EDUCATION AT A GLANCE OECD Indicators 1998

CENTRE FOR EDUCATIONAL RESEARCH AND INNOVATION

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AND INNOVATION

INDICATORS OF EDUCATION SYSTEMS

EDUCATION AT A GLANCE

OECD Indicators

1998

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Education at a Glance - OECD Indicators

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Organisation for Economic Co-operation and Development

Pursuant to Article 1 of the Convention signed in Paris on 14th December 1960, and which came into force on 30th September 1961, the Organisation for Economic Co-operation and Development (OECD) shall promote policies designed:

- to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy;
- to contribute to sound economic expansion in Member as well as non-member countries in the process of economic development; and
- to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.

The original Member countries of the OECD are Austria, Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The following countries became Members subsequently through accession at the dates indicated hereafter: Japan (28th April 1964), Finland (28th January 1969), Australia (7th June 1971), New Zealand (29th May 1973), Mexico (18th May 1994), the Czech Republic (21st December 1995), Hungary (7th May 1996), Poland (22nd November 1996) and Korea (12th December 1996). The Commission of the European Communities takes part in the work of the OECD (Article 13 of the OECD Convention).

The Centre for Educational Research and Innovation was created in June 1968 by the Council of the Organisation for Economic Co-operation and Development and all Member countries of the OECD are participants.

The main objectives of the Centre are as follows:

- *analyse and develop research, innovation and key indicators in current and emerging education and learning issues, and their links to other sectors of policy;*
- *explore forward-looking coherent approaches to education and learning in the context of national and international cultural, social and economic change; and*
- *facilitate practical co-operation among Member countries and, where relevant, with non-member countries, in order to seek solutions and exchange views of educational problems of common interest.*

The Centre functions within the Organisation for Economic Co-operation and Development in accordance with the decisions of the Council of the Organisation, under the authority of the Secretary-General. It is supervised by a Governing Board composed of one national expert in its field of competence from each of the countries participating in its programme of work.

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INTRODUCTION

The OECD education indicators

Governments are seeking effective educational policies that enhance the social and economic prospects of individuals, contribute to economic productivity, provide incentives to promote the efficiency of the administration of schooling and help mobilise additional resources to meet increasing demands for education and learning.

To inform the process of policy formation and to reinforce the public accountability of education systems, the OECD continuously seeks to develop indicators that can provide insight into the comparative functioning of education systems – focusing on the human and financial resources invested in education and on returns to those investments.

A quantitative description of the functioning of education systems allows countries to see themselves in the light of other countries' performance. Through international comparisons, countries may come to recognise weaknesses in their own education systems, while also identifying strengths that can otherwise be ignored in the heat of domestic debate. The OECD education indicators show whether variations in educational experiences within a country are unique or if they mirror differences observed elsewhere.

The OECD education indicators are the product of an ongoing process of conceptual development and data collection, the objective of which is to link a broad range of policy needs with the best internationally available data.

The 1998 edition of Education at a Glance

The 1998 edition of *Education at a Glance* – OECD *Indicators* provides a richer array of indicators than ever before, based on more comparable and up-to-date data. The 36 indicators that are included represent the consensus of professional thinking on how to measure the current state of education internationally.

The thematic organisation of the volume, and the background information accompanying the tables and charts, make this publication a valuable resource for anyone interested in analysing education systems across countries. Following a summary of new developments and a presentation of key comparisons and trends, the indicators are displayed in six chapters:

- *Chapter* A presents indicators on the demographic, social and economic context in which education systems operate.
- *Chapter* B deals with the financial and human resources that countries invest in education, comparing: *i*) the resources that countries invest in education, relative to national wealth, the number of students and the size of the public purse; *ii*) the ways in which education systems are financed and *iii*) the sources from which the funds originate and the deployment of resources across different functional categories.
- *Chapter* C presents indicators on access to education, participation, progression and completion. Trends in enrolments in the various levels of education and types of educational institutions are shown to indicate how the supply and demand of educational resources have evolved in different countries.
- *Chapter* D presents a broad picture of the labour force participation of young people 15 to 29 years of age, both while in education and following the completion of initial education.
- *Chapter* E deals with the learning environment and the various ways in which school systems are organised. It shows data on teacher compensation, demographics of the teaching force, the statutory time that teachers are required to teach and students required to be in a classroom, subject emphasis in the curriculum, how decision-making authority is distributed across levels of government and the use of computers in schools.
- Finally, *Chapter* F presents indicators on the individual, social and labour market outcomes of education.

One unique aspect of this year's edition is that, through the *World Education Indicators* programme (WEI), which OECD co-ordinates in co-operation with UNESCO, a wide range of non-member countries have contributed to *Education at a Glance*, extending the coverage of some of the indicators to now almost two-thirds of the world population.

The publication *Education Policy Analysis*, which complements *Education at a Glance*, takes up selected themes of key importance for governments and analyses the implications for educational policy. Chapter 1 in *Education Policy Analysis* provides information on country priorities for lifelong learning. Chapter 2 provides a review of research and country experiences that aim at identifying new roles for teachers. Chapter 3 provides information on the importance of different structures and pathways in education. Finally, Chapter 4 explains how private resources are being brought into tertiary education.

NEW DEVELOPMENTS

Trend data offer an insight into developments in the supply of and demand for learning opportunities

Broad shifts in the economic and social structures in OECD countries have increased the demand for educational reform, specifically for the development of strategies to adapt education and training systems to these new conditions. The development of different policy options and strategies for change can best be achieved through an understanding of how education and training systems have evolved. The 1998 edition of *Education at a Glance* therefore complements its review of cross-country variation with trend indicators in order to show how the supply of learning opportunities has evolved and how the expansion of learning opportunities has been financed. These trend indicators trace a rapid growth in the proportion of young people undertaking upper secondary and tertiary education in many countries (Indicators C1 to C4) and a consequent rise in spending (Indicators B1 to B4). As the size of the youth population in most countries has stopped shrinking, and in some cases is expanding (Indicator A4), the increase in demand for education has imposed costs that governments are finding harder to bear. Private sources are increasingly being drawn upon (Indicator B3).

New indicators have been designed to shed light on the transition from school to work

The labour-market situation of young persons has returned to the forefront of public debate in recent years. There is a general perception that the transition from education to work has become more difficult, despite the fact that the size of youth cohorts has been declining in most countries and that young people entering the labour market are generally more educated than was the case ten years ago. A new set of indicators (D1 to D4) shed light on the transition from education to work. Indicator D1 presents a broad picture of the labour force participation of young people 15 to 29 years of age, both while in education and following the completion of initial education. Indicator D2 traces the increase over a decade in the number of years of education and employment that a person aged 15 can expect up to the age of 29. Finally, Indicator D3 provides information on the various reasons for youth unemployment and Indicator D4 describes how the labour-market situation differs in the early years for young people with different levels of educational attainment.

Improved measures examine investments in education and their returns

Education is an investment in human skills that can help foster economic growth and raise productivity, that can contribute to personal and social development and that has the potential to reduce social inequality. No equation can fully describe these relationships, but several of the new or enhanced indicators included here allow for a better understanding of the cost and nature of the investment on the one hand and of the benefits or returns to education on the other.

On the investment side, the main expenditure indicator (B1) provides a more complete picture of the resources devoted to education and how these have evolved from 1990 to 1995. It is supplemented by a new indicator (B3) describing the relative shares of public and private investment in education and how patterns of educational finance are changing. The indicator of spending per student (B4) has been further developed to show how changes in spending and participation have influenced unit costs.

To respond to increasing public and government concern over the outcomes of education, more than one-third of the indicators in this edition have been devoted to the individual, social and labour market outcomes of education. The picture of mathematics and science achievement of primary and lower secondary students presented in earlier editions has been expanded with a comparison of the distribution of student achievement in 4th and 8th grades (F1) and an examination of the extent to which education systems and societies moderate or reinforce early educational disparities between the two grades (F2). In addition, a new indicator (F3) examines the share of the overall variation in student achievement that is associated with the groups that were tested – classes and schools – and what percentage originates with students themselves.

The indicator on educational attainment (A1), traditionally used to proxy the stock of human capital, has been complemented with information on literacy skills in the adult population (A3).

With regard to the labour market outcomes of education, there is a more detailed picture than in the past of the relationship between education and earnings (F7), including an estimate of the relative rates of return across levels of education that distinguishes between fiscal and private returns to education (F8).

New indicators have been designed to improve the information base on lifelong learning

As societies and economies have become more dependent on the production and use of knowledge, lifelong learning has become a central policy issue. The 1998 edition of *Education at a Glance* takes a further step towards reporting internationally comparable data on lifelong learning and its impact on society and the economy.

The indicators on participation in education (C1 to C5) have been expanded to cover not just the young, but all age groups. There is a growing demand in the workplace and elsewhere for individuals who are good at using and interpreting knowledge flexibly, and who can work with others effectively. These abilities can be acquired partly through education, but must also be developed in the settings where they will be used. Indicator C5 brings together new evidence on rates of participation, as well as intensity of participation, in education and training by adults in different institutional settings.

Finally, the indicator on education and earnings (F7) has also been expanded to trace the impact of educational attainment on earnings not only at a single age but over the lifecycle.

Indicators on disparities in educational provision and outcomes provide new insights

Despite widening access to education, outcomes continue to vary greatly for individuals, between as well as within countries. The disparities in achievement start in the early years of school. By the 8th grade even the average mathematics scores in different countries can differ by an amount equivalent to several times the progress typically made by a student in a year (Indicator F2). The same is true when comparing achievement of the top and bottom 25 per cent of achievers within countries. The dispersion of their scores rises as they progress in school. However, some countries appear to be more effective than others in limiting the degree to which the best and poorest performing students drift apart over time.

A new indicator (F4) sheds light on the characteristics of students who are most likely to perform poorly and can help educators and policy-makers identify crucial risk factors that impede effective learning. By showing that in some countries these tendencies are less marked than in others, these indicators can also give support to policy incentives designed to foster equity.

In adulthood, those who fail to reach certain levels of education and competence face poor earnings and labour market prospects (Indicators F5 and F7). A large proportion of adult populations still have below upper secondary attainment or low levels of literacy – both of which correlate with less desirable labour market outcomes. But whereas average earnings seem to "take off" only with tertiary education (perhaps because upper secondary is now so commonplace), the risk of unemployment, particularly among youths, is reduced most by completion of upper secondary.

A new indicator (A2) examines the extent to which individuals improve on the education level of their parents. Such mobility impacts on the equality of opportunities and has also a bearing on the potential for improving the overall human capital stock over time.

Finally, a new developmental indicator (C6) compares the proportion of students with special educational needs and presents data on the extent of provision for these students, its location, and its resourcing in terms of student/teaching staff ratios.

The indicators give greater emphasis to tertiary education, which is now replacing secondary education as the focal point of access to rewarding careers

As demand for education continues to rise, young people are becoming more likely to study well beyond compulsory schooling, both in terms of attending higher educational levels and of enrolling at older ages. The factors influencing this expansion are not hard to discover. Demand for education has never been greater, as individuals and societies are attaching ever more importance to education as a route to social and economic success. This is no longer simply a matter of aspiring families seeking advancement for their children, as early school leaving increases the risk of exclusion and of poor labour market prospects for all young people. In OECD countries, a tertiary qualification halves the time that an adult is likely to spend unemployed, compared to leaving education without an upper secondary qualification, and can add a decade to the amount of time spent employed over a working life (Indicator A5).

This edition provides a more complete picture of who enters tertiary education and who survives up to graduation. Indicator C3 estimates the percentage of youth who will enter university-level education during the course of their lives, given current conditions. It also gives information on patterns of participation and on the demographic composition of those entering tertiary education.

At tertiary level many of those who participate do not obtain a qualification; a new indicator this year shows that, on average, only about two-thirds of university students complete their first degrees (C4). Although "dropping out" is not necessarily an indicator of failure from the perspective of the individual student, high drop-out rates may indicate that the education system is not meeting the needs of its clients.

Enhanced indicators offer more insight into the learning environment and the organisation of schools

Ongoing debates about teachers' salaries, professional status and time spent on instruction have sparked interest in comparative data on levels of teacher compensation, the amount of time teachers spend working, the number of classes they teach per day and the number of students in each class.

Indicator E1 provides a more differentiated picture of teacher compensation and offers insight into how structural characteristics of education systems, such as teachers' salary levels, student/teaching staff ratios and teaching hours translate into teaching costs per student.

A new indicator (E5) examines the distribution of decision-making responsibilities among key stakeholders of education. Placing more decision-making authority at lower levels of the education system has been a key aim in the restructuring and systemic reform in many countries since the early 1980s. At the same

time, there are also frequent examples of strengthening the influence of the central level in certain domains. For example, an easing of "process" and financial regulations may be accompanied by an increase in output control from the centre, and by national curriculum frameworks.

Finally, Indicator E6 has been introduced to provide cross-country comparisons of the number of students per computer, as well as students' reports on how often they use a computer during the final year of secondary school. Because OECD economies are increasingly dependent on technological knowledge and skills in the labour force, students with little or no exposure to information technology in school may face difficulties in making a smooth transition to the modern labour market.

The coverage of the private sector has been improved

Improved coverage throughout the volume of the private sector of education – with respect to both participation rates in educational institutions and sources of funds – provides a more complete picture of costs, resources and participation in education systems.

Methodological advances have made the indicators more comparable

In 1995, UNESCO, OECD and EUROSTAT introduced a new set of instruments through which data are now jointly collected on key aspects of education. The return on this collaboration, which was led by the OECD and carried out in close consultation with the OECD/INES Technical Group, has been substantial improvement in the collection, organisation and quality of international education statistics, as well as a reduction in the time taken to publish the indicators. The continuing implementation of common definitions, the use of high standards for quality control, and better data documentation have improved the international comparability of education statistics.

KEY COMPARISONS AND TRENDS

The OECD's 1998 education indicators chart a wide range of educational and related developments of interest to policy-makers, educators, and researchers in Member countries. The selection of data and accompanying commentary shown on the following pages pick up some of the central themes that emerge from the indicators. The charts show the range of country experiences in simplified form, by grouping countries into bands defined in each case by a range of values. Full data are available in the subsequent chapters of this publication.

HIGHLIGHTS

Sources of demand for education

Demand is affected both by pressure to participate in post-compulsory education, which in turn is influenced by links between qualifications and life chances, and by the size of the population at school age.

- Men who are tertiary graduates enjoy, on average across OECD countries, six more years of employment than men who have not completed upper secondary education; for women the gap is 11 years (Chart 1).
- School-age populations have stabilised in most countries, although in a handful they continue to fall steeply (Chart 2).

The rate of educational expansion

To meet rising demand, education systems are rapidly expanding to allow more people to study longer and to higher levels.

- Between 1990 and 1996, the average time a 5 year-old can expect to spend in education rose from $14^1/_2$ years to $16^1/_2$ years but still varies from 12 to 19 years across OECD countries (Chart 3).
- The number of students at the tertiary level has increased in all countries between 1990 and 1996; in half of OECD countries by more than a third. On average across OECD countries, 34 per cent of young people are entering universities; 22 per cent complete a first degree (Chart 5).

Resources and their deployment

With school-age populations stabilising, expanding rates of participation are feeding through into higher overall spending on education.

- Public educational spending as a percentage of GDP has been rising between 1990 and 1995 in most countries, very rapidly in Mexico, but has been falling in Italy and Turkey (Chart 8).
- Although education remains mainly publicly funded, private spending is becoming increasingly important and accounts, on average, for 9 per cent of initial educational funds. Overall, this spending appears to supplement rather than displace public expenditure (Chart 9).
- The ratio of primary students to teaching staff varies from 31 to 11 across OECD countries. Mexico has about three times as many students per teacher in primary schools than in universities; in Italy the reverse is true (Chart 11).

Outcomes

Wide variations in student achievement feed through into unequal prospects in adulthood.

- In almost half of countries, the lowest-achieving 25 per cent of 8th-graders have mathematics scores equivalent to two or more years behind the OECD average (Chart 12). Disparities widen in the course of schooling, but much more slowly in some countries than in others (Chart 13).
- The level of education that adds most to individuals' earnings is university, whose graduates earn typically 20-100 per cent more than upper secondary graduates by mid-career (Chart 15).
- Adults who are university graduates receive, on average, up to 3.5 times as much training as upper secondary graduates, who in turn receive up to 2.5 times as much as those who only have lower secondary education. Education combines with other influences to make adult learning least common among those who need it most (Chart 17).

THE LABOUR MARKET AND DEMAND FOR EDUCATION

Increasing demand for educational provision comes, at least in part, from the desire of employers to have better skilled workers and, hence, from individuals who see that educational qualifications improve their life chances. Completion of compulsory schooling is no longer sufficient in OECD countries to provide reasonable economic prospects. A school leaver without an upper secondary qualification can expect between the ages of 25 and 64:

- to earn about 20 per cent less by mid-career than a leaver completing upper secondary, and only half as much as a university graduate (Indicator F7);
- to spend more than twice as long unemployed as someone with tertiary education (Indicator A5);
- to spend twice as long out of the labour market as a tertiary graduate – 10 extra years for women; 4 for men (Indicator A5).

The impact of education on employment is summarised in Chart 1, in terms of the additional expected years in employment for those progressing to a tertiary qualification, relative to those who do not have an upper secondary qualification. These "expectations", like life expectancy, are not true forecasts of what will happen to today's young people, but a summary of what is happening to all age-groups now. Employment expectation is examined for those aged 25 years and older, to compare prospects after the completion of initial education.

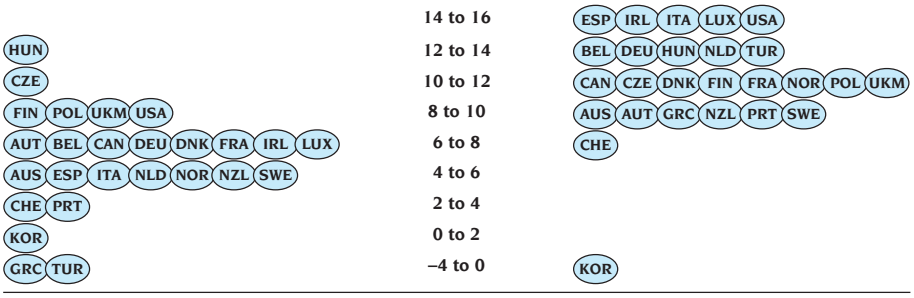
Chart 1 highlights the striking difference in the time spent employed by people with different educational qualifications. In most countries, tertiary graduates enjoy between five and eight more years employment than those without an upper secondary qualification (typically about 35 rather than under 30 years); for women the difference is more than a decade (typically 30 rather than under 20 years).

This disparity is not mainly to do with spells of unemployment. Although the extra two years that less-educated men spend unemployed (one year for women) is itself a strong incentive to complete education, most of the difference is due to long spells outside the labour market. Women taking career breaks and older men who lose their jobs find it far more difficult to re-enter employment without educational qualifications. Moreover, in countries with weaker traditions of women working, it is often the better-educated who have access to jobs. The five countries in which women overall work the least – Ireland, Italy, Luxembourg, Spain and Turkey – also show high educational disparities. In these countries a woman with tertiary education works on average twice as many years as one without upper secondary.

A full analysis of structures and pathways for youths, with cross-references to destinations out of different educational and employment experiences, is provided in the volume *Education Policy Analysis*.

Chart 1. **Learning to work**

Additional expected years in employment for adults with tertiary education, compared to those without upper secondary education



* "Expected" years are calculated by adding up the current (1996) probability of being in employment, for each age-cohort from 25 to 64 years. The "difference" is calculated by subtracting expected years for adults without upper secondary education from expected years for adults with tertiary education.

Better education brings big rewards, not just in pay but in job prospects. Those without upper secondary education spend more time unemployed and, in particular, out of the labour market than tertiary graduates. This is most true for women, especially in countries where fewer women work overall.

For details see Indicator A5.

CHANGES IN DEMOGRAPHIC DEMAND FOR EDUCATION

With nearly two-thirds of educational spending going towards primary and secondary schooling (Indicator B1), changes in the size of the school-age population can have a large impact on educational costs. Sharp falls in birth rates in the 1970s explain, in part, why educational spending was stable in the 1980s relative to GDP, despite increasing rates of participation. In the 1990s, however, the school-age population has stabilised in many countries, and in some it has begun to rise again.

Chart 2 shows recent and future trends in the share of the population aged 5-14 years, roughly the age span of enrolment in primary and lower secondary education. While in some countries, particularly in southern and central Europe, the sharp fall has continued, in most there was a slight increase between 1990 and 1996. Over the next decade, the picture will be more mixed, although only a third of countries will have either rises or falls amounting to more than one per cent per year. The Czech Republic, Hungary, Ireland, Poland and Spain stand out as the countries with a persistent decline over the whole period, while Denmark, Luxembourg and New Zealand will shift from modest to more substantial rises.

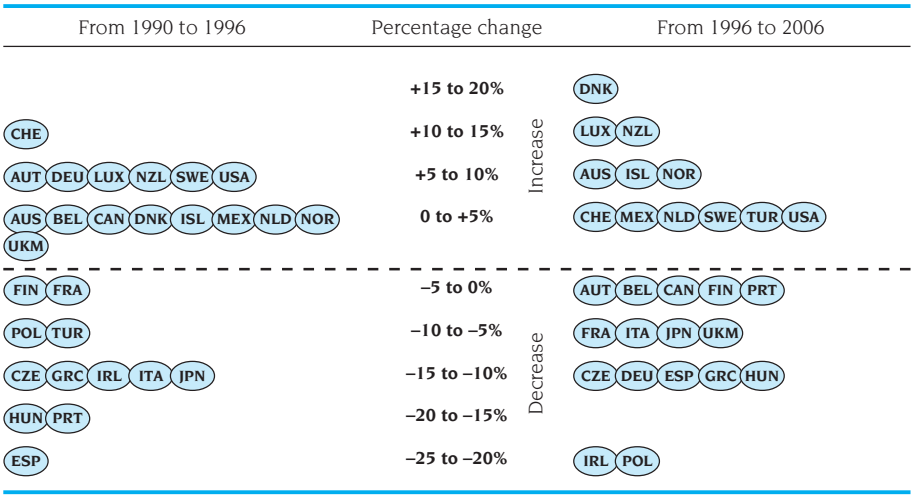
Since the number of schools and the number of teachers do not automatically expand and contract in proportion to student populations, the impact of demographic change on the resourcing of education is not always immediate or apparent. A more significant issue in the future will be demand for post-compulsory education. Earlier modest rises in the child population are now feeding through into larger numbers of people in their late teens and early 20s. Upper secondary schools, colleges and universities have hitherto been able to take a rising proportion of relatively small cohorts with often only modest rises in spending. Can such expansion be sustained under less favourable demographic conditions?

To appreciate the potential impact on costs from these population changes, the cost implications of the cross-country variation in today's demographic profiles can be examined. In Italy, just 10 per cent of the population are aged between 5 and 14, compared to over 20 per cent in Mexico and Turkey. The mean across OECD countries is 13 per cent. To sustain the present expenditure per student, under average demographic conditions for the OECD, Italy would need to spend 10 per cent more on education, while Mexico could spend 50 per cent less (Indicator B1). This illustrates the potential long-term effect of shifts in OECD countries' demographic profiles.

Chart 2. **New students**

Percentage change in the population of school-age children (aged 5-14)

The early 1990s saw a modest increase in the number of children in many countries. The coming decade will be mixed but with few extreme changes. Today's modest rises in school enrolment will soon feed into new pressures on post-compulsory education, and compound the effect of rising participation rates.



For details see Indicator A4.

EXPANDING PARTICIPATION IN EDUCATION

The expansion of education systems has been driven by more people entering higher levels of education, as well as by increasing study durations at each level. Although in most countries compulsory schooling still ends at age 15 or 16, participation in upper secondary education is becoming universal at older ages (Indicator C2). A growing minority of young people, and in some countries a majority, are now continuing into some form of tertiary education (Indicator C3).

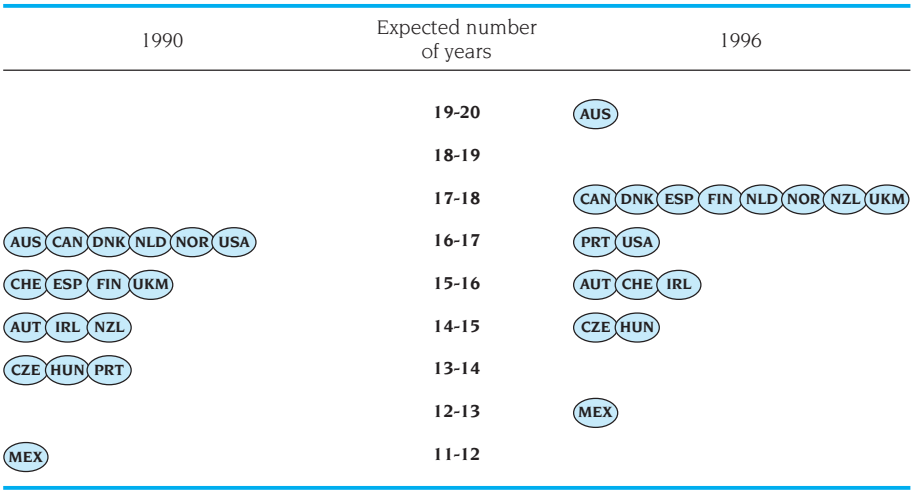
One way of summarising this expansion is to calculate the "expected" years of education for young people, by adding up the proportions of the population who participate at each year of age. By this measure, if half the population were enrolled for six years beyond the end of compulsory schooling, three years would be added to educational "expectancy". Chart 3 shows that the change in educational expectancy between 1990 and 1996 has been substantial in many countries. In Australia, New Zealand, Portugal, Spain and the United Kingdom, the rise over a six-year period equates to all young people studying, on average, for an extra two to three years. In the majority of OECD countries providing data, the rise was at least a year.

Expanding participation is seen in higher enrolment in upper secondary and widening access to tertiary studies. In 10 countries, 90 per cent or more of 17 year-olds are now enrolled, even though only three of these countries (Belgium, Germany and the Netherlands) formally require school attendance at this age (Indicator C1). Nevertheless, differences in the proportion of students who leave without completing upper secondary education continues to be the biggest single influence on country differences in average years of study. Beyond the late teens, only a minority of any given age-cohort remains enrolled in education in most countries; only in Belgium, Canada, France, the Netherlands and Spain are over half of 20 year-olds enrolled in educational institutions.

With substantial numbers remaining in or returning to education throughout their 20s and beyond, however, the average amount of tertiary education received by every member of the population over a lifetime remains high: 2.3 years across the OECD, and above three years in Australia, Canada, Finland, New Zealand and the United States (Indicator C3). This average takes into account many people who receive no tertiary education at all, and others who are enrolled for a much longer period. Average tertiary participation has increased rapidly in some countries, doubling between 1990 and 1996 in Hungary, Portugal and the United Kingdom.

Chart 3. **Rising educational expectancy**

Expected time spent in full- and part-time education for persons 5 years and older, based on current enrolment rates



The 1990s have seen big rises in the rate at which the population participates both in upper secondary and in tertiary education. The average lenth of young people's education rose from 14 1/2 years in 1990 to 16 1/2 in 1996. The great majority are now completing upper secondary education, and tertiary study has become a mass pursuit.

For details see Indicator C1.

RISING EDUCATIONAL ATTAINMENT

How well educated is the adult population? In today's "knowledge-based" societies, where a sound basic education helps equip people for the complex demands of work and everyday life, there is a need to raise the proportion of the population who have completed at least secondary education. At present, about 60 per cent of working-age adults in OECD countries have a qualification at the upper secondary level (Indicator A1). This proportion continues to increase steadily, as each cohort of young people enters adulthood with progressively higher qualifications.

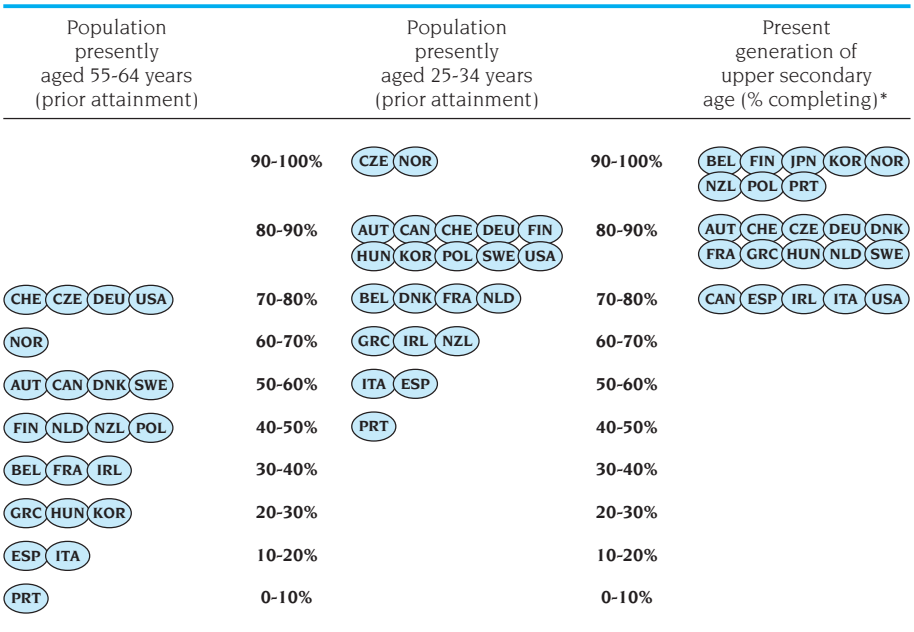
Chart 4 illustrates how these attainment rates have risen through successive generations. For the generation now nearing retirement age, those educated in the 1940s and 1950s, only a minority in most countries gained an upper secondary qualification. For the generation thirty years younger, educated in the 1970s and 1980s, the attainment rate is significantly higher; in half of the countries providing data it is 80 per cent or more. The qualification rate of today's school-leavers shows that the past decade has seen a catching-up of those countries whose rates had remained relatively low. In 12 out of 24 OECD countries for which data are available, upper secondary graduation rates are above 85 per cent and in Belgium, Finland, Japan, New Zealand, Norway and Poland they exceed 93 per cent. Trends in university-level attainment have followed a similar pattern, with the proportion rising from one in thirteen 55-64 year-olds to one in seven 25-34 year-olds across OECD countries (Indicator A1).

As upper secondary completion becomes the norm in OECD countries, the minority who fail to attain it are increasingly at risk. In Canada, Mexico, Spain and the United States graduation rates remain below 75 per cent (Indicator C2), although second chance opportunities in Canada and the United States do allow drop-outs the opportunity to complete upper secondary at older ages. Catering adequately for this disadvantaged minority is as great a challenge as was the creation of "mass" education systems in previous decades.

The rate at which populations attain upper secondary and tertiary education has risen steeply through successive age-groups presently of working age. At least about three-quarters of today's school leavers complete upper secondary education. The challenge now is to ensure that the remaining quarter is not left behind, with the risk of social exclusion that this will entail.

Chart 4. **Generational improvements**

Percentage of the population completing at least upper secondary education, in three age cohorts



* This rate is the annual number of upper secondary graduates divided by the population at the typical age of graduation. In countries where it is common to obtain more than one upper secondary qualification, there can be double-counting that exaggerates the proportion of a cohort who qualify at this level.

For details see Indicators A1 and C2.

ENTRY, PARTICIPATION AND DROP-OUT IN UNIVERSITY EDUCATION

If current university-level entry rates extend into the future, one out of three of today's young people will enter university-level education during the course of their lives. In the United States, the entry rate is now over 50 per cent. But as participation has risen, the characteristics of participants have changed. No longer are the majority of university entrants people in their late teens, entering university immediately after completion of secondary education (see Chart 6 and Indicator C3).

Chart 5 shows that considerably smaller proportions of the population graduate from than enter university-level education – on average, 22 per cent of a typical age-cohort graduate from a first degree university programme compared to 34 per cent who enrol. The proportion of individual entrants who graduate corresponds roughly to the "university survival rates", introduced for the first time in this year's edition of *Education at a Glance*. These rates average to about two-thirds, but differ widely across countries, from above 80 per cent in Hungary, Japan and the United Kingdom, to 35 per cent in Italy (Indicator C4).

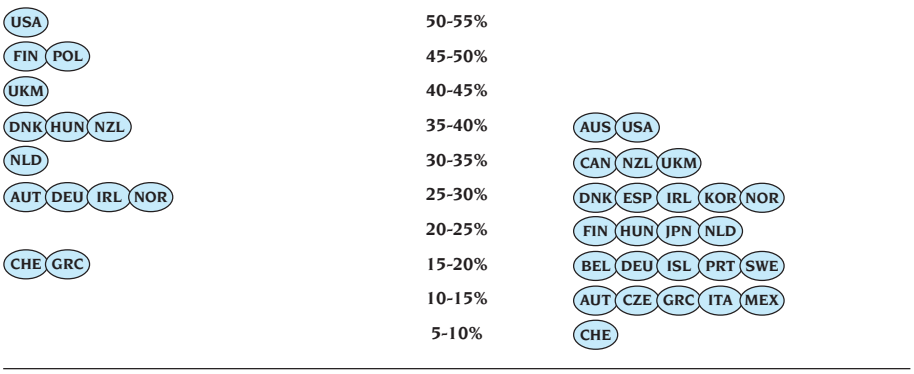
People who "drop out" of university do not necessarily fail: many of them take up employment or find that the educational programmes chosen do not meet their needs. But survival rates are a useful indicator of the efficiency of tertiary education systems, in terms of meeting the needs of their clients. It is important to note that data on survival rates do not show a systematic trade-off between wide access to higher education and a high incidence of dropping out. While the United States has high access and a high drop-out rate (nearly 40 per cent), Finland, New Zealand and the United Kingdom have high participation and low drop-out rates. In Austria, access is low and drop-out rates are high.

The compounded effect of these differences in entry and survival rates means that even within Western Europe, the proportion of the population graduating from university varies widely, from one in ten in Italy and Austria to one in three in the United Kingdom (Indicator C4). A contributory factor is the lack of a short-cycle degree, similar to a bachelor option, in the first two of these countries.

The university level does not dominate tertiary education everywhere. In countries with education systems as diverse as those of Belgium, Canada, Norway and Switzerland, the volume of participation (measured by student enrolment years) is similar in non-university as in university-level courses. Consequently, the output of tertiary education cannot be judged by a single measure, but rather should be looked at in terms of its ability to meet diverse needs.

Chart 5. **From enrolment to graduation**

Percentage of the population entering and graduating from first university-degree courses*



* Entry is calculated as the sum of entry rates for all age-groups; graduation rates divide the number of graduates by the population at the "typical" age of graduation. The entry rate is an approximation of the chances of an individual enrolling/graduating sometime in their life, given current patterns.

At least a third of young people in OECD countries are likely to attend university during the course of their lives, although a smaller proportion will obtain degrees. In some countries, only a minority of entrants complete the course; in others almost all do. Countries with high entrance do not necessarily have greater drop-out rates.

For details see Indicator C4.

CHANGING PATTERNS OF PARTICIPATION IN TERTIARY EDUCATION

Tertiary education is no longer the preserve of people in their late teens and early 20s. Adults of all ages are enrolled, with high proportions of age-groups up to the late 20s studying in some countries. Some of this ageing of the student body can be accounted for by people prolonging their studies, but at least as important in many countries is the "mature" student phenomenon – re-entry into education after a period outside it. In Denmark and Norway fewer than 20 per cent of university entrants are under 21 whereas in Greece and Ireland over 80 per cent are still below this age.

Chart 6 shows that both in the OECD as a whole and within many individual countries, the age of graduation with a bachelor-level degree is highly varied. Of the countries supplying data, only in Australia, New Zealand and the United Kingdom do even a quarter of students complete their studies by their twenty-second birthday, and in most countries at least a quarter are over 28 when they obtain their first degree (Indicator C4). Within countries it is becoming much harder to identify a "typical" age of completion: the middle half of graduating students, ordered by age, are between 21 and 29 years in New Zealand and between 25 and 32 in Denmark – a range of 7 years or more in both countries.

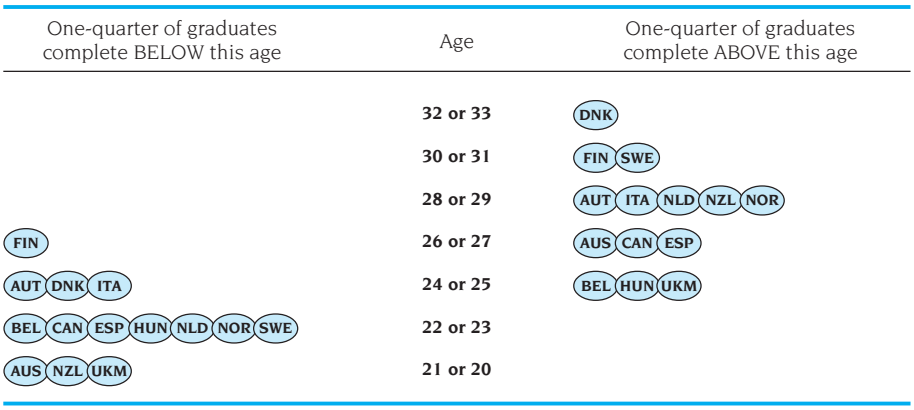
In Belgium and Hungary, on the other hand, most students complete within a relatively narrow age band in their early to mid 20s. In these countries, "long cycle" first degree courses of about five years prevail; where this is the case, completion ages tend to be more uniform, largely because long degrees are less attractive to mature entrants.

In non-university tertiary programmes, many of which are two or three years in duration, access at mature ages tends to be easier, and the age range at graduation is even more varied than for 3-4 year university degrees. In Finland and the United Kingdom, completion ages typically range from the early 20s to the mid 30s. At the extreme is Canada, where the youngest quarters complete non-university programmes by 22, but the oldest quarter after the age of 40. Tertiary students in non-university programmes are, on average, twice as likely as those in university programmes to study part-time, and in Australia, New Zealand, Switzerland, the United Kingdom and the United States, the majority in the non-university level do so (Indicator C3). In the English-speaking countries in particular, a wide variety of study modes and types of programmes are helping to dissolve the age barrier in tertiary education.

Chart 6. **Varying ages of participation**

Ages between which one-half of first-time university graduates complete their degrees

Students are entering and graduating from university at a wide range of ages. In most countries over a quarter do not complete a first-degree programme before their late 20s. Mature students typically choose relatively short programmes, especially in non-university tertiary education, where part-time study is twice as common as in universities.
For details see Indicator C4.



THE SHARE OF NATIONAL INCOME INVESTED IN EDUCATIONAL INSTITUTIONS

Every country invests a large share of its national income in education. How much to invest is a collective decision made by governments and their voters, by individual students and their parents, by enterprises and by others who contribute resources. In primary and secondary education, overall spending is influenced by the number of school-age children, though not solely determined by it. Varying class sizes and teacher salaries create wide differences in how overall investment in education translates into how much is spent per child. In tertiary education, these cross-country variations are accentuated by differences in how many young people participate and in the role of private financing.

Given these multiple influences, it is perhaps surprising that OECD countries spend such similar proportions of their GDP on education: two-thirds of OECD countries between 5 and 7 per cent, as shown in Chart 7. Despite tight public scrutiny of education budgets, in only five out of 22 reporting OECD countries has educational spending been contained at less than 5 per cent of GDP. There is potentially greatest discretion over spending on tertiary education, which varies between countries relative to GDP by a factor of over three (from 0.8 per cent of GDP in Italy and Greece to 2.8 per cent in Canada).

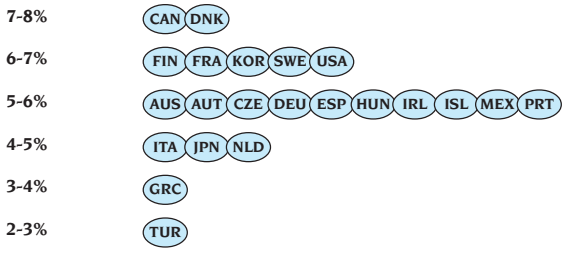
On average, OECD countries devote 12.6 per cent of total government outlays to support for education, with the values for individual countries ranging between 8 and 23 per cent (Indicator B2). This expenditure includes direct expenditure on educational institutions and public subsidies to households as well as to other private entities for education.

Relatively higher proportions of public budgets tend to be devoted to education in countries where these overall budgets are lower as a percentage of GDP. For example in Korea and Mexico, where relatively small fractions of GDP are spent publicly, the proportion of public budgets allocated to education is relatively high. Conversely, in countries such as Italy or the Netherlands, where education accounts for a relatively low proportion of public spending, total public spending relative to GDP is high. This is evidence that education is a social priority in all countries, even in those with little public involvement in other areas.

In the majority of OECD countries, education that is funded from public sources is also organised and delivered by public institutions, although in some countries government funds are, in part, transferred to government-dependent private institutions or given directly to households to spend in the institution of their choice.

Chart 7. **National income invested in education**

Percentage of GDP spent on educational institutions from public and private sources



Overall spending on education consumes around six per cent of GDP in most OECD countries. This expenditure is difficult for governments to contain, since most comes from public sources and pays for schools, whose resourcing structures are well entrenched.

For details see Indicator B1.

CHANGES IN THE SHARE OF NATIONAL RESOURCES INVESTED IN EDUCATION

On average, 90 per cent of spending on educational institutions originates from public sources (Indicator B3). In three-quarters of OECD countries, public spending on educational institutions increased in real terms in the first half of the 1990s. Only Hungary, Italy and Turkey saw significant declines (Indicator B1). But it is important to consider this spending in relation to what happened to national income over the same period. In Hungary, for example, GDP also fell, so the proportion spent on education remained fairly stable. Conversely, in Ireland a 31 per cent rise in government spending on education (after adjusting for inflation) from 1990 to 1995 was matched by rapid economic growth, so that the public education's share of GDP stayed constant.

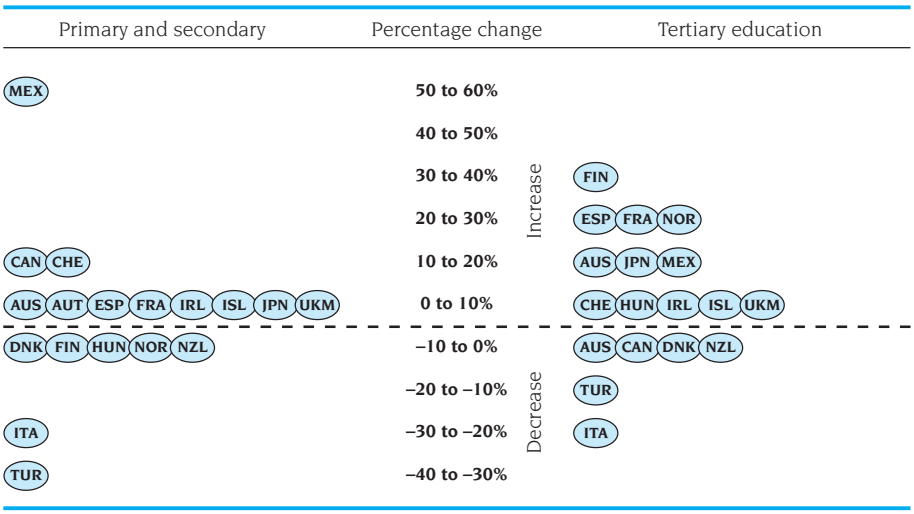
Chart 8 looks at the change between 1990 and 1995 in the percentage of GDP that governments spend on education, either directly on educational institutions or in the form of subsidies to the private sector. The increases shown in this chart are significant, given the pressure to contain government spending in many countries and the competing claims of other public spending priorities. In the majority of OECD countries, there has been a modest growth in education's share of GDP. The singular exception is Mexico where increases in educational investment have brought overall spending more in line with other OECD countries – from 3.2 to 4.6 per cent of GDP.

In some countries (notably Finland and Norway) tertiary education has fared better than primary and secondary, while in others (especially Canada and Mexico) the reverse is true. In Italy and Turkey there has been a decline across all levels of education. Trends in national resources devoted to education must be interpreted in the context of changes in various inter-related factors of supply and demand, such as the demographic structure of the population, enrolment rates, per capita income, national price levels for educational resources and the organisation and delivery of instruction. An important influence is also the interaction of demographic trends with participation rates, which between them affect overall enrolments differently in each country.

Chart 8. **Changes in public educational investment**

Percentage rise in direct public spending on educational institutions relative to GDP (1990-1995)

Public spending on education has in most countries been rising in real terms and, to a lesser extent, as a share of GDP. Education has done well in the competition for limited public funds, helping to fund rising enrolment. But these changes are small relative to country differences in education's share of public budgets.



For details see Indicator B1.

CHANGING PATTERNS IN THE PUBLIC-PRIVATE PARTNERSHIP IN EDUCATIONAL FINANCE

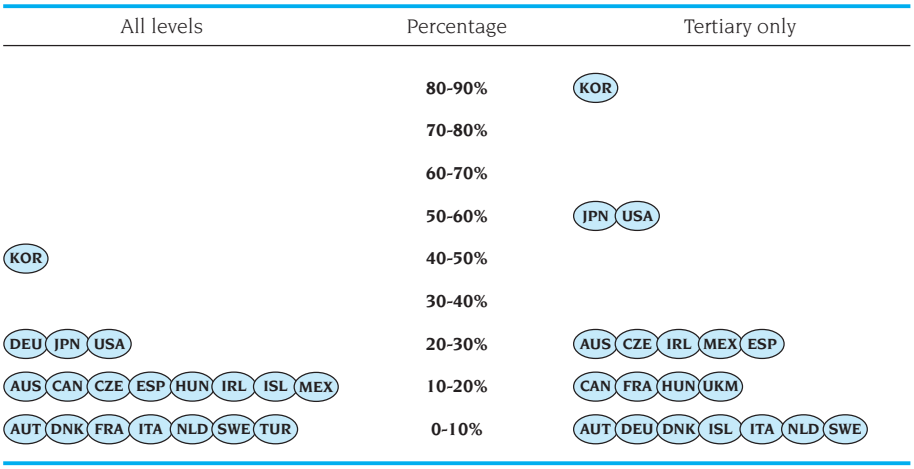
Although education is still primarily a public enterprise, it involves a substantial and growing component of private financing. The private sector is a significant source of funds, although in some countries more so than in others (see Chart 9). Among the 12 OECD countries reporting data, the proportion of funding for educational institutions originating in the private sector ranges from 3 per cent or below in Italy, the Netherlands and Sweden to over 18 per cent in Australia and Germany (Indicator B3). In addition, a number of countries give substantial subsidies to the private sector which are then spent on education by households or enterprises. In Australia, Canada, Ireland, Italy and the Netherlands, these transfers raise the share of educational funds paid by private entities to educational institutions by between 2.4 and 7.3 per cent across OECD countries.

Private payments tend to be concentrated in tertiary education, where they account for over 20 per cent of funding in about half of OECD countries. In recent years this private contribution to the direct cost of study has risen in many systems as a result of higher tuition fees or a growth in the share of private universities and colleges. But payments to educational institutions (covered by the chart) are only part of the picture. Students and their families also make a large and in many cases growing contribution to indirect costs such as living expenses and the purchase of books and equipment. Where tuition fees or private enrolments have risen, they have not generally done so at the expense of public funding. More often, they have helped to fund a general expansion. Some of the countries with the highest growth in private spending have also shown large increases in public funding (Indicator B3). Between 1990 and 1995, for example, private spending on tertiary education doubled in Australia while public funding (including financial aid for students) rose by one-third. France and Japan saw similar public increases, and private growth of 23 and 16 per cent respectively.

However, there remain a number of countries that continue to finance expansion in tertiary education almost entirely through public budgets. In the Flemish Community of Belgium, Finland, Denmark and Germany for example, private spending continues to play a negligible role in tertiary education. *Education Policy Analysis* takes the analysis of how private resources are being brought into tertiary education further. It also examines how new financing approaches differ for different types of students, field of studies and modes of participation.

Chart 9. **Private payments**

Percentage of payments to educational institutions that originate from private sources



Private spending on education is becoming more important in some countries, even though most funds continue to originate from the public purse. Students in both public and private tertiary institutions are having to pay more for their education. Overall, this spending appears to supplement rather than displace public expenditure.

For details see Indicator B3.

EDUCATIONAL EXPENDITURE PER STUDENT

As demand for greater participation in education is met by a growing number of places, governments can only contain the overall bill by cutting or preventing a rise in unit costs. In practice, they have enjoyed only limited success in doing so. Overall, spending per student rose between 1990 and 1995 in ten out of 13 countries for which full data are available.

At the tertiary level, spending has increased at least in line with growth in enrolments in seven out of 11 countries for which data are available. In Australia, Mexico and Spain, spending has increased faster than enrolments, causing rises in unit costs of between 10 and 30 per cent in the early 1990s. Two significant exceptions are the United Kingdom and the Netherlands, where expenditure per student declined. In Italy, a particularly sharp fall in spending per student – 30 per cent – resulted from a drop in total spending while tertiary enrolments were rising. In Ireland, on the other hand, a dramatic rise of over 50 per cent in tertiary enrolments resulted in only a small drop in per-student funding, as total resources were expanded.

In primary and secondary education, in periods where student numbers have stabilised, it has been even harder to prevent rises in unit costs, since the numbers of staff and schools cannot be easily reduced. Savings have tended, at best, to lag behind demographic change. Conversely, in countries where the youth population is now rising, there is a tendency for class sizes to increase rather than for spending to rise proportionately.

Overall, the need to spend money prudently and effectively raises the question of whether present resourcing structures should be reformed over the long term. Chart 10 shows that different countries have adopted very different policies on how to distribute resources between students at different educational levels. In some countries such as Austria, Denmark and Italy, spending per student is similar at primary, secondary and tertiary levels. But in seven out of 21 countries with data, more than three times as much is devoted to a student in tertiary than to one in primary education (Indicator B4). These ratios are determined by a combination of salary levels, which are almost always greater at "higher" levels of education, and student/teaching staff ratios, which are more variable, as shown in Chart 11.

Chart 10. **Spending per student**

Educational spending per primary, secondary and tertiary student in equivalent US dollars

Expenditure per student differs widely between countries in both absolute terms and when compared with GDP per capita. However, there is a common pattern: expenditure per student rises with the level of education and is dominated by personnel costs.

Spending per student	Primary education	Secondary education	Tertiary education
More than 10 000 US dollars			AUS CAN CHE SWE USA
8 001-10 000 US dollars			DEU DNK JPN NLD NOR NZL
6 001-8 000 US dollars		AUT CHE DEU DNK FRA USA	AUT BEL (Fl) CZE FIN FRA IRL PRT UKM
4 001-6 000 US dollars	AUT CHE DNK FIN ITA JPN SWE USA	AUS BEL (Fl) FIN ITA JPN NLD NZL SWE UKM	ESP HUN ITA KOR MEX
2 001-4 000 US dollars	AUS BEL (Fl) DEU ESP FRA IRL KOR NLD NZL UKM	CZE ESP IRL KOR	GRC
Less than 2 000 US dollars	CZE MEX HUN	GRC HUN MEX	

For details see Indicator B4.

RATIO OF STUDENTS TO TEACHING STAFF

The biggest determinant of unit costs in education is the cost of teachers: staff compensation accounts for more than 80 per cent of current costs in most primary and secondary school systems (Indicator B5). The average cost of teaching is influenced by the size of salaries and the number of students for each teacher employed.

Chart 11 shows the ratio of students to teaching staff at two educational levels. This is not the same as class size, but gives an indication of the teaching resources devoted to each student. Within each level of education, this ratio varies widely – for example, from 11 students per primary school teachers in Italy to 28 in Mexico, and 31 in Korea (Indicator B7).

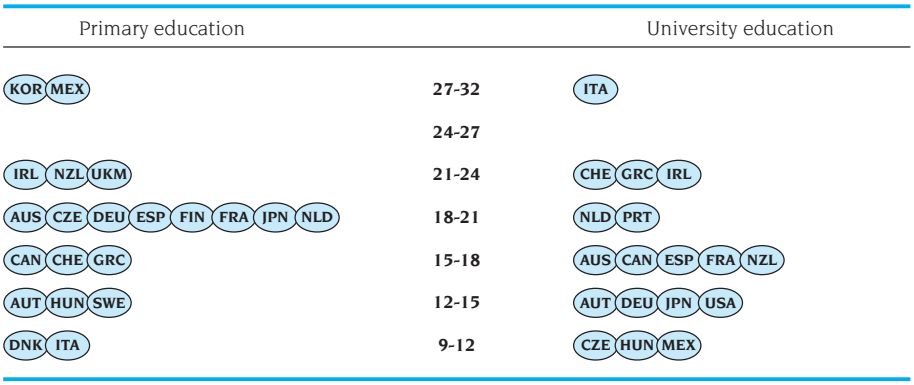
Although the "typical" student/teaching staff ratio is lower for university than for primary education, there is no consistent relationship between the two within countries. At the extreme, Italy has nearly three times as many students per teacher in universities as in primary schools – the reverse of the situation in Mexico. This explains why in Chart 10 spending per student is so high for Mexican universities relative to primary schools and low for Italian ones. In lower secondary education student/teaching staff ratios tend to be a bit lower than in primary, and upper secondary ratios are often similar to those of universities.

How important are salary differences compared to these other factors? In themselves they make a big difference to cost variations by country: an experienced primary-school teacher earns over three times per capita GDP in Korea and less than per capita GDP in the Czech Republic, Hungary, Norway and Turkey (Indicator E1). However, in some countries with low salaries, the student/teaching staff ratios are also low (for example, in Hungary, Italy and Sweden), while Korea's well-paid teachers are relatively few in number. This helps even out costs and to some extent matches reward to responsibility, but is by no means a general rule.

Differences in salary between educational levels are in most countries of lesser importance. Although higher levels of education are almost always better paid, in nearly half of OECD countries the "salary premium" for upper secondary over primary school teachers is less than 6 per cent (for experienced teachers) (Indicator E1). Thus it is student/teaching staff ratios that in most cases create the greatest cost differences between levels. Important exceptions are Belgium, Denmark and Switzerland, where salaries for upper secondary teachers are over 30 per cent higher than salaries for primary teachers.

Chart 11. **Ratio of students to teaching staff**

Number of students per teacher in primary schools and universities



The ratio of students to teaching staff varies widely, by a factor of three from one country to another. Universities typically have slightly lower ratios than schools, but in some countries the reverse is true. Teacher salary differences contribute to cost differences across countries, but to a lesser extent across educational levels.

For details see Indicators B7 and E1.

SCHOOL ACHIEVEMENT: WIDE BETWEEN-COUNTRY DIFFERENCES

International tests show that wide differences in student performance appear early on in children's schooling, and tend to increase as schooling progresses. Using the tests in mathematics carried out in 1995 by the International Association for the Evaluation of Educational Achievement (IEA), it is possible to examine these differences against international as well as within-country standards of achievement.

Chart 12 illustrates country differences in terms of both the average score in each country and the score below which the achievement of the bottom quarter of students falls. By 8th grade, or around age 13, these differences are wide by any measure. Their magnitude can be expressed in terms of "grade-level equivalents", which is calculated by looking at the difference in points between the international average score of a 7th and an 8th grader on the same test. This difference, the average progress made in a year, is used as a rough measure for progress over one grade level (Indicator F1).

The difference between mathematics achievement in Japan and Korea on the one hand and the OECD average on the other exceeds more than twice the typical difference in achievement between students in 7th and 8th grades in OECD countries. High achievement, moreover, is not a characteristic only of a small elite in those countries: over 75 per cent of the students in Japan and Korea score above the OECD average (Indicator F2). In Greece, Iceland, Portugal and Spain, the average student is over a year behind the international average – *i.e.* performs lower than children a year younger in the average OECD country.

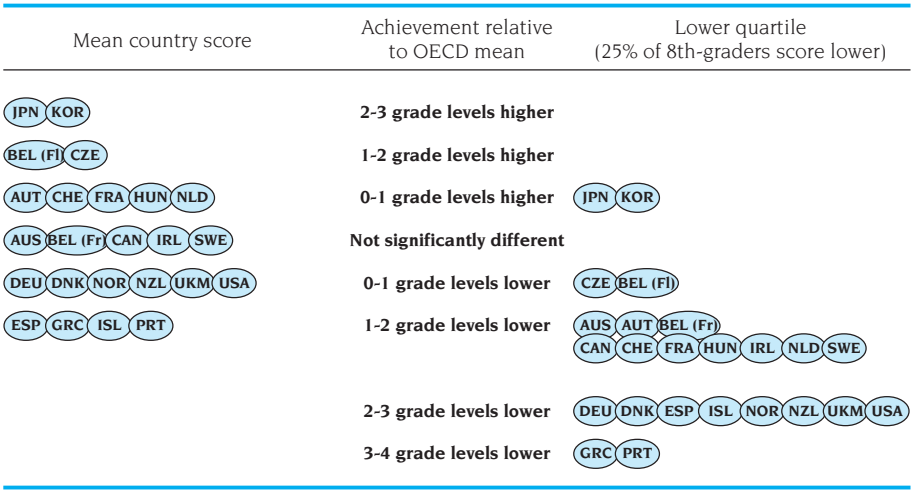
It is notable that countries with similar levels of average performance show a considerable variation in disparities of student achievement. For example, Australia and the United States show the same average level of mathematics performance, but weaker performers in the United States have markedly lower scores than their counterparts in Australia. On the other hand stronger performers in the United States score more highly than stronger performers in Australia.

Comparing the range of achievement within a country with its average performance thus shows that a wide range of achievement is not a necessary condition for a system to attain a high level of overall performance.

Chart 12. **Difference between countries in mathematics achievement**

Eighth-grade mathematics scores relative to the OECD average

Eighth-graders in some countries score lower on average in mathematics tests than 7th-graders in the OECD as a whole. For the lowest-achieving 25%, the deficit can be more than three times this amount. But some countries manage to achieve high scores not just for the average student but for the great majority.



For details see Indicators F1 and F2.

A WIDENING GAP IN STUDENT PERFORMANCE

How do education systems and societies moderate or reinforce variation in student achievement? Can policy intervention be successful or are these inequalities in student performance inevitable features of society? One way of answering this is by comparing the within-country variation in achievement early in primary education, when school has not had much of a chance to have an effect, and again a few years later on, to see if school and society have had an impact on inequalities during this time.

To track the growth in student differences in each country, Chart 13 compares the variability in student mathematics achievement in the 4th and 8th grades. It uses a statistical construct, the standard deviation, as an indicator of how much inequality there is in the scores of students. Across OECD countries, the student-level standard deviation rises over the four grades tested. From the 4th grade, where it is 79 points, the standard deviation increases to the 8th grade by 10 points (Indicator F2). This indicates that, on average, the spread or dispersion among students in mathematics achievement is larger as students enter secondary school than it is in the early elementary school years.

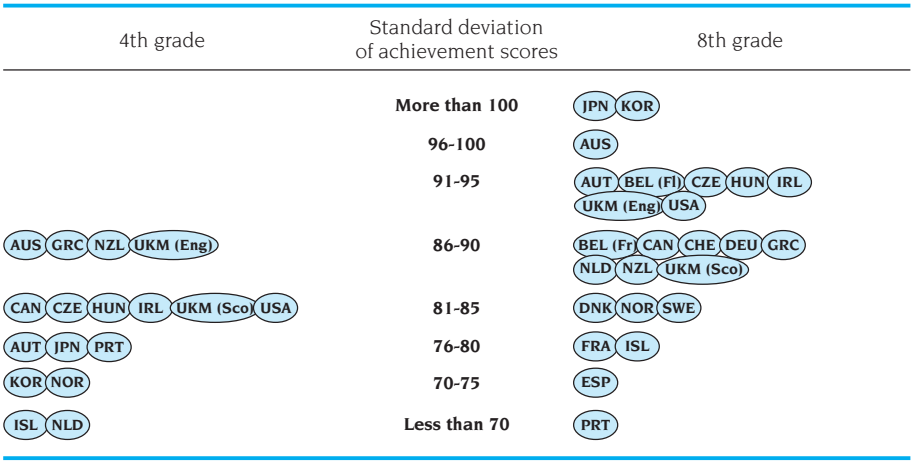
However, there are considerable differences in the growth of these disparities across countries. While some countries exhibiting relatively large variation in mathematics achievement in the 4th grade also exhibit relatively large variation in the 8th grade, some countries with low variation in the 4th grade have – relative to other countries – high variation in the 8th grade, and vice versa. Korea, which has one of the smallest standard deviations in 4th grade, shows the largest disparity in 8th grade: an increase in the standard deviation of 38 points. Similarly, Japan and the Netherlands show an increase of over 20 points: twice the average growth for OECD countries.

In Greece and Scotland, on the other hand, the difference between the standard deviations at the 4th and 8th grade are not statistically different so that variation in student performance does not seem to have increased. Iceland and Norway show some of the lowest standard deviations at both grade levels.

Three conclusions emerge from Indicator F2: first, the variation within one grade of children in their early teens is large – even in the middle half of the population the lowest performing students would have to study several additional years to catch up with the best. Second, this difference varies greatly by country, from over 4 to 2.5 grade-year equivalents, based on the average student's progress over a grade year. Third, there is no clear relationship between the distribution of achievement and overall performance levels. France manages to get most students above the OECD mean of 8th-grade mathematics achievement with a relatively narrow range of performance, whereas Japan gets high scores over a wide range of performance.

Chart 13. **A widening gap in student performance**

Variation of mathematics achievement scores in 4th and 8th grades (expressed by the standard deviation)



Across OECD, variation in student performance rises from the 4th to the 8th grade. However, differences among countries show that the growth in disparities is not an inevitable outcome.

For details see Indicator F2.

ADULTS: SHORTFALLS IN HUMAN CAPITAL

How well equipped are adults to meet the demands of modern life and work? The stock of "human capital" is the knowledge, competencies and other economically relevant attributes held by the working-age population. It is difficult to measure, since it depends on such a wide range of characteristics. Two approximations that can be used are first the educational level that people have achieved and, second, their tested ability to carry out everyday tasks that require particular commonly-needed skills.

Chart 14 shows what proportion of the population fails to meet two criteria commonly associated with a desirable level of human capital. The first is completion of upper secondary education. While the majority of 25 to 64 year-olds in most countries are now educated to at least this level, the proportion who have not completed upper secondary education varies from below 20 per cent to still over half. The second criterion is the proportion of adults who score only at level 1 or 2 on the document scale in the International Adult Literacy Survey (IALS) (Indicator A3). Level 3 of this scale, which requires the completion of complex or unfamiliar tasks using documents, is considered desirable to cope with the literacy requirements of everyday life. The proportion failing to reach this level is just over or just under 50 per cent in most countries, although much higher in Poland and much lower in Sweden.

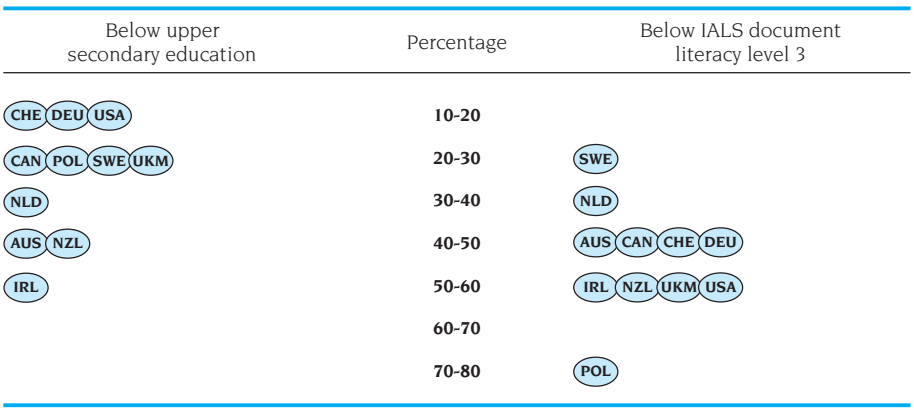
While these two measures of human capital are very different in kind, some interesting observations can be made. One is that rising educational attainment does not necessarily eliminate all skill deficits. While there is a strong correlation between attainment and literacy in all countries, there are some people with high attainment and low literacy. A related observation is that there is no obvious correspondence between the countries with the highest attainment and with the lowest literacy. In Switzerland and the United States, for example, over 80 per cent have attained an upper secondary qualification but around 50 per cent show low literacy performance (IALS levels 1 or 2). On the other hand, Ireland has low levels of human capital on both measures, and Sweden is on both counts high.

Chart 14. **Low educational attainment and literacy skills**

Percentage of the population aged 25-65 with relatively low levels of educational attainment and literacy

Most adults have completed upper secondary education but the proportion of adults who have not varies widely. In most countries roughly half of people show literacy performance below desirable levels. A good education and literacy in adulthood do not always go together.

For details see Indicators A1 and A3.



THE EDUCATION PREMIUM

An important outcome of education, and one that contributes to demand for it, is the higher average pay of more educated people. This can be seen as part of the return to investment in human capital. While more education does not guarantee higher pay, and there are many factors other than educational attainment that influence remuneration, in all countries the average earnings of people with higher qualifications are significantly higher than for those with lower educational attainment. This is true in countries with varying socio-economic systems and at all levels of development.

The most important determinant in this regard is whether a person graduates from tertiary education. For university graduates the premium is particularly large. As shown in Chart 15, by the time people are in their 30s and early 40s they earn, on average, between 30 and 80 per cent more than those who stopped at the end of upper secondary education.

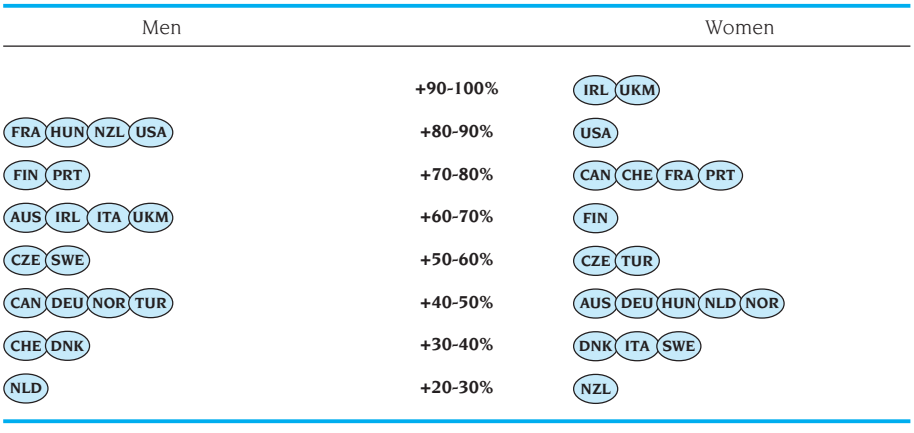
Not surprisingly in countries like Denmark, with flat overall wage structures, the differences are not as great as in countries like the United States, where earnings disparities are large. But this is not the only influence. In Sweden and New Zealand, for example, differentials by education are high for men but much lower for women. In many countries, though, it is women who have the greatest educational premium, despite the fact that lower women's pay persists even comparing them with men with the same level of education (Indicator F7). The premia shown in the graph compare persons with different educational levels within each gender.

The earnings gap between the better and worse educated increases with age. In most countries the premium rises, albeit at a declining rate, up to a maximum reached typically around the age of 50.

Among those who do not complete tertiary education, there is also a distinct gradation according to how far they have gone in secondary school. Those without upper secondary qualifications typically have between 0 and 40 per cent lower earnings by mid-career than those who complete this level. But this gap is smaller than the university premium, implying that upper secondary education is a break-point for many countries beyond which additional education attracts a particularly high premium.

Chart 15. **Earnings returns to university education**

Average earnings of 30-44 year-old university graduates: percentage difference from earnings of those with upper secondary education only



In some countries, persons with university education earn up to twice on average than those who leave after upper secondary. The education premium is often greater for women, and tends to be higher for completion of tertiary than for secondary education.

For details see Indicator F7.

EDUCATION AND YOUTH UNEMPLOYMENT

Just as education increases earnings expectations, it reduces the risk of unemployment. This is a particularly important consideration for young people, whose unemployment rates remain relatively high.

Chart 16 compares unemployment rates for young adults who have not completed upper secondary education with those who have, but without going on to tertiary studies. The reduced risk of unemployment for the latter is significant in many countries, although better-educated young people also face a big risk at this age. On average in 1996, 20-24 year-olds in the labour market had a 15 per cent chance of being unemployed if they had completed upper secondary education, and a 21 per cent chance if they had not (Indicator D4). In a few countries, especially in Southern Europe, a continuing market for less-educated labour and difficulties in translating qualifications into jobs has made youth unemployment greater for the more educated. But in countries such as Australia, the Czech Republic, Ireland and Hungary, those who fail to complete upper secondary education are more than twice as likely to be out of work than those who have completed this level.

It is interesting to note that in this case university education offers no advantage on average: young university graduates are as likely to be unemployed as young upper secondary graduates. Although for older adults university education makes more of a difference, the bigger distinction remains between those who have and have not completed upper secondary. So unlike with the earnings of those in work, secondary completion makes the biggest difference to finding work in the first place.

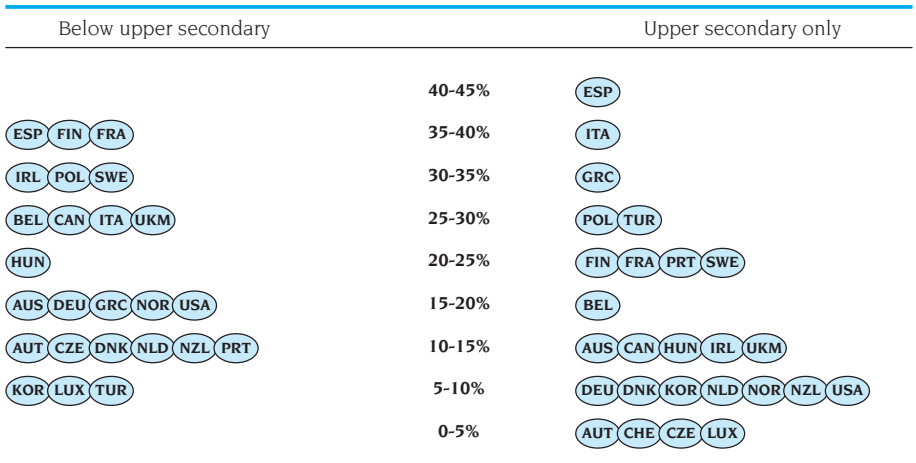
Official charts on youth unemployment need to be interpreted carefully, since they only look at the jobless as a percentage of those in the labour force, not of the whole cohort. These rates exaggerate the relative importance of unemployment for teenagers, many of whom remain in education. The proportion of the entire population of a particular age who are unemployed tends to be higher for those in their early 20s, of whom more are in the labour market.

Youth unemployment is not everywhere due primarily to difficulty in getting one's first job. While in Italy, Finland and Greece this remains the most important reason for young people under 25 to be unemployed, in other countries there are more who have already had experience of work, which proved to be short-lived (Indicator D3). So the sustainability of jobs becomes as important an issue as assistance in labour-market entry.

Chart 16. **Finishing school and job chances**

Unemployment rates of 20-24 year-olds by level of educational attainment

Having completed upper secondary education is a more important advantage in reducing the chance of youth unemployment than completing tertiary education. Labour market problems for young people persist through their 20s, and are not just to do with getting one's first job.



For details see Indicator D4.

LIFELONG LEARNING AS AN EDUCATIONAL OUTCOME

One of the most desirable outcomes of initial education is to create learning habits that last throughout life. Participation in education and training in adulthood is strongly correlated with the level of education that individuals have attained.

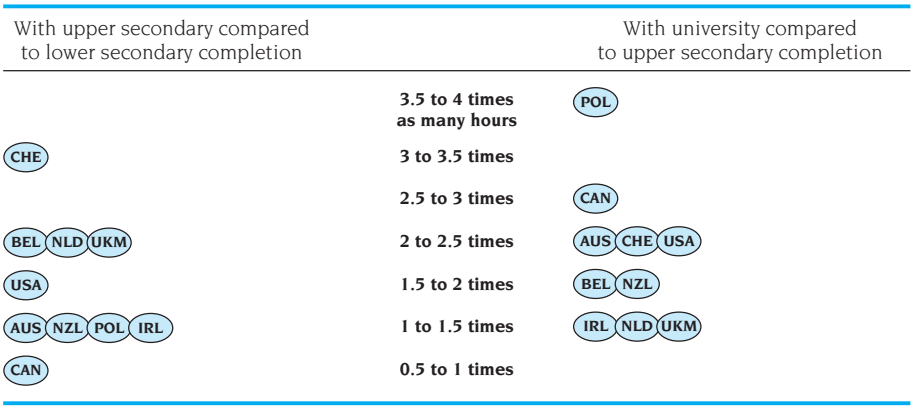
Chart 17 shows the extent to which progressing to a given level of educational attainment raises the amount of training undertaken in adulthood. About a third of adults on average participate in some form of training during a given year. But the amount of training undertaken varies widely, from a short course perhaps lasting only half a day to long programmes of study. Indicator C5 therefore considers the average hours spent in training by all adults 25 to 64 years of age, including those who undertake none. Each successive level of education increases this average, in some cases by a factor of two to four. The biggest effect of this type results from university completion in Poland: Poles who complete university have on average 3.5 times as much training each year as Poles who only complete upper secondary. But completing upper secondary education also increases the chance of participation in continuing education and training, making it over twice as likely in Belgium, the Netherlands, Switzerland and the United Kingdom as for those with only lower secondary attainment.

The result of this concentration of training among the most educated is to enhance their existing advantages. Adult education and training can also potentially correct for shortfalls in formal learning that has taken place in youth. So it is important not to assume that the educational level is the only determinant of training participation. Workers participate more than non-workers and men more than women, especially during prime working years. Continuing education and training also rises sharply with earnings. In a number of countries those in the top earnings quintile are over three times as likely to participate than those who have no income or are in the lowest earning quintile. Sweden, where there is a high overall participation rate, is a notable exception – but here as in other countries, those with higher income have on average more training.

Current patterns of participation in adult education and training tend therefore to increase inequalities in earnings and in the distribution of human capital. The volume *Education Policy Analysis* provides a full analysis of country priorities for lifelong learning for further reference.

Chart 17. **Compounding educational advantage**

Difference in average hours spent per year in training between adults of different educational backgrounds



Adults who are university graduates participate on average in up to 3 1/2 times as much training as upper secondary graduates, who in turn participate in up to 2 1/2 times as much as those who only have lower secondary education. Education combines with other influences to make adult learning least common among those who need it most.
For details see Indicator C5.

EDUCATIONAL MOBILITY ACROSS GENERATIONS

Despite continuing increases in the proportion of the population completing secondary and tertiary education, the educational chances of individuals remain heavily influenced by their own family backgrounds. A young person whose parents did not go to university is much less likely to pursue this option than one whose parents did. This has important implications for equity and equality of opportunities. In addition, it potentially limits the rate at which societies are able to expand educational attainment rates, especially at a time when students and their families are increasingly being asked to contribute to the financial cost of studying. Families without direct experience of education's benefits are less likely to make a heavy investment.

One way to analyse the level of educational mobility across generations is to look at how likely it is that an adult has graduated from tertiary education, according to the attainment of his or her parents. In the United States, two-thirds of adults whose parents completed tertiary education also did so themselves (Indicator A2). In other countries the proportion is lower, but always well over one-third. In contrast, typically only one in five adults whose parents did not complete upper secondary education have themselves progressed to a tertiary qualification. In Switzerland and Poland it is below one in ten.

Chart 18 shows the degree of difference in these intergenerational prospects between those with the best-educated and those with the least-educated parents. Adults with tertiary-educated parents are on average between about two and six times as likely to be tertiary graduates than those whose parents did not finish secondary school.

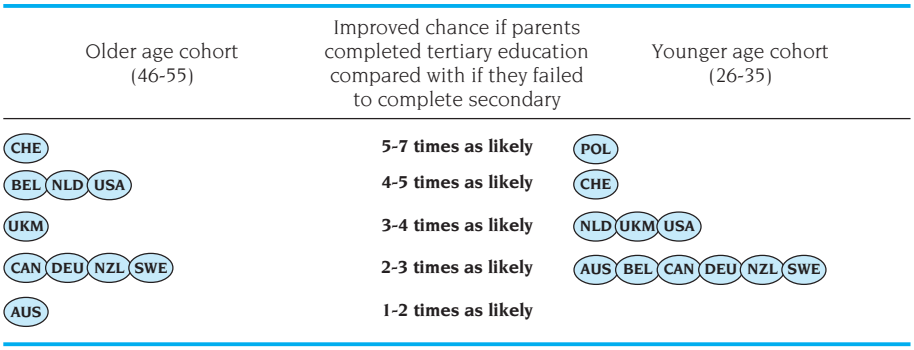
This ratio comparing the prospects of people with different backgrounds varies not only between countries, but also between age-cohorts. If equality of opportunity were increasing, one might expect the difference to narrow for younger, more recently-educated generations. This is indeed the case in some countries such as Belgium, the Netherlands, Switzerland and the United States. Those who completed their education in these countries 30-40 years ago were between 4.4 and 5.6 times as likely to receive tertiary education with well-educated than with poorly-educated parents; for those educated more recently, the ratio has fallen to between 2.6 and 4.3. But in Australia, Canada, Germany and New Zealand, where relative prospects are historically more evenly distributed, they have become somewhat less so. The graph shows that there is therefore a degree of convergence between countries in this respect, with ratios of between two and three for 26-35 year-olds in the majority of countries reporting data.

Adults with highly-educated parents are between two and six times as likely to have gained tertiary qualifications than those with poorly-educated parents. For younger generations this range has narrowed to between two and three times in most countries, but in countries where differences were smallest, they have become larger.

For details see Indicator A2.

Chart 18. **Educational mobility across generations**

Relative chance of having completed tertiary education, for individuals with parents of different educational backgrounds



World Education Indicators

One unique aspect of this year's edition is that, through the World Education Indicators *programme (WEI), which OECD co-ordinates in co-operation with UNESCO, a wide range of non-member countries have contributed to* Education at a Glance, *extending the coverage of some of the indicators to now almost two-thirds of the world population. These countries are: Argentina, Brazil, Chile, China, India, Indonesia, Jordan, Malaysia, Paraguay, the Philippines, the Russian Federation, Uruguay and Thailand. Israel has observer status in OECD's activities on education and has contributed to the OECD indicators on educational finance. Data for Israel are presented together with those from WEI participants.*

While for many aspects of educational performance the dividing line between OECD countries and WEI participants has become blurred, other indicators point to clear differences. The following presents selected findings from data from WEI participants which illustrate these differences.

***Student demography** (Indicator A4) places education systems in WEI participants in a very different context from that prevailing in the OECD. While in most OECD countries the proportion of 5-14 year-olds in the total population varies between 11 and 16 per cent, among WEI participants only in the Russian Federation and Thailand is this proportion lower than 19 per cent. In Brazil, India, Indonesia, Jordan, Malaysia and the Philippines more than half of the population is between 5 and 29 years old, and in Jordan the total number of students enrolled even exceeds the number of employed persons. Some of the less prosperous countries have both fewer resources to allocate to education and more children over whom to distribute these resources. With the exception of the Russian Federation and Thailand, this situation will change only slightly over the coming decade.*

*Striking are also differences in the **levels of educational attainment** between OECD countries and WEI participants (Indicator A1). At present, about 60 per cent of 25-46 year-olds in OECD countries have a qualification at the upper secondary level whereas among WEI participants this percentage ranges from 8 per cent in India to 33 per cent in Malaysia.*

*However, Indicator A1 also shows that **the gap in upper secondary completion is rapidly closing**, with attainment rates rising steeply through successive generations. In Malaysia, only 8 per cent of 55-64 year-olds completed upper secondary education while almost half of 25-34 year-olds have done so. Similarly, in Argentina, Brazil and Indonesia the completion of upper secondary education is around 20 per cent higher among 25-34 year-olds than among 55-64 year-olds. But progress has been uneven. In India, for example, the completion of upper secondary education, at 8 per cent, remains low among 25-34 year-olds.*

*Patterns of participation in, and progression through, education over the life cycle vary widely among countries. One way of summarising participation is to calculate the "expected" years of education for young people, by adding up the proportions of the population who participate at each year of age. Within the OECD, school expectancy varies from 12 years in Mexico to over 18 years in Australia, Belgium and Sweden; in most countries it falls in the range of 16-17 years. Among WEI participants, **school expectancy** in Argentina and Brazil is, at around 14.4 years (with high levels of grade repetition though), similar to that in the Czech Republic, Greece, Hungary, Korea and Poland, whereas Indonesia, with about 10 years, lags considerably behind.*

*While in most OECD countries virtually all young people have access to a basic education of at least 11 years, in half of WEI participants for which data are available enrolment rates do not exceed 90 per cent for more than 6 years (Indicator C1). In India and Indonesia less than 65 per cent of an age cohort has **access to lower secondary education** (Indicator C2). By contrast, in Argentina, China, Jordan, Malaysia, the Philippines and the Russian Federation it is around 90 per cent. Similarly, lower secondary completion rates among WEI participants range from less than 60 per cent in Argentina, Brazil and Indonesia to above 80 per cent in Chile, Jordan, the Philippines and Thailand.*

In the majority of WEI participants compulsory education ends at 14 years, although the range runs from 12 years in the Philippines to 16 years in Malaysia. At the same time, in China, Jordan, Indonesia, Malaysia, Mexico and the Russian Federation participation rates fall below 20 per cent as early as 3 or more years before the end of compulsory education (Indicator C2).

*Rising skill requirements of labour markets, an increase in unemployment during recent years and higher expectations of individuals and society have also led to a sharp increase among most WEI participants in the proportion of young people obtaining a university-level qualification. Whereas among 55-64 year-olds the completion of university education ranges from 1 to 4 per cent in these countries (Indicator A1), university graduation rates today range from 2 to 11 per cent (Indicator C4). However, differences between OECD countries and WEI participants in tertiary participation and completion remain wide. While in OECD countries a 17 year-old can, on average, expect to receive 2.3 years of tertiary education over his or her lifetime, among WEI participants, the expectancy of tertiary education ranges from below one year in Brazil, Indonesia, Malaysia and Thailand to nearly 2 years in Argentina. The expectancy of tertiary education is affected by both tertiary entry rates and the typical duration of study. Also first **university-level graduation rates** of WEI participants are significantly lower than in OECD countries, ranging from less than 4 per cent in China and Malaysia to around 10 per cent or more in Brazil, Chile and Jordan (Indicator C4).*

It is noteworthy that the relative importance of non-university tertiary programmes is greater in WEI participants than in OECD countries. In Argentina, China, Malaysia and Thailand the graduation rates for non-university tertiary programmes exceed those for the university level.

Most WEI participants have made major progress towards eliminating ***gender differences in enrolment and graduation rates*** *(Indicator A1 and C1 to C4). In the majority of both OECD and WEI participants women can now expect to receive about the same years of education as men (Indicator C1). China is the only WEI participant in which male upper secondary graduates outnumber female graduates by more than 10 per cent.*

In all countries, there is a trade-off between the pressure to improve the quality of educational services and the need to expand access to educational opportunities. WEI participants show both considerably lower enrolment rates than typical OECD countries and have fewer ***resources to spend per student****. While OECD countries typically spend about US$3 500 per primary student, among WEI participants this ranges from US$350 in the Philippines to between US$1 100 and about US$1 800 in Argentina, Chile and Malaysia (roughly comparable to spending levels in the Czech Republic, Hungary and Mexico), after an adjustment for differences in purchasing power parities is made.*

Nevertheless, in view of their spending capacity, some WEI participants invest considerable amounts per student. With US$710 and US$870, Jordan and Brazil spend far less than any OECD country per primary student. But when comparing spending per student in relation to the spending capacity, expressed by the GDP per capita, the value for both countries (with Brazil at 15 per cent and Jordan at 20 per cent) is near the OECD average of 20 per cent (Indicator B4).

The gap is somewhat smaller at the secondary level, where spending among WEI participants ranges from around US$750 or less in Indonesia, Jordan and the Philippines to between US$1 570 and US$4 300 in Argentina, Chile, Israel and Malaysia (OECD average = US$4 606).

Despite wide differences in the absolute amounts of spending per student, there are also common patterns across all countries: expenditure per student rises sharply with the level of education and is dominated by personnel costs. Correspondingly, ***teacher salaries*** *are, when measured in absolute terms, low in most WEI participants as compared to the OECD average (Indicator E1). However, in many of those countries the ratio of statutory teacher salaries to GDP per capita is comparable to, or even higher, than what is observed in OECD countries. In Malaysia and Jordan the salaries of an experienced general upper secondary teacher are 2.6 and 3.2 times as high as per capita GDP. Upper secondary teachers in these two countries are among the most highly qualified in the labour force.*

Lower spending levels should also not automatically be equated with lower educational quality. The Russian Federation performs above the OECD average in terms of mathematics achievement in 8th grade (see the 1996 edition of Education at a Glance). Similarly, Israel and Thailand (the other non-member countries for which data are available) show performance levels comparable with those of typical OECD countries.

Some WEI participants counterbalance the pressure on spending per student with comparatively high ***student/teaching staff ratios****. At around 20:1, student/teaching staff ratios in primary education in Malaysia and Thailand are close to those in typical OECD countries. However, in Argentina, Brazil, Chile, China, India and the Philippines, ratios are between 25:1 and 52:1, well above the OECD average of 18.3. At the upper secondary level, student/teaching staff ratios among WEI participants are almost all above the OECD average, ranging from 17:3 in Argentina to 36:1 in Brazil (OECD average = 14.6).*

Longer ***teaching hours*** *help WEI participants to relieve the pressure on unit costs. Teaching obligations in WEI participants are typically higher than in OECD countries ranging, for a primary teacher, from 634 hours in Thailand to more than 1 100 in Indonesia and the Philippines. By contrast, the number of teaching hours per year at the primary level in OECD countries varies from 551 hours in Hungary to 975 in the Netherlands.*

A comparison of amounts invested in education and GDP levels shows that both OECD countries and WEI participants devote a significant amount of national income to education. In only five out of 22 reporting OECD countries, and in two out of the five WEI participants reporting both public and private investments, is less than 5 per cent of GDP spent on educational institutions. In Argentina, Chile, India, Israel and Malaysia public and private investment in primary education as a percentage of GDP is close to, or even exceeds, the OECD average. These spending levels reflect a relatively large youth population (Indicator A4). By contrast, at the secondary level, all WEI participants for which data are available trail behind OECD countries in the proportion of GDP spent on educational institutions. In most cases this is explained by considerably lower enrolment rates (Indicator C1).

Comparing educational spending to total ***public spending*** *reveals even more clearly the investment in education made by most WEI participants: the share of public spending devoted to education by WEI participants exceeds the OECD average for all countries for which data are available, with values ranging from under 13 per cent in Argentina to over 15 per cent in Brazil, Chile and Malaysia (OECD average = 12.6 per cent).*

Financial and human resources invested in education

	Public expenditure for educational institutions as a percentage of GDP	Index of change in public expenditure for educational institutions as a percentage of GDP (1990 = 100)	Percentage of expenditure on educational institutions from private sources (initial sources of funds)	Annual expenditure per student in equivalent US dollars			Index of change in annual expenditure per student (1990 = 100)		Teacher salaries in public lower secondary education after 15 years of experience		Ratio of students to teaching staff		
				Primary education	Secondary education	Tertiary education	Primary and secondary education	Tertiary education	Annual statutory teacher salary in equivalent US dollars	Salary per statutory teaching hour in equivalent US dollars	Primary education	Secondary education	University-level education
Australia	4.5	114	18	3 121	4 899	10 590	110	114	m	m	18.1	m	15.4
Austria	5.3	113	m	5 572	7 118	7 943	115	104	26 249	40	12.7	8.9	14.5
Belgium	m	m	m	m	m	m	m	m	28 846	39	m	m	m
Canada	5.8	111	10	m	m	11 471	107	98	m	m	17.0	19.7	16.4
Czech Republic	4.8	m	15	1 999	2 820	6 795	m	m	8 279	14	20.4	12.3	11.7
Denmark	6.5	117	7	5 713	6 247	8 157	m	m	28 388	38	11.2	11.0	m
Finland	6.6	96	m	4 253	4 946	7 315	85	103	27 758	m	16.8	m	m
France	5.8	118	9	3 379	6 182	6 569	114	100	28 949	45	19.5	13.3	17.2
Germany	4.5	m	22	3 361	6 254	8 897	98	m	38 826	54	20.9	15.0	12.5
Greece	3.7	m	m	m	1 950	2 716	m	m	17 156	27	15.0	11.3	23.9
Hungary	4.9	79	11	1 532	1 591	4 792	m	m	4 789	10	12.2	10.4	9.9
Iceland	4.5	108	m	m	m	m	m	m	m	m	17.6	m	m
Ireland	4.7	131	8	2 144	3 395	7 249	133	90	37 154	51	22.6	15.8	21.6
Italy	4.5	80	n	4 673	5 348	5 013	91	69	23 487	38	11.2	10.2	29.0
Japan	3.6	105	m	4 065	4 465	8 768	m	m	m	m	19.7	15.9	13.5
Korea	3.6	m	m	2 135	2 332	5 203	m	m	42 597	93	31.2	24.3	m
Luxembourg	4.3	m	m	m	m	m	m	m	m	m	m	m	m
Mexico	4.6	163	m	1 015	1 798	5 071	165	114	m	m	28.3	16.2	9.4
Netherlands	4.6	106	3	3 191	4 351	9 026	110	90	30 898	34	20.0	18.6	18.7
New Zealand	5.3	109	m	2 638	4 120	8 737	m	m	23 393	30	22.0	16.1	16.1
Norway	6.8	125	m	m	m	9 647	m	m	21 127	35	m	m	m
Poland	5.2	m	m	m	m	m	m	m	m	m	m	m	m
Portugal	5.4	m	m	m	m	6 073	m	m	24 501	38	m	m	18.5
Spain	4.8	119	16	2 628	3 455	4 944	125	134	28 783	32	18.0	15.1	17.6
Sweden	6.6	m	2	5 189	5 643	13 168	m	m	22 846	40	12.7	13.7	m
Switzerland	5.5	107	m	5 893	7 601	15 685	101	98	51 787	61	15.9	12.3	21.2
Turkey	2.2	76	m	m	m	m	m	m	954	m	m	m	m
United Kingdom	4.6	113	m	3 328	4 246	7 225	106	74	29 948	41	21.3	15.6	x
United States	5.0	m	m	5 371	6 812	16 262	m	m	31 327	32	16.9	16.1	14.1
Country mean	**4.9**		**9**	**3 546**	**4 606**	**8 134**			**26 649**	**40**	**18.3**	**14.6**	**16.7**
WEI Participants													
Argentina	3.4	m	17	1 158	1 575	m	m	m	12 541	14	25.6	17.3	m
Brazil	5.0	m	m	870	1 018	m	m	m	7 341	11	29.7	35.8	m
Chile	3.0	m	45	1 807	2 059	8 436	m	m	12 991	15	31.3	29.0	m
China	m	m	m	m	m	m	m	m	m	m	25.0	m	m
India	2.4	m	m	m	m	m	m	m	m	m	52.4	21.9	m
Indonesia	m	m	m	m	740	m	m	m	4 788	5	22.4	18.3	m
Israel	7.0	m	14	3 162	4 305	10 132	m	m	m	m	m	m	m
Jordan	m	m	m	710	710	m	m	m	11 519	14	m	m	72.4
Malaysia	4.9	m	2	1 228	2 308	11 016	m	m	27 956	36	19.4	18.6	20.4
Paraguay	3.1	m	m	343	492	m	m	m	m	m	20.2	m	m
Philippines	3.0	m	m	337	342	m	m	m	7 318	m	36.4	34.4	m
Russian Federation	3.4	m	m	m	m	m	m	m	1 482	2	m	m	13.7
Thailand	3.6	m	m	m	m	m	m	m	1 203	2	21.0	21.8	m
Uruguay	2.7	m	m	920	1 022	2 441	m	m	857	2	m	15.2	15.7

Participation in education

	School expectancy (in years) under current conditions (education for children under age 5 excluded)	Index of change in enrolment at all levels of education (1990 = 100)	Net entry rates in tertiary-level education	Survival rates in university-level education	Expected years of tertiary education for all 17 year-olds	Index of change in tertiary enrolment (1990 = 100)	Continuing education and training	
							Percentage of 25-64 year-olds participating	Mean number of hours per participant (25-64 year-olds)
Australia	19.3	114	m	65	3.6	129	36	167
Austria	15.8	108	29	53	2.0	120	m	m
Belgium	18.3	m	m	m	2.7	148	m	m
Canada	17.1	110	m	m	4.0	118	37	207
Czech Republic	14.6	92	m	79	1.1	149	m	m
Denmark	17.1	114	35	67	2.3	121	m	m
Finland	17.2	110	45	75	3.2	130	m	m
France	16.5	m	m	55	2.6	132	m	m
Germany	16.6	106	27	72	1.9	107	m	m
Greece	14.2	m	18	m	2.1	m	m	m
Hungary	14.8	96	35	81	1.3	185	m	m
Iceland	17.5	113	m	m	1.8	126	m	m
Ireland	15.6	100	29	77	2.2	151	22	233
Italy	m	95	m	35	m	127	m	m
Japan	m	93	m	90	m	121	m	m
Korea	14.8	95	m	m	2.5	122	m	m
Luxembourg	m	m	m	m	m	m	m	m
Mexico	12.0	107	m	68	0.8	122	m	m
Netherlands	17.5	100	34	70	2.2	110	36	182
New Zealand	17.2	119	39	76	3.0	141	46	204
Norway	17.1	109	26	m	2.8	139	m	m
Poland	14.8	106	48	m	1.9	223	14	138
Portugal	16.9	109	m	49	2.0	244	m	m
Spain	17.5	97	m	m	2.5	137	m	m
Sweden	18.0	109	m	m	2.2	141	54	m
Switzerland	15.7	107	16	74	1.5	112	42	124
Turkey	m	111	m	55	m	171	m	m
United Kingdom	17.3	114	41	81	2.3	181	45	127
United States	16.8	111	52	63	3.7	106	42	111
Country mean	**16.4**		**34**		**2.3**			
WEI Participants								
Argentina	14.4	m	m	m	1.9	m	m	m
Brazil	14.5	m	m	m	0.6	m	m	m
Chile	13.0	m	m	m	m	m	m	m
China	12.4	m	m	m	m	m	m	m
India	m	m	m	m	m	m	m	m
Indonesia	9.7	m	9	m	0.7	m	m	m
Israel	m	m	m	m	m	m	m	m
Jordan	12.3	m	m	m	1.1	m	m	m
Malaysia	11.5	m	8	m	0.9	m	m	m
Paraguay	10.1	m	m	m	m	m	m	m
Philippines	12.0	m	m	m	1.4	m	m	m
Russian Federation	m	m	m	m	m	m	m	m
Thailand	m	m	14	m	0.6	m	m	m
Uruguay	14.4	m	m	m	1.4	m	m	m

Learning environment and organisation of schools

	Percentage of teachers in public lower secondary education below 40 years of age	Percentage of teachers in public lower secondary education who are female	Number of teaching hours per year for teachers in public lower secondary education	Total intended instruction time in hours per year for students 13 years of age
Australia	m	m	m	m
Austria	53	61	658	1 073
Belgium	28	52	741	1 069
Canada	m	67	m	m
Czech Republic	m	76	607	773
Denmark	30	62	750	900
Finland	33	68	m	950
France	34	56	647	986
Germany	18	56	715	921
Greece	m	61	629	1 064
Hungary	m	76	473	852
Iceland	m	m	m	m
Ireland	44	m	735	957
Italy	17	72	612	1 105
Japan	m	39	m	m
Korea	71	58	456	867
Luxembourg	m	m	m	m
Mexico	m	m	m	m
Netherlands	31	33	910	1 067
New Zealand	33	m	776	792
Norway	28	m	611	833
Poland	m	m	m	m
Portugal	m	m	644	840
Spain	m	m	900	900
Sweden	29	58	576	741
Switzerland	40	37	850	m
Turkey	m	41	m	m
United Kingdom	39	m	740	945
United States	36	60	964	m
Country mean	**35**	**57**	**700**	**934**
WEI Participants				
Argentina	m	69	875	913
Brazil	m	m	667	667
Chile	m	77	860	990
China	m	38	m	918
India	m	28	m	m
Indonesia	m	46	912	1 120
Israel	m	m	m	m
Jordan	m	58	833	947
Malaysia	m	58	778	1 230
Paraguay	m	m	m	1 080
Philippines	m	77	1 176	1 467
Russian Federation	m	m	721	893
Thailand	m	63	543	1 167
Uruguay	m	m	534	863

m = missing data.
Note: The student/teaching staff ratio is not the same as class size.
* Mostly short rst university programmes.
** Mostly long rst university programmes.

Individual and labour market outcomes of education

Educational attainment of the adult population and current graduation rates				Index of earnings differentials, university to upper secondary (25-64 year-olds)		Ratio of unemployment rates, university to upper secondary		
Upper secondary attainment or higher (25-64 year-olds)	Current upper secondary graduation rate	University attainment (25-64 year-olds)	First-time university graduation rate	Men	Women	Men	Women	
57	m	15	36*	161	139	0.6	0.5	Australia
71	86	6	10**	m	m	0.7	0.7	Austria
53	m	11	m	m	m	0.6	0.5	Belgium
76	73	17	32*	152	172	0.5	0.6	Canada
84	83	10	13**	155	149	0.5	0.3	Czech Republic
66	81	15	28*	138	132	0.6	0.4	Denmark
67	98	12	24	187	173	0.4	0.4	Finland
60	85	10	m	185	167	0.7	0.8	France
81	86	13	16**	152	151	0.6	0.5	Germany
44	80	12	13**	m	m	0.8	0.6	Greece
63	86	13	22**	189	150	0.2	0.3	Hungary
m	m	m	15*	m	m	m	m	Iceland
50	79	11	25	171	187	0.5	0.4	Ireland
38	79	8	13**	173	129	0.9	0.9	Italy
m	99	m	23*	m	m	m	m	Japan
61	91	19	26*	m	m	1.1	1.4	Korea
29	m	11	m	m	m	0.2	0.6	Luxembourg
m	26	m	12**	m	m	m	m	Mexico
63	81	23	20**	135	143	1.0	0.6	Netherlands
60	93	11	31*	171	148	0.7	0.8	NewZealand
82	117	16	27*	143	146	0.7	0.6	Norway
74	94	10	m	m	m	0.3	0.2	Poland
20	91	7	16**	182	175	0.6	0.5	Portugal
30	73	13	26	145	147	0.8	0.7	Spain
74	81	13	19	158	144	0.4	0.5	Sweden
80	81	10	9**	146	161	1.9	0.9	Switzerland
17	m	6	m	151	153	0.7	0.4	Turkey
76	m	13	34*	161	190	0.5	0.5	United Kingdom
86	72	26	35*	183	175	0.4	0.5	United States
60	**85**	**13**	**22**					**Country mean**
								WEI Participants
27	34	5	6**	m	m	m	m	Argentina
25	34	9	10**	m	m	0.5	0.5	Brazil
m	49	m	10	m	m	m	m	Chile
m	37	m	2*	m	m	m	m	China
8	m	5	m	m	m	m	m	India
19	30	2	6*	m	m	m	m	Indonesia
m	m	m	m	m	m	m	m	Israel
m	69	m	13*	m	m	1.0	0.8	Jordan
33	41	m	4*	m	m	0.6	0.8	Malaysia
33	m	11	3**	m	m	0.7	0.2	Paraguay
m	63	m	m	m	m	1.8	4.2	Philippines
m	88	m	m	m	m	m	m	Russian Federation
13	46	6	7*	m	m	1.4	1.2	Thailand
27	m	10	7**	m	m	0.6	0.6	Uruguay
A1.2a	**C2.3**	**A1.2a**	**C4.2b**	**F7.1**	**F7.1**	**F5.3**	**F5.3**	**Tables**
44	172	44	200	358	358	345	345	Pages

READER'S GUIDE

COVERAGE OF THE STATISTICS

Although a lack of data still limits the scope of the indicators in many countries, the coverage extends, in principle, to the entire national education system regardless of the ownership or sponsorship of the institutions concerned and regardless of education delivery mechanisms. With one exception described below, all types of students and all age-groups are meant to be included: children (including those classified as exceptional), adults, nationals, foreigners, as well as students in open distance learning, in special education programmes or in educational programmes organised by ministries other than the Ministry of Education, provided the main aim of the programme is the educational development of the individual. However, vocational and technical training in the workplace, with the exception of combined school and work-based programmes that are explicitly deemed to be parts of the education system, is not included in the basic education expenditure and enrolment data.

Educational activities classified as "adult" or "non-regular" are covered, provided that the activities involve studies or have a subject-matter content similar to "regular" education studies or that the underlying programmes lead to potential qualifications similar to corresponding regular educational programmes. Courses for adults that are primarily for general interest, personal enrichment, leisure or recreation are excluded.

CALCULATION OF INTERNATIONAL MEANS

For many indicators a country mean is presented and for some an OECD total.

The *country mean* is calculated as the unweighted mean of the data values of all countries for which data are available or can be estimated. The country mean therefore refers to an average of data values at the level of the national systems and can be used to answer the question of how an indicator value for a given country compares with the value for a typical or average country. It does not take into account the absolute size of the education system in each country.

The OECD *total* is calculated as a weighted mean of the data values of all countries for which data are available or can be estimated. It reflects the value for a given indicator when the OECD area is considered as a whole. This approach is taken for the purpose of comparing, for example, expenditure charts for individual countries with those of the entire OECD area for which valid data are available, with this area considered as a single entity.

Note that both the country mean and the OECD total can be significantly affected by missing data. Given the relatively small number of countries, no statistical methods are used to compensate for this. In cases where a category is not applicable in a country or where the data value is negligible for the corresponding calculation, the value zero is imputed for the purpose of calculating means. In cases where a data point represents the ratio of two values, neither of which is applicable for a particular country, the mean does not take into account this country.

ISCED LEVELS OF EDUCATION

The classification of the levels of education is based on the International Standard Classification of Education (ISCED/1976). ISCED is an instrument for compiling statistics on education internationally and distinguishes among seven levels of education. The *Glossary* describes the ISCED levels of education and Annex 1 shows corresponding theoretical durations and the typical starting and ending ages of the main educational programmes by ISCED level.

SYMBOLS FOR MISSING DATA

Four symbols are employed in the tables and graphs to denote missing data:

a Data not applicable because the category does not apply.
m Data not available.
n Magnitude is either negligible or zero.
x Data included in another category/column of the table.

COUNTRY CODES

OECD Member countries

Australia	AUS	Korea	KOR
Austria	AUT	Luxembourg	LUX
Belgium	BEL	Mexico	MEX
Canada	CAN	Netherlands	NLD
Czech Republic	CZE	New Zealand	NZL
Denmark	DNK	Norway	NOR
Finland	FIN	Poland	POL
France	FRA	Portugal	PRT
Germany	DEU	Spain	ESP
Greece	GRC	Sweden	SWE
Hungary	HUN	Switzerland	CHE
Iceland	ISL	Turkey	TUR
Ireland	IRL	United Kingdom	UKM
Italy	ITA	United States	USA
Japan	JPN		

Countries participating in the UNESCO/OECD World Education Indicators programme (WEI Participants)

Argentina	ARG	Jordan	JOR
Brazil	BRA	Malaysia	MYS
Chile	CHL	Philippines	PHL
China	CHN	Russian Federation	RUS
India	IND	Thailand	THA
Indonesia	IDN		

Data from countries participating in the UNESCO/OECD World Education Indicators (WEI) programme, referred to as "WEI participants" in this publication, are presented for the first time. Some of the data are still at the development stage.

Israel (ISR) has observer status in OECD's activities on education and has contributed to the OECD indicators on educational finance. Data for Israel are presented together with those from WEI participants.

THE DEMOGRAPHIC, SOCIAL AND ECONOMIC CONTEXT OF EDUCATION

To interpret international differences in the structures, processes and outcomes of education, the context in which education systems operate has to be taken into account. It is particularly important to know about the existing supply of human knowledge, competence and skills to which education systems seek to add. These factors can be set alongside the current output of education systems as shown in Indicators C2 and C4. As far as the demand for education is concerned, demographic patterns determine the potential client-base, in terms of the number of people in the age-groups that participate most in education, while the changing requirements of the labour market influence the demand for education from individuals and society.

There are several ways of estimating the existing stock of human knowledge and skills, sometimes referred to as human capital. The most common is the educational attainment – the highest level of education completed – of members of the adult population. This is the most easily measurable proxy for the overall qualifications of the workforce, and it is an important factor shaping economic outcomes and the quality of life. **Indicator A1**, which compares the attainment of national populations, is thus an indicator of the stock of human capital. It shows, importantly, how attainment has been rising over time, by comparing differences between younger and older people, educated in different decades. It also looks at gender differences in education, and shows clearly how these have been reducing over time.

A further aspect of attainment is shown in **Indicator A2**: the extent to which individuals improve on the educational level of their parents. By showing how likely it is that adults complete tertiary education, measured against the educational level of their parents, this indicator provides an indication of educational mobility between generations. Such mobility has long been seen as a determinant of equality of opportunity, but it also has a bearing on the potential for improving the stock of human capital over time.

A second way of estimating human capital is by measuring it more directly – by testing adults for certain core abilities, such as literacy skills. **Indicator A3**, based on the results of the International Adult Literacy Survey, looks at the degree to which adults show a form of skill that is essential both for work and for full participation in society.

On the demand side, **Indicator A4** shows the demographic background to educational provision, in terms of the trend in the size of youth-cohorts at the "expected" ages of participation in various stages of education. This indicator must be qualified with two observations. First, participation rates among age-groups before and after compulsory schooling are by no means constant. Second, participation is not always at the "expected" age, and is becoming less so as lifelong learning becomes commonplace. Nevertheless, demographic data are important in forecasting costs both within compulsory education and beyond.

These patterns are influenced in particular by a perception that education is more important for economic prospects than ever before. The demand for education is strengthened by some of the labour-market outcomes documented in Chapter F. A central contextual economic indicator, **Indicator A5**, is the lower expectation of employment, and higher expectation of unemployment, for individuals who lack educational qualifications. As the job opportunities for unskilled people are declining, the demand for education is likely to continue to grow.

EDUCATIONAL ATTAINMENT OF THE ADULT POPULATION

Policy context

A well-educated and well-trained population is important for the social and economic well-being of countries and individuals. Education plays a role in providing individuals with knowledge, skills and competencies to participate more effectively in society. Education also contributes to an expansion of scientific and cultural knowledge.

This indicator shows a profile of the educational attainment of the adult population and labour force...

The level of educational attainment in the population is a commonly used proxy for the stock of "human capital", that is, the skills available in the population and labour force. This indicator shows the level of educational attainment of the population and the labour force. It serves as a backdrop for comparing current participation and completion rates between countries. Data are broken down by gender and by age-group.

... providing a proxy for assessing the average skills in the labour force.

Evidence and explanations

In most OECD countries more than 60 per cent of the population aged 25 to 64 have completed at least upper secondary education and in the Czech Republic, Germany, Norway, Switzerland and the United States this proportion is equal to or exceeds 80 per cent. In other countries, especially in southern Europe, the educational structure of the adult population shows a different profile. In Greece, Italy, Luxembourg, Portugal, Spain and Turkey more than half of the population aged 25-64 years have not completed upper secondary education.

Countries differ widely in the distribution of educational attainment across their populations.

Among WEI participants which provided data on educational attainment, the percentage of 25-64 year-olds that have completed at least upper secondary education ranges from 8 per cent in India to 33 per cent in Malaysia.

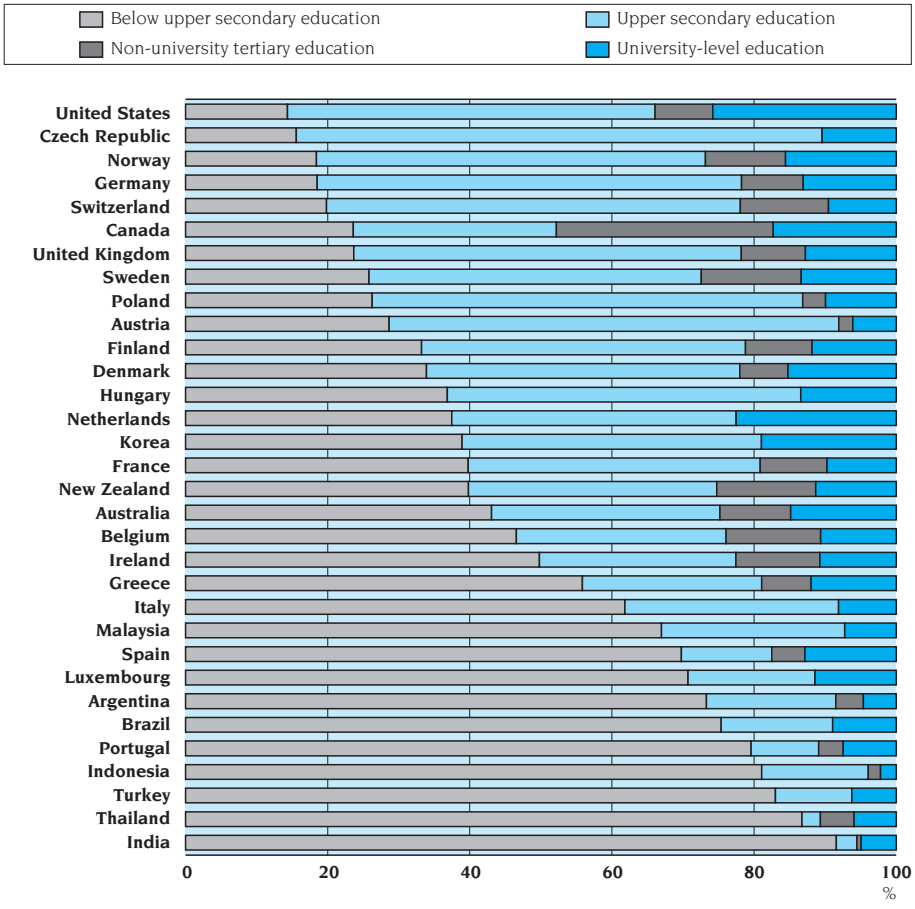
A comparison of the distribution of educational attainment in the labour force aged between 25 and 64 with the distribution of educational attainment in the total population in the same age range shows a higher percentage of people in the labour force with upper secondary and tertiary qualifications (Table A1.1). Across OECD countries, an average of 60 per cent of the adult population has at least upper secondary attainment – but in the adult labour force it is 66 per cent. In Belgium and Hungary the difference between upper secondary attainment in the adult population and in the labour force is 10 per cent or more. In general, the level of educational attainment in the labour force is higher than in the total adult population because individuals – particularly women – with more education are generally more likely to participate in the labour force (Indicator A5).

Educational attainment is generally higher among people in the labour force than among working-age adults outside it.

A comparison of the attainment of the population aged 25-34 years with that of the age-group 55-64 shows that the proportion of individuals who do not complete upper secondary education has been shrinking in all OECD countries, and especially in those countries with lower general attainment of the adult population. In younger age-groups, differences between countries are less pronounced. Many countries with currently low attainment in the adult population are expected

Differences in educational attainment between younger and older people offer an indirect measure of the evolution of the stock of human capital.

Chart A1.1. **Distribution of the population 25 to 64 years of age by the highest completed level of education (1996)**



Countries are ranked in descending order of the percentage of the population having completed at least upper secondary education.

Source: OECD.

to move closer to those with higher attainment levels. In Greece, Italy, Korea, Portugal, Spain and Turkey the proportion of individuals aged 25-34 with at least an upper secondary attainment is more than three times higher than in the age-group 55-64.

The pattern is similar among WEI participants although there is wide variation in the extent to which completion of upper secondary education has grown. In Malaysia, only 8 per cent of 55-64 year-olds had completed upper secondary education – but almost half of 25-34 year-olds have done so. Similarly, in Argentina, Brazil and Indonesia the completion of upper secondary education is around 20 per cent higher among 25-34 year-olds than among 55-64 year-olds. In India, by contrast, the completion of upper secondary education, at 8 per cent, remains low among 25-34 year-olds.

Chart A1.2*a*. **Percentage of the population who have completed at least upper secondary education, by age group (1996)**

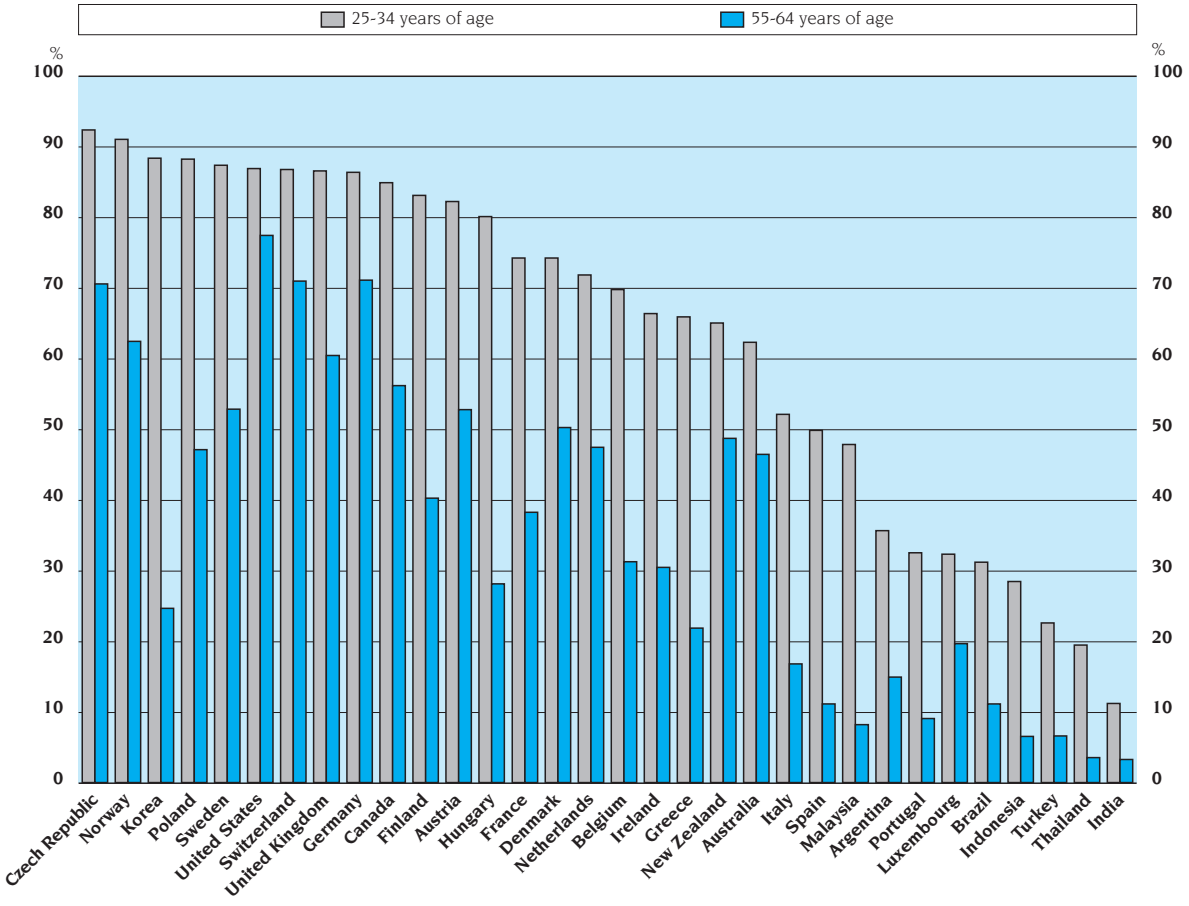
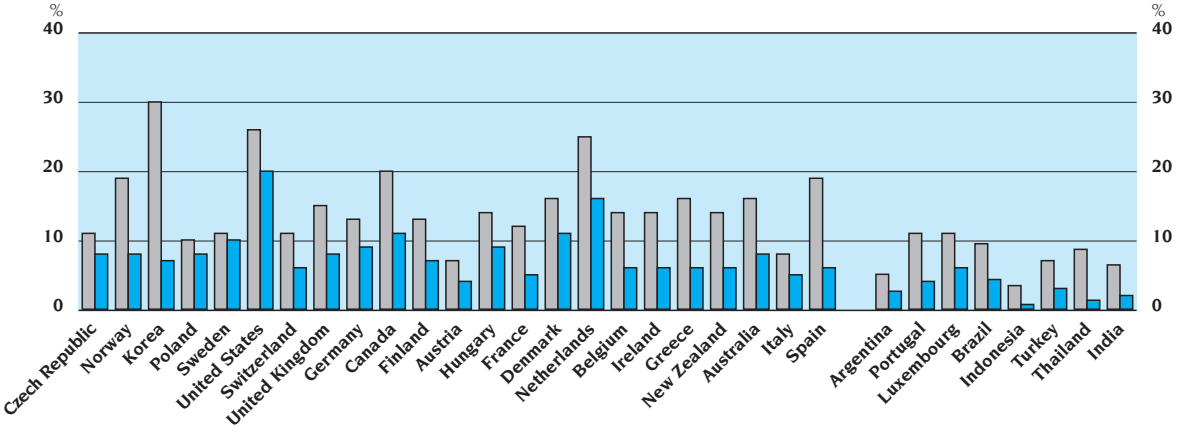


Chart A1.2*b*. **Percentage of the population who have completed university-level education, by age group (1996)**



Countries are ranked by the percentage of the population 25 to 34 years of age who have completed at least upper secondary education.
Source: OECD.

There has been an increase in the proportion of young people who have attained a qualification at the university level.

The proportion of 25-64 year-olds who have completed university education ranges among OECD countries from less than 9 per cent in Austria, Italy, Portugal and Turkey to more than 20 per cent in the Netherlands and the United States. The rising skill requirements of labour markets, an increase in unemployment during recent years and higher expectations of individuals and society have all led to an increase in the proportion of young people who obtain a university-level qualification. In Korea, although only 7 per cent of people in the 55-64 age-group have a university qualification, among 25-34 year-olds the percentage has risen to 30. The proportion of university graduates in this younger age-group is more than three times larger than in the older cohort in Portugal, Spain and Korea.

Growth in university-level education has been even faster in WEI participants. The completion of university education ranges from 1 to 4 per cent among 55-64 year-olds in the WEI participants providing comparable data; it ranges from 3 to 9 per cent among 25-34 year-olds in these countries.

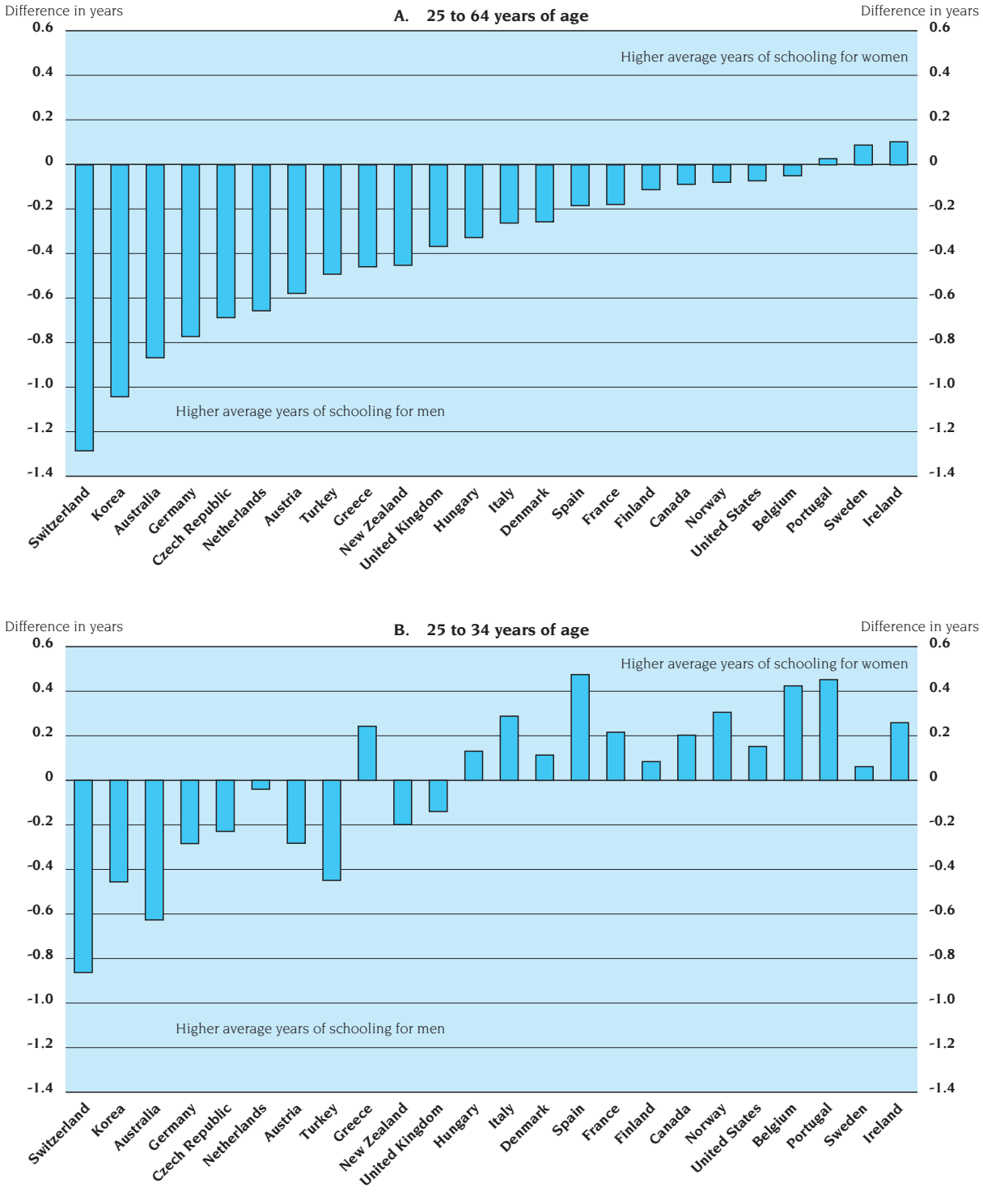
Men have a higher level of attainment than women…

In most countries a higher proportion of men than women have attained at least upper secondary or university-level qualifications, particularly in the older age-groups. For university or equivalent qualifications, the gap between men and women in the 25-64 age-group in the OECD countries is five percentage points or more in Belgium, Germany, Korea, Luxembourg, the Netherlands, Switzerland and the United Kingdom. The differences are most pronounced in Korea (11 percentage points). Younger women, however, are far more likely than older ones to have a university-level qualification. In 22 out of 26 countries, more than twice as many women aged 25 to 34 have earned university qualifications compared to their counterparts 55-64 years of age. Korea is the only country where, among 25-34 year-olds, there is more than a 5 per cent gap in university completion rates favouring men. In Hungary and Spain, the university attainment rates favour women by a similar amount.

… differences which are largely attributable to large gender differences in the attainment of older age-groups.

One way of summarising the difference in level of attainment between men and women is to estimate the difference in the average number of years of formal education completed by men and women. This figure is calculated by weighting the duration of different educational programmes within each level of education by the number of adults with highest level of attainment at that programme level. The estimate of average years of schooling is only approximate, since it does not take account of differences in the starting-age of formal education, the extent of uncompleted education at different levels and grade repetition, or the extent to which duration of programmes may have been shorter in the past for older age-cohorts. In almost all countries men in the 25-64 age-group have more average years of schooling than women in the same age-group, except in Ireland, Portugal and Sweden (Chart A1.3). The difference is more than half a year in Australia, Austria, the Czech Republic, Germany and the Netherlands and more than a year in Korea and Switzerland. These differences are mostly attributable to large gender differences in the attainment of older age-groups. In the young population aged 25-34 years, women have higher average years of schooling than men in 14 of the 24 OECD countries. Only in Australia and Switzerland is the difference favouring men more than half a year. On the other hand in Portugal and Spain young women have on average about half a year more schooling than men.

Chart A1.3. **Difference in average years of schooling between women and men (1996)**



Countries are ranked in ascending order of the difference in years between women and men 25 to 64 years of age.

Source: OECD.

DEFINITIONS

Data are derived from National Labour Force Surveys.

The attainment profiles shown here are based on the percentage of the population or of the labour force aged 25-64 years who have completed a specified highest level of education, defined according to the International Standard Classification of Education (ISCED 1976). But since the education systems of many countries have changed considerably since the ISCED 1976 classification was adopted, many educational programmes now in existence cannot be easily classified and the contents of a specific ISCED level may differ between countries, and even within countries over time between different age-groups. Countries may not always classify diplomas and qualifications at the same ISCED levels, even if they are received at roughly the same age or after a similar number of years of study.

The average years of schooling for men and women are based on estimates of the number of years spent in completed levels of education by each adult, looking at the highest educational level that he or she has completed and then assuming the number of years of education it has taken to reach that level. Assumptions regarding the number of years that it takes to reach a particular ISCED level were derived from national estimates of the proportion of the population completing various national qualifications (and the corresponding number of years that it takes to get there) that are aggregated into ISCED for international reporting. Annex 1 shows the average number of years of schooling corresponding to each completed level of education in each country. Annex 3 gives details of the methodology.

A1

Table A1.1. **Distribution of the population and of the labour force 25 to 64 years of age by level of educational attainment (1996)**

	Population					Labour force				
	Below upper secondary education	Upper secondary education	Non-university tertiary education	University-level education	Total	Below upper secondary education	Upper secondary education	Non-university tertiary education	University-level education	Total
Australia	43	32	10	15	100	37	35	11	17	100
Austria	29	63	2	6	100	23	68	2	7	100
Belgium	47	30	13	11	100	37	33	16	14	100
Canada	24	29	31	17	100	18	29	33	20	100
Czech Republic	16	74	x	10	100	12	76	x	12	100
Denmark	34	44	7	15	100	29	47	8	17	100
Finland	33	46	9	12	100	29	48	10	14	100
France	40	41	9	10	100	34	44	11	11	100
Germany	19	60	9	13	100	14	61	10	15	100
Greece	56	25	7	12	100	50	26	9	15	100
Hungary	37	50	x	13	100	24	59	x	17	100
Ireland	50	28	12	11	100	43	29	14	14	100
Italy	62	30	x	8	100	54	34	x	11	100
Korea	39	42	x	19	100	38	41	x	21	100
Luxembourg	71	18	x	11	100	63	21	x	16	100
Netherlands	37	40	x	23	100	29	43	x	27	100
New Zealand	40	35	14	11	100	35	38	15	13	100
Norway	18	55	11	16	100	15	56	12	17	100
Poland	26	61	3	10	100	21	64	4	12	100
Portugal	80	9	3	7	100	76	11	4	9	100
Spain	70	13	5	13	100	62	15	6	17	100
Sweden	26	47	14	13	100	23	48	15	14	100
Switzerland	20	58	12	10	100	17	58	14	10	100
Turkey	83	11	x	6	100	78	13	x	9	100
United Kingdom	24	55	9	13	100	19	57	10	15	100
United States	14	52	8	26	100	11	52	9	28	100
Country mean	**40**	**40**	**10**	**13**	**100**	**34**	**43**	**11**	**15**	**100**
WEI Participants										
Argentina	73	18	4	5	100	69	20	5	6	100
Brazil	75	16	x	9	100	72	17	x	11	100
India	92	3	1	5	100	m	m	m	m	m
Indonesia	81	15	2	2	100	m	m	m	m	m
Malaysia	67	26	x	7	100	62	29	x	9	100
Paraguay	67	19	3	11	100	64	21	3	13	100
Thailand	87	3	5	6	100	86	3	5	7	100
Uruguay	73	12	4	10	100	69	14	4	12	100

Poland: Year of reference 1995.
Turkey: Year of reference 1997.
Source: OECD Education Database. See Annex 3 for notes.

Table A1.2*a*. **Percentage of the population that has attained a specific level of education, by age group (1996)**

	At least upper secondary education					At least university-level education				
	Age 25-64	Age 25-34	Age 35-44	Age 45-54	Age 55-64	Age 25-64	Age 25-34	Age 35-44	Age 45-54	Age 55-64
Australia	57	62	60	54	46	15	16	18	14	8
Austria	71	82	75	67	53	6	7	7	5	4
Belgium	53	70	58	47	31	11	14	11	10	6
Canada	76	85	81	73	56	17	20	18	17	11
Czech Republic	84	92	87	84	71	10	11	12	10	8
Denmark	66	74	70	65	50	15	16	17	16	11
Finland	67	83	76	60	40	12	13	13	12	7
France	60	74	64	56	38	10	12	10	10	5
Germany	81	86	85	81	71	13	13	16	14	9
Greece	44	66	52	36	22	12	16	14	11	6
Hungary	63	80	75	62	28	13	14	15	15	9
Ireland	50	66	54	38	30	11	14	11	9	6
Italy	38	52	46	31	17	8	8	11	8	5
Korea	61	88	63	41	25	19	30	18	11	7
Luxembourg	29	32	33	28	20	11	11	14	12	6
Netherlands	63	72	66	57	47	23	25	25	21	16
New Zealand	60	65	64	56	49	11	14	13	10	6
Norway	82	91	87	78	62	16	19	17	14	8
Poland	74	88	82	68	47	10	10	10	12	8
Portugal	20	32	24	15	9	7	11	9	6	4
Spain	30	50	34	20	11	13	19	15	10	6
Sweden	74	87	80	70	53	13	11	15	16	10
Switzerland	80	87	82	78	71	10	11	10	9	6
Turkey	17	23	19	14	7	6	7	7	7	3
United Kingdom	76	87	81	71	60	13	15	15	12	8
United States	86	87	88	86	77	26	26	26	28	20
Country mean	**60**	**72**	**65**	**55**	**42**	**13**	**15**	**14**	**12**	**8**
WEI Participants										
Argentina	27	36	29	21	15	5	5	6	4	3
Brazil	25	31	27	19	11	9	9	11	9	4
India	8	11	9	6	3	5	6	5	3	2
Indonesia	19	28	17	13	7	2	3	2	1	1
Malaysia	33	48	32	18	8	m	m	m	m	m
Paraguay	33	43	31	26	19	11	13	11	9	6
Thailand	13	19	14	7	4	6	9	7	3	1
Uruguay	27	36	30	22	14	10	14	12	8	5

Poland: Year of reference 1995.
Turkey: Year of reference 1997.
Source: OECD Education Database. See Annex 3 for notes.

A1

Table A1.2*b*. **Percentage of the population that has attained a specific level of education, by age and gender (1996)**

		At least upper secondary education					At least university-level education				
		Age 25-64	Age 25-34	Age 35-44	Age 45-54	Age 55-64	Age 25-64	Age 25-34	Age 35-44	Age 45-54	Age 55-64
Australia	Men	66	70	70	64	57	15	16	19	15	9
	Women	48	55	50	43	36	14	16	18	12	8
Austria	Men	79	86	82	75	64	8	8	9	8	6
	Women	64	78	68	59	42	5	6	6	3	2
Belgium	Men	54	67	57	50	35	13	15	15	13	9
	Women	53	72	58	44	27	8	13	8	6	3
Canada	Men	76	83	80	73	58	19	19	18	20	15
	Women	77	87	83	73	55	16	21	17	15	8
Czech Republic	Men	91	94	92	91	84	13	12	15	12	11
	Women	78	91	82	76	58	8	10	10	8	4
Denmark	Men	70	74	74	70	58	16	15	17	17	13
	Women	62	75	65	61	43	15	17	18	14	9
Finland	Men	66	82	74	59	42	13	14	15	14	10
	Women	67	85	78	61	38	10	12	12	10	5
France	Men	63	74	68	61	44	11	12	11	12	7
	Women	57	75	61	51	33	9	13	9	7	4
Germany	Men	87	88	89	87	83	16	14	19	19	13
	Women	76	84	81	75	59	10	12	13	9	5
Greece	Men	47	65	53	40	27	13	14	16	13	9
	Women	42	67	50	31	17	11	18	13	8	3
Hungary	Men	69	82	80	70	31	14	11	14	17	12
	Women	58	78	70	54	26	13	17	16	13	6
Ireland	Men	47	62	52	36	29	12	15	13	11	8
	Women	54	71	57	41	32	9	14	10	7	4
Italy	Men	40	50	47	36	20	9	8	11	10	6
	Women	37	54	45	27	13	7	9	10	7	3
Korea	Men	70	90	73	55	41	25	34	25	16	12
	Women	52	86	52	26	10	13	26	10	6	2
Luxembourg	Men	34	33	38	34	27	15	13	17	17	10
	Women	25	32	29	21	13	8	10	10	7	3
Netherlands	Men	68	72	70	66	60	26	26	28	26	20
	Women	57	72	63	48	36	19	24	22	16	11
New Zealand	Men	66	68	70	63	59	13	15	15	13	8
	Women	55	63	59	49	38	9	13	11	7	4
Norway	Men	83	90	87	79	67	16	17	17	16	11
	Women	81	92	86	76	58	15	22	18	11	5
Poland	Men	76	87	82	72	55	10	9	9	12	10
	Women	71	89	81	64	40	10	11	10	11	7
Portugal	Men	20	29	24	17	11	8	9	9	7	5
	Women	20	36	25	14	8	7	13	9	5	2
Spain	Men	32	48	36	25	15	13	16	15	12	8
	Women	28	52	32	16	8	13	23	15	8	4
Sweden	Men	73	87	78	69	52	14	12	15	17	11
	Women	75	88	83	72	54	13	11	14	16	9
Switzerland	Men	88	91	86	88	85	13	13	14	14	10
	Women	73	82	77	68	58	6	9	7	5	3
Turkey	Men	22	28	25	19	10	8	8	9	10	5
	Women	12	18	13	8	3	4	5	5	4	1
United Kingdom	Men	81	88	85	79	70	15	17	18	15	11
	Women	71	86	76	64	52	10	14	12	8	5
United States	Men	85	86	87	87	78	27	26	26	32	25
	Women	86	88	89	86	77	24	27	26	24	16
Country mean	**Men**	**61**	**69**	**65**	**58**	**47**	**14**	**14**	**15**	**14**	**10**
	Women	**55**	**69**	**60**	**49**	**35**	**11**	**14**	**12**	**9**	**5**
WEI Participants											
Argentina	Men	25	33	27	21	16	5	5	7	5	4
	Women	28	39	30	22	14	4	5	5	3	1
Brazil	Men	24	29	26	19	13	9	9	11	9	6
	Women	25	33	28	18	10	9	10	11	8	3
India	Men	13	16	13	10	6	7	9	8	6	3
	Women	4	6	4	2	1	3	4	2	1	1
Indonesia	Men	24	34	21	18	11	3	4	3	2	1
	Women	14	23	12	8	3	1	3	1	1	0.2
Malaysia	Men	37	49	41	23	12	m	m	m	m	m
	Women	29	47	26	13	4	m	m	m	m	m
Paraguay	Men	34	43	33	26	22	13	14	14	11	7
	Women	32	44	29	26	17	9	13	9	7	4
Thailand	Men	14	20	16	8	5	6	8	8	4	2
	Women	12	19	13	6	2	5	9	6	2	1
Uruguay	Men	23	30	26	19	13	10	12	11	9	6
	Women	30	41	34	24	15	11	15	12	7	5

Poland: Year of reference 1995.
Turkey: Year of reference 1997.
Source: OECD Education Database. See Annex 3 for notes.

INTERGENERATIONAL CHANGE IN COMPLETION OF TERTIARY EDUCATION

POLICY CONTEXT

This indicator shows the relationship between educational attainment of parents and offsprings.

Educational attainment is an important contributor to an individual's literacy, degree of socialisation, and economic and social position. One of the factors contributing to how much education someone attains is the educational attainment of his or her parents. A highly supportive learning environment at home (here proxied by a high level of attainment of the parents) is likely to be reflected in higher educational attainment of the children. The supportive environment can be manifested not only through a financial capacity to support children's higher education, but also through day-to-day interactions of higher "intellectual quality" between parents and children.

In societies that aim for equality of opportunity, the correlation between the educational fortunes of individuals and of their parents may appear disturbingly high. Limits to intergenerational mobility in this sense can create problems both in terms of equity and in terms of raising the stock of human capital.

EVIDENCE AND EXPLANATIONS

The likelihood of obtaining a tertiary qualification given one's parents educational attainment is an indication of the degree of intergenerational mobility in a country.

This analysis of data from the International Adult Literacy Survey (IALS) provides a measure of the likelihood of attaining a tertiary degree or qualification (ISCED 5 or more) in relation to parental level of educational attainment – referred to here, broadly, as intergenerational mobility. One measure of such mobility examines the probability of obtaining a tertiary qualification for groups whose parents have reached each respective level of attainment. The measure is expressed as the ratio of the chance of getting a tertiary degree or qualification if at least one parent obtained one, and the chance of doing so if neither parent completed secondary school.

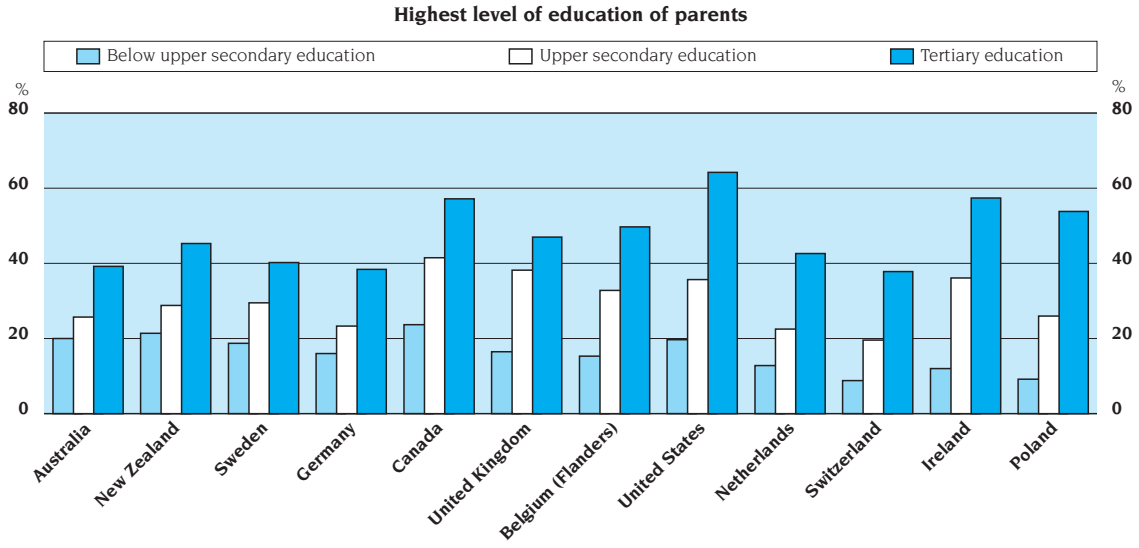
The proportion of individuals who obtain a tertiary qualification was higher, in all countries studied, the higher the educational attainment of the parents.

In 12 countries surveyed, the intergenerational mobility ranges from 2.0 in Australia to 5.8 in Poland: that is, having a well-educated parent makes one twice as likely in Australia and six times as likely in Poland to obtain tertiary education than if one has poorly educated parents. In Poland and Ireland, where a majority of parents did not graduate from secondary school, a much smaller proportion of young people who obtained a tertiary qualification came from these than from other parents. Chart A2.1 shows the proportion of adults aged 16 to 65 with tertiary qualifications, by level of educational attainment of their parents.

It appears that in countries with the lower intergenerational educational gap it is growing, but in those with the highest it is falling.

A comparison of older and younger generations of adults gives an indication of the changing pattern of educational mobility over time (Table A2.1). A Flemish-speaking Belgian aged 46 to 55, for example, is 4.4 times as likely to have completed tertiary education with a highly educated parent than with a less educated one; but the same ratio for 26-35 year-olds has fallen to 2.6. Such a significant improvement in the relative chances of people with less

Chart A2.1. **Percentage of the population 16 to 65 years of age who have completed tertiary education by level of educational attainment of their parents (1994-1995)**



Countries are ranked in ascending order of the probability of obtaining a tertiary qualification for individuals whose parents have also completed tertiary education compared to individuals whose parents have not completed secondary education.
Source: OECD and Statistics Canada/IALS.

educated parents is not generalised: other than Belgium (Flanders) it occurs only in the Netherlands, Switzerland and the United States – the three countries with most marked inequalities in the older generation. In Australia, Canada, Germany and New Zealand, by contrast, the four countries with the smallest disparities among 46-55 year-olds, inequality by parental background is higher for the younger generation. There is thus some convergence in the ratio, which in the younger generation is between 2.4 and 3.6 in all but two countries.

Definitions

The table shows the ratio of the probability of obtaining tertiary qualifications for individuals whose parents have also completed some form of tertiary education relative to the probability of attaining tertiary education for those whose parents have not completed secondary school. The higher the indicator the less educational mobility there is between generations.

Data for Germany are from the Socio-economic Panel, 1996.

Data are from the International Adult Literacy Survey (IALS), which was undertaken by Statistics Canada and OECD at the end of 1994 and in 1995.

Table A2.1. **Increased probability of obtaining a tertiary qualification for individuals whose parents have also completed tertiary education compared to individuals whose parents have not completed secondary education**

	Total (16-65 years)	Younger age cohort (26-35 years)	Older age cohort (46-55 years)
Australia	2.0	2.4	1.9
Belgium (Flanders)	3.3	2.6	4.4
Canada	2.4	2.9	2.2
Germany	2.3	2.9	2.4
Ireland	4.8	m	m
Netherlands	3.3	3.3	4.3
New Zealand	2.1	2.8	2.0
Poland	5.8	6.6	m
Sweden	2.2	2.8	2.6
Switzerland	4.3	4.3	5.6
United Kingdom	2.9	3.3	3.1
United States	3.3	3.6	4.6

Table A2.2. **Percentage of the population 16 to 65 years of age who have attained tertiary education, by level of educational attainment of their parents**

	Below upper secondary education	Upper secondary education	Tertiary education
Australia	20.0	25.7	39.2
Belgium (Flanders)	15.3	32.8	49.7
Canada	23.7	41.5	57.2
Germany	16.0	23.3	38.4
Ireland	12.0	36.1	57.4
Netherlands	12.8	22.5	42.6
New Zealand	21.4	28.8	45.3
Poland	9.2	26.0	53.8
Sweden	18.7	29.5	40.2
Switzerland	8.8	19.6	37.8
United Kingdom	16.5	38.2	47.0
United States	19.7	35.7	64.2

Source: OECD and Statistics Canada/International Adult Literacy Survey (IALS), 1994-1995. For Germany: Socio-economic Panel, 1996.

LITERACY SKILLS OF THE ADULT POPULATION

POLICY CONTEXT

This indicator provides a profile of adult literacy skills in 12 OECD countries, disaggregated by age, gender and educational attainment.

The results of the International Adult Literacy Survey (IALS) provide a novel approach to the measurement of skills and competencies of adults in an international context. Assessing the skills of adults directly is an alternative to measuring the stock of human capital via educational qualifications. Measures of educational attainment do not certify a consistent set of skills across countries and ignore less formal learning. The IALS was designed to measure adult literacy skills, as determined by assessed proficiency levels, using test materials derived from specific contexts within countries. Results from IALS are useful in assessing the extent to which the measured skills of adults vary in relation to their educational attainment.

EVIDENCE AND EXPLANATIONS

A substantial proportion of the population in all countries assessed in IALS demonstrate low skills. Respondents in the International Adult Literacy Survey were asked to carry out various tasks that might be encountered in everyday life. This indicator presents the results for the IALS document scale, which tested the knowledge and skills required to locate and use information contained in various formats such as official forms, timetables, maps and charts. Performance at literacy level 3 is generally considered desirable in order to avoid difficulties in coping with social and economic life in a modern democratic society. So the proportion of the population performing at levels 1 and 2 can be taken to represent a shortfall relative to the desirable minimum. At least a quarter of adults in all countries tested performed below the desirable minimum (Chart A3.1), but in some countries the proportion at this level was 50 per cent or higher (Ireland, New Zealand, Poland and the United Kingdom).

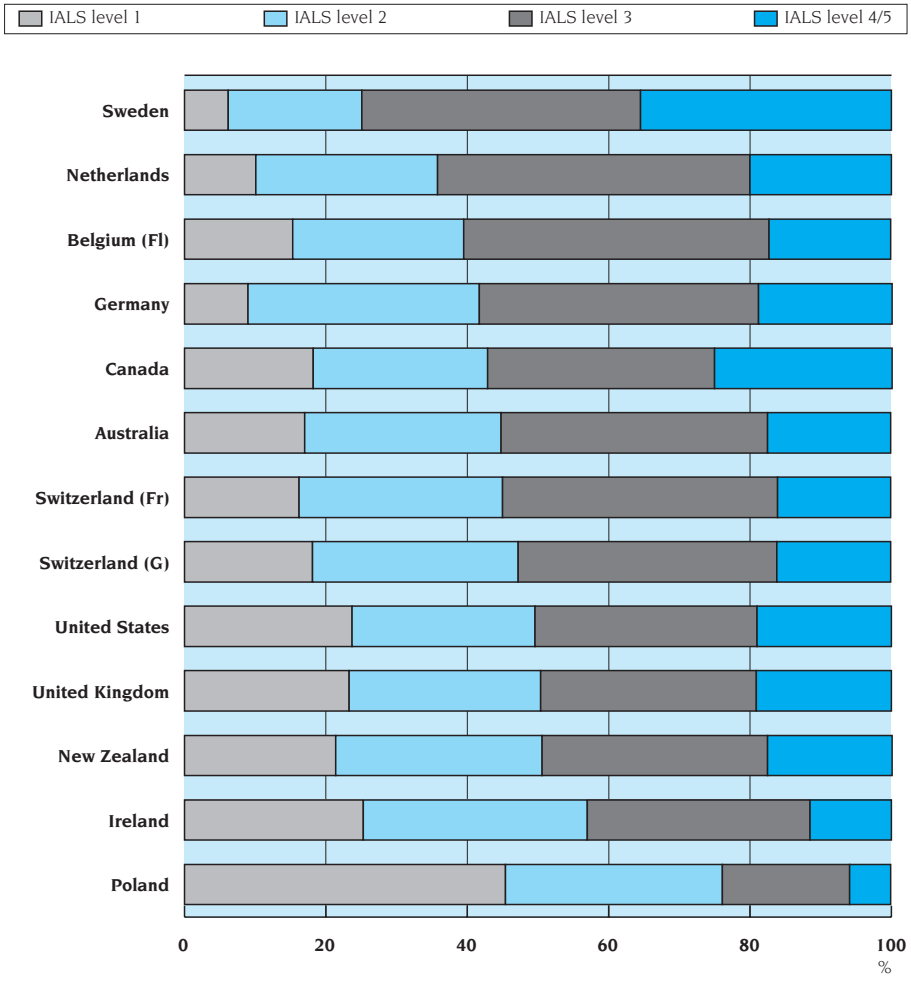
Although the mean literacy scores tend to be relatively close in most countries, the distribution of scores varies widely.

Chart A3.2 shows mean scores and scores at the 5th, 25th, 75th and 95th percentiles. The mean score offers only partial information about adult literacy in a given country, since the mean can be relatively high even when there are many in the population with quite low scores. Although the mean scores tend to be relatively close in most countries, the distribution of scores varies widely. In Canada, for example, the average score is relatively high on the document scale, but the gap between the 5th and the 95th percentiles is among the widest. Yet the Netherlands has both a small interquartile range (the difference between the 25th and 75th percentiles), indicating a low variation within the country, and a high average score.

In some countries low attainment levels are less of an impediment in achieving relatively high literacy levels than in others.

Countries differ substantially in the proportion of their adult population who have attained different levels of education, which in part might affect the overall distribution of literacy. In general, countries with higher levels of educational attainment in the population have, on average, higher literacy scores. But there are still marked differences between countries at a given level of education. Countries differ most at the lowest education levels. In some countries low educa-

Chart A3.1. **Distribution of the population 16 to 65 years of age by literacy level on the IALS document scale (1994-1995)**



Countries are ranked in descending order of the percentage of the population scoring at literacy level 3 or higher.

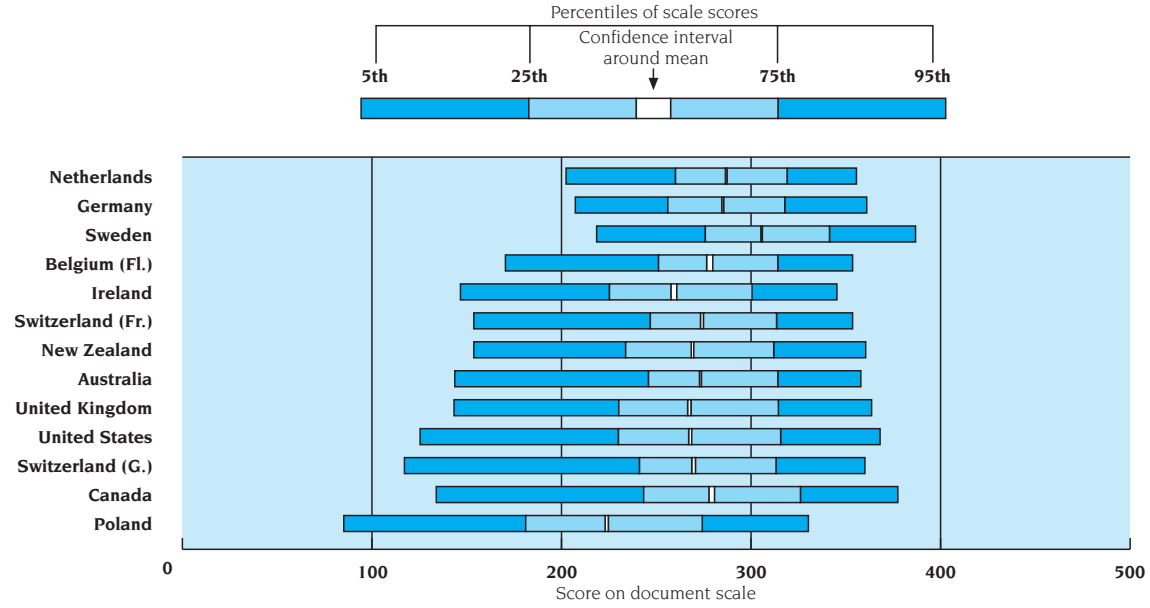
Source: OECD and Statistics Canada/IALS.

tional attainment is less of an impediment in achieving relatively high literacy levels than in others. The difference between the average score of individuals with tertiary education and those with less than upper secondary is highest in the United States and lowest in Germany (Chart A3.3). Adults with below upper secondary attainment in Germany have higher scores in document literacy than adults who have completed upper secondary education in the United States.

High percentages of older adults show low literacy levels.

On average in all countries except the United States, men outscore women on the document scale. The levels of literacy skills vary also across age-groups. Older people in many countries have received less education than younger ones (Indicator A1), although many young people aged 16 to 25 have not yet completed their education. Comparisons across age-groups may provide some insight on the extent to which differences in literacy skills are a product of education

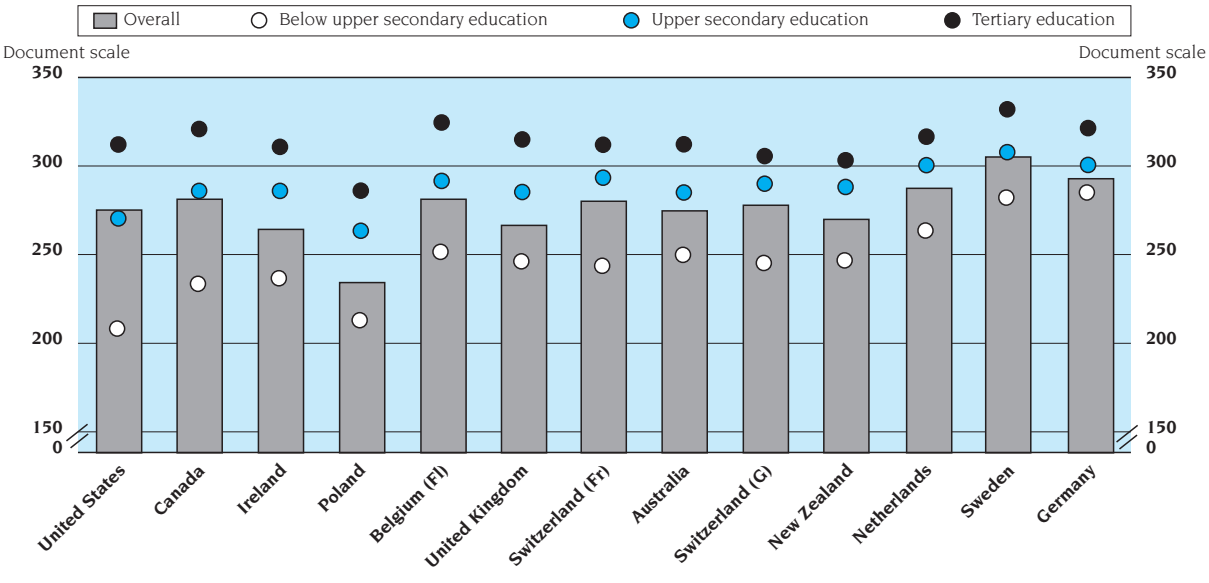
Chart A3.2. **Mean literacy scores and scores at the 5th, 25th, 75th and 95th percentiles on the IALS document scale among the population 16 to 65 years of age (1994-1995)**



Countries are ranked in ascending order of the difference in scores between the 5th and 95th percentile.

Source: OECD and Statistics Canada/IALS.

Chart A3.3. **Mean literacy scores on the IALS document scale of the population 16 to 65 years of age by level of educational attainment (1994-1995)**



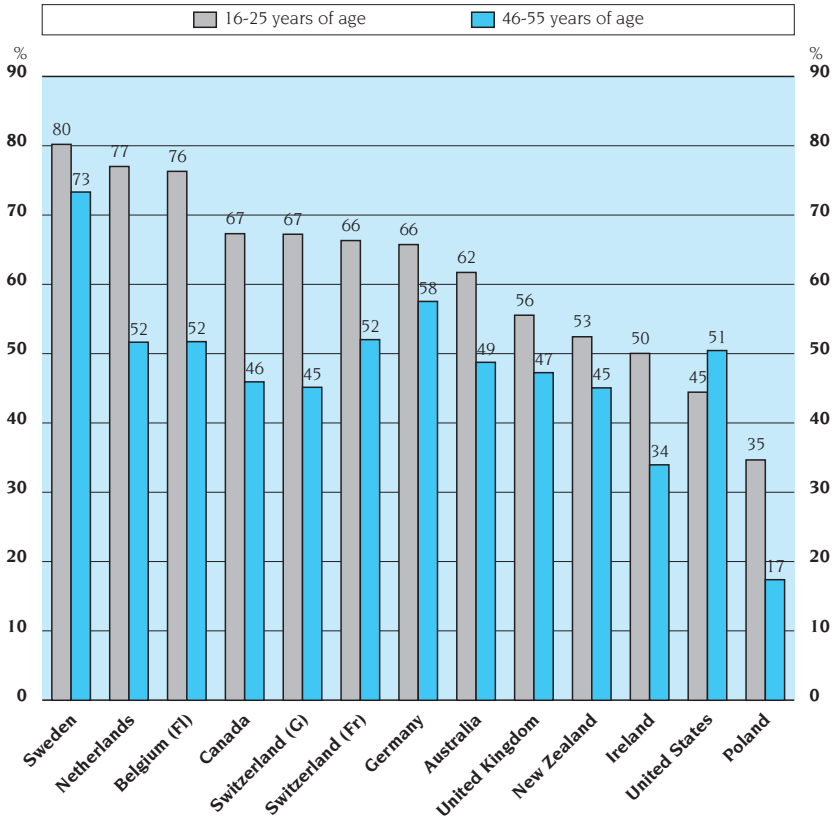
Countries are ranked in descending order of the difference in mean score between those with tertiary education and those with below upper secondary attainment.

Source: OECD and Statistics Canada/IALS.

systems or reflect the effects of experience after schooling. In all countries except the United States, adults aged 46 to 55 have lower levels of document literacy than those aged 16 to 25 (Chart A3.4). In Belgium (Flanders) and the Netherlands, for example, while three-quarters of younger adults score at literacy levels 3 or higher, only half of older adults do. In Poland, the proportion of adults who have scored at level 3 or higher is twice as high in the age-group 16-25 as in that for 46-55 year-olds.

Country rankings differ in the two age-groups. Both Germany and the United States fare relatively better in the age-group 46 to 55: Germany is second only to Sweden in the proportion of older adults scoring at level 3 or higher in the document scale, but is average among the young. The United States is average among older adults but second-last among the young.

Chart A3.4. **Percentage of the population scoring at IALS literacy level 3 or higher on the document scale by age group (1994-1995)**



Countries are ranked in descending order of the percentage of the population 16 to 25 years of age scoring at literacy level 3 or higher.

Source: OECD and Statistics Canada/IALS.

DEFINITIONS

Respondents in the International Adult Literacy Survey were asked to carry out various tasks that might be encountered in everyday life. "Prose literacy" refers to the knowledge and skills required to understand and use information from texts, such as editorials, news stories, poems and fiction; "document literacy" refers to the knowledge and skills required to locate and use information contained in various formats such as job applications, payroll forms, transportation timetables, maps, tables and graphics; and "quantitative literacy" refers to the knowledge and skills required to apply arithmetic operations to numbers embedded in printed materials, such as balancing a cheque-book, calculating a tip, completing an order form or determining the amount of interest on a loan from an advertisement.

Data are from the International Adult Literacy Survey.

The Belgium IALS sample is representative of the Flemish Region excluding the Capital Region of Brussels. Therefore the name Flanders is used in this indicator rather than the Flemish Community as in the rest of this publication.

Table A3.1. **Percentage of the population aged 16 to 65 years at each document literacy level (1994-1995)**

	IALS level 1	IALS level 2	IALS level 3	IALS level 4/5
Australia	17 (0.5)	28 (0.7)	38 (0.7)	17 (0.6)
Belgium (Flanders)	15 (1.7)	24 (2.8)	43 (4.1)	17 (0.9)
Canada	18 (1.9)	25 (1.5)	32 (1.8)	25 (1.3)
Germany	9 (0.7)	33 (1.2)	40 (1.0)	19 (1.0)
Ireland	25 (1.7)	32 (1.2)	32 (1.3)	12 (1.2)
Netherlands	10 (0.7)	26 (0.8)	44 (0.9)	20 (0.8)
New Zealand	21 (0.9)	29 (1.1)	32 (0.8)	18 (0.7)
Poland	45 (1.3)	31 (1.0)	18 (0.7)	6 (0.3)
Sweden	6 (0.4)	19 (0.7)	39 (0.8)	36 (0.6)
Switzerland (French)	16 (1.3)	29 (1.4)	39 (1.3)	16 (1.1)
Switzerland (German)	18 (1.0)	29 (1.5)	37 (0.8)	16 (1.0)
United Kingdom	23 (1.0)	27 (1.0)	31 (1.0)	19 (1.0)
United States	24 (0.8)	26 (1.1)	31 (0.9)	19 (1.0)

Table A3.2. **Mean scores and scores at the 5th, 25th, 75th and 95th percentiles on the document literacy scale (1994-1995)**

	5th percentile	25th percentile	Mean	75th percentile	95th percentile
Australia	144	246	273 (1.0)	314	358
Belgium (Flanders)	170	251	278 (3.2)	314	354
Canada	134	243	279 (3.0)	326	377
Germany	207	256	285 (1.0)	318	361
Ireland	147	225	259 (3.2)	301	345
Netherlands	202	260	287 (0.9)	319	356
New Zealand	154	234	269 (1.3)	312	360
Poland	85	181	224 (1.8)	274	330
Sweden	219	276	306 (0.9)	341	387
Switzerland (French)	154	247	274 (1.7)	314	354
Switzerland (German)	117	241	270 (2.0)	313	360
United Kingdom	143	230	268 (1.9)	314	364
United States	125	230	268 (1.7)	316	368

Table A3.3. **Mean document literacy scores by level of educational attainment and gender (1994-1995)**

	Below upper secondary education	Upper secondary education	Tertiary education	Men	Women
Australia	249 (1.5)	282 (1.3)	308 (1.2)	276 (1.5)	271 (1.3)
Belgium (Flanders)	251 (5.3)	289 (2.1)	313 (1.5)	285 (5.4)	272 (2.1)
Canada	227 (5.7)	288 (5.3)	318 (4.9)	279 (4.6)	278 (3.0)
Germany	276 (1.1)	295 (2.2)	315 (1.6)	289 (2.2)	281 (1.4)
Ireland	232 (2.6)	281 (2.9)	304 (3.3)	261 (5.4)	257 (2.2)
Netherlands	263 (1.5)	302 (1.4)	311 (1.6)	290 (1.3)	283 (1.3)
New Zealand	245 (2.3)	287 (2.0)	302 (1.5)	271 (1.8)	268 (1.7)
Poland	202 (1.7)	251 (2.0)	276 (3.9)	227 (1.7)	220 (2.6)
Sweden	281 (2.4)	308 (1.0)	331 (2.0)	311 (1.6)	301 (1.7)
Switzerland (French)	235 (4.1)	283 (2.2)	313 (2.7)	279 (2.9)	271 (2.1)
Switzerland (German)	231 (6.2)	283 (2.1)	300 (2.7)	274 (2.7)	264 (2.7)
United Kingdom	247 (2.4)	286 (3.1)	312 (1.9)	274 (2.4)	260 (2.4)
United States	200 (4.6)	266 (2.3)	303 (2.4)	267 (1.8)	268 (2.2)

( ) Standard errors appear in parentheses.
Source: OECD and Statistics Canada/ International Adult Literacy Survey (IALS), 1994-1995.

THE RELATIVE SIZE OF THE SCHOOL-AGE POPULATION

POLICY CONTEXT

The number of young people in a population influences both the rate of renewal of labour-force qualifications and the amount of resources and organisational effort a country must invest in its education system. Other things being equal, countries with larger proportions of young people in the population must allocate a larger proportion of their national income to initial education and training than those with smaller young populations but similar participation rates.

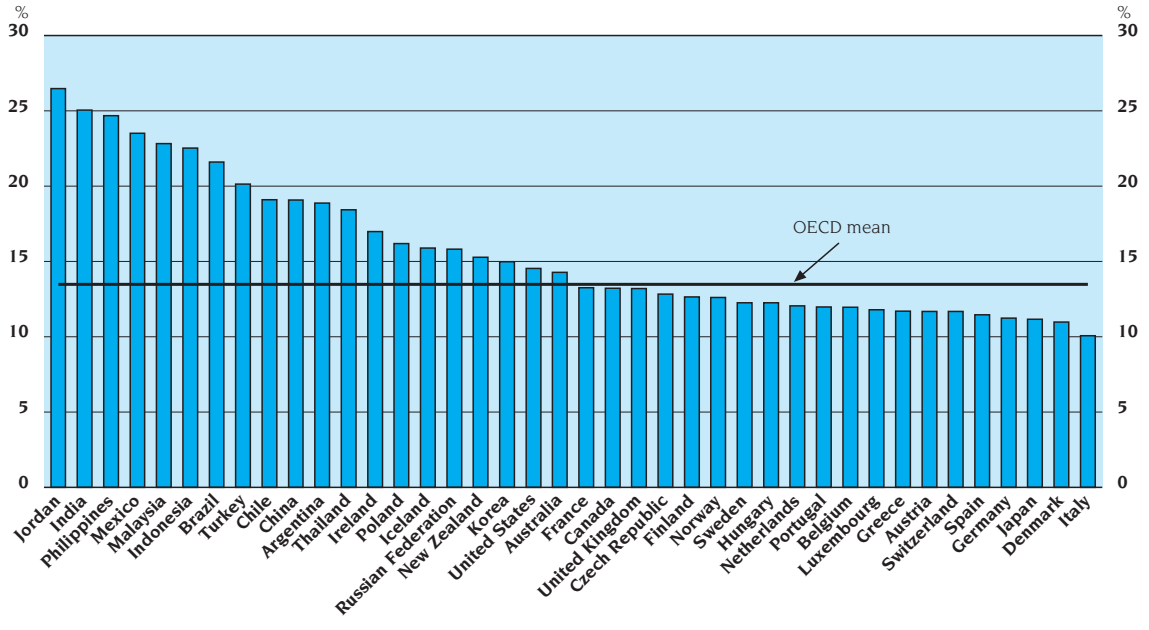
This indicator shows the relative size of the traditional school-age population in primary/lower secondary, upper secondary and tertiary education and forecasts these up to the year 2006.

EVIDENCE AND EXPLANATIONS

The proportion of 5-14 year-olds in the total population, who are typically enrolled in primary and lower secondary programmes, varies between 11 and 16 per cent in most OECD countries; the proportion of 20-29 year-olds is in general slightly larger (Table A4.1). Although differences between countries in the relative size of the youth population have diminished since 1990, there are still notable contrasts.

Differences between countries in the relative size of the youth population have diminished since 1990 but there are still notable contrasts.

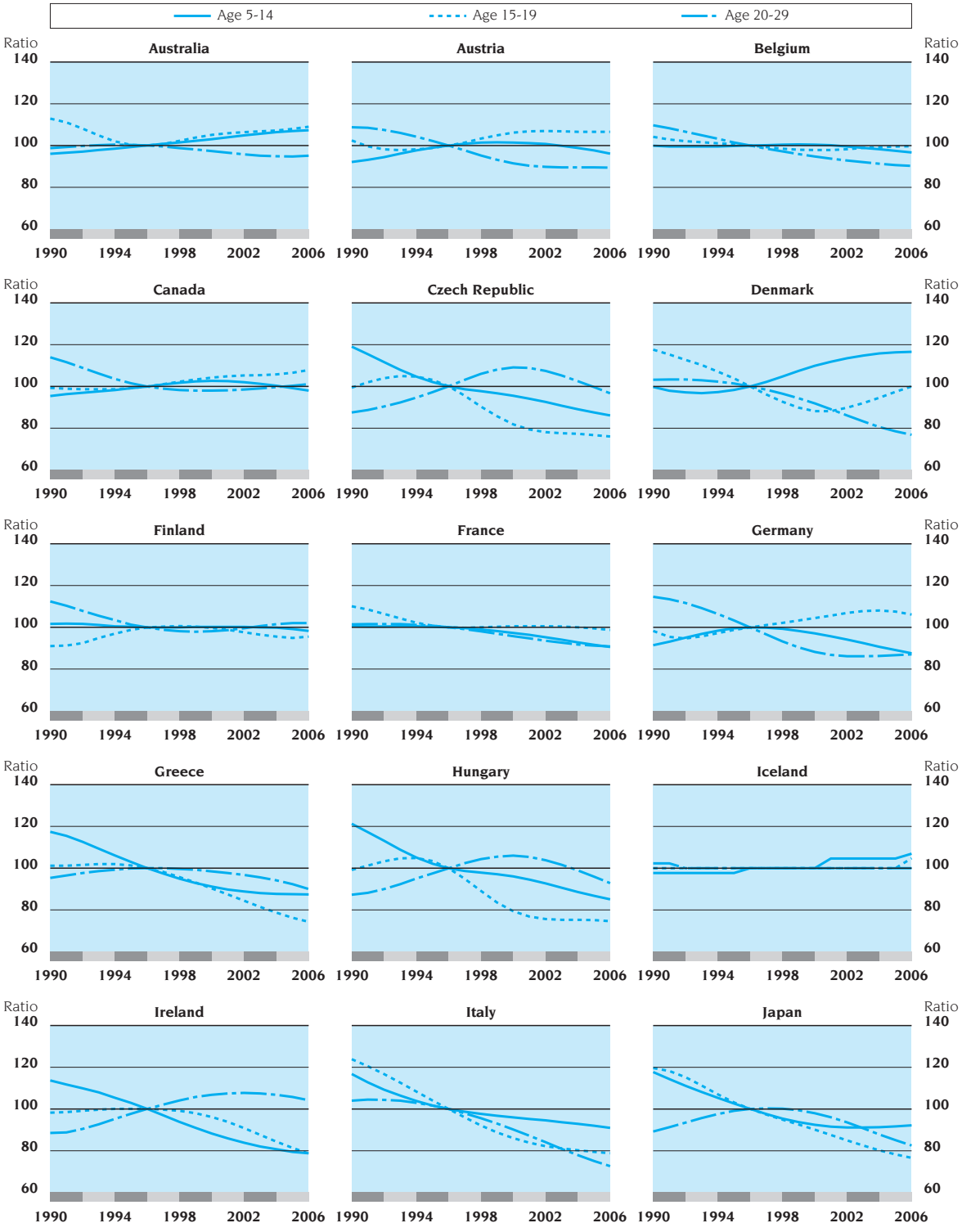
Chart A4.1. **Percentage of 5 to 14 year-olds in the total population (1996)**



Countries are ranked in descending order of the percentage of 5 to 14 year-olds in the total population.

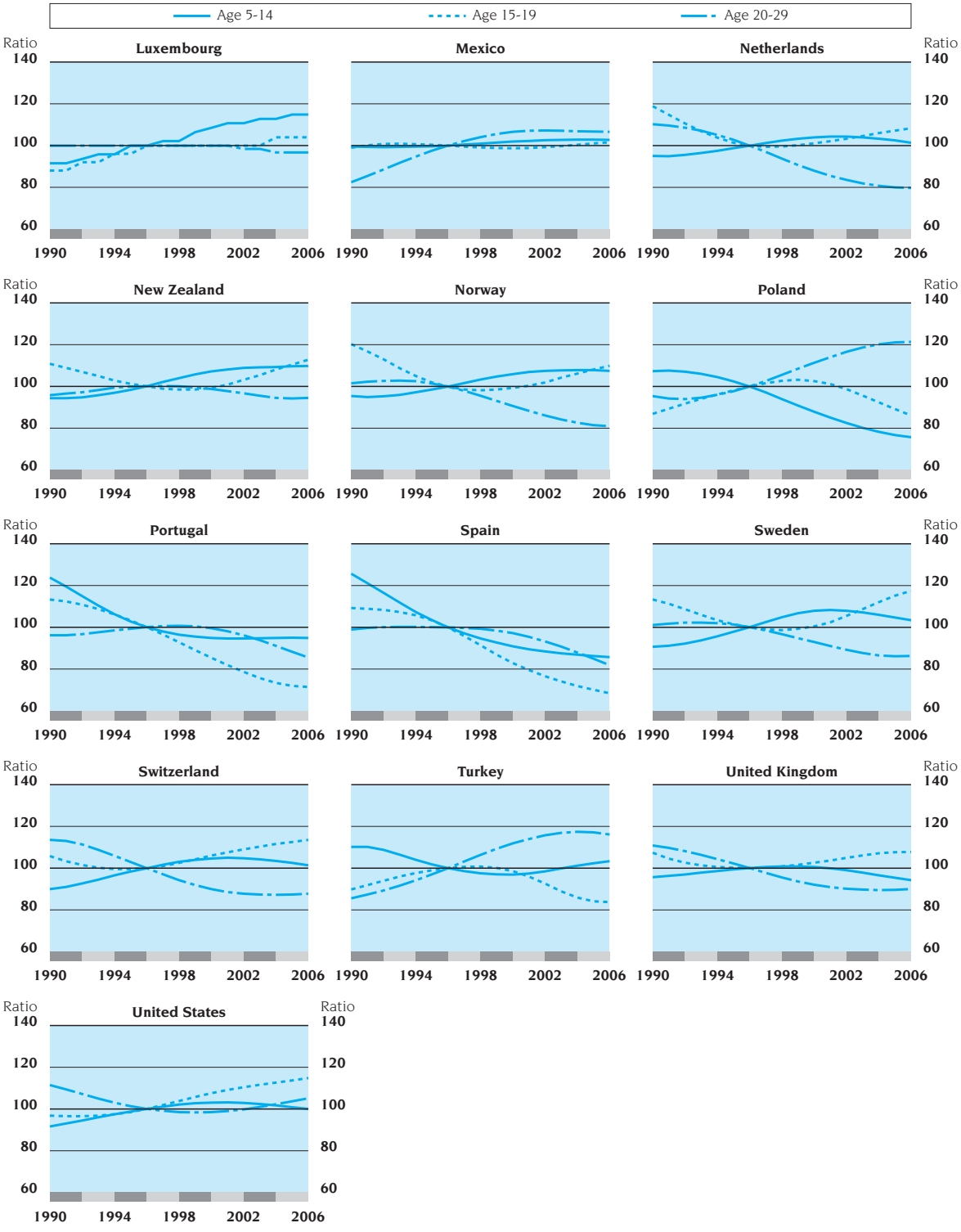
Source: OECD.

Chart A4.2. **Change in the size of the youth population since 1990 and expected change until 2006 (1996 = 100)**



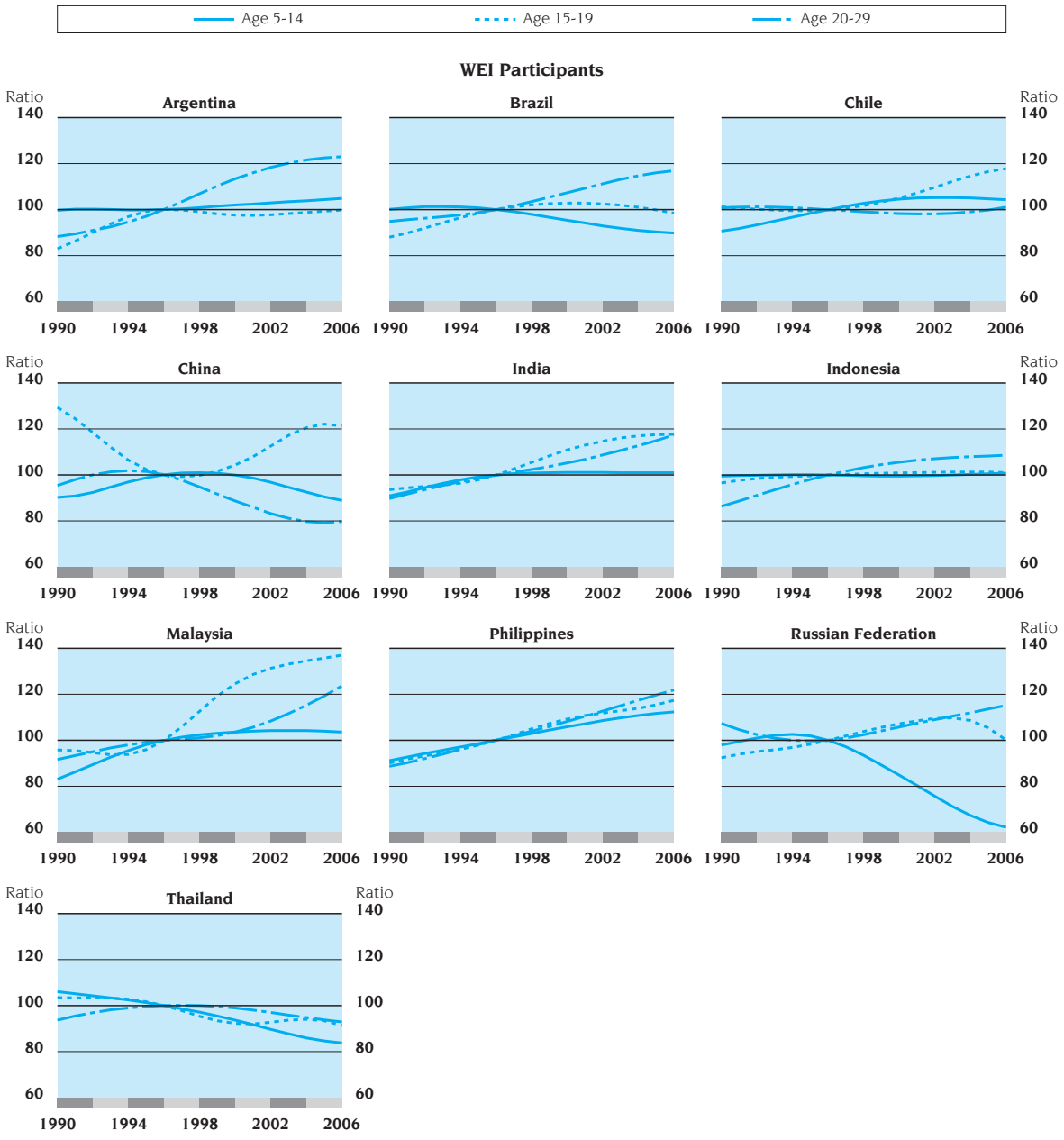
Source: OECD.

Chart A4.2. (*cont.*) **Change in the size of the youth population since 1990 and expected change until 2006 (1996 = 100)**



Source: OECD.

Chart A4.2. (*cont.*) **Change in the size of the youth population since 1990 and expected change until 2006 (1996 = 100)**



Source: OECD.

Mexico and Turkey have both fewer resources to allocate to education and more children over whom to distribute these.

In Italy only 10 per cent of the population is between the ages of 5 and 14; in Mexico and Turkey these figures are 24 and 20 per cent respectively. Two of the least prosperous countries in the OECD have thus both fewer resources to allocate to education and more children over whom to distribute these resources.

Among WEI participants, only the Russian Federation and Thailand have a proportion of 5-14 year-olds lower than 19 per cent and in others it is as high as 25 to 26 per cent.

The age distribution of the population in WEI participants differs considerably from that in most OECD countries. Only in the Russian Federation and Thailand is the proportion of 5-14 year-olds lower than 19 per cent and in India, Jordan and the Philippines it is as high as 25 to 26 per cent. In Brazil, India, Indonesia, Jordan, Malaysia and the Philippines more than half of the population is between 5 and 29 years olds. That presents a real challenge to the financing of education. In Jordan, the total number of students enrolled exceeds the number of employed persons (Column 10 in Table A4.1).

The sharp decline in youth populations during the 1970's and 80's has generally slowed down…

Taking the size of the population in 1996 as the baseline (index = 100), Chart A4.2 illustrates how the population in three age-bands – which roughly correspond to the ages in which students typically participate in primary/lower secondary, upper secondary and tertiary education – have evolved since 1990 and how they can be expected to develop over the next decade.

… and population forecasts suggest that the proportion of 5-14 year-olds will stabilise in many OECD countries.

The sharp decline in the population of 5-14 year-olds that occurred in many OECD countries during the 1970's and 80's has generally slowed down and population forecasts suggest that over the next decade the proportion of 5-14 year-olds will stabilise in many OECD countries. Ireland and Poland are the only countries in which the number of 5-14 year-olds – with currently 17 and 16 per cent, a comparatively high proportion of the population – will decline by more than 20 per cent over the next decade. In the Czech Republic, Germany, Greece, Hungary and Spain the decline will still exceed 10 per cent.

Although the decline in the youth population has somewhat eased the pressure on expanding school systems at the lower levels of education, in most countries higher enrolment rates in post-compulsory schooling have outweighed lower birth rates (Indicator C1).

A decline in the youth population is also no longer the rule. In 10 OECD countries the number of 5-14 year-olds has been rising by between 5 and 10 per cent over the period 1990-1996. These rises will feed through into further rises in demand for post-compulsory education in the years ahead. When populations of these ages were falling it was relatively easy to expand participation rates – but can these higher levels now be sustained? The countries where the population of 5-14 year-olds is expected to grow by more than 10 per cent are Denmark, Luxembourg and New Zealand; and whereas Denmark and Luxembourg have currently a comparatively low share of 5-14 year-olds, in New Zealand a comparatively high share is expected to expand further.

Among 20-29 year-olds, the age-band typically corresponding to participation in tertiary education, a decline of around 20 per cent in Denmark, Italy, the Netherlands and Norway will ease the pressure on tertiary spending. In Poland and Turkey, by contrast, the population of 20-29 year-olds is expected to increase by 21 and 16 per cent over the next decade which, combined with increasing participation rates, will put considerable pressure on tertiary education systems.

In most WEI participants, only modest changes in the share of 5-14 year-olds in the total population are expected over the next decade, with a tendency towards a slight decline.

The Philippines, the Russian Federation and Thailand are the only WEI participants in which major changes in the share of 5-14 year-olds are expected: in the Russian Federation, which with 16 per cent has currently the lowest share of 5-14 year-olds among WEI participants, a decline by almost 40 per cent is expected over the next decade, following a sharp drop in birth rates over recent years. In the Philippines, on the other hand, a high share of 5-14 year-olds in 1996 is expected to expand yet further, with the population of students at the age of primary education expected to grow by 12 per cent.

In all other WEI participants only modest changes in the share of 5-14 year-olds in the total population are expected over the next decade, with a tendency towards a slight decline in the majority of WEI participants.

More variation can be observed in older age-groups: in Chile, China, India, Malaysia and the Philippines, the number of 15-19 year-olds is expected to increase by between 17 and 37 per cent which, together with rising access to upper secondary education in these countries (Indicator C1) will put substantial further pressure on the financing of secondary and post-compulsory education.

Student demography is an important factor influencing the financial resources required for education.

The size of the youth population in a given country shapes the potential demand for initial education and training. The bigger the number of young people, the greater the potential demand for educational services. Among countries of comparable wealth, a country with a relatively large youth population would have to spend a larger percentage of its GDP on education if each young person is to have the opportunity to receive the same quantity of education as young people in other countries. Conversely, if the relative size of the youth population is smaller, the same country could spend less of its wealth on education to achieve similar results.

Chart B1.4A in Indicator B1 shows the effects that international differences in the share of the youth population have on educational spending. In Italy, the country with the lowest share of 5-29 year-olds, educational expenditure as a percentage of GDP could be expected to rise by 10 per cent if the relative size of the youth population in this country were at the level of the OECD average. In Mexico, by contrast, expenditure on education could be expected to be 50 per cent lower if the proportion of 5-29 year-olds in this country were at the OECD average. In other words, other things being equal, Mexico would have to double its investment in educational institutions in order to reach the OECD average spending per student as a percentage of GDP.

DEFINITIONS

Data are derived from the 1996 OECD Demographic Database and from the World Education Indicators Pilot Project. Projections are based on the UN Population database.

Columns 1-3 in Table A4.1 show the percentage of 5-14, 15-19 and 20-29 year-olds in the total population. Columns 4-9 show the change in the sizes of the populations 5-14, 15-19 and 20-29 years of age over the period 1990-2006. The changes are expressed as percentages relative to the size of the population in 1996 (index = 100). The statistics cover everyone resident in the country, regardless of citizenship and of educational or labour market status. Column 10 shows the number of students enrolled as a percentage of the employed population 25-64 year of age.

Chart A4.2 shows the development of the index provided in columns 4-9 of Table A4.1 over the period 1990- 2006.

Table A4.1. **Number of people at the age of basic, upper secondary and tertiary education as a percentage of the total population (1996)**

	Percentage of the population			Change in the size of the population (1996 = 100)						Number of students enrolled as a percentage of the employed population 25-64 year of age
				Age 5-14		Age 15-19		Age 20-29		
	Age 5-14	Age 15-19	Age 20-29	1990	2006	1990	2006	1990	2006	
Australia	14	7	15	96	107	113	109	99	95	81
Austria	12	6	15	92	96	102	107	109	89	52
Belgium	12	6	14	100	97	104	100	110	90	75
Canada	13	7	14	95	98	99	108	114	101	63
Czech Republic	13	8	15	119	86	99	76	88	97	53
Denmark	11	6	15	100	117	118	100	103	77	57
Finland	13	6	13	102	98	91	95	112	102	61
France	13	7	15	101	91	110	99	101	91	71
Germany	11	5	14	91	88	98	106	115	87	54
Greece	12	7	15	117	87	101	74	95	90	58
Hungary	12	8	15	121	85	99	75	87	93	70
Iceland	16	8	15	98	107	100	105	102	100	m
Ireland	17	9	15	114	79	98	79	88	104	96
Italy	10	6	16	117	91	124	79	104	73	61
Japan	11	7	15	118	92	120	77	89	83	m
Korea	15	9	19	m	m	m	m	m	m	63
Luxembourg	12	5	14	91	115	88	104	100	97	47
Mexico	24	11	19	99	103	99	102	82	107	m
Netherlands	12	6	15	95	101	119	108	110	80	61
New Zealand	15	7	15	94	110	111	113	96	94	82
Norway	13	6	15	95	107	120	110	102	81	57
Poland	16	8	14	107	76	87	86	95	121	76
Portugal	12	8	16	124	95	113	71	96	85	64
Spain	11	8	17	126	86	109	68	99	82	90
Sweden	12	6	14	91	103	113	117	101	86	59
Switzerland	12	6	14	90	101	106	114	114	88	43
Turkey	20	11	19	110	103	90	84	86	116	m
United Kingdom	13	6	15	96	94	107	108	111	90	65
United States	15	7	14	92	100	97	115	111	105	66
Country mean	**13**	**7**	**15**	**104**	**97**	**105**	**95**	**100**	**93**	**65**
WEI Participants										
Argentina	19	10	15	100	105	83	100	88	123	m
Brazil	22	11	17	100	90	88	98	95	117	79
Chile	19	9	17	91	104	101	118	101	101	74
China	19	7	19	90	89	129	121	95	80	m
India	25	9	17	91	101	94	118	90	117	m
Indonesia	23	10	17	100	101	97	101	86	109	m
Jordan	26	12	20	m	m	m	m	m	m	144
Malaysia	23	10	18	83	104	96	137	92	124	58
Paraguay	26	10	17	m	m	m	m	m	m	m
Philippines	25	11	18	91	112	90	117	89	122	47
Russian Federation	16	7	13	98	62	92	100	107	115	m
Thailand	18	10	19	106	84	103	91	94	93	60
Uruguay	17	8	15	m	m	m	m	m	m	60

Source: OECD Education Database. See Annex 3 for notes.

EXPECTED NUMBER OF YEARS IN EMPLOYMENT, UNEMPLOYMENT AND TIME OUTSIDE THE LABOUR MARKET

POLICY CONTEXT

This indicator shows how the years between the ages 25 and 64 are divided between employment, unemployment and time outside the labour market for individuals at each level of educational attainment.

The effect of educational attainment on the labour-force status of a typical individual manifests itself not only at a single point in time but over the entire life-cycle. In particular, it affects the total number of years over a lifetime which are spent in employment, in unemployment and outside the labour force. While social and labour-market policies are often designed to deal with the immediate labour-force status of an individual, the effects of educational attainment on labour-force activity are cumulative and likely to have a larger long-term impact.

It provides a long-term perspective on the relationship between attainment and labour-force activity.

The expected number of years a person spends employed, unemployed and out of the labour market, broken down by level of educational attainment, can provide a long-term perspective on the relationship between educational attainment and labour-force activity.

EVIDENCE AND EXPLANATIONS

Expected years in employment tend to rise with the level of educational attainment.

Expected years in employment tend to rise with the level of educational attainment in most countries. Over the age span 25 to 64, individuals with tertiary attainment in OECD countries can expect to spend 2.7 more years in employment, 7 months less in unemployment, and 2.1 years less out of the labour force than persons with upper secondary education. The impact of educational attainment on expected years of employment among men is strongest in the Czech Republic, Hungary, the United Kingdom and the United States and weakest in Greece, Korea, Switzerland and Turkey. Educational attainment had a weaker impact on expected years in employment among males in WEI participants (where employment rates are above the OECD average at all levels of educational attainment) than in OECD countries.

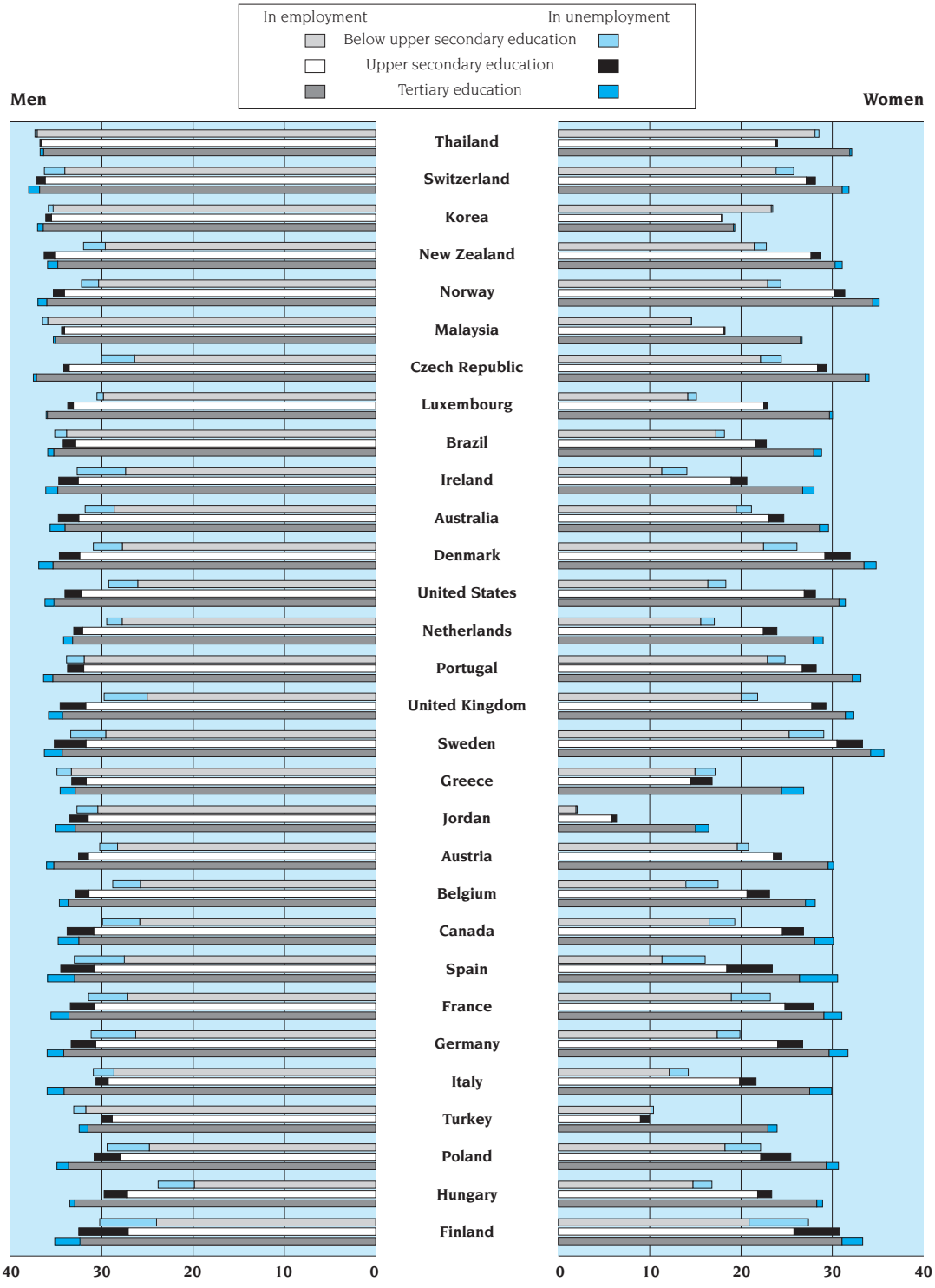
Level of educational attainment has an even stronger impact on the expected years of employment among women.

For women, the differences in expected years in employment across levels of education are even wider than for those of men in most countries, although Korea is a notable exception. The difference between the expected years in employment between women with less than an upper secondary education and women with a tertiary qualification ranges from less than 9 years in New Zealand, Sweden, Switzerland (three countries with above average employment rates for women) to 15 or more years in Ireland, Italy, Luxembourg and Spain (4 countries which have below average employment rates for women). Among WEI participants, the impact of educational attainment on expected years of employment was similar to OECD countries – with the exception of Thailand (with employment rates above the OECD average at all levels of educational attainment).

Differences in expected years of unemployment across educational levels are small.

Over the life-cycle, the trade-off seems to be more between employment and time outside the labour force than between employment and unemployment – that is, lower expected years in employment tend to be mirrored more by higher

Chart A5.1. **Expected years in employment and unemployment of 25-64 year-olds, by gender and level of educational attainment (1996)**



Countries are ranked in descending order of the years in employment for men with upper secondary education.

Source: OECD.

expected years outside the labour force than by years in unemployment. Although unemployment can be prolonged in some countries, it is generally sporadic, whereas years outside the labour force can accumulate rapidly as a result of more or less permanent withdrawal from the labour force (for example, because of caring for children, inadequate skill levels or early retirement).

DEFINITIONS

Data are derived from national labour-force surveys (for details see Annex 3).

This indicator shows expected years in employment, outside the labour force and in unemployment for men and women aged 25 to 64 with different levels of educational attainment. These estimates are calculated by summing, over all age-groups, the product of age-specific ratios of employment, unemployment and inactivity to population ratios and the number of years in each corresponding age-group. The total number of years spent in the three labour-force statuses (employed, unemployed and not in the labour force) is 40 – the number of years from the ages of 25 to 64. The labour-force statuses are defined according to the guidelines specified by the International Labour Office.

But estimates of expected time in employment, unemployment and inactivity assume that current labour market conditions will continue into the future.

The estimates shown here of expected time in employment, in unemployment and outside the labour force over the period from 25 to 64 years of age need to be interpreted with some caution. They are based on the observed labour force situation of persons presently 25 to 64 years of age and assume that current labour market conditions will continue into the future, both in general and for each attainment level and age-group. Older persons with low attainment levels (particularly less than upper secondary) who are currently in the labour force started work at a time in the past when low educational levels were less of a handicap.

Table A5.1. **Expected years in employment, out of the labour force and in unemployment for men 25 to 64 years of age (1996)**

	Expected years in employment				Expected years out of the labour market				Expected years in unemployment			
	Below upper secondary education	Upper secondary education	Tertiary education	All levels of education	Below upper secondary education	Upper secondary education	Tertiary education	All levels of education	Below upper secondary education	Upper secondary education	Tertiary education	All levels of education
Australia	28.6	32.5	34.0	31.5	8.2	5.3	4.4	6.1	3.2	2.2	1.6	2.3
Austria	28.3	31.5	35.3	31.0	9.8	7.5	4.0	7.8	1.9	1.1	0.8	1.2
Belgium	25.8	31.4	33.7	29.0	11.2	7.2	5.4	9.0	3.0	1.4	0.9	2.0
Canada	25.8	30.9	32.5	30.4	10.1	6.2	5.2	6.8	4.1	2.9	2.3	2.8
Czech Republic	26.4	33.6	37.2	33.3	10.0	5.8	2.5	5.9	3.6	0.6	0.3	0.8
Denmark	27.7	32.4	35.3	31.6	9.1	5.4	3.1	6.1	3.2	2.2	1.6	2.3
Finland	24.0	27.1	32.4	27.2	9.8	7.5	4.9	7.9	6.2	5.4	2.8	4.9
France	27.2	30.7	33.6	29.7	8.5	6.6	4.4	7.2	4.2	2.7	2.0	3.0
Germany	26.3	30.7	34.2	31.0	8.8	6.6	4.0	6.3	4.9	2.7	1.8	2.7
Greece	33.3	31.7	32.9	33.0	5.1	6.7	5.4	5.4	1.6	1.6	1.6	1.6
Hungary	19.9	27.3	33.0	25.9	16.2	10.3	6.5	11.7	4.0	2.5	0.6	2.4
Ireland	27.4	32.6	34.8	30.3	7.3	5.3	3.9	6.2	5.3	2.1	1.3	3.5
Italy	28.7	29.3	34.1	28.9	9.1	9.4	4.0	9.2	2.3	1.4	1.8	1.9
Korea	35.3	35.5	36.4	35.6	4.1	3.9	3.0	3.8	0.5	0.6	0.6	0.6
Luxembourg	29.8	33.1	36.0	31.1	9.5	6.3	3.9	8.3	0.7	0.6	0.1	0.6
Netherlands	27.8	32.1	33.2	30.9	10.5	6.9	5.8	7.9	1.7	1.0	1.0	1.2
New Zealand	29.6	35.2	34.8	33.1	8.0	3.7	4.1	5.3	2.4	1.1	1.1	1.6
Norway	30.4	34.1	36.0	33.8	7.8	4.7	3.0	5.0	1.9	1.2	1.0	1.2
Poland	24.8	27.9	33.6	28.1	10.6	9.2	5.1	8.9	4.6	2.9	1.3	3.0
Portugal	31.9	32.0	35.4	32.2	6.1	6.3	3.6	6.0	1.9	1.8	1.0	1.8
Spain	27.5	30.8	33.0	28.7	7.0	5.5	4.1	6.6	5.5	3.6	3.0	4.7
Sweden	29.6	31.7	34.3	31.8	6.6	4.8	3.7	5.1	3.8	3.5	2.0	3.2
Switzerland	34.0	36.2	36.8	36.1	3.7	2.9	2.0	2.7	2.2	0.9	1.2	1.2
Turkey	31.7	28.9	31.5	31.6	6.9	10.0	7.5	7.1	1.3	1.2	0.9	1.3
United Kingdom	25.0	31.8	34.3	31.1	10.3	5.5	4.2	6.1	4.7	2.8	1.5	2.8
United States	26.1	32.2	35.2	32.3	10.8	6.0	3.8	6.0	3.2	1.9	1.0	1.7
Country mean	**28.2**	**31.7**	**34.4**	**31.1**	**8.7**	**6.4**	**4.3**	**6.7**	**3.2**	**2.0**	**1.3**	**2.2**
WEI Participants												
Argentina	m	m	m	m	4.7	4.0	2.1	4.5	m	m	m	m
Brazil	33.9	32.9	35.3	34.0	4.9	5.8	4.1	4.8	1.3	1.3	0.6	1.2
Jordan	30.4	31.5	32.9	31.1	7.3	6.5	4.9	6.7	2.3	2.0	2.2	2.2
Malaysia	35.9	34.1	35.1	35.8	3.5	5.6	3.1	3.7	0.6	0.3	0.2	0.5
Paraguay	35.7	36.6	35.9	35.8	2.3	2.0	3.1	2.3	2.0	1.4	1.1	1.9
Thailand	37.1	36.6	36.4	37.0	2.7	3.2	3.3	2.7	0.2	0.1	0.4	0.3
Uruguay	32.4	34.7	35.7	32.8	5.0	3.4	3.1	4.8	2.6	1.9	1.2	2.4

Poland: Year of reference 1995.
Turkey: Year of reference 1997.
Source: OECD Database. See Annex 3 for notes.

Table A5.2. **Expected years in employment, out of the labour force and in unemployment for women 25 to 64 years of age (1996)**

	Expected years in employment				Expected years out of the labour market				Expected years in unemployment			
	Below upper secondary education	Upper secondary education	Tertiary education	All levels of education	Below upper secondary education	Upper secondary education	Tertiary education	All levels of education	Below upper secondary education	Upper secondary education	Tertiary education	All levels of education
Australia	19.5	23.0	28.6	22.4	18.9	15.3	10.4	16.1	1.6	1.6	1.0	1.5
Austria	19.6	23.6	29.5	22.6	19.2	15.5	9.8	16.4	1.2	0.9	0.6	1.0
Belgium	14.0	20.7	27.1	19.3	22.5	16.9	11.9	18.3	3.5	2.5	1.1	2.4
Canada	16.5	24.5	28.1	24.3	20.7	13.2	9.9	13.5	2.8	2.3	2.0	2.2
Czech Republic	22.1	28.4	33.6	27.4	15.6	10.6	6.0	11.5	2.3	1.0	0.4	1.1
Denmark	22.5	29.2	33.5	27.5	13.9	8.0	5.2	9.8	3.7	2.8	1.3	2.7
Finland	20.9	25.8	31.1	25.2	12.6	9.3	6.7	10.0	6.5	4.9	2.3	4.8
France	18.9	24.8	29.1	23.2	16.8	12.0	9.0	13.6	4.3	3.1	2.0	3.3
Germany	17.4	24.0	29.6	23.4	20.1	13.2	8.3	14.1	2.5	2.7	2.1	2.5
Greece	15.0	14.4	24.4	17.3	22.8	23.2	13.1	20.4	2.2	2.4	2.4	2.4
Hungary	14.8	21.8	28.3	19.9	23.2	16.6	11.1	18.5	2.1	1.5	0.6	1.5
Ireland	11.3	18.9	26.8	17.1	25.9	19.4	12.0	20.9	2.7	1.7	1.2	2.0
Italy	12.2	19.8	27.5	15.3	25.8	18.3	10.1	22.6	2.1	1.8	2.4	2.0
Korea	23.3	17.8	19.2	22.0	16.5	22.0	20.7	17.8	0.2	0.1	0.2	0.2
Luxembourg	14.2	22.5	29.7	16.7	24.9	17.1	10.0	22.5	0.9	0.5	0.3	0.8
Netherlands	15.6	22.4	27.9	20.6	22.9	16.1	11.0	18.0	1.5	1.5	1.1	1.4
New Zealand	21.4	27.7	30.3	25.4	17.2	11.3	8.9	13.5	1.3	1.0	0.8	1.1
Norway	22.9	30.3	34.4	29.5	15.6	8.6	4.9	9.5	1.4	1.1	0.7	1.0
Poland	18.2	22.2	29.3	22.6	17.8	14.5	9.3	14.4	3.9	3.3	1.3	3.0
Portugal	22.9	26.7	32.2	24.3	15.2	11.8	6.9	14.0	1.9	1.5	0.9	1.7
Spain	11.4	18.5	26.4	14.3	23.9	16.6	9.4	21.1	4.7	5.0	4.2	4.6
Sweden	25.3	30.5	34.2	30.2	10.9	6.7	4.3	7.2	3.8	2.8	1.5	2.6
Switzerland	23.8	27.2	31.1	26.7	14.2	11.9	8.2	12.1	2.0	1.0	0.7	1.2
Turkey	10.1	9.0	23.0	10.9	29.6	30.1	16.0	28.8	0.3	1.0	1.0	0.4
United Kingdom	20.0	27.8	31.4	26.4	18.2	10.7	7.6	12.1	1.8	1.5	0.9	1.5
United States	16.4	26.9	30.7	26.6	21.7	11.9	8.6	12.2	1.9	1.2	0.7	1.1
Country mean	**18.1**	**23.4**	**29.1**	**22.3**	**19.5**	**14.6**	**9.6**	**15.7**	**2.4**	**2.0**	**1.3**	**1.9**
WEI Participants												
Argentina	m	m	m	m	23.3	17.9	8.8	20.9	m	m	m	m
Brazil	17.2	21.6	28.0	19.0	21.8	17.2	11.2	20.0	1.0	1.2	0.8	1.0
Jordan	1.9	5.9	15.0	4.3	37.9	33.6	23.5	35.2	0.1	0.5	1.5	0.5
Malaysia	14.4	18.1	26.5	16.2	25.4	21.8	13.3	23.6	0.2	0.1	0.2	0.2
Paraguay	21.7	24.9	32.8	23.6	17.4	13.5	6.2	15.3	0.9	1.6	0.9	1.1
Thailand	28.1	23.8	31.9	28.4	11.5	16.0	7.9	11.2	0.4	0.2	0.2	0.4
Uruguay	18.1	24.4	29.7	20.8	19.3	13.2	8.8	16.8	2.7	2.4	1.5	2.4

Poland: Year of reference 1995.
Turkey: Year of reference 1997.
Source: OECD Database. See Annex 3 for notes.

FINANCIAL AND HUMAN RESOURCES INVESTED IN EDUCATION

Education is an investment in human skills. It can thus help foster economic growth and enhance productivity, contribute to personal and social development, and reduce social inequality. Like any investment, it has both costs and returns. This chapter provides a comparative examination of cost patterns in OECD countries and WEI participants; educational outcomes and economic returns to education are examined in Chapter F. This chapter focuses on three aspects of educational spending patterns:

- the resources that countries invest in education, relative to national wealth, the number of students and the size of the public purse;
- the ways in which education systems are financed and the sources from which the funds originate;
- the deployment of resources across different resource categories.

How much is spent on education?

Indicator B1 examines the proportion of national resources devoted to educational institutions, the sources of these funds and the levels of education to which they are directed. **Indicator B2** provides another way of comparing the national resources invested in education, by examining the share of total national public expenditure on education.

Indicators B1 and B2 provide a broad picture of the resources devoted to education, although they have to be interpreted in light of a number of inter-related supply and demand factors, including the demographic structure of the population (Indicator A4), enrolment rates in the different levels of education (Indicator C1), per capita income and national price levels for educational resources. The relative size of the youth population, for example, shapes the potential demand for initial education and training in a country. The bigger the proportion of young people (other things being equal), the more resources have to be devoted to education. Similarly, participation rates affect education expenditure: the higher enrolment rates, the more financial resources will be required (again, other things being equal).

The data in Indicator B2 are affected also by various patterns of public spending. The proportion of total public expenditure devoted to education is affected by the relative size of public budgets, and by the degree to which the private sector is involved in the financing of education. For example, countries that require students to pay tuition fees and/or to fund most or all of their living expenses are likely to devote a smaller percentage of public funds to tertiary education (once more, other things being equal) than countries which provide "free" tertiary education and/or generous public subsidies to tertiary students. Similarly, countries where private enterprises contribute substantially to the education of students (such as those which have adopted the dual system) can be expected to devote a comparatively low share of public expenditure to education.

While Indicator B1 shows the proportion of national wealth that is invested in education, **Indicator B4** shows how these funds translate into the amount of funds ultimately spent per student. Policy-makers must balance the pressure to improve the quality of educational services against the desirability of expanding access to educational opportunities. They must also decide how to apportion expenditure per student across different levels of education – including continuing education and training – and across different types of educational programmes. For example, some countries emphasise broad access to higher education while others invest in near-universal education for children as young as two or three. As there are no absolute standards for the resources per student necessary to ensure optimal returns for either the participant or society as a whole, international comparisons of national investment in education provide an important insight into how countries vary in their extent of investment.

Who pays for education?

Cost-sharing, between the participants in education and society as a whole, is an issue that is vigorously debated in some countries. This question is especially relevant at the beginning and ending stages of education – early childhood and tertiary education – where in some countries the practice of full or near-full public funding is less common.

With increased participation drawing from new groups of clients and a wider range of choices on what, when, how and where to learn, governments are forging new partnerships to mobilise the necessary resources, to encourage efficiency and to introduce flexibility to permit everyone to pursue the pathways and learning opportunities which best meet their requirements. New policies are designed to allow the different actors and stakeholders to participate more fully and to share the costs and benefits of education more equitably. New financing strategies aim also at influencing student behaviour in ways that make education more cost-effective. As a result, public funding is now increasingly seen as providing only a part, although a very substantial part, of the investment in education, and private sources of funds are playing an increasingly important role. To shed light on these issues, **Indicator B3** examines the relative proportions of funds for educational institutions that come from public and private sources, as well as trends in how these shares have evolved.

Which level of government has responsibility for, and control over, the funding of education is also likely to have influence over decisions regarding how those funds are spent. An important factor in educational policy is thus the division of responsibility for educational funding between national, regional and local authorities. Important decisions on educational funding are made both at the level of government where the funds originate and at the level of government where they are finally spent or distributed. At the initial source of educational funding, decisions are made concerning the volume of resources allocated, and any restrictions on how that money can be spent. At the final governmental source of educational funding, additional restrictions may be attached to the funds, or this level of government may even pay directly for educational resources (for example, by paying teachers' salaries). **Indicator B6** shows both the initial and final sources of public funding.

How are funds allocated?

How funds are allocated across functional categories can influence the quality of instruction, the condition of educational facilities (such as expenditure on school maintenance) and the ability of the education system to adjust to changing demographic and enrolment trends. Comparisons of how countries distribute educational expenditure across the resource categories can provide some insight into the degree of variation in the organisational structure and the operation of educational institutions. Decisions on the allocation of resources made at the system level, both budgetary and structural, eventually feed through to the classroom and affect the nature of instruction and the conditions under which it is provided. The nature of the expenditure, in particular the proportion of current expenditure dedicated to the compensation of staff (including both salary and non-salary compensation), is examined in **Indicator B5**.

Finally, **Indicator B7** compares student/teaching staff ratios across countries – another important indicator of the resources countries devote to education.

EDUCATIONAL EXPENDITURE RELATIVE TO GROSS DOMESTIC PRODUCT

B1

Policy context

Expenditure on education is an investment that can help foster economic growth, enhance productivity, contribute to personal and social development and reduce social inequality. The share of total financial resources devoted to education is one of the key choices made in each country, a choice made aggregately by governments, heads of enterprises, and individual students and their families. So long as the social and private returns on that investment are sufficiently large, there is an incentive for enrolment to expand and total investment to increase.

This indicator provides a measure of the relative share of a nation's wealth that is invested in education, the sources where the funds originate and the levels of education to which they are directed.

In appraising how much they spend on education, governments need to take a view both on how much education should be provided and on how effectively existing resources are being utilised. Although this indicator cannot answer these questions directly, it provides a point of reference on how the volume of educational spending, relative to the size of national wealth, has evolved over time in different countries.

It also includes a comparative review of changes in educational investment over time.

Evidence and explanations

Overall investment in relation to GDP

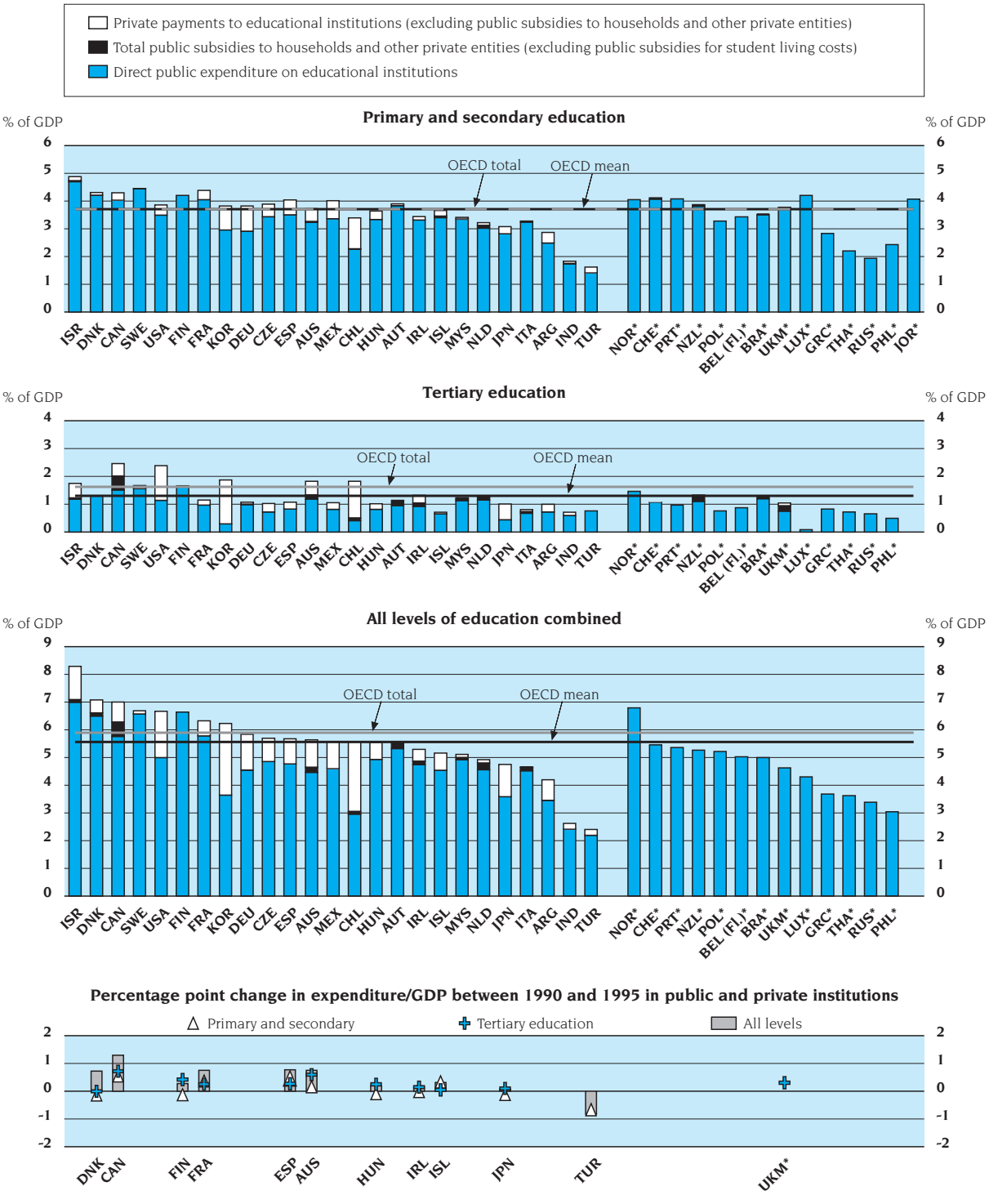
All OECD countries invest a substantial proportion of national resources in education. Taking into account both public and private sources of funds, OECD countries as a whole spend 5.9 per cent of their collective GDP in support of their educational institutions. Under current conditions of tight constraints on public budgets, such a large spending item is subject to close scrutiny by governments looking for ways to trim or limit the growth of expenditure. In only five of 22 reporting OECD countries, and in two out of the five WEI participants reporting both public and private investments, is less than 5 per cent of GDP spent on educational institutions (Chart B1.1).

As a whole, OECD countries spend 5.9 per cent of GDP in support of their educational institutions.

If one considers direct public expenditure, funds from international sources as well as all public subsidies to students and households, the share of education in GDP in OECD countries then rises to around 8 per cent and more of GDP in Denmark and Sweden and to between 6.5 and 8 per cent in Canada, Finland, France and the United States; it remains below 5 per cent in Greece, Italy, Japan and Turkey.

Many factors influence the relative position of countries on this measure. For example, high-expenditure countries may be enrolling larger numbers of students while low-expenditure countries may either be very efficient in delivering education or may be limiting access to higher levels of education; the distribution of enrolments between sectors and fields of study may differ, as may the duration of studies; and the scale and organisation of linked research activities may vary.

Chart B1.1. **Expenditure on educational institutions as a percentage of GDP, by source of funds (1995)**



* Public expenditure only. Countries who report public expenditure only are sorted separately in descending order of public expenditure.

Countries are ranked in descending order of total expenditure from both public and private sources on educational institutions for all levels of education combined.

Source: OECD.

Changes in overall educational spending between 1990 and 1995

In nine out of 12 OECD countries, public and private investment in education increased between 1990 and 1995...

How did investments in education evolve over time? Did spending levels follow the development of national wealth? In nine out of the 12 OECD countries for which comparable trend data are available, public and private investment in education has increased since 1990 in real terms (Table B1.2). The increase in Australia and Spain amounted to 20 per cent and in Ireland to more than 30 per cent. On the other hand, spending in Finland, Hungary and Turkey was lower in 1995 than in 1990. The trend is similar when only public investment is considered: direct public expenditure for institutions and public subsidies to households increased in 15 out of 19 countries since 1990. Substantial decreases in public expenditure on education over the period 1990-1995 could be observed only in Hungary, Italy and Turkey (about 20-25 per cent).

... and in almost all countries expenditure on education increased faster than national wealth.

In almost all OECD countries for which comparable trend data are available, expenditure on education grew faster than national wealth (Table B1.1*a*). In France, Mexico, Norway, Spain and Switzerland, public expenditure on educational institutions as a percentage of GDP increased by between about 0.5 and 1.4 percentage points over the period 1990 to 1995. Mexico showed the largest increase, from 3.2 per cent of GDP in 1990 to 4.6 per cent in 1995, now reaching the level of spending in the Netherlands and the United Kingdom. By contrast, public expenditure as a percentage of GDP declined sharply in Italy and Turkey.

In Finland, the decrease of educational spending in real terms has followed a decline in GDP between 1990 and 1995. Considering public expenditure on education relative to GDP, Finland invests now a larger share of national wealth in education than it did in 1990. The result is different for Italy and Turkey where an increase in GDP was accompanied by a decline in educational spending.

Countries vary in the levels of education that show the largest expenditure growth.

Countries vary in the levels of education that show the largest growth in expenditure (Chart B1.2). Finland, France, Norway and Spain substantially increased the share of their GDP spent on public funding of tertiary education between 1990 and 1995; increases in Mexico, by contrast, were primarily driven by rising public expenditure on primary and secondary education. Italy and Turkey showed sizable decreases in the proportion of GDP that the government spent on education at all levels.

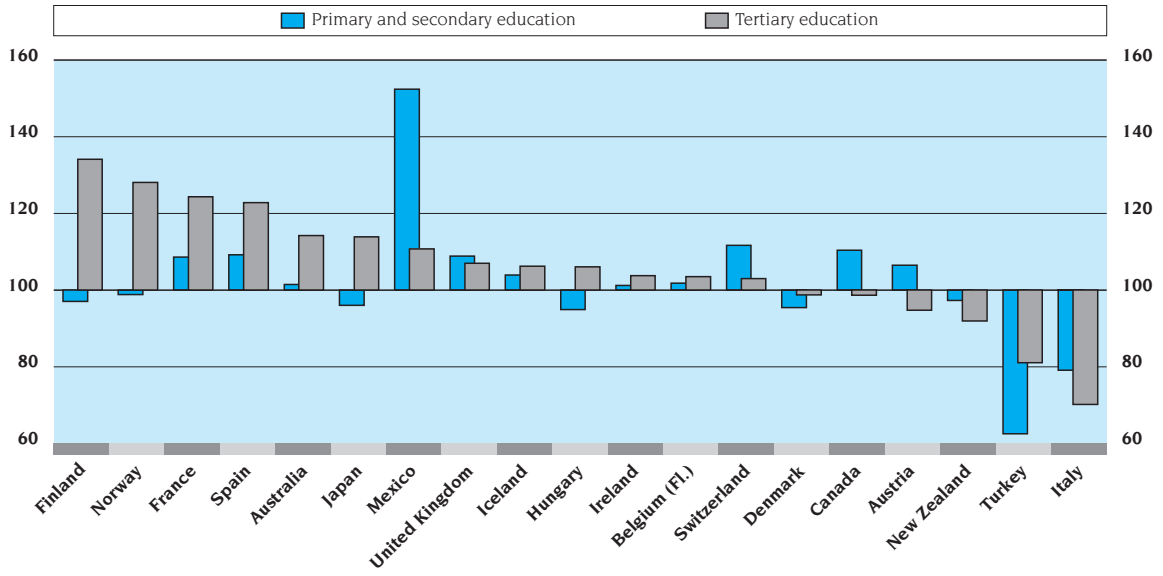
Part, but not all, of the changes in expenditure can be explained by changes in student demography and enrolment patterns (Indicators A4 and C1).

Expenditure on education by source of funds

Most of this amount is accounted for by direct public expenditure on educational institutions.

Education remains primarily a public enterprise, with government spending continuing to be the main source of educational funding in both OECD countries and WEI participants. In OECD countries, 4.7 per cent of the collective GDP is accounted for by direct public expenditure on educational institutions. This percentage varies by more than a factor of two across OECD countries, ranging from 3.7 per cent or less in Greece, Japan, Korea and Turkey to over 6.5 per cent in the Nordic countries (Denmark, Finland, Norway and Sweden) (Table B1.1*a*). The amount of public national resources invested in education in Brazil, Israel and Malaysia is at, or above, the average across OECD countries (4.9 per cent), whereas India lags considerably behind.

Chart B1.2. **Index of change between 1990 and 1995 in the share of GDP spent on direct public expenditure for educational institutions (1990 = 100)**



Countries are sorted in descending order of the change in the share of GDP *spent through direct public expenditure for tertiary education.*

Source: OECD.

Public subsidies to households comprise another 0.13 per cent of the collective GDP *of* OECD *countries.*

Public subsidies to households (scholarships and loans to students for tuition and fees, for example) and subsidies to other private entities for education (through, for example, subsidies to firms or labour organisations that operate apprenticeship programmes) comprise another 0.13 per cent of the collective GDP of OECD countries and account for more than 0.2 per cent of GDP in Austria, Canada, the Netherlands, New Zealand and the United Kingdom. Public subsidies support about 40 per cent or more of all private expenditure for educational institutions in Canada, Italy and the Netherlands.

Indirect public financing of educational institutions, through public subsidies to households, is negligible in most WEI participants, although this form of financing is near the OECD average in Brazil, Chile and Israel.

Some countries invest considerable resources in subsidies for student living expenses.

Government subsidies for students' living costs lower the opportunity costs of education. In addition to the direct impact that these subsidies have on educational expenditure, they can also have an indirect impact by stimulating additional enrolment. Government financial aid to students for living expenses is substantial in many countries, ranging from below 0.05 per cent of GDP in the Flemish Community of Belgium, Korea, Greece and Italy to over 1 per cent of GDP in Denmark and Sweden (Table B1.1*a*).

Although the primary concern of governments generally relates to expenditure originating in the public sector, a broader understanding of how the private sector can be mobilised to fund educational activities is also important for policy-makers. More and more, public funding is seen as providing only a part, although

Options for the funding of tertiary institutions

Although the funding for the lower levels of education is provided largely by governments, more variation can be observed at the higher levels of education, where participants are often considered the primary beneficiaries. Countries have found different ways of securing funding for tertiary education:

One option has been for government authorities to define an "appropriate" figure for tuition fees, financed in different ways (see also Indicator B3). In Australia, for example, the Higher Education Contribution Scheme requires students in publicly funded places to contribute towards the cost of their course. Since 1997, contribution rates have been differentiated into three bands. The average contribution from students is 37 per cent of the total cost of tuition. In New Zealand, the formula for core funding in 1994 provides about 80 per cent of the "fully budgeted" of support per student, leaving to each institution the decision to establish a schedule of tuition fees. Students can finance the tuition fees through loans, to be repaid in instalments in periods when incomes exceed a threshold.

A second option has been to shift all or part of the responsibility for financing student maintenance costs from the public education budget to either the student and his or her family or to other government departments, such as unemployment or training funds. In Germany and Sweden, student financial support is provided partly in the form of a grant and partly in the form of a subsidised loan. The debate continues in both countries on the appropriate balance between the two components, although the principle of some element of student repayment obligation is not in question. In France, proposals to rationalise further indirect support for students have figured in the public debate on financing and reform. In Denmark recent changes in the criteria for eligibility for social insurance have already brought otherwise inactive beneficiaries into tertiary education; for these new learners, social-insurance budgets will bear at least some share of the maintenance costs.

A third option has been to strengthen the external earnings capacity of educational institutions, both in teaching and training services and in a range of other activities. Such activities increase the scope for subsidising traditional education programmes. For example, contract teaching, international programmes and research – funded from other sources – can help to underwrite administrative overheads, as well as to support teaching and learning.

A fourth option, related to the third, has been to promote the development of new forms of teaching and learning in partnership with business and industry, as in the Enterprise in Higher Education initiative in the United Kingdom. These initiatives not only build on the expertise and contexts for learning residing in the partner organisations, but draw on financial, human and material resources provided by the partners (both private and public, in the latter case from other budget functions and regional and local authorities). This is one means of drawing financial resources from business and industry into tertiary institutions.

A fifth option has been to draw systematically on full or part-time student earnings, in part building on changes in study programmes which cater for alternate periods of work and study. Earnings generated through concurrent or consecutive work both permit learners to shoulder a larger share of the investment in tertiary education and give them an introduction to the world of work, but they also may delay their studies and transition to full-time employment.

Source: *Redefining Tertiary Education*, OECD (1998).

a very important part, of total educational investment. Particularly for tertiary education, financial mechanisms are being used to leverage the participation of the learners and third-party payers in the funding of tertiary education.

Funds generated by the private sector amount, for OECD countries taken as a whole, to 1.2 per cent of GDP but there are wide differences between countries.

If the 19 OECD countries providing data on private expenditure are taken as a whole, the private sector is the source of 20 per cent of aggregate expenditure on educational institutions, amounting to 1.2 per cent of aggregate GDP. Countries nonetheless differ considerably in the degree to which expenditure on educational institutions is shared by the direct beneficiaries of education and society as a whole. For example, private payments to educational institutions (net of public subsidies) exceed 1.1 per cent of GDP in Germany, Japan, Korea and the United States. With 2.5 per cent of GDP, private spending on educational institutions in Chile is close to the public share (3.0 per cent of GDP).

In Korea and the United States private spending largely originates in households whereas in Germany business enterprises provide the major share.

Although in Korea and the United States most of this expenditure comes from households, in Germany funds from business enterprises provide and support the work-based component of the dual apprenticeship system. In Australia, Canada, the Czech Republic, France, Hungary, Iceland, Mexico and Spain, the private share of expenditure still lies between 0.5 and 1 per cent of GDP, which corresponds to a relative share of private funds for educational institutions of 9-18 per cent (see also Indicator B3). The proportion of expenditure on educational institutions that is funded by the private sector is 3 per cent or less in Austria, Italy, the Netherlands and Sweden.

In some countries, private payments other than to educational institutions (such as expenditure by households on student living expenses, books and other supplies) are substantial, exceeding 0.5 per cent of GDP in Finland, the Netherlands, Spain and Sweden. But coverage of these forms of private expenditure is not uniform across countries, and often reflects the degree to which public subsidies are given to support students' living costs.

The "visible" private costs account for only part of the full costs incurred by students and their families.

Although the relative share of private expenditure on educational institutions may appear comparatively low in many countries, it must be taken into account that the total costs which families incur for the education of their children often far exceed the private payments to educational institutions captured in this indicator. The coverage of private sources of funds in this indicator, moreover, especially when they are spent on in private institutions or on student living costs, is not complete in many countries.

Expenditure on educational institutions by level of education

The percentage of GDP devoted to primary and secondary education follows by and large the overall spending pattern…

The percentage of GDP devoted to the primary and secondary levels across OECD countries follows, by and large, the overall spending pattern described above. Total public expenditure on primary and secondary education institutions in OECD countries ranges from 3 per cent or below in Germany, Greece, Japan, Korea, the Netherlands and Turkey to 4 per cent or above in Canada, Denmark, Finland, France, Luxembourg, Norway, Portugal, Sweden and Switzerland (Table B1.1*b*). Deviations from this overall pattern can be explained largely by demographic factors, differences in primary and secondary enrolment rates and differences in how the educational process is organised (*e.g.* in terms of pupil-teacher ratios and teachers' salaries).

In Argentina, Chile, India, Israel and Malaysia public and private investment in primary education as a percentage of GDP is close to, or even exceeds, the OECD average. These spending levels reflect a relatively large youth population (Indicator A4). By contrast, at the secondary level, all WEI participants for which data are available trail behind OECD countries in the proportion of GDP spent on educational institutions, which in most cases is explained by considerably lower enrolment rates (Indicator C1).

By far the major part of spending on primary and secondary education comes from public sources – about 90 per cent of expenditure on educational institutions across the 19 OECD countries able to provide data by source. In several countries, however, the private sector funds a large part of the expenditure on educational institutions – above 15 per cent in Germany, Korea and Mexico. Among WEI participants, a sizable proportion of educational expenditure is funded by

private sources in Chile. There are virtually no private-sector transfers to educational institutions in Austria, Denmark, Italy and Sweden (2 per cent or less of total expenditure) – although many countries are unable to report private-sector transfers in primary and secondary education.

... whereas for tertiary education there are marked differences between countries.

There are considerable differences between OECD countries in investment patterns in tertiary education. Although the OECD as a whole devotes 1.6 per cent of its GDP to funding tertiary education, Canada and the United States spend considerably larger fractions on it (2.5 and 2.4 per cent of GDP respectively). At the other end of the scale are Greece, Iceland and Italy, which devote less than 1 per cent of their GDP to the funding of tertiary institutions. To some extent the differences depend on the amount of research expenditure included. In theory, expenditure should include all spending on research performed within tertiary-level institutions, regardless of whether the research is financed from general institutional funds or through separate grants or contacts from public and private sponsors. As a result, even if countries can accurately report expenditure on research according to these instructions, which is not always the case, the volume of expenditure can vary according to the extent to which research is carried out within tertiary institutions.

The degree to which tertiary institutions rely on non-governmental funding varies widely.

In many countries, selective user-fees (for tuition, for example) are charged for tertiary education; in some countries higher fees are charged (or corresponding subsidies reduced) for educational programmes that are deemed to have higher private returns. But the degree to which tertiary institutions rely on non-governmental funding varies widely (Table B1.1*c*). For example, the proportion of spending on tertiary institutions that originates in the private sector ranges from 0.08 per cent of GDP or less in Austria, Denmark, Germany, Iceland, Italy and the Netherlands to more than 1.2 per cent in Korea and the United States. In Japan, Korea and the United States, in fact, more than half of the expenditure on tertiary institutions is funded through non-governmental funds (see also Indicator B3). Among WEI participants, non-governmental funding is particularly important in Argentina, Chile and Israel. In Chile 73 per cent of funding comes from the private sector. In most OECD countries public expenditure, both direct and indirect, nonetheless continues to be the principal source of funding for all types of tertiary education.

Additional expenditure on research and development

Expenditure on research and development activities outside higher education institutions is considerable in many countries.

Investing in research and development (R&D) activities is another way of trying to improve aggregate productivity. Although some R&D work is carried out in higher education institutions, another important component is the research undertaken in non-instructional research centres and in private industry. Across the 24 OECD countries for which R&D data are available, expenditure as a percentage of GDP (excluding the higher education sector) ranges from 0.2 per cent or below in Mexico and Turkey to 1.9 per cent or above in Finland, France, Germany, Korea, Japan, Sweden and the United States. Expenditure on research and development (Chart B1.3) appears to follow a similar pattern as expenditure on tertiary institutions, although there are some notable exceptions.

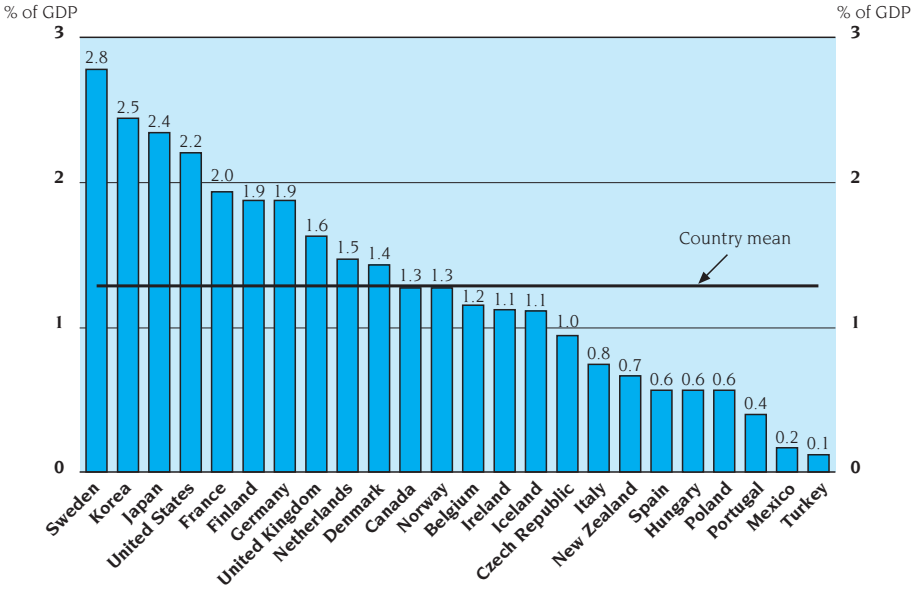
France, Germany and Japan invest smaller GDP shares in tertiary education than does

For example, although France, Germany and Japan both spend less than half as much of their GDP on tertiary educational institutions (1.1, 1.1 and 1.0 per cent, respectively) as does the United States (2.4 per cent), they spend about the

the United States although their investment in R&D is comparable with that of the United States.

same proportion of their GDP or more on R&D activities outside the higher education sector (2.0, 1.9 and 2.4 per cent respectively, compared with the United States' 2.2 per cent). These differences are likely to reflect the value placed on R&D relative to investment in tertiary institutions, as well as the degree to which R&D activities take place in independent research centres and private industry, rather than in higher education institutions.

Chart B1.3. **Expenditure on research and development (excluding expenditure on higher education) as a percentage of GDP (1995)**



Source: OECD.

Important factors influencing national expenditure on education

The national resources devoted to education depend on a number of inter-related factors of supply and demand.

The national resources devoted to education depend on a number of inter-related factors of supply and demand, such as the demographic structure of the population, enrolment rates, per capita income, national price levels for educational resources and the organisation and delivery of instruction.

Comparisons of educational expenditure depend also on who is eligible to attend school and who actually participates.

The size of the youth population in a particular country (Indicator A4) shapes the potential demand for initial education and training. The bigger the number of young people, the greater the potential demand for educational services. Among countries of comparable wealth, a country with a relatively large youth population would have to spend a larger percentage of its GDP on education for each young person to have the opportunity to receive the same quantity of education as young people in other countries. Conversely, if the relative size of the youth population is smaller, the same country would require to spend less of its wealth on education to achieve similar results. Across OECD countries, the proportion of the total population 5 to 29 years of age varies from 31 per cent in Germany and Switzerland to over 50 per cent in Turkey and Mexico, with an OECD average of 35 per cent.

The larger the number of young people, the higher the potential demand for educational services.

In Denmark, Finland, Germany and Sweden, where there are relatively small youth populations, educational expenditure as a percentage of GDP would be expected to rise by between 0.9 and 1.1 percentage points if the relative size of the youth population in these countries were at the OECD average (Chart B1.4*a*). In contrast, in Korea and Mexico, expenditure on education would be expected to fall (by 1.0 and 1.8 percentage points respectively) if the proportion of the youth population in these two countries were at the OECD average.

The higher the enrolment rate, the more financial resources will be required.

Although countries have obviously little control over the size of their youth populations, the proportion participating at various levels of education is indeed a central policy issue. Variations in enrolment rates between countries reflect differences in the demand for education, from pre-primary schooling through tertiary education, as well as the supply of programmes at all levels. Indicator C1 shows that the years in education a five year-old child can expect ranges among OECD countries from 12 to more than 19 years. The variation in expected years in tertiary education is even wider, from less than one year in Mexico to four years in Canada (Indicator C3).

Differences in the length of schooling also influence educational spending.

Differences in the length of schooling are reflected in differences in enrolment rates which, in turn, influence educational expenditure. Chart B1.4*b* shows the change in expenditure on educational institutions as a percentage of GDP that would be expected if enrolment profiles were equal across OECD countries, other factors remaining the same. Generally, countries that have higher-than-average enrolment rates, such as Canada, Denmark, Finland, Norway, Sweden and the United States, also spend more of their GDP on education whereas low-spending countries, such as Greece, have below-average enrolment rates. Exceptions to this pattern are the Czech Republic, Hungary, Mexico and Switzerland, which have average spending and below-average enrolment rates and Australia, which is average in spending but has an above-average enrolment rate.

If enrolment patterns were equal across OECD countries, expenditure as a percentage of GDP would be expected to rise by 2.4 per cent of GDP in Mexico, and to fall by 0.5 per cent or more in Australia, Canada, Finland and the United States, assuming expenditure per student in each of these countries remained the same.

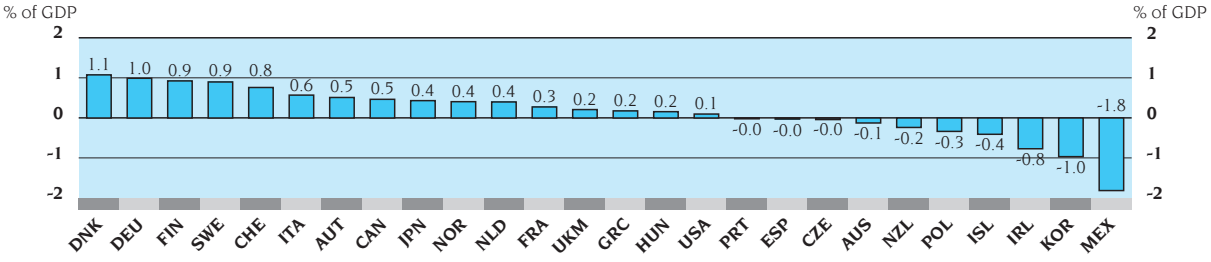
In some countries, demographic effects on educational spending are outweighed by the effects of enrolment patterns.

The various factors that affect spending on education should not be examined in isolation. In several instances where demography has the biggest potential impact on educational costs, its impact is moderated by opposite trends in participation patterns. In Canada, Finland, France, the Netherlands and Norway, for example, the potential savings from having a relatively small youth population is, in part, counterbalanced by comparatively high participation rates. Similarly, in Mexico the potential cost of educating a proportionately large youth population is counterbalanced by a below-average enrolment rate. In contrast, a comparatively small youth population and a comparatively low enrolment rate enables the Swiss to spend relatively more per student.

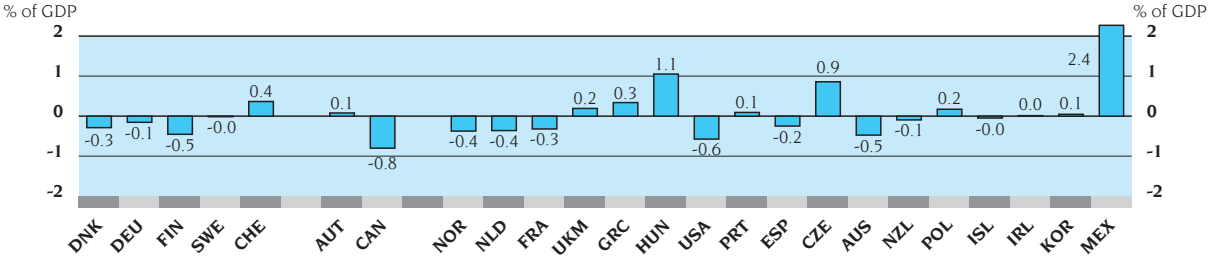
Such effects are most clearly visible in tertiary education, where both enrolment rates (Indicator C1) and costs per student (Indicator B4) differ widely between countries. If tertiary enrolment patterns in Canada and the United States were at the level of the OECD average, expenditure on tertiary education as a percentage of GDP in these countries would be expected to fall by 1.0 and 0.7 percentage points (Chart B1.4*d*). At the other end of the scale is Mexico, whose expenditure on tertiary education as a percentage of GDP would be expected to increase by 1.5 percentage points, if enrolment patterns were at the OECD average.

Chart B1.4. **Impact of demography and enrolment on expenditure on educational institutions as a percentage of GDP (1995)**

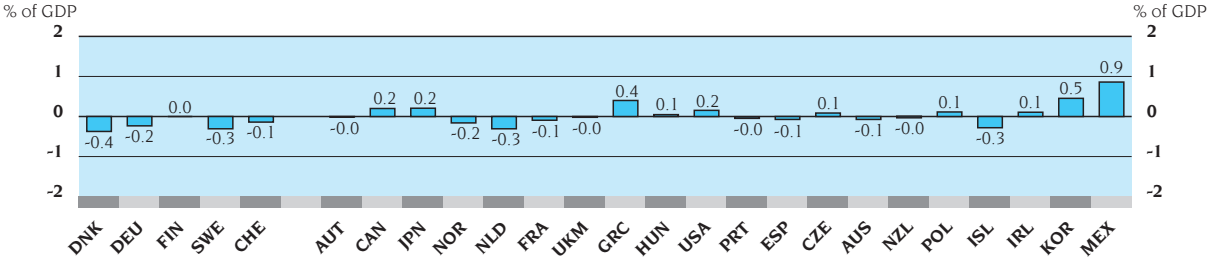
A. Estimated increase/decrease in expenditure on educational institutions as a percentage of GDP if the proportion of the population 5 to 29 years of age in each country was at the OECD average level



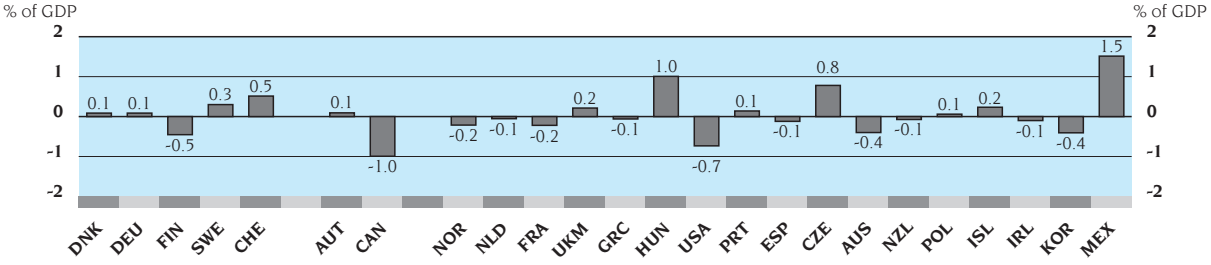
B. Estimated increase/decrease in expenditure on educational institutions as a percentage of GDP if enrolment patterns in each country (all levels combined) were at the OECD average level



C. Estimated increase/decrease in expenditure on educational institutions as a percentage of GDP if enrolment patterns at *levels up to upper secondary* education in each country were at the OECD average



D. Estimated increase/decrease in expenditure on educational institutions as a percentage of GDP if enrolment patterns at the *tertiary level* in each country were at the OECD average level



Countries are ranked in descending order of the values in Chart B1.4A.

Source: OECD.

DEFINITIONS

Data refer to the financial year 1995 and are based on the UOE data collection on education statistics and the World Education Indicators Pilot Project, administered in 1997 (for details see Annex 3).

In this indicator, expenditure on education is expressed as a percentage of GDP and is presented by source of funds and by level of education. The distinction by source of funds is based on the initial source of funds and does not reflect subsequent public-to-private or private-to-public transfers. Ideally, this indicator would cover both direct private costs (such as tuition and other education-related fees and the costs of textbooks, uniforms and transport) as well as indirect private costs (lost output when employees participate in on-the-job training). But many of these private costs are difficult to measure and to compare internationally. The main focus of this indicator therefore is on public and private expenditure on educational institutions.

Direct public expenditure on educational institutions (column 1 of Tables B1.1*a*, *b* and *c*) can take the form either of purchases by the government agency itself of educational resources to be used by educational institutions or of payments by the government agency to educational institutions that have responsibility for purchasing educational resources.

Public subsidies to households and other private entities for educational institutions (column 2 of Tables B1.1*a*, *b* and *c*) are composed of government transfers and certain other payments to students/households, insofar as these translate into payments to educational institutions for educational services (for example, fellowships, financial aid or student loans for tuition). They also include government transfers and some other payments (mainly subsidies) to other private entities, including, for example, subsidies to firms or labour organisations that operate apprenticeship programmes and interest subsidies to private financial institutions that provide student loans, etc.

Payments from households and other private entities to educational institutions (column 3 of Tables B1.1*a*, *b* and *c*) include tuition fees and other fees, net of offsetting public subsidies.

Public subsidies to households that are not attributable to payments to educational institutions (column 7 of Tables B1.1*a*, *b* and *c*) include subsidies for student living costs and the value of special subsidies provided to students, either in cash or in kind, such as free or reduced-price travel on public transport or family allowances that are contingent on student status. (Those subsidies are also included in column 5 of Tables B1.1*a*, *b* and *c*.)

Private payments other than to educational institutions (column 6 of Tables B1.1*a*, *b* and *c*) include direct purchases of personal items used in education or subsidised expenditure on student living expenses.

Table B1.2 shows the change in public and private expenditure on educational institutions over the period 1990 to 1995, expressed as a percentage of spending in 1990.

The data do not include benefits provided to students or households in the form of tax reductions, tax subsidies or other special tax provisions. It should be noted also that the coverage of expenditure from private sources is still uneven across countries.

Data for the school year 1990 (1989/90) are based on a special survey carried out amongst OECD countries in 1997.

Table B1.1 and B1.2 show expenditure for educational services in the financial year 1990. The data on expenditure for 1990 were obtained by a special survey in 1997. Countries were asked to collect the data according to the definitions and the coverage of the UOE data collection on education statistics administered in the same year.

Data for 1990 are expressed in 1995 price levels.

All expenditure, as well as the GDP for 1990, are adjusted to 1995 prices using the private consumer price index.

The methodology that was used for the calculation of the impact of student demography and enrolment patterns on this indicator is described in Annex 3.

The country mean is calculated as the simple average over all OECD countries for which data are available. The OECD total reflects the value of the indicator when the OECD region is considered as a whole (the Reader's Guide gives details).

Table B1.1*a*. **Educational expenditure as a percentage of GDP for all levels of education combined, by source of funds (1995)**

	1995							1990	
	Direct public expenditure for educational institutions	Total public subsidies to households and other private entities excluding public subsidies for student living costs	Private payments to educational institutions excluding public subsidies to households and other private entities	Total expenditure from both public and private sources for educational institutions	Total expenditure from public, private and international sources for educational institutions **plus** public subsidies to households	Private payments other than to educational institutions	Financial aid to students **not** attributable to household payments to educational institutions for educational services	Direct public expenditure for educational institutions	Total expenditure from both public and private sources for educational institutions
Australia	4.5	0.18	1.00	5.6	6.1	0.48	0.48	4.3	4.9
Austria	5.3	0.21	n	5.5	5.6	a	0.12	5.2	m
Belgium (Fl. Community)	5.0	m	m	m	m	m	0.04	4.8	m
Canada	5.8	0.51	0.73	7.0	7.3	m	0.33	5.4	5.7
Czech Republic	4.8	n	0.84	5.7	6.0	m	0.34	m	m
Denmark	6.5	0.11	0.47	7.1	8.5	m	1.39	6.2	6.4
Finland	6.6	m	x	6.6	7.3	0.63	0.63	6.4	6.4
France	5.8	x	0.54	6.3	6.6	0.26	x	5.1	5.6
Germany	4.5	0.01	1.29	5.8	6.0	m	0.21	m	m
Greece	3.7	n	m	3.7	3.7	m	n	m	m
Hungary	4.9	n	0.61	5.5	5.7	m	0.16	5.0	5.3
Iceland	4.5	x	0.62	5.2	5.5	0.22	0.34	4.3	4.8
Ireland	4.7	0.12	0.42	5.3	5.7	m	0.37	4.7	5.2
Italy	4.5	0.12	0.01	4.7	4.7	m	0.03	5.8	m
Japan	3.6	m	1.16	4.7	4.7	m	m	3.6	4.7
Korea	3.6	m	2.58	6.2	6.2	m	n	m	m
Luxembourg	4.3	0.04	m	m	m	m	0.11	m	m
Mexico	4.6	x	0.97	5.6	5.6	0.32	x	3.2	m
Netherlands	4.6	0.24	0.12	4.9	5.4	0.60	0.47	m	m
New Zealand	5.3	0.28	m	m	m	m	0.59	5.5	m
Norway	6.8	n	m	m	m	m	x	6.2	m
Poland	5.2	m	m	m	m	m	m	m	m
Portugal	5.4	a	m	5.4	5.5	m	0.10	m	m
Spain	4.8	n	0.91	5.7	5.8	0.56	0.12	4.2	4.9
Sweden	6.6	n	0.11	6.7	7.9	1.20	1.20	m	m
Switzerland	5.5	0.06	m	m	m	m	0.11	5.0	m
Turkey	2.2	x	0.21	2.4	2.5	m	0.07	3.2	3.2
United Kingdom	4.6	0.22	m	m	m	0.31	0.31	4.3	m
United States	5.0	x	1.67	6.7	6.7	0.15	m	m	m
Country mean	**4.9**	**0.12**	**0.75**	**5.6**	**5.9**	**0.43**	**0.33**		
OECD total	**4.7**	**0.13**	**1.20**	**5.9**	**6.0**	**0.24**	**0.24**		
WEI Participants									
Argentina[1]	3.4	n	0.75	4.1	4.2	n	n	m	m
Brazil	5.0	0.11	m	m	m	m	m	m	m
Chile[1]	3.0	0.10	2.51	5.6	5.6	m	0.01	m	m
India[1]	2.4	x	0.21	2.6	3.8	m	m	m	m
Israel[2]	7.0	0.10	1.20	8.3	8.3	0.50	m	m	m
Malaysia[1]	4.9	0.07	0.11	5.1	5.1	m	m	m	m
Paraguay[1]	3.1	m	m	m	m	m	m	m	m
Philippines	3.0	m	m	m	m	m	m	m	m
Russian Federation	3.4	n	m	m	m	n	n	m	m
Thailand[1]	3.6	m	m	m	m	m	m	m	m
Uruguay[1]	2.7	n	m	m	m	m	n	m	m

1. 1996 data.
2. 1994 data.

Source: OECD Education Database. See Annex 3 for notes.

Table B1.1*b*. **Educational expenditure as a percentage of GDP for primary and secondary education, by source of funds (1995)**

	1995							1990	
	Direct public expenditure for educational institutions	Total public subsidies to households and other private entities excluding public subsidies for student living costs	Private payments to educational institutions excluding public subsidies to households and other private entities	Total expenditure from both public and private sources for educational institutions	Total expenditure from public, private and international sources for educational institutions **plus** public subsidies to households	Private payments other than to educational institutions	Financial aid to students **not** attributable to household payments to educational institutions for educational services	Direct public expenditure for educational institutions	Total expenditure from both public and private sources for educational institutions
Australia	3.2	0.03	0.47	3.7	4.0	0.29	0.29	3.2	3.6
Austria	3.8	0.01	0.06	3.9	3.9	a	0.02	3.6	m
Belgium (Fl. Community)	3.4	n	m	m	m	m	0.01	3.4	m
Canada	4.0	x	0.27	4.3	4.3	m	0.04	3.7	3.8
Czech Republic	3.4	n	0.46	3.9	4.2	m	0.26	m	m
Denmark	4.2	x	0.09	4.3	4.9	0.60	0.60	4.4	4.5
Finland	4.2	m	x	4.2	4.4	0.23	0.23	4.3	4.3
France	4.1	x	0.33	4.4	4.6	0.15	x	3.7	4.0
Germany	2.9	x	0.91	3.8	3.9	m	0.11	m	m
Greece	2.8	n	m	2.8	2.8	m	m	m	m
Hungary	3.3	n	0.30	3.6	3.7	m	0.02	3.5	3.7
Iceland	3.4	0.05	0.20	3.6	3.7	m	n	3.3	3.3
Ireland	3.3	n	0.13	3.4	3.6	m	0.18	3.3	3.5
Italy	3.2	0.04	n	3.2	3.2	m	n.	4.1	4.1
Japan	2.8	m	0.26	3.1	3.1	a	a	2.9	3.2
Korea	3.0	n	0.87	3.8	3.8	m	m	m	m
Luxembourg	4.2	x	m	m	m	m	m	m	m
Mexico	3.4	n	0.65	4.0	4.0	0.27	x	2.2	m
Netherlands	3.0	0.10	0.10	3.2	3.4	0.26	0.19	m	m
New Zealand	3.8	0.05	m	m	m	m	0.17	3.9	m
Norway	4.1	n	m	m	m	m	m	4.1	m
Poland	3.3	m	m	m	m	m	m	m	m
Portugal	4.1	a	m	4.1	4.2	m	0.07	m	m
Spain	3.5	n	0.54	4.0	4.1	0.32	0.05	3.2	3.7
Sweden	4.4	n	0.01	4.5	5.1	0.61	0.61	m	m
Switzerland	4.1	0.05	m	m	m	m	0.06	3.7	m
Turkey	1.4	m	0.20	1.6	1.7	m	m	2.3	2.3
United Kingdom	3.8	0.03	m	m	m	0.03	0.03	3.5	m
United States	3.5	x	0.38	3.9	3.9	0.02	x	m	m
Country mean	**3.5**	**0.02**	**0.33**	**3.7**	**3.8**	**0.23**	**0.15**		
OECD total	**3.4**	**0.03**	**0.39**	**3.7**	**3.8**	**0.08**	**0.07**		
WEI Participants									
Argentina[1]	2.5	n	0.38	2.9	2.9	n	n	m	m
Brazil	3.5	n	m	m	m	m	m	m	m
Chile[1]	2.3	0.01	1.12	3.4	3.4	m	0.01	m	m
India[1]	1.7	0.02	0.08	1.8	2.5	m	m	m	m
Israel[2]	4.7	0.04	0.14	4.9	4.9	0.31	m	m	m
Jordan[1]	4.1	n	m	m	m	m	n	m	m
Malaysia[1]	3.3	0.02	0.05	3.4	3.4	m	m	m	m
Paraguay[1]	2.3	n	m	m	m	n	n	m	m
Philippines	2.4	m	m	m	m	m	m	m	m
Russian Federation	1.9	n	m	m	m	n	n	m	m
Thailand[1]	2.2	m	m	m	m	m	m	m	m
Uruguay[1]	1.9	n	0.09	2.0	2.1	m	n	m	m

1. 1996 data.
2. 1994 data.

Source: OECD Education Database. See Annex 3 for notes.

Table B1.1c. **Educational expenditure as a percentage of GDP for tertiary education, by source of funds (1995)**

	1995							1990	
	Direct public expenditure for educational institutions	Total public subsidies to households and other private entities excluding public subsidies for student living costs	Private payments to educational institutions excluding public subsidies to households and other private entities	Total expenditure from both public and private sources for educational institutions	Total expenditure from public, private and international sources for educational institutions **plus** public subsidies to households	Private payments other than to educational institutions	Financial aid to students **not** attributable to household payments to educational institutions for educational services	Direct public expenditure for educational institutions	Total expenditure from both public and private sources for educational institutions
Australia	1.2	0.15	0.49	1.8	2.0	0.20	0.20	1.0	1.2
Austria	0.9	0.20	n	1.0	1.0	a	a	1.0	m
Belgium (Fl. Community)	0.9	m	m	m	m	0.03	0.03	0.8	m
Canada	1.5	0.51	0.45	2.5	2.8	0.46	0.30	1.5	1.8
Czech Republic	0.7	n	0.31	1.0	1.1	m	0.08	m	m
Denmark	1.3	x	0.01	1.3	1.9	0.63	0.63	1.3	1.3
Finland	1.7	m	x	1.7	2.1	0.40	0.40	1.2	1.2
France	1.0	x	0.18	1.1	1.2	0.09	x	0.8	0.9
Germany	1.0	0.01	0.07	1.1	1.2	m	0.10	m	m
Greece	0.8	n	m	0.8	0.8	m	0.01	m	m
Hungary	0.8	n	0.20	1.0	1.2	m	0.13	0.8	0.8
Iceland	0.7	m	0.05	0.7	1.0	m	m	0.6	0.7
Ireland	0.9	0.12	0.28	1.3	1.5	m	0.17	0.9	1.2
Italy	0.7	0.06	0.07	0.8	0.8	0.06	x	1.0	m
Japan	0.4	m	0.58	1.0	1.0	m	m	0.4	0.9
Korea	0.3	m	1.58	1.9	1.9	m	n	m	m
Luxembourg	0.1	x	m	m	m	m	m	m	m
Mexico	0.8	n	0.24	1.1	1.1	0.03	x	0.7	m
Netherlands	1.1	0.13	0.02	1.3	1.6	0.34	0.28	m	m
New Zealand	1.1	0.23	m	m	m	m	0.39	1.2	m
Norway	1.5	n	m	m	m	m	m	1.1	m
Poland	0.8	m	m	m	m	m	m	m	m
Portugal	1.0	a	m	1.0	1.0	m	0.04	m	m
Spain	0.8	n	0.25	1.1	1.1	0.09	0.06	0.7	0.8
Sweden	1.6	n	0.11	1.7	2.3	0.59	0.59	m	m
Switzerland	1.1	0.01	m	m	m	m	0.04	1.0	m
Turkey	0.8	m	m	m	m	m	m	0.9	m
United Kingdom	0.7	0.19	0.11	1.0	1.3	0.28	0.28	0.7	0.7
United States	1.1	x	1.24	2.4	2.4	0.11	m	m	m
Country mean	**0.9**	**0.10**	**0.33**	**1.3**	**1.5**	**0.24**	**0.20**		
OECD total	**0.9**	**0.11**	**0.67**	**1.6**	**1.7**	**0.15**	**0.17**		
WEI Participants									
Argentina[1]	0.7	n	0.28	1.0	1.0	n	n	m	m
Brazil	1.2	0.11	m	m	m	m	m	m	m
Chile[1]	0.4	0.10	1.33	1.8	1.8	m	n	m	m
India[1]	0.6	x	0.13	0.7	0.7	m	m	m	m
Israel[2]	1.2	0.05	0.53	1.8	1.8	m	n	m	m
Malaysia[1]	1.1	0.06	0.05	1.2	1.2	m	m	m	m
Paraguay[1]	0.8	m	m	m	m	m	m	m	m
Philippines	0.5	m	m	m	m	m	m	m	m
Russian Federation	0.7	n	m	m	m	n	n	m	m
Thailand[1]	0.7	m	m	m	m	m	m	m	m
Uruguay[1]	0.7	n	m	m	m	m	n	m	m

1. 1996 data.
2. 1994 data.

Source: OECD Education Database. See Annex 3 for notes.

Table B1.1*d*. **Educational expenditure from public and private sources for educational institutions as a percentage of GDP by level of education (1995)**

	Primary and secondary education			Tertiary education			All levels of education combined (including pre-primary and undistributed)
	All	Primary	Secondary	All	Non-university	University-level	
Australia	3.7	1.6	2.1	1.8	0.3	1.5	5.6
Austria	3.9	1.2	2.7	1.0	0.1	0.9	5.5
Belgium (Flemish Community)	m	m	m	m	m	m	m
Canada	4.3	x	x	2.5	0.9	1.5	7.0
Czech Republic	3.9	0.9	2.9	1.0	0.1	1.0	5.7
Denmark	4.3	1.7	2.6	1.3	x	x	7.1
Finland	4.2	1.8	2.4	1.7	0.3	1.3	6.6
France	4.4	1.2	3.2	1.1	x	x	6.3
Germany	3.8	x	x	1.1	n	1.0	5.8
Greece	2.8	1.3	1.5	0.8	0.2	0.7	3.7
Hungary	3.6	1.1	2.5	1.0	a	1.0	5.5
Iceland	3.6	x	x	0.7	n.	0.6	5.2
Ireland	3.4	1.3	2.1	1.3	x	x	5.3
Italy	3.2	1.1	2.1	0.8	n	0.8	4.7
Japan	3.1	1.3	1.7	1.0	0.1	0.9	4.7
Korea	3.8	1.7	2.2	1.9	0.4	1.5	6.2
Luxembourg	m	m	m	m	m	m	m
Mexico	4.0	2.1	1.9	1.1	x	1.1	5.6
Netherlands	3.2	1.2	2.0	1.3	a	1.3	4.9
New Zealand	m	m	m	m	m	m	m
Norway	m	m	m	m	m	m	m
Poland	m	m	m	m	m	m	m
Portugal	4.1	1.8	2.3	1.0	x	1.0	5.4
Spain	4.0	1.3	2.7	1.1	n	1.1	5.7
Sweden	4.5	2.0	2.5	1.7	x	x	6.7
Switzerland	m	m	m	m	m	m	m
Turkey	1.6	1.0	0.6	m	m	m	2.4
United Kingdom	m	m	m	1.0	x	x	m
United States	3.9	1.8	2.0	2.4	0.4	2.0	6.7
Country mean	**3.7**	**1.5**	**2.2**	**1.3**	**0.2**	**1.1**	**5.6**
OECD total	**3.7**	**1.6**	**2.1**	**1.6**	**0.3**	**1.5**	**5.9**
WEI Participants							
Argentina[1]	2.9	1.5	1.4	1.0	0.3	0.7	4.1
Chile[1]	3.4	1.8	1.6	1.8	0.3	1.6	5.6
India[1]	1.8	1.3	0.6	0.7	m	m	2.6
Indonesia[1]	m	m	1.4	m	m	m	m
Israel[2]	4.9	2.6	2.3	1.8	m	m	8.3
Malaysia[1]	3.4	1.6	1.8	1.2	0.4	0.8	5.1
Uruguay[1]	2.0	1.1	1.0	m	0.1	0.8	m

1. 1996 data.
2. 1994 data.

Source: OECD Education Database. See Annex 3 for notes.

Table B1.2. **Index of the change between 1990 and 1995 in public and private expenditure on education, by level of education (1990 = 100)**

	All levels of education				Primary and secondary education				Tertiary education			
	Direct **public** expenditure for educational institutions	Direct **public** expenditure for educational institutions **plus** public subsidies to the private sector	Direct **private** expenditure for educational institutions	Total direct expenditure from both public and private sources for educational institutions	Direct **public** expenditure for educational institutions	Direct **public** expenditure for educational institutions **plus** public subsidies to the private sector	Direct **private** expenditure for educational institutions	Total direct expenditure from both public and private sources for educational institutions	Direct **public** expenditure for educational institutions	Direct **public** expenditure for educational institutions **plus** public subsidies to the private sector	Direct **private** expenditure for educational institutions	Total direct expenditure from both public and private sources for educational institutions
Australia	114	117	165	120	112	112	132	114	126	132	210	139
Austria	113	117	m	m	118	118	m	m	105	128	m	m
Belgium (Fl. Com.)	115	112	m	m	111	110	m	m	112	101	m	m
Canada	111	115	146	113	114	114	125	115	102	118	157	109
Denmark	117	117	215	117	106	107	269	106	109	109	a	109
Finland	96	100	x	96	89	91	x	89	123	134	x	123
France	118	120	109	117	114	116	103	113	130	133	123	129
Hungary	79	80	139	84	76	76	114	80	85	88	245	90
Iceland	108	x	x	109	106	x	x	106	109	x	x	109
Ireland	131	135	138	132	131	133	x	129	133	140	166	142
Italy	80	82	m	m	81	82	x	81	72	76	m	m
Japan	105	105	109	106	102	102	99	102	123	123	116	119
Mexico	163	164	m	m	173	173	m	m	125	128	m	m
Netherlands	106	102	110	107	108	104	100	107	99	95	124	101
New Zealand	109	117	m	m	110	114	m	m	104	122	m	m
Norway	125	126	m	m	112	116	m	m	146	138	m	m
Poland	m	m	m	m	m	m	m	m	m	m	m	m
Spain	119	119	126	120	115	115	124	116	130	128	135	131
Switzerland	107	107	m	m	109	109	m	m	100	101	m	m
Turkey	76	76	1 133	83	70	69	1 088	79	91	93	m	m
United Kingdom	113	119	m	m	113	112	m	m	111	144	791	132

Source: OECD Education Database. See Annex 3 for notes.

GOVERNMENT SUPPORT FOR EDUCATION AS A SHARE OF TOTAL PUBLIC EXPENDITURE

POLICY CONTEXT

This indicator shows direct public expenditure on educational services, public subsidies to the private sector and public educational expenditure as a percentage of total public expenditure.

If the social returns (including both private and public benefits) from a particular service are higher than the private benefits alone, markets alone may fail to provide those services adequately. Education is one area where all governments intervene to fund or direct the provision of services, not least to ensure that education is not beyond the reach of some members of society. Education, however, must compete for public financial support against a wide range of other areas covered in government budgets.

The indicator also shows the relative size of different types of direct and indirect transfers to educational institutions and households as well as trends in the share of education expenditure in public budgets.

The share of a government's budget that is devoted to education is a function of the perceived value of education relative to that of other public investments, including health care, social security for the unemployed and elderly, defence and security and other programmes. Government funding of education can be primarily through direct transfers to educational institutions or through public subsidies to households and other private entities. The volume of public spending on education is also influenced by the volume of private funding directed at education (Indicators B1 and B3) as well as by the overall amount of public funds available and the scope of public sector budgets.

EVIDENCE AND EXPLANATIONS

Total public resources invested in education

On average, OECD countries devote 12.6 per cent of total government outlays to support for education.

On average, OECD countries devote 12.6 per cent of total government outlays to support for education, with the values for individual countries ranging between 8 and 23 per cent (Chart B2.1). This expenditure includes direct expenditure on educational institutions and public subsidies to households (for – example, scholarships and loans to students for tuition and fees and student living costs) as well as other private entities for education (for instance, subsidies to firms or labour organisations that operate apprenticeship programmes). The educational share of the public-sector budget is below 10 per cent in Germany, Greece, Hungary, Italy, Japan and the Netherlands. In contrast, in Korea, Mexico and Norway it ranges from 16 to 23 per cent.

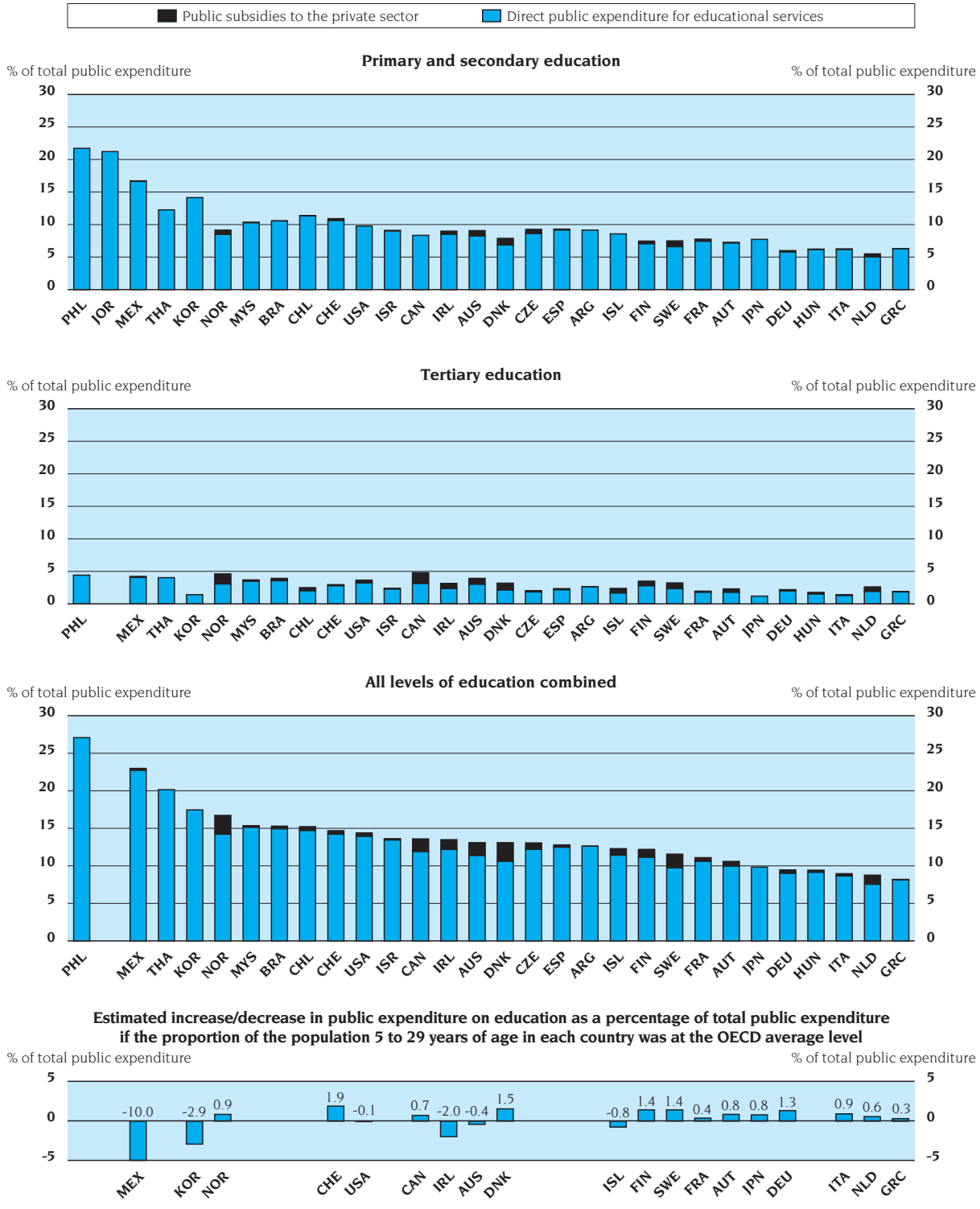
Among WEI participants, the share is generally higher.

The share of public spending devoted to education by WEI participants exceeds the OECD average for all countries for which data are available, with values ranging from under 13 per cent in Argentina to over 15 per cent in Brazil, Chile and Malaysia.

Education that is funded from public sources is organised and delivered primarily by public institutions.

In the majority of OECD countries, education that is funded from public sources is also organised and delivered by public institutions, although in some countries the final funding is transferred to government-dependent private institutions (Indicator B6) or given directly to households to spend in the institution of their choice. In the former case, one could consider the final spending and

Chart B2.1. Public expenditure on education as a percentage of total public expenditure (1995)



Countries are ranked in descending order of the proportion of public expenditures on education for all levels of education combined.

Source: OECD.

delivery of education to be subcontracted by governments to non-governmental institutions, whereas, in the latter instance, students and their families are left to decide the type of institution that best meets their requirements.

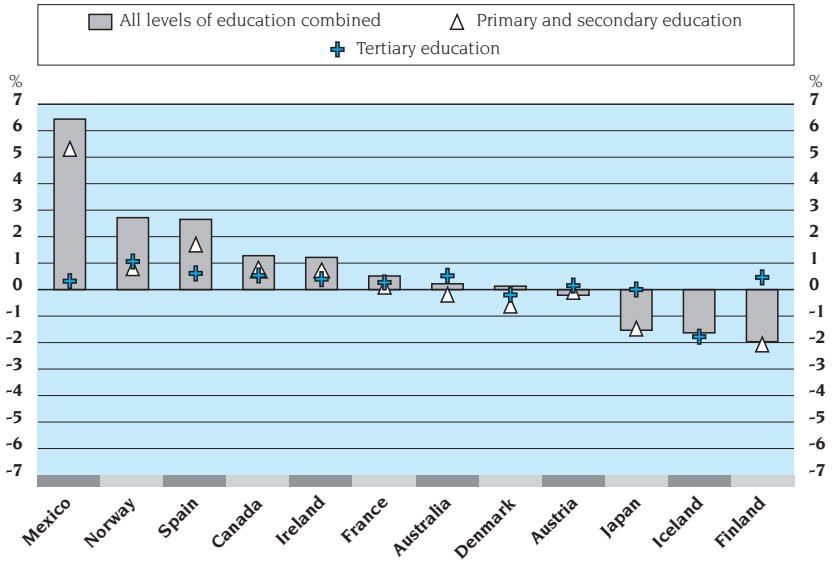
Changes in government support for education as a share of total public expenditure since 1990

In seven out of 12 OECD countries, the share of education in total public spending has increased.

In seven out of 12 OECD countries, the proportion of total public expenditure that is devoted to education has increased between 1990 to 1995 – in Norway and Spain by 2.7 percentage points and in Mexico by 6.4 percentage points. In Canada and Ireland the increase was about 1.2 percentage points (Chart B2.2).

In Finland and Iceland the share of the public budget spent on education declined 2.0 and 1.6 percentage points, respectively, over this time period. In Italy and Japan, direct public expenditure for educational services also declined (2.1 and 1.5 percentage points respectively), although no data are available on the change in the amount of public subsidies to the private sector. In Italy spending on education decreased (Table B1.2 in Indicator B1) despite growing public spending. In Finland total public spending increased, although expenditure on education remained unchanged and in Austria the increase in education spending lagged behind the overall increase in public spending. In contrast, public spending decreased in Spain although spending on education increased by 17 per cent.

Chart B2.2. **Change in public spending on education as a percentage of total public spending between 1990 and 1995, by level of education (in percentage points)**



Countries are ranked in descending order of the change for all levels of education.

Source: OECD.

Since expenditure on primary and secondary education is the largest component of total education expenditure, changes in spending at these levels tend to have the largest impact on the share of public budgets dedicated to education. In Mexico, the share of primary and secondary education in public spending increased by 5.3 percentage points, whereas spending on the tertiary level remained close to the proportion in 1990. The share of education in public budgets also increased more at the primary and secondary level than at the tertiary level in Spain and Switzerland.

In most countries, the change in the share of education in public budgets is driven by the change in the share of primary and secondary education.

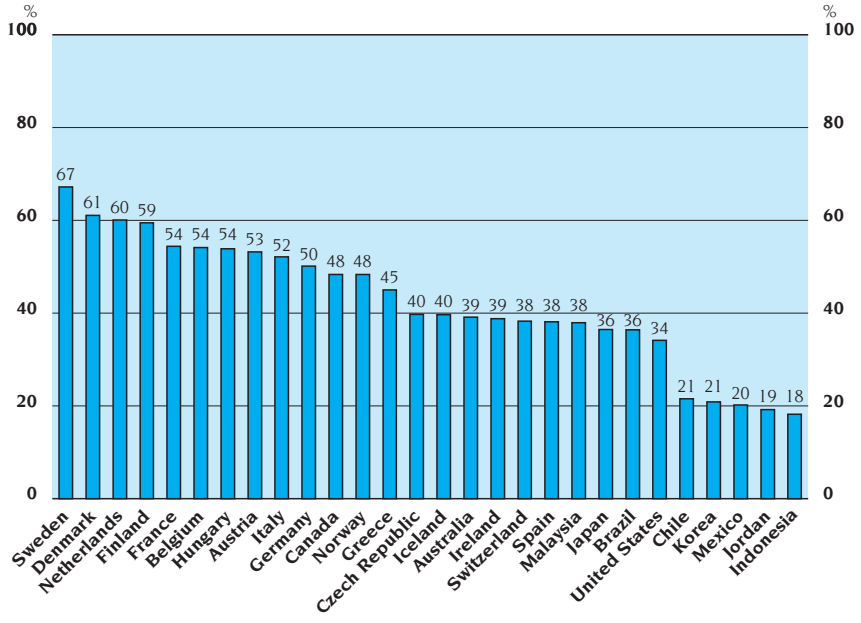
The share of public budgets dedicated to tertiary education increased in 10 out of 12 countries. In Australia, Canada, Finland, Norway and Spain the share of tertiary spending in overall public spending increased by half a percentage point or more between 1990 and 1995.

Supply and demand factors affecting public expenditure

The relative size of public budgets (as measured by public spending divided by GDP) is inversely related to the relative proportion of public expenditure devoted to education (Chart B2.3). For example, in OECD countries where public spending is low relative to overall GDP, such as Korea and Mexico, the proportion of public expenditure dedicated to education is relatively high. Likewise, countries such as Italy or the Netherlands, where education accounts for a relatively low proportion of total public spending, total public spending relative to GDP is high. This is evidence that public funding of education is a social priority in all countries, even those with little public involvement in other areas.

Public funding of education is a social priority, even in countries with little public involvement in other areas.

Chart B2.3. **Total public expenditure as a percentage of GDP (1995)**



Source: OECD.

The relative size of the youth population shapes the potential demand for initial education and training.

The relative size of the youth population shapes the potential demand for initial education and training in a country. The larger this proportion, the more resources have to be devoted to education. Conversely, the fewer people are at the age relevant for initial education, the less a country has to spend on it. Chart B2.1 indicates the changes in the proportions of educational expenditure for a given total government outlay that would be expected if the size of the population aged 5-29 were at the OECD average in each country, holding constant enrolment rates and expenditure per student. In countries such as Denmark, Finland, Germany, Italy, Sweden and Switzerland, where the proportion of the youth population is relatively small, public spending on education would be considerably higher if the proportion of young people in the total population was at the OECD average. In Mexico and Korea, by contrast, public spending on educational institutions would decrease by 2.9 and 10 percentage points if the proportion of young people in these countries were at the OECD average.

The involvement of the private sector in the funding of education influences public-sector spending.

Another factor that contributes to the variation between countries in the proportion of total public spending on education is the degree of involvement of the private sector in the funding of education. Relative shares of public and private investments are examined in Indicator B3. In general, countries that require students to pay tuition fees and/or to fund most or all of their living expenses appear to devote a smaller percentage of total public funds to tertiary education, other things being equal, than countries that provide "free" education and/or generous public subsidies to students. Similarly, countries in which private enterprises contribute substantially to the education of students (as is the case in countries with the dual system of apprenticeship) also devote a comparatively smaller proportion of public expenditure to education.

Variations in the proportion of total public spending on education can also reflect differences in the scope of the education sector between countries.

Finally, variations in the proportion of total public spending on education tend to reflect differences in the scope of the education sector between countries, as well as differences in the breadth and depth of the public-sector involvement in areas outside education. For example, countries that spend relatively large amounts on their social-security and national health-care systems (such as Austria, Denmark, France, Germany and Sweden) may appear to be spending relatively small proportions of their public budget on education, although both students and educational institutions may still benefit directly or indirectly from other forms of public expenditure. Furthermore, some countries provide benefits to students or households in the form of tax reductions, tax subsidies or other special tax provisions which are not accounted for in the educational expenditure shown in this indicator.

Public investment by level of education

Between 5.5 and 16.7 per cent of total public expenditure in OECD countries is allocated to primary and secondary education and between 1.2 and 4.8 per cent to tertiary education.

The involvement of the public sector in the funding of the different levels of education varies widely between OECD countries. In 1995, they spent between 5.5 and 16.7 per cent of total public expenditure on primary and secondary education and between 1.2 and 4.8 per cent on tertiary. Korea, Mexico, Switzerland and the United States as well as Brazil, Chile, Jordan and Malaysia all spend about 10 per cent or more of total government expenditure on primary and secondary education. In contrast, the primary and secondary share in Germany and the Netherlands is 6 per cent or less. Canada, Mexico and Norway devote the largest fraction of public spending to tertiary education (more than 4 per cent).

One way of comparing spending across levels of education is by comparing the enrolment and public spending shares across primary/secondary and tertiary education. In Australia, Canada and the Netherlands, the proportion of public expenditure on education that is devoted to the tertiary level is 30 per cent or more, whereas the respective total enrolment shares at the tertiary level are 26 per cent, 15 per cent and 9 per cent. In Japan and Korea the vast majority of public educational expenditure is invested in primary and secondary education, with the tertiary sector receiving 12 and 8 per cent, respectively, of total public expenditure on education. These differences result from differences in total educational expenditure per student (Indicator B4) as well as from differences in the share of private sector support (Indicator B3) across the levels of education.

Enrolment and public expenditure shares are correlated across levels of education but there are notable exceptions.

A heavy reliance on private funding of tertiary education, 1.6 per cent of GDP (Indicator B1), helps explain Korea's low public spending on tertiary education: despite above average tertiary enrolment rates only 1.4 per cent of Korean public funds are devoted to tertiary education. Other countries that spend relatively small proportions of public funds on tertiary education are Italy and Japan (1.4 and 1.2 per cent, respectively).

A heavy reliance on private funding helps explain Korea's low public spending on tertiary education.

■ DEFINITIONS

In this indicator each of the following three expenditure variables is expressed as a percentage of a country's total public-sector expenditure: *i*) direct public expenditure on educational services; *ii*) public subsidies to the private sector; and *iii*) total educational expenditure from public sources. Direct public expenditure on educational services includes both amounts spent directly by governments to hire educational personnel and to procure other resources, and amounts provided by governments to public or private institutions for use by the institutions themselves to acquire educational resources. Public subsidies include scholarships and other financial aid to students plus certain subsidies to other private entities. The data on total public expenditure for all purposes (the denominator in all percentage calculations) have been taken from the OECD National Accounts Database (see Annex 2).

Data refer to the financial year 1995 and are based on the UOE data collection on education statistics and the World Education Indicators Pilot Project, administered in 1997 (for details see Annex 3).

The methodology that was used for the calculation of the estimates in Chart B2.1 is explained in Annex 3. The country mean is calculated as the simple average across all countries for which data are available. The OECD total reflects the value of the indicator when the OECD region is considered as a whole (the Reader's Guide gives details).

Data for 1990 are expressed in 1995 prices.

Table B2.1. **Public expenditure on education as a percentage of total public expenditure by level of education (1995)**

	Total: direct expenditure plus public subsidies to the private sector			Direct public expenditure for educational services			Public subsidies to the private sector		
	Primary and secondary education	Tertiary education	All levels of education combined	Primary and secondary education	Tertiary education	All levels of education combined	Primary and secondary education	Tertiary education	All levels of education combined
Australia	9.1	3.9	13.1	8.3	3.0	11.4	0.8	0.9	1.7
Austria	7.3	2.3	10.6	7.2	1.8	10.0	0.1	0.5	0.6
Belgium	m	m	m	m	m	m	m	m	m
Canada	8.4	4.8	13.6	8.4	3.1	11.9	x	1.7	1.7
Czech Republic	9.3	2.0	13.1	8.6	1.8	12.2	0.7	0.2	0.9
Denmark	7.9	3.2	13.1	6.9	2.1	10.6	1.0	1.0	2.5
Finland	7.5	3.5	12.2	7.1	2.8	11.2	0.4	0.7	1.1
France	7.8	2.0	11.1	7.5	1.8	10.6	0.3	0.2	0.5
Germany	6.0	2.2	9.5	5.8	2.0	9.1	0.2	0.2	0.4
Greece	6.3	1.9	8.2	6.3	1.8	8.2	n	n	n
Hungary	6.2	1.8	9.4	6.2	1.5	9.2	n	0.2	0.3
Iceland	x	2.4	12.3	8.6	1.7	11.4	x	0.7	0.9
Ireland	9.0	3.1	13.5	8.6	2.4	12.2	0.5	0.8	1.3
Italy	6.3	1.4	9.0	6.2	1.3	8.7	0.1	0.1	0.3
Japan	7.8	1.2	9.8	7.8	1.2	9.8	m	m	m
Korea	14.2	1.4	17.5	14.2	1.4	17.5	n	n	n
Luxembourg	m	m	m	m	m	m	m	m	m
Mexico	16.7	4.2	23.0	16.7	4.1	22.8	0.1	0.2	0.2
Netherlands	5.5	2.6	8.8	5.0	1.9	7.6	0.5	0.7	1.2
New Zealand	m	m	m	m	m	m	m	m	m
Norway	9.2	4.6	16.7	8.5	3.1	14.2	0.7	1.5	2.5
Poland	m	m	m	m	m	m	m	m	m
Portugal	m	m	m	m	m	m	m	m	m
Spain	9.3	2.3	12.8	9.2	2.2	12.5	0.1	0.2	0.3
Sweden	7.5	3.2	11.6	6.6	2.3	9.8	0.9	0.9	1.8
Switzerland	10.9	2.9	14.7	10.7	2.8	14.3	0.3	0.1	0.4
Turkey	m	m	m	m	m	m	m	m	m
United Kingdom	m	m	m	m	m	m	m	m	m
United States	9.8	3.6	14.4	9.8	3.2	14.0	x	0.4	0.4
Country mean	**8.7**	**2.7**	**12.6**	**8.4**	**2.2**	**11.8**	**0.4**	**0.5**	**0.9**
WEI Participants									
Argentina[1]	9.2	2.6	12.6	9.2	2.6	12.6	n	n	n
Brazil	10.6	3.9	15.3	10.6	3.6	15.0	n	0.3	0.3
Chile[1]	11.4	2.5	15.2	11.4	2.0	14.7	n	0.5	0.5
Israel[2]	9.1	2.4	13.7	9.1	2.3	13.5	0.1	0.1	0.2
Jordan[1]	21.3	m	m	21.3	m	m	n	n	n
Malaysia[1]	10.4	3.7	15.4	10.3	3.5	15.2	0.1	0.2	0.2
Paraguay[1]	11.1	m	m	11.1	3.6	14.8	n	m	m
Philippines	m	m	m	21.7	4.4	27.1	m	m	m
Thailand[1]	m	m	m	12.3	4.0	20.2	m	m	m
Uruguay[1]	8.7	3.2	12.4	8.7	3.2	12.4	n	n	n

1. 1996 data.
2. 1994 data.

Source: OECD Education Database. See Annex 3 for notes.

Table B2.2. **Public expenditure on education as a percentage of total public expenditure by level of education (1990)**

	Total: direct expenditure plus public subsidies to the private sector			Direct public expenditure for educational services			Public subsidies to the private sector		
	Primary and secondary education	Tertiary education	All levels of education combined	Primary and secondary education	Tertiary education	All levels of education combined	Primary and secondary education	Tertiary education	All levels of education combined
Australia	9.3	3.4	12.9	8.5	2.8	11.5	0.7	0.6	1.4
Austria	7.4	2.1	10.8	7.3	2.0	10.6	n	0.1	0.3
Belgium	m	m	m	m	m	m	m	m	m
Canada	7.7	4.3	12.3	7.7	3.2	11.3	x	0.4	0.4
Czech Republic	m	m	m	m	m	m	m	m	m
Denmark	8.5	3.4	13.0	7.5	2.3	10.6	1.0	1.1	2.2
Finland	9.5	3.0	14.2	9.3	2.7	13.6	0.3	0.4	0.6
France	7.7	1.7	10.6	7.5	1.6	10.3	0.2	0.1	0.3
Germany	m	m	m	m	m	m	m	m	m
Greece	m	m	m	m	m	m	m	m	m
Hungary	m	m	m	m	m	m	m	m	m
Iceland	8.8	4.1	13.9	8.2	1.6	10.7	0.6	2.6	3.2
Ireland	8.3	2.7	12.3	8.0	2.2	11.4	0.3	0.6	0.9
Italy	m	m	m	7.6	1.8	10.8	m	m	m
Japan	m	m	m	9.2	1.2	11.4	m	m	m
Korea	m	m	m	m	m	m	m	m	m
Luxembourg	m	m	m	m	m	m	m	m	m
Mexico	11.4	3.9	16.6	11.4	3.8	16.5	n	0.1	0.1
Netherlands	m	m	m	m	m	m	m	m	m
New Zealand	m	m	m	m	m	m	m	m	m
Norway	8.4	3.5	14.0	8.0	2.2	12.1	0.4	1.3	2.0
Poland	m	m	m	m	m	m	m	m	m
Portugal	m	m	m	m	m	m	m	m	m
Spain	7.6	1.7	10.1	7.5	1.6	9.9	0.1	0.1	0.3
Sweden	m	m	m	m	m	m	m	m	m
Switzerland	m	m	m	m	m	m	m	m	m
Turkey	m	m	m	m	m	m	m	m	m
United Kingdom	8.4	2.1	10.7	8.2	1.7	10.1	0.2	0.4	0.6
United States	m	m	m	m	m	m	m	m	m
Country mean	**8.6**	**3.0**	**12.6**	**8.3**	**2.2**	**11.5**	**0.3**	**0.7**	**1.0**

Source: OECD Education Database. See Annex 3 for notes.

RELATIVE SHARES OF PUBLIC AND PRIVATE INVESTMENTS

POLICY CONTEXT

This indicator shows the relative shares of public and private investment in education and how they have evolved since 1990.

Cost-sharing, between the participants in education and society as a whole, is a vigorously debated issue in some countries. This question is especially relevant at the beginning and ending stages of education – early childhood and tertiary education – where the practice of full or near-full public funding is less common in some countries.

With increased participation drawing from new client groups and a wider range of choices concerning what, when, how and where to learn, governments are forging new partnerships to mobilise the necessary resources, to encourage efficiency and to introduce flexibility to permit everyone to pursue the pathways and learning opportunities which best meet their requirements. New policies are designed to allow the different actors and stakeholders to participate more fully and to share the costs and benefits more equitably.

As a result, public funding is now increasingly seen as providing only a part, although a very important part, of the investment in education and private sources of funds are playing an increasingly important role. Many countries are concerned that this balance should not become so tilted as to lead potential learners away from, instead of towards, learning.

EVIDENCE AND EXPLANATIONS

Public and private shares of expenditure for educational institutions

Education is still a mainly public enterprise, yet it involves a substantial and growing component of private financing for its visible costs.

Education is still a mainly public enterprise, although there is a substantial and growing degree of private financing for its "visible costs". Table B3.1 shows the relative proportions of funds for educational institutions that come from public and private sources. The first set of columns shows the distribution of the source of expenditures before public-to-private or private-to-public transfers have occurred. These reflect the original source of funds spent on education. The second set of columns shows expenditures after all transfers have occurred, reflecting the final spender of funds on educational institutions. For example, final funds from private sources would capture all education fees (*e.g.* tuition) paid to educational institutions, including the proportion that are supported by public subsidies to households.

Among the 12 OECD countries reporting data, the proportion of funding for educational institutions originating in the private sector ranges from 3 per cent or below in Italy, the Netherlands and Sweden to over 18 per cent in Australia and Germany. In Chile it is as high as 45 per cent. With 14 and 17 per cent, the private share in educational funds is sizable also in Argentina and Israel.

Chart B3.1. **Distribution of expenditure on educational institutions, final funds (1995)**

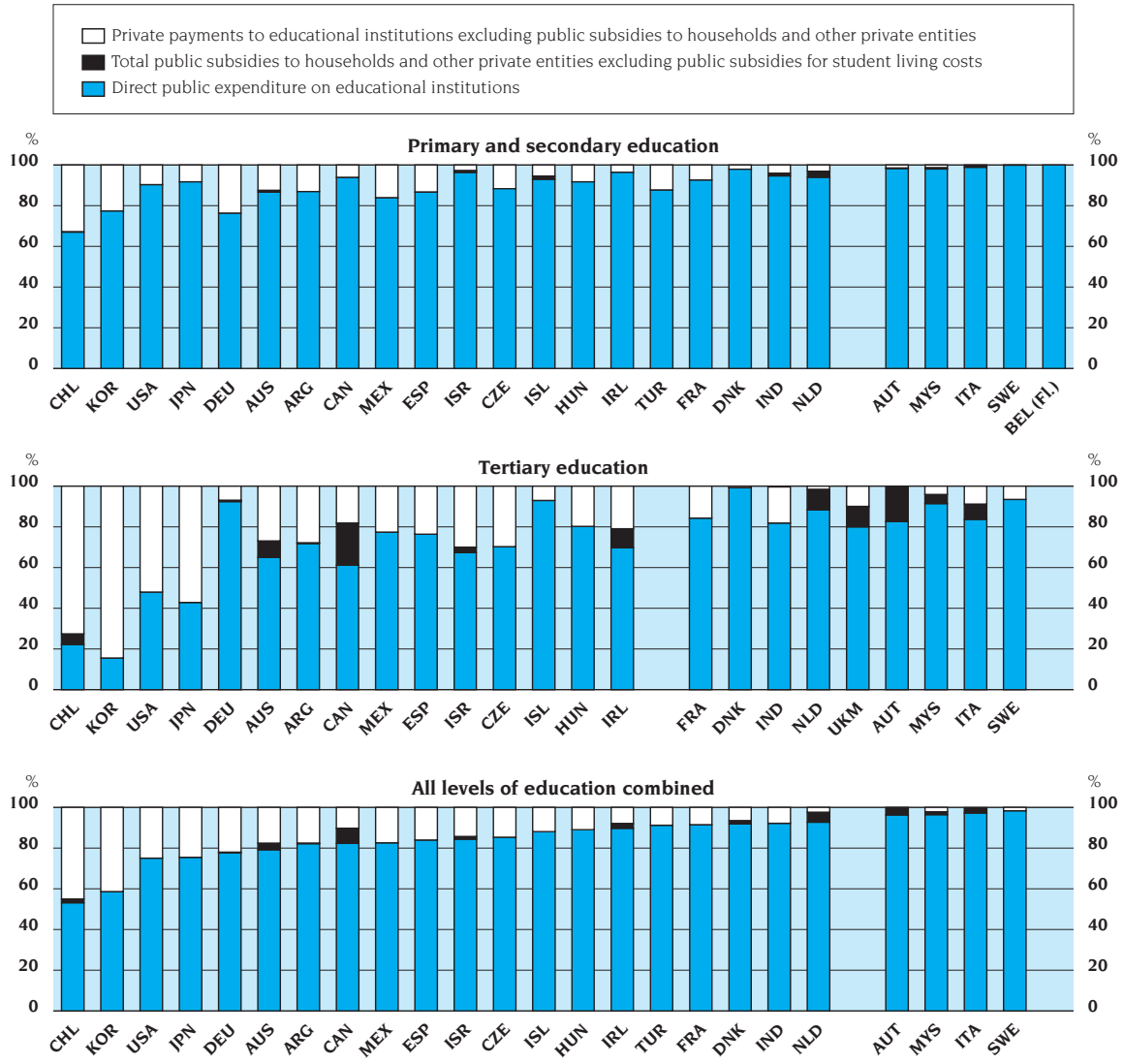
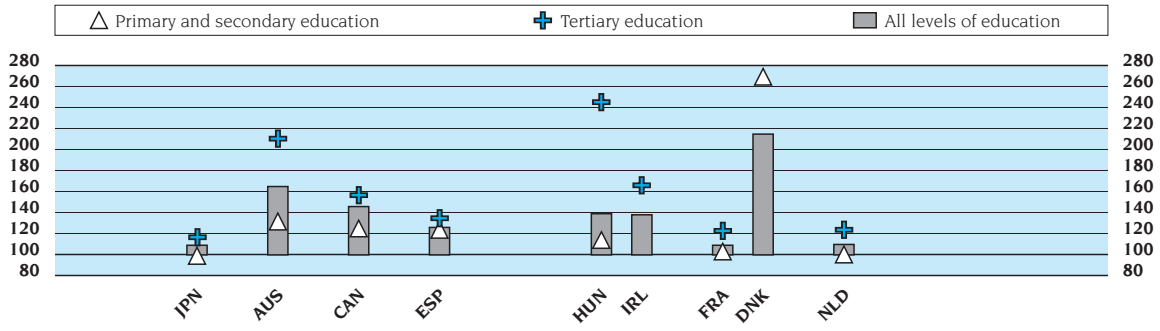


Chart B3.2. **Index of change in the share of private funding for educational institutions between 1990 and 1995, by level of education (1990 = 100)**



Source: OECD.

Private expenditures after transfers increase the share of private sector spending in Australia, Canada, Ireland, Italy and the Netherlands.

Taking into account public-to-private transfers of funds changes the picture for some countries (second set of columns in Table B3.1). In Australia, Canada, Ireland, Italy and the Netherlands public-to-private transfers of funds raise the share of the private sector in educational funding by between 2.4 and 7.3 percentage points. In these countries subsidies to students for tuition fees account for most of public-to-private transfers. Data on both private expenditure on educational institutions and on the share of public subsidies that are spent on educational institutions are unavailable for a number of countries. It can be assumed that, for all countries that report final funds but not initial sources of funds, public-to-private transfers play an important role in the financing of education.

In Korea and the United States private spending largely originates in households whereas in Germany it comes primarily from business enterprises. The share of private investments in education is largest in tertiary education.

In Korea and the United States, private sector expenditure is comprised mainly of household expenditure for tuition and fees in tertiary institutions; in Germany almost all of the private expenditure is accounted for by contributions of the enterprise sector to the dual system of apprenticeship at the upper secondary level. Differences between countries are largest for tertiary education. The share of expenditure on tertiary institutions covered by individuals, businesses and other private sources, net of public financial aid to students, ranges from less than 2 per cent in Denmark and the Netherlands to over 25 per cent in Argentina, Australia, Chile, the Czech Republic and Israel. In Hungary, Ireland and Spain the private share of initial funds still exceeds 20 per cent. In Japan, Korea and the United States final funds originate to over 50 per cent from private sources.

The amounts incurred by students and their families for tuition and other education-related expenditure differ among countries according to taxation and spending policies and to the willingness of governments to support students, influenced by whether they are studying full- or part-time, their age, and whether they are living in the family home. To some extent, however, the patterns that have helped establish these subsidy patterns are breaking down. More mature students, whose numbers are increasing (Indicator C3), are more likely to have established their own households and to prefer part-time and distance learning to full-time, on-campus study.

Some of the highest-spending countries muster these resources with substantial help from private sources.

Considering the public and private shares of educational spending jointly with total education spending as a percentage of GDP (Indicator B1) shows that some of the countries with the highest total spending relative to national income, such as Australia, Korea and the United States, muster these resources with substantial help from private sources. Conversely, in countries with relatively low overall spending, such as Austria and Italy, private individuals tend to contribute relatively little. There are exceptions to this pattern.

Changes in public and private investments in education

The importance of families for the financing of their children's education has increased in many countries.

In Australia, Canada, Denmark, Hungary and Ireland direct private expenditure on educational institutions has increased by between 38 and 115 per cent, whereas the increase in direct public funds to educational institutions in these countries was not more than 31 per cent.

Changes are most striking in tertiary education.

Changes are most striking in tertiary education (Chart B3.2). In many countries, the growth in tertiary participation (Indicator C1) represents a strong response to demand, both individual and social. But, as tertiary structures and programmes were designed for a different time, so too are its financing

In countries where private household spending on tuition fees, education-related services and living costs are increasing, the growth can be ascribed to one or more of four factors.

a) *Enrolments have increased, as in Australia, France and Spain, contributing to increases in the volume of spending on tertiary education by households in those countries. Although enrolments have also grown in Finland, the impact is less owing to nearly full public support for tuition and living costs. Nevertheless, Finnish students may finance their living costs with a bank loan guaranteed by the government which obliges repayment, and younger students commonly receive at least some additional support from their parents.*

b) *Fees, charges or contributions have been increased or newly imposed in a wide range of countries, particularly in Australia and the Netherlands, but also in Portugal, Italy, the United States, the United Kingdom, New Zealand, Japan, and for the Fachhochschulen in Austria. Some governments draw on fees to cover a larger proportion of the costs of large volume participation in tertiary education, so the growth in financial aid to students helped households meet only a share of increased costs in those countries.*

c) *The cost of education-related goods and services other than instruction has risen, or subsidies for them per student have declined. Information on education-related and living expenses is uneven, but country-provided data indicate increases on such expenditure after taking into account inflation over the 1990-1994 period at about 5 per cent in Japan and 7 per cent in the United States. The Netherlands has reduced the subsidy to cover these expenses, as have the United Kingdom, Finland, Germany and New Zealand. The shift has resulted from a relative increase in the volume of student loans that, even taking into account features which reduce the costs to students of loan origination and repayment, require students or their families to assume a larger share of tertiary costs. In Germany and Norway, for example, those eligible for financial aid receive equal parts grant and loan; in Sweden, the loan component accounts for 70 per cent of the support provided to recipients of financial aid.*

d) *A high percentage of enrolment in some countries is in private institutions with higher fees that have to cover nearly the full cost of tuition: this is the case in Portugal, Japan, Korea and the United States among other countries. In Portugal, virtually all spending by students and families on tertiary education institutions in 1995/96 went to private universities and polytechnics. Those institutions now account for about one-third of overall enrolment, up from about 20 per cent in 1990.*

Source: *Education Policy Analysis*, OECD (1998).

mechanisms. Notwithstanding the major financial role for governments, the costs to learners of participation in tertiary education have risen in many countries.

Individual data on countries show that in those countries where private household spending on tuition fees, education-related services and living costs has increased, the growth has been due to one or more of four factors (Box): *i*) an increase in enrolments, *ii*) increasing or newly imposed fees, charges or contributions, *iii*) an increase in the costs of education-related goods and services other than institutions or *iv*) increasing enrolments in private institutions with higher fees.

Rises in tuition fees and private institution enrolments have generally not implied a decline in public funding.

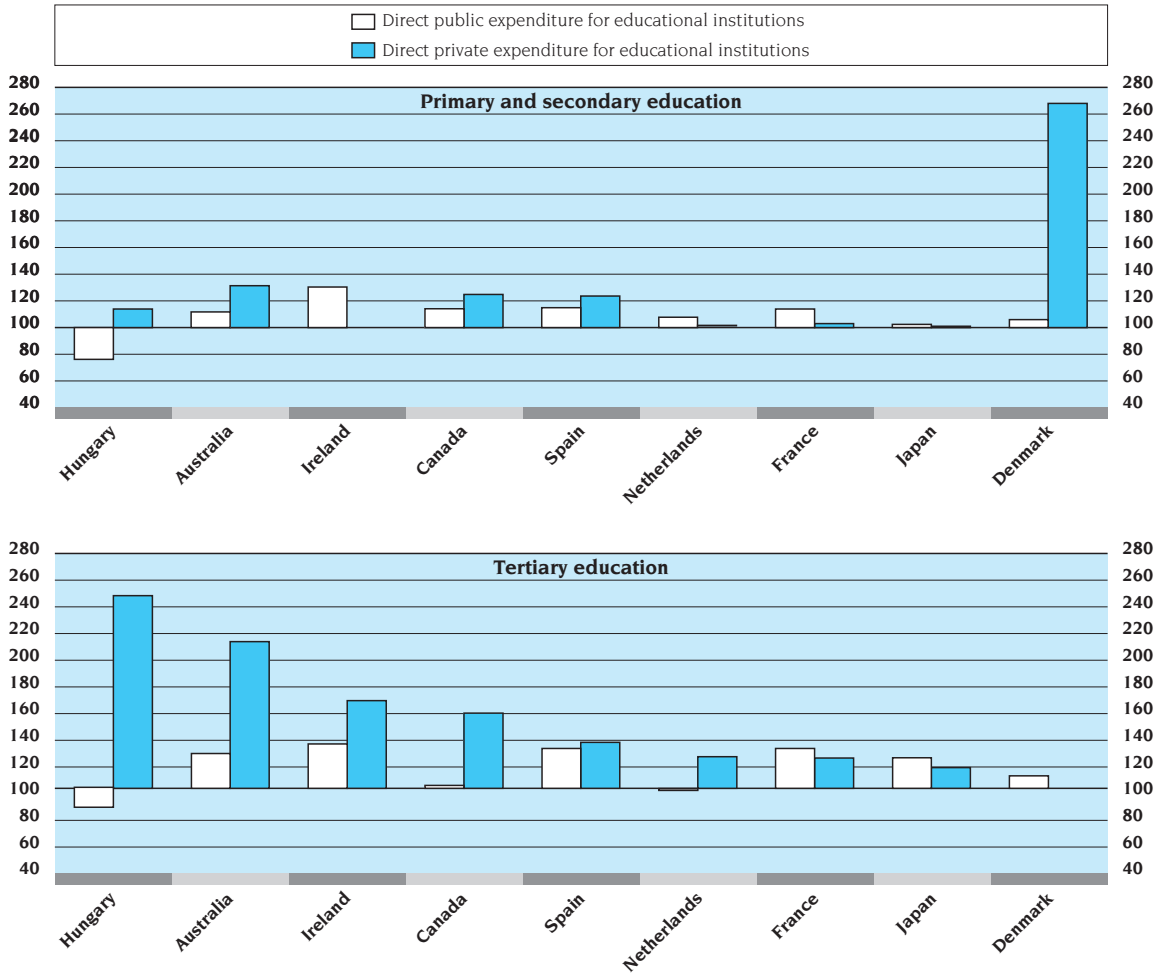
Rises in tuition fees and in educational costs have not generally implied that increased private spending has been accompanied by falls in public expenditure on education. On the contrary, Chart B3.3 shows that public investment in education has also increased in most countries for which 1990-1995 data are available. In fact, some of the countries with the highest growth in private spending have also shown the highest increase in public funds for education.

Between 1990 and 1995, public spending on tertiary education institutions and on financial aid for students increased by 26 and 33 per cent, respectively, in Australia and Ireland; in Australia private spending doubled, and it increased by more than two-thirds in Ireland. In Hungary, direct public expenditure declined while private expenditure more than doubled, and in Spain both public and private

expenditure has increased by about a third. The size of the increase in public spending on tertiary education was broadly similar in France and Japan (30 and 23 per cent, respectively), although private spending in these countries rose at a slower rate (23 and 16 per cent). In the Netherlands public funding remained more or less stable although private spending increased by 24 per cent. There, as well as in Canada, household spending on tertiary education has grown at a more rapid rate than has public support.

There are also countries that have financed tertiary expansion mainly out of public budgets, and where private spending for tertiary education remains small or negligible (less than 9 per cent of total expenditure on educational institutions), such as Denmark, Germany, Iceland, Italy, the Netherlands, Sweden and the United Kingdom.

Chart B3.3. **Index of change in public and private expenditure on education between 1990 and 1995 (1990 = 100)**



Source: OECD.

New financing strategies aim not only at mobilising required resources from a wider range of public and private sources, but also to influence student behaviour in ways that make education more cost-effective. It is hard to determine the precise impact of tuition charges on learner behaviour, partly because they cannot be seen in isolation from grants, tax expenditures and implicit subsidies in loans. But many countries in which students and their families spend more on tertiary education show some of the highest tertiary participation rates (Indicator C3).

New financing strategies also aim at influencing student behaviour in ways that make education more cost-effective.

Public transfers to the private sector for education

Governments can purchase educational services directly (for example, by paying teacher salaries), transfer funds to educational institutions according to various allocation mechanisms, or give money to students (through, for example, scholarships, grants, or loans) to spend in educational institutions. By making the funding for educational institutions dependent on a student's choice to enrol, governments can introduce an incentive for institutions to organise programmes and teaching in ways that better meet student requirements, thus reducing the costs of failure and mis-matches. Direct public funding of institutions based on student enrolments or student credit-hours, already in place in the majority of OECD countries, provides such an incentive. Funding of educational institutions indirectly through subsidies for tuition is another method.

Public funds are largely spent on educational institutions but some countries provide sizeable subsidies for education to the private sector.

Tables B3.2*a* and B3.2*b* show that, although for primary and secondary education most public money is spent either directly by governments or transferred to educational institutions to acquire resources, more variation in spending patterns can be observed at the tertiary level. In 12 out of 27 countries, more than 20 per cent of public spending at the tertiary level is transferred to households or is transferred to other recipients which are not educational institutions (such as enterprises or labour unions). These, in turn, spend these amounts, at least in part, on educational institutions.

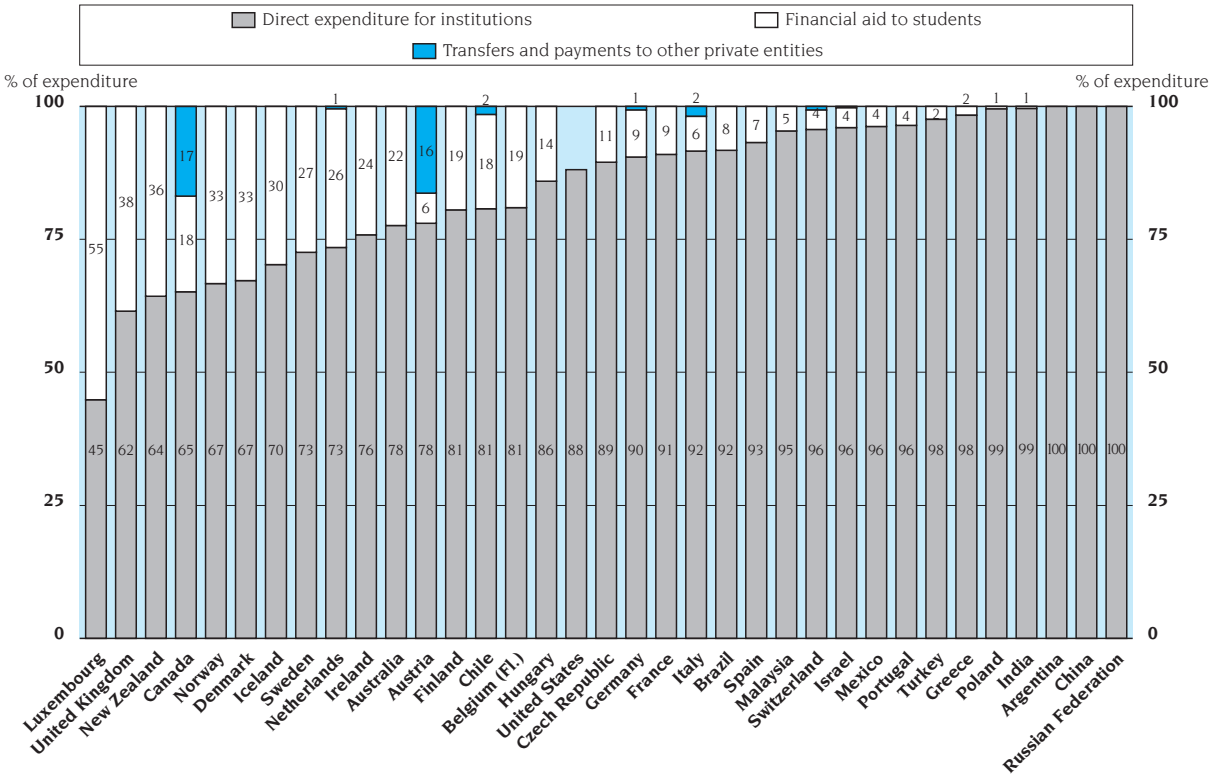
Public funds to help students and their families meet the costs of education are provided in a variety of ways, including scholarships, grants and student loans (which are generally included in these data) or through subsidies provided to students, either in cash or in kind, such as free or reduced-price travel on public transport systems and family allowances or child allowances that are contingent on student status (which are covered in principle in these data, although the degree of coverage across countries is uneven). It should be noted that student loans provided by private financial institutions (rather than directly by a government) are counted as private expenditure, although any interest rate subsidies or government payments on account of loan defaults are captured as under public funding.

In Denmark, Luxembourg and the United Kingdom, between 28 and 55 per cent of public expenditure at the tertiary level is for scholarships and grants to households. In Iceland, New Zealand, Norway and Sweden, between 18 and 30 per cent of public expenditure is for student loans (reported on a gross basis, without subtracting or netting out repayments or interest payments from the borrowers).

Public-to-private transfers are often a means to expand access for lower income students.

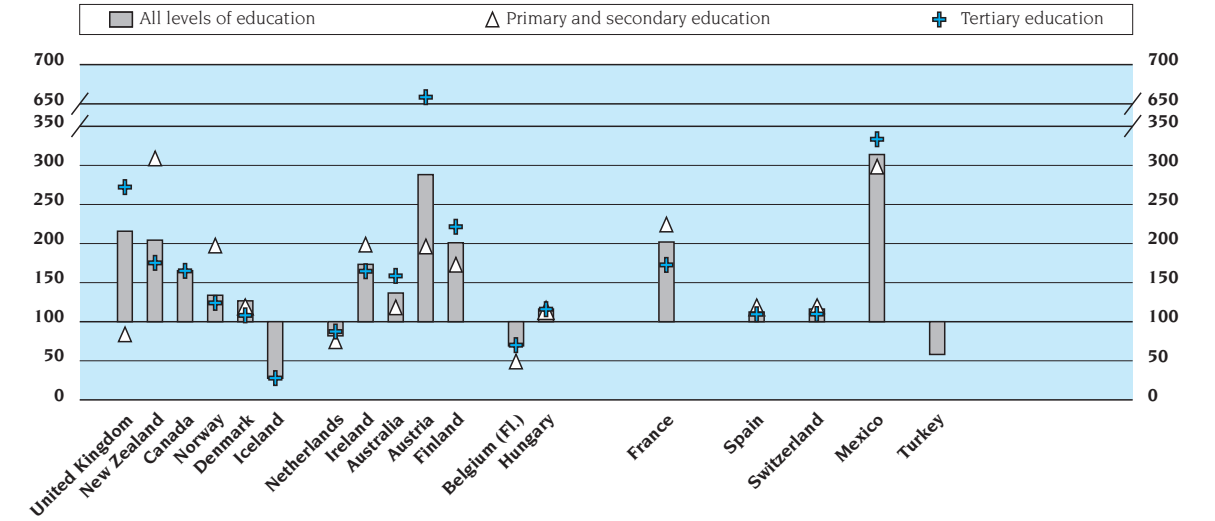
In countries where tertiary education is expanding, including Australia, New Zealand, Norway and the United Kingdom, and particularly in those in which students are charged tuition fees, public to private transfers of funds are often seen as a means to expand access for lower income students.

Chart B3.4. **Direct public expenditure on tertiary educational institutions and public transfers to the private sector as a percentage of total government expenditure on education (1995)**



Countries are ranked in ascending order of the proportion of direct public expenditure on educational institutions.

Index of change in public transfers to the private sector between 1990 and 1995 (1990 = 100)



Source: OECD.

Public funding through subsidies to the private sector for educational institutions is becoming increasingly important.

In 14 out of 18 countries with comparable data public subsidies to the private sector (primarily financial aid to students) have grown more swiftly than direct public expenditure on educational institutions. Chart B3.4 shows an index of the change in the size of public transfers to the private sector between 1990 and 1995 for the different levels of education. In Austria, Finland, France, Mexico, New Zealand and the United Kingdom the amount of public funds that are transferred to households and other private entities to be spent in educational institutions or on student living costs has more than doubled. In Canada and Ireland the relative share has increased by still more than 50 per cent. For tertiary education, public subsidies increase by over 500 per cent in Austria, more than 200 per cent in Mexico and more than doubled in Finland and the United Kingdom.

This may be an indication that governments are trying to increase competition in the education sector by shifting some decisions on educational spending to private households. Another trend in a number of countries has been to provide funds to institutions in the form of a block grant, which gives institutions more discretion in spending.

DEFINITIONS

Data refer to the financial year 1995 and are based on the UOE data collection on education statistics and the World Education Indicators Pilot Project, administered in 1997 (for details see Annex 3).

The initial public and private shares of educational expenditure are the percentages of total education spending originating in, or generated by, the public and private sectors. Initial public spending includes both direct public expenditure for educational institutions and transfers to the private sector. Initial private spending includes tuition fees and other student or household payments to educational institutions, less the portion of such payments offset by public subsidies. The final public and private shares are the percentages of education funds expended directly by public and private purchasers of educational services. Final public spending includes direct public purchases of educational resources and payments to educational institutions and other private entities. Final private spending includes tuition fees and other private payments to educational institutions (whether or not offset by public subsidies).

Data for 1990 are expressed in 1995 prices.

Tables B3.2*a* and B3.2*b* show direct public educational expenditure on institutions and transfers to the private sector for education as a percentage of total public expenditure on education. They also show different types of transfers to the private sector as a percentage of total public educational expenditure. Scholarships and grants include special subsidies provided to students, either in cash or in kind, such as free or reduced-price travel on public transport systems, and family or child allowances that are contingent on student status. Student loans are reported on a gross basis, without subtracting or netting out repayments or interest payments from the borrowers. Payments to other private entities include payments to private entities that are not defined as educational institutions. These include transfers to business or labour associations that provide adult education, subsidies to firms or labour associations which operate apprenticeship programmes, subsidies to non-profit organisations which provide student housing or meals and interest-rate subsidies to private financial institutions which make student loans.

Table B3.1. **Distribution of public and private sources of funds for educational institutions before (initial funds) and after (final funds) transfers from public sources, by level of education (1995)**

	Initial funds (the orginal source of funds spent on education)						Final funds (after public-to-private or private-to-public transfers have occured)					
	Primary and secondary education		Tertiary education		All levels of education combined		Primary and secondary education		Tertiary education		All levels of education combined	
	Public sources	Private sources	Public sources	Private sources	Public sources	Private sources	Public sources	Private sources	Public sources	Private sources	Public sources	Private sources
Australia	87	13	73	27	82	18	87	13	65	35	79	21
Austria	98	2	m	m	m	m	98	2	98	2	97	3
Belgium (Fl. Community)	100	n	m	m	m	m	100	n	m	m	m	m
Canada	94	6	82	18	90	10	94	6	61	39	82	18
Czech Republic	88	12	70	30	85	15	88	12	70	30	85	15
Denmark	98	2	99	1	93	7	98	2	99	1	92	8
Finland	m	m	m	m	m	m	m	m	m	m	m	m
France	93	7	84	16	91	9	93	7	84	16	91	9
Germany	76	24	93	7	78	22	76	24	92	8	78	22
Greece	m	m	m	m	m	m	m	m	m	m	m	m
Hungary	92	8	80	20	89	11	92	8	80	20	89	11
Iceland	m	m	m	m	m	m	m	m	93	7	88	12
Ireland	96	4	79	21	92	8	96	4	70	30	90	10
Italy	100	n	91	9	100	n	100	n	84	16	97	3
Japan	m	m	m	m	m	m	92	8	43	57	75	25
Korea	77	23	m	m	m	m	77	23	16	84	59	41
Luxembourg	m	m	m	m	m	m	m	m	m	m	m	m
Mexico	m	m	m	m	m	m	84	16	77	23	83	17
Netherlands	97	3	99	1	97	3	94	6	88	12	93	7
New Zealand	m	m	m	m	m	m	m	m	m	m	m	m
Norway	m	m	m	m	m	m	m	m	m	m	m	m
Poland	m	m	m	m	m	m	m	m	m	m	m	m
Portugal	m	m	m	m	m	m	m	m	m	m	m	m
Spain	87	13	76	24	84	16	87	13	76	24	84	16
Sweden	100	n	94	6	98	2	100	n	94	6	98	2
Switzerland	m	m	m	m	m	m	m	m	m	m	m	m
Turkey	m	m	m	m	m	m	88	12	m	m	91	9
United Kingdom	m	m	90	10	m	m	m	m	72	28	m	m
United States	m	m	m	m	m	m	90	10	48	52	75	25
Country mean	**93**	**7**	**86**	**13**	**91**	**9**	**91**	**9**	**75**	**25**	**86**	**14**
WEI Participants												
Argentina[1]	87	13	66	34	83	17	87	13	66	34	83	17
Chile[1]	67	33	27	73	55	45	67	33	22	78	53	47
India[1]	96	4	m	m	m	m	95	5	82	18	93	7
Israel[2]	97	3	70	30	86	14	96	4	67	33	84	16
Malaysia[1]	98	2	96	4	98	2	98	2	91	9	96	4
Uruguay[1]	96	4	m	m	m	m	m	m	m	m	m	m

1. 1996 data.
2. 1994 data.

Source: OECD Education Database. See Annex 3 for notes.

Table B3.2*a*. **Direct expenditure for institutions and transfers to the private sector as a percentage of total government expenditure on primary and secondary education (1995)**

	Direct expenditure for institutions	Transfer for education to private entities					Total
		Financial aid to students			Transfer and payments to other private entities	Total	
		Scholarships/ other grants to households	Student loans	Total			
Australia	91	8	n	8	1	9	100
Austria	99	1	a	1	n	1	100
Belgium (Fl. Community)	100	n	n	n	n	n	100
Canada	m	m	m	m	m	m	m
Czech Republic	93	7	a	7	n	7	100
Denmark	87	12	n	13	x	13	100
Finland	95	5	n	5	m	5	100
France	96	4	n	4	n	4	100
Germany	96	4	n	4	n	4	100
Greece	100	n	n	n	n	n	100
Hungary	99	1	a	1	n	1	100
Iceland	m	m	m	m	m	m	m
Ireland	95	5	n	5	n	5	100
Italy	99	n	n	n	1	1	100
Japan	m	m	m	m	n	m	m
Korea	100	n	n	n	n	n	100
Luxembourg	100	n	a	n	n	n	100
Mexico	100	n	a	n	a	n	100
Netherlands	91	7	n	8	1	9	100
New Zealand	95	4	2	5	a	5	100
Norway	93	4	3	7	n	7	100
Poland	100	n	a	n	m	n	100
Portugal	98	2	a	2	a	2	100
Spain	99	1	n	1	n	1	100
Sweden	88	10	2	12	a	12	100
Switzerland	97	1	n	1	1	3	100
Turkey	97	3	n	3	m	3	100
United Kingdom	98	2	a	2	n	2	100
United States	m	m	m	m	m	m	m
Country mean	**96**	**3**	**1**	**4**	**1**	**4**	**100**

Source: OECD Education Database. See Annex 3 for notes.

Table B3.2*b*. **Direct expenditure for institutions and transfers to the private sector as a percentage of total government expenditure on tertiary education (1995)**

	Direct expenditure for institutions	Transfer for education to private entities					Total
		Financial aid to students			Transfer and payments to other private entities	Total	
		Scholarships/ other grants to households	Student loans	Total			
Australia	78	13	9	22	n	22	100
Austria	78	6	a	6	16	22	100
Belgium (Fl. Community)	81	19	n	19	m	19	100
Canada	65	17	1	18	17	35	100
Czech Republic	89	11	a	11	n	11	100
Denmark	67	28	5	33	x	33	100
Finland	81	19	n	19	m	19	100
France	91	9	m	9	n	9	100
Germany	90	6	3	9	1	10	100
Greece	98	2	n	2	n	2	100
Hungary	86	14	a	14	n	14	100
Iceland	70	m	30	30	m	30	100
Ireland	76	24	n	24	n	24	100
Italy	92	6	n	6	2	8	100
Japan	m	a	m	m	n	m	m
Korea	m	m	m	m	m	m	m
Luxembourg	45	55	a	55	x	55	100
Mexico	96	1	3	4	a	4	100
Netherlands	73	22	4	26	1	27	100
New Zealand	64	14	22	36	a	36	100
Norway	67	9	25	33	n	33	100
Poland	99	1	a	1	m	1	100
Portugal	96	4	a	4	a	4	100
Spain	93	7	n	7	n	7	100
Sweden	73	9	18	27	a	27	100
Switzerland	96	3	n	4	1	4	100
Turkey	98	2	n	2	m	2	100
United Kingdom	62	32	6	38	n	38	100
United States	88	x	x	x	x	12	100
Country mean	**81**	**13**	**5**	**18**	**2**	**19**	**100**
WEI Participants							
Argentina[1]	100	n	n	n	n	n	100
Brazil	92	6	2	8	n	8	100
China	100	n	n	n	n	n	100
India[1]	99	1	n	1	n	n	100
Israel[2]	96	4	n	4	n	4	100
Malaysia[1]	95	2	3	5	n	5	100
Paraguay[1]	100	n	n	n	n	n	100
Russian Federation	100	n	n	n	n	n	100

1. 1996 data.
2. 1994 data.

Source: OECD Education Database. See Annex 3 for notes.

EDUCATIONAL EXPENDITURE PER STUDENT

B4

POLICY CONTEXT

This indicator shows annual expenditure per student in absolute terms (in equivalent US dollars).

Effective schools require the right combination of talented personnel, adequate facilities, state-of-the-art equipment and motivated students ready to learn. The demand for high-quality education, which can translate into higher costs per student, has to be balanced against the necessity of avoiding undue burdens on taxpayers.

It also compares per-student expenditure in relative terms – with per capita GDP, as a broad measure of a country's standard of living, taken as the basis for comparisons.

As a result, the question of whether the resources devoted to education are yielding adequate value for the cost figures prominently in public debate. Even small gains in efficiency, on the order of 1 or 2 per cent, could release prodigious resources that could be used to improve educational quality or to increase access to education. Although the optimal volume of resources required to prepare each student for life and work in the modern economy is not known, international comparisons of the investment per student in education can provide a starting point for evaluating the effectiveness of different models of educational provision.

Trends in the development of per-student expenditure are also examined.

Policy-makers must also balance the importance of improving the quality of educational services with the desirability of expanding access to educational opportunities. A comparative review of how trends in per-student expenditure have evolved show how the expansion of enrolments in many countries, particularly in tertiary education, have affected the allocation of resources per student.

Decisions on the allocation of funds over the different levels of education are also important. For example, some countries emphasise broad access to higher education while others invest in near-universal education for children as young as two or three.

EVIDENCE AND EXPLANATIONS

Expenditure per student in equivalent US dollars

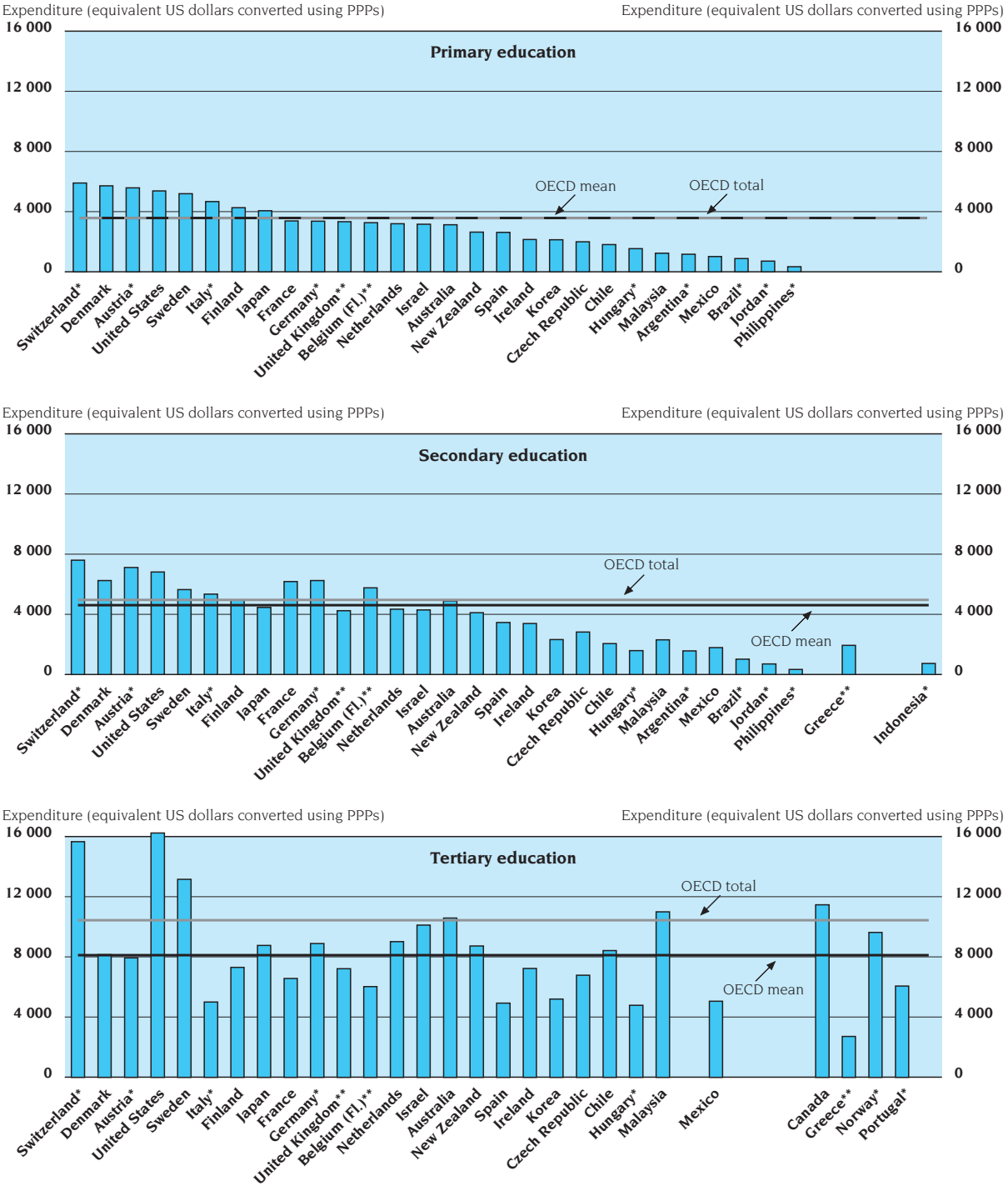
As a whole, OECD countries spend US$5 210 per student each year – US$3 595 per primary student, US$4 970 per secondary student and US$10 440 per tertiary student…

OECD countries as a whole spend about US$5 210 per student each year (all levels of education combined). US$3 595 are spent per student at the primary level, US$4 970 per student at the secondary level and US$10 440 per student at the tertiary level (Chart B4.1). But these OECD-wide totals are heavily influenced by the high expenditure in the United States. Spending per student in the "typical" OECD country, as represented by the simple mean across all countries, amounts to US$3 545 at the primary level, US$4 605 at the secondary level and US$8 130 at the tertiary level of education.

… but these averages mask a broad range of expenditure per student across countries.

These averages mask a broad range of expenditure per student across OECD countries. Even excluding the two countries with the highest and the two with the lowest expenditure, the range in expenditure per student is wide: from about US$2 000 to US$5 600 at the primary level, from about US$2 000 to US$6 800 at

Chart B4.1. **Annual expenditure per student in public and private institutions, by level of education (1995)**



* Public institutions.
** Public and government-dependent private institutions.

Countries are ranked in descending order of expenditure per student at the primary level of education.

Source: OECD.

the secondary level, and from less than US$5 000 to more than US$13 000 at the tertiary level.

Comparisons are based on purchasing power parities.

These comparisons are based on purchasing power parities, not market exchange rates, and therefore reflect the amount of a national currency that will buy the same basket of goods and services in a country as the US dollar will in the United States. These adjustments do not adjust for differences in the cost of educational resources of equivalent quality.

Of the 21 OECD countries for which data on expenditure per primary student are available, five spend less than US$2 150 per primary student (the Czech Republic, Hungary, Ireland, Korea and Mexico) and five countries spend more than US$5 150 (Austria, Denmark, Sweden, Switzerland and the United States).

Among WEI participants, expenditure per primary student ranges from US$340 in the Philippines to between US$1 100 and about US$1 800 in Argentina, Chile and Malaysia (roughly comparable to spending levels in the Czech Republic, Hungary and Mexico) and US$3 160 in Israel.

In view of their spending capacity, some WEI participants invest considerable amounts per student.

With US$710 and US$870, Jordan and Brazil spend far less than any OECD country per primary student. But when comparing spending per student in relation to the spending capacity, expressed by the GDP per capita, the value for both countries (with Brazil at 15 per cent and Jordan at 20 per cent) is around the OECD average of 20 per cent (Chart B4.3).

For secondary education, Greece, Hungary and Mexico spend less than US$2 000 per student, whereas Austria, Switzerland and the United States spend more than US$6 800 (Table B4.1). Spending among WEI participants ranges here from around US$750 or less in Indonesia, Jordan and the Philippines to US$1 570-4 300 in Argentina, Chile, Israel and Malaysia.

Expenditure per tertiary student varies across countries by almost a factor of six.

At the tertiary level, expenditure per student varies by almost a factor of six, with Greece and the United States constituting the extremes among the 24 countries for which such data are available (Table B4.1). Greece, Hungary and Spain report per-student expenditure of less than US$5 000; Canada, Sweden, Switzerland and the United States report spending between US$11 000 and over US$16 000 per year. Tertiary spending per student in Chile, Israel and Malaysia exceeds the OECD average.

There is a common pattern: expenditure per student rises sharply with the level of education and is dominated by personnel costs.

Expenditure per student exhibits a common pattern throughout the OECD: in each country it rises sharply with the level of education and it is dominated by personnel costs (Indicator B5). This pattern can be understood by looking at the main determinants of expenditure, particularly the place and mode of educational provision. The vast majority of education still takes place in traditional school and university settings with – despite some differences – similar organisation, curriculum, teaching style and management. These shared features are likely to lead to similar patterns of unit expenditure.

The labour-intensiveness of education accounts for the predominance of teachers' salaries in overall costs.

The labour-intensiveness of the traditional education model accounts for the predominance of teachers' salaries in overall costs. Differences in student/teaching staff ratios (Indicator B7), staffing patterns, teachers' salaries (Indicator E1), teaching materials and facilities influence cost differences between levels of education, types of programmes and types of schools.

Technology may allow some savings to be made.

Future gains in efficiency may be achieved through the use of new information technologies, both to hold down unit costs and to maintain, if not improve, learning outcomes. Unit cost savings may also be available through the expansion of distance education, whether making intensive use of technology or not.

Lower unit-expenditure cannot simply be equated with lower quality of educational services.

It would be misleading to equate lower unit-expenditure generally with a lower quality of educational services. The Czech Republic, the Netherlands, Japan and Korea, for example, which have comparatively moderate expenditure per student, are the countries with the best performances by students in mathematics (Indicator F1).

Institutional arrangements often lag behind changes in demographic conditions.

Institutional arrangements often adapt to changing demographic conditions only after a considerable lag. They can also influence unit expenditure. For example, a declining number of primary students may lead to higher unit costs if staffing is not reduced and/or schools closed in proportion. Conversely, in times of enrolment increases, class sizes may increase, teachers may teach outside their field of specialisation, etc.

In addition, differences in national price levels for educational services, in so far as they deviate from overall price levels, accounted for in the purchasing power parities, have an impact on the differences in unit expenditure between countries.

Change in expenditure per student between 1990 and 1995

Education expenditure per student increased between 1990 and 1995 in most countries.

In 10 out of the 13 countries for which comparable trend data are available for primary and secondary education, expenditure per student increased between 1990 and 1995, even though enrolment increased in many of them (Chart B4.2). In Ireland and Spain, expenditure per primary and secondary student rose by 33 and 25 per cent, respectively, even as enrolments declined.

Only in Finland and Italy did expenditure per primary and secondary student decrease by more than nine percentage points between 1990 and 1995. In Italy this fall occurred despite a simultaneous decrease in enrolments.

In Mexico, expenditure per primary student has more than doubled between 1990 and 1995.

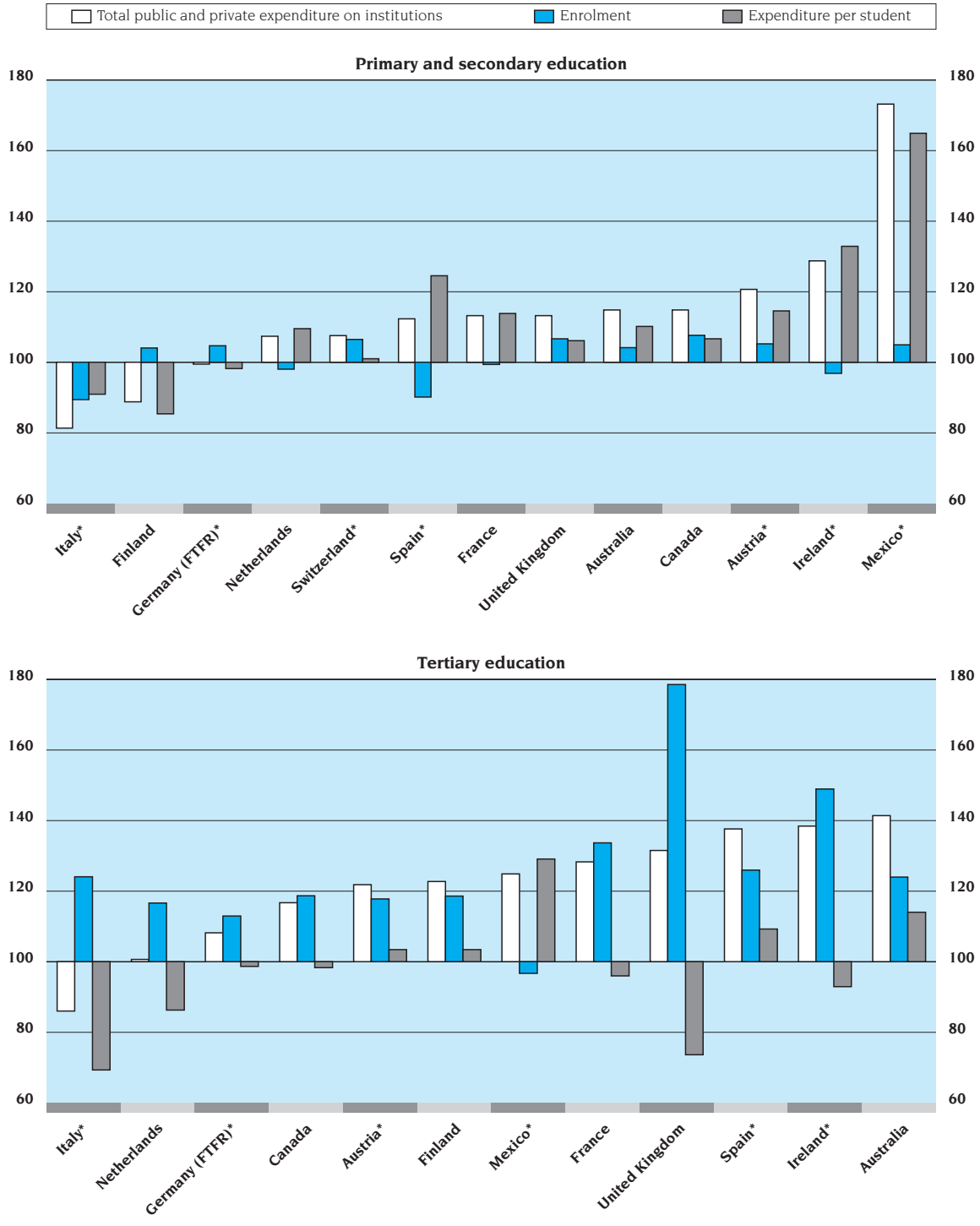
In Mexico, expenditure per primary student has more than doubled over the period 1990-1995, from about US$400 in 1990 to more than US$1 000 in 1995 (although this increase may be slightly overestimated due to an incomplete coverage of expenditure data in 1990). In Austria, Ireland and Spain the increase in expenditure per primary student exceeded 34 per cent.

At the secondary level of education, expenditure per student increased by two thirds in Mexico and by about a fifth or more in Ireland, Spain and Switzerland between 1990 and 1995. Finland, Germany (FTFR), Italy and the United Kingdom are countries that show a decline in spending per secondary student.

In most countries, expenditure on tertiary education has kept pace with a marked increase in access to tertiary.

In seven out of 12 OECD countries, tertiary expenditure has kept pace with an often dramatic increase in the number of students enrolled: in Australia, Austria, Canada, Finland, France, Germany, Mexico and Spain expenditure per tertiary student in 1995 was the same as, or higher than, in 1990. In Australia and Spain expenditure on tertiary education increased much faster than enrolments, leading to increases in expenditure per tertiary student of 14 and 34 per cent, respectively. Even in Ireland, where tertiary enrolment grew by over 50 per cent between 1990 and 1995, educational expenditure has almost kept pace.

Chart B4.2. **Index of change in spending on education, enrolment and expenditure per student in 1995 (1990 = 100)**



* Public institutions only.

Countries are ranked in ascending order of changes in total expenditure.

Source: OECD.

In the Netherlands and the United Kingdom enrolments increased faster than total expenditure, and expenditure per student in 1995 was lower than in 1990. In Italy a decrease in funding for tertiary education, coupled with an increase in tertiary enrolments, has led to a decline of 30 per cent in tertiary spending per student.

Educational expenditure per student in relation to national GDP

OECD countries as a whole invest 18 per cent of GDP per capita per primary student, 25 per secondary student and 49 per tertiary student.

Expenditure per student relative to GDP per capita is a spending measure that takes into account the number of students that a country is trying to educate, as well as its relative wealth. As education is universal at lower levels, spending per student relative to GDP per capita at the lower levels of education can be interpreted as the resources spent on young people relative to a country's ability to pay. For higher levels of education, this measure is affected by a combination of wealth, spending and enrolment rates.

At the tertiary level, for example, countries can be relatively high on this measure if a relatively large portion of their wealth is spent on educating a relatively small number of students. For the OECD as a whole, expenditure per student averages 18 per cent of GDP per capita at the primary level, 25 per cent at the secondary level and 49 per cent at the tertiary level.

Although spending per student relative to GDP per capita tends to be lower in WEI participants for primary and secondary education, the value for Malaysia at the tertiary level is more than twice as large as the OECD average.

Poorer countries tend to spend relatively less per student…

There is a clear positive relationship between spending per student and per capita GDP (Chart B4.3), showing that poorer countries tend to spend relatively less per student than richer countries as measured by per capita GDP.

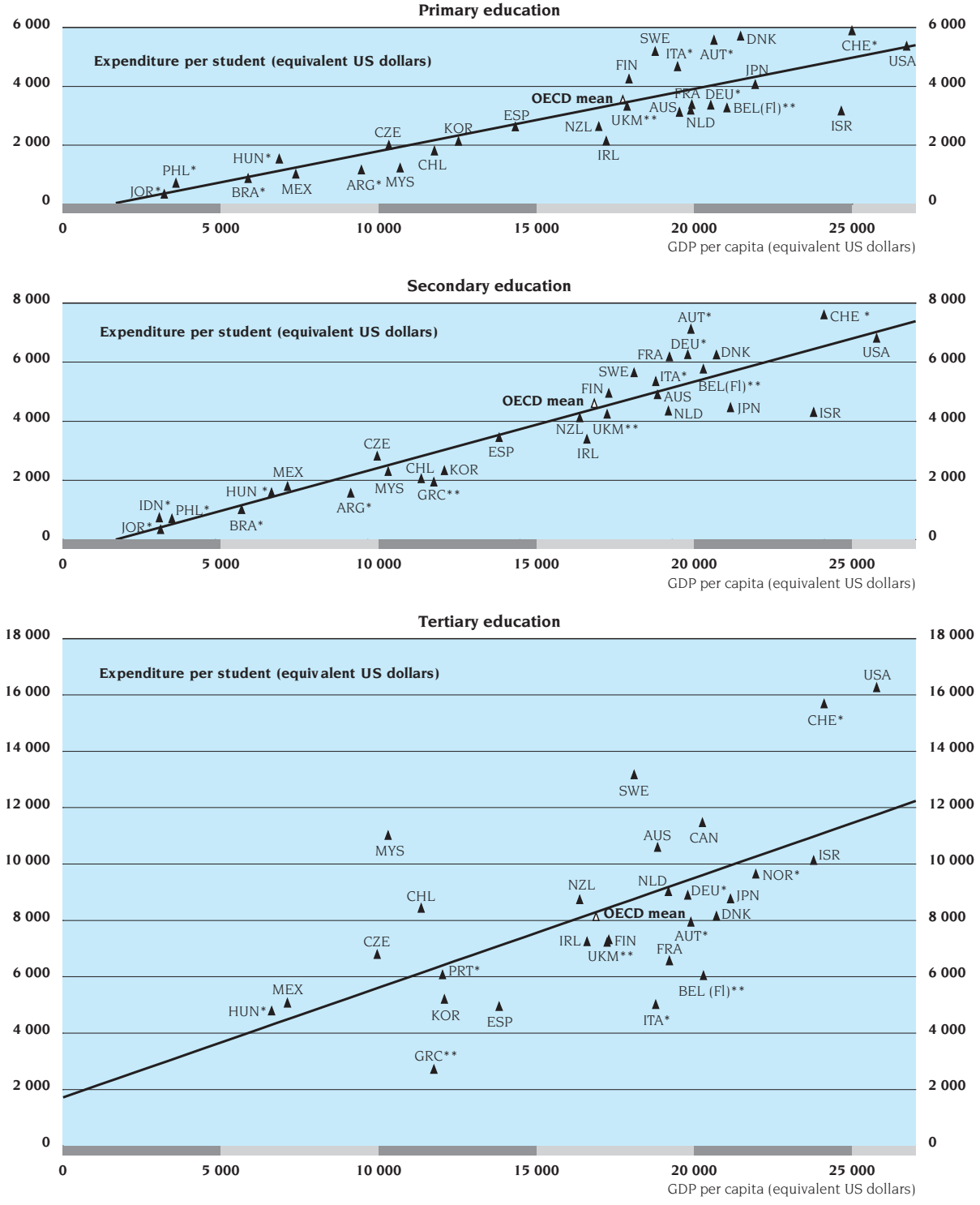
… but there are many exceptions.

Although the relationship between spending per student and GDP per capita is generally positive there is considerable variation in per-student spending among both richer and poorer countries. Five countries with vastly different levels of per capita wealth (the Czech Republic, Japan, Jordan, the United Kingdom and the United States) spend similar portions of that wealth to educate the typical primary student, about the OECD country mean of 20 per cent. At the primary level, spending on this measure is 7 percentage points or more above the country mean in three countries (Austria, Denmark and Sweden) and at least 6 percentage points below the country mean in Ireland and Mexico.

The picture is similar for secondary education. For example, among the poorest OECD countries, Greece spends a relatively small amount of per capita GDP to educate the average secondary student (16 per cent), while Hungary, Indonesia and Malaysia spend substantially more (between 22 and 23 per cent). Among the wealthiest OECD countries, Japan and the United States spend only 20 and 26 per cent of per capita GDP to educate the average secondary student, while Switzerland spends 30 per cent.

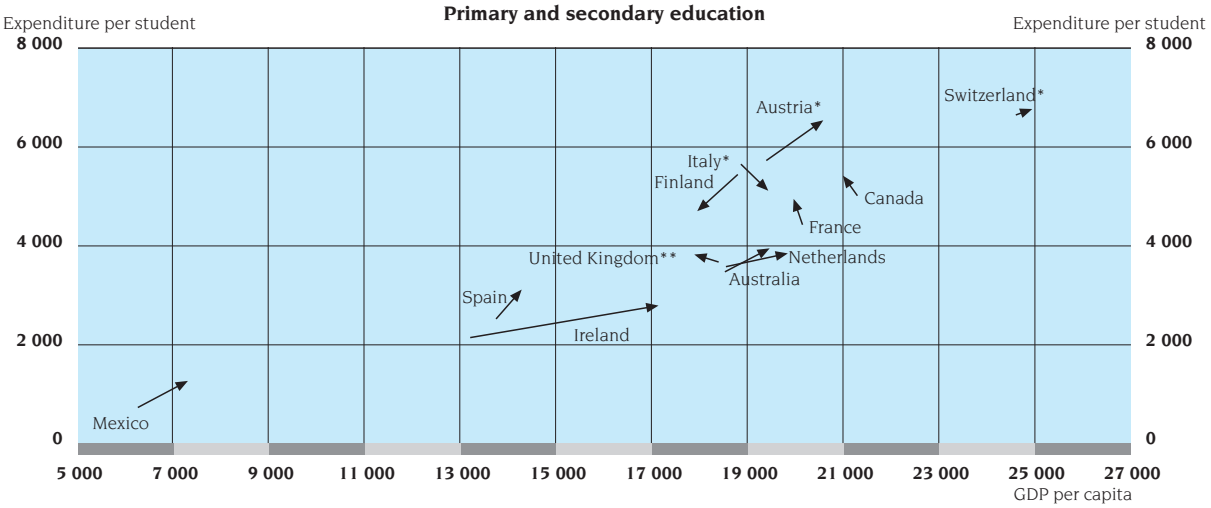
The range in spending across countries on this measure is much wider for tertiary education than for primary. For example, in Chile, Hungary, Malaysia, Mexico and Sweden tertiary spending per student relative to GDP per capita is more than 20 percentage points above the OECD country mean of 47 per cent. At the other end of the scale, Greece and Italy spend 20 percentage points or more below the OECD country mean.

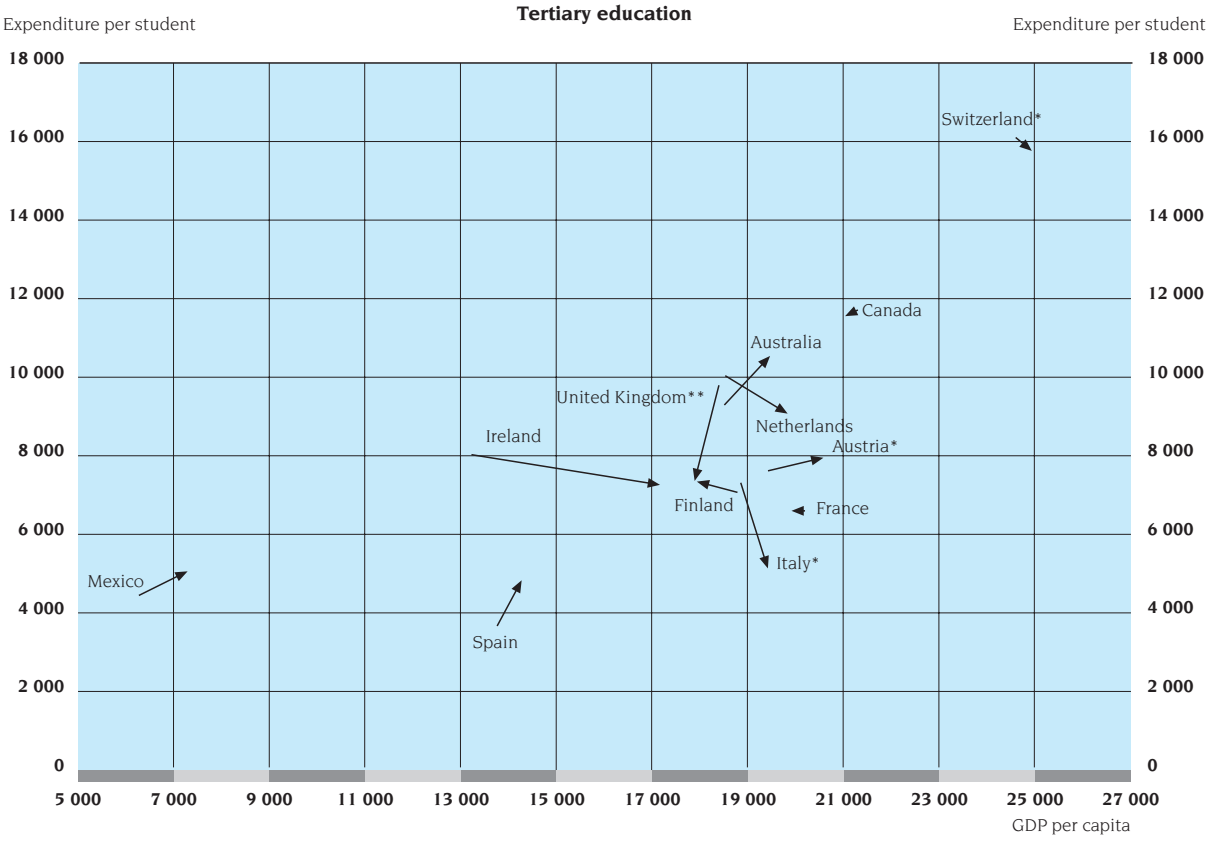
Chart B4.3. **Annual educational expenditure per student in relation to GDP per capita, by level of education (1995)**



* Public institutions.
** Public and government-dependent private institutions.
Source: OECD.

Chart B4.4. **Change in expenditure per student over the period 1990-1995, in relation to change in GDP per capita (1995 constant US dollars)**





The begining of the arrow indicates spending per student and GDP per capita in 1990. The end of the arrow indicates the corresponding values for 1995.

* Public institutions.
** Public and government-dependent private institutions.

Source: OECD.

In general, as countries grow richer, expenditure per student increases…

Does growing wealth translate into higher spending per student? The arrows in Chart B4.4 show, for each country, the changes in expenditure per student in relation to the respective changes in per capita GDP. The origin of the arrow represents the GDP per capita (horizontal axis) and the expenditure per student (vertical axis) in 1990 (at 1995 prices) and the end of each arrow shows the corresponding values for 1995.

In general, changes in per student expenditure are positively correlated with changes in GDP per capita. For example, both primary and secondary expenditure per student has risen along with GDP per capita in Australia, Austria, Ireland, Mexico, Spain and Switzerland. In Finland, expenditure per student declined as GDP per capita declined.

… but growing national income and rising expenditure per student are by no means universal.

This pattern is not uniform, particularly at the higher levels of education. Both upper secondary and tertiary expenditure per student increased between 1990 and 1995 in Spain at the same time as GDP per capita declined.

Differentials in educational expenditure per student across levels of education

Not only does expenditure per student differ between countries in absolute terms…

Cross-country comparisons of the distribution of expenditure across levels of education are an indication of the relative emphasis placed on education at different levels in a given country, as well as the relative costs of providing education at those levels. Chart B4.5 presents expenditure per student in early childhood, secondary and tertiary education relative to expenditure per primary student.

… but relative spending per student across levels of education also varies markedly.

Although in almost all countries expenditure per student rises with the level of education, the relative size of the differences varies markedly across countries. At the secondary level, expenditure per student is, on average, 1.38 times higher than that at primary level, although the variation here ranges from 1.04 times the expenditure per primary student in Hungary to more than 1.75 times in the Flemish Community of Belgium, France, Germany and Mexico. Nearly two-thirds of the countries have expenditure per secondary student which is between around 1.10 and 1.60 times that at the primary level.

The most significant differentials occur at the tertiary level.

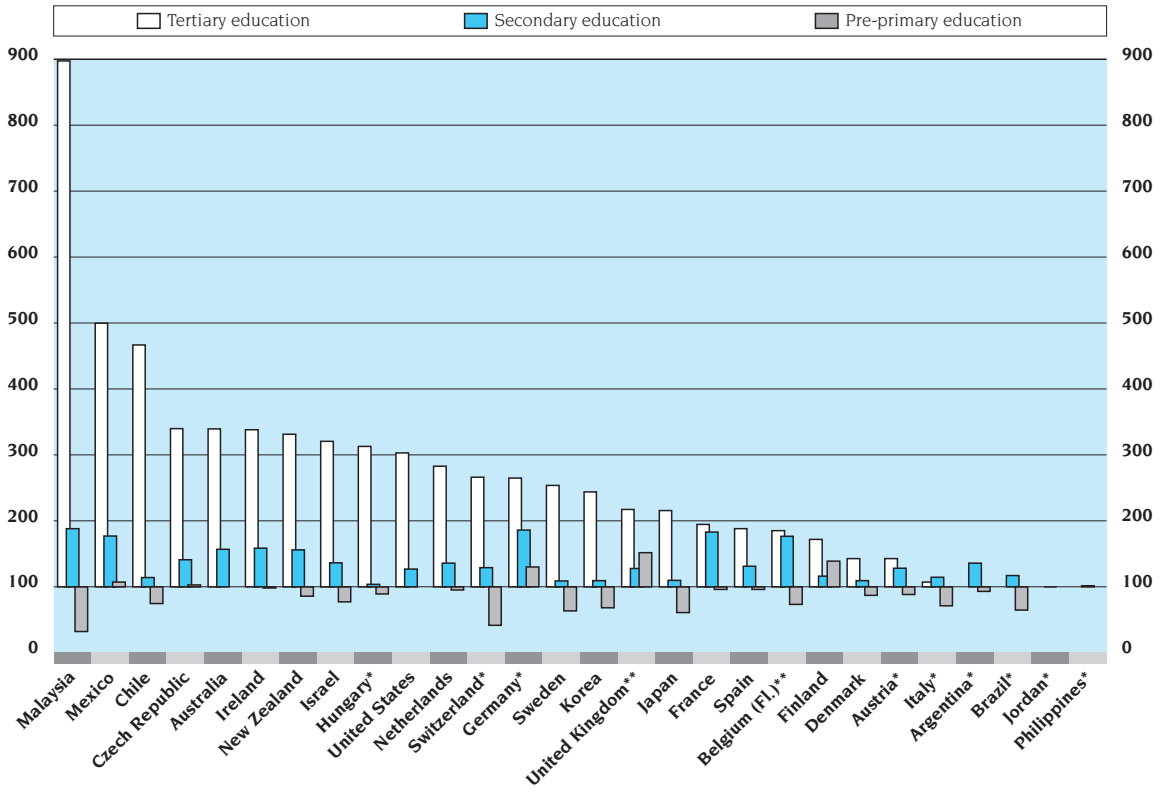
Although OECD countries spend, on average, 2.54 times more per student at the tertiary level than at the primary level, spending patterns vary widely between countries. For example, whereas Italy only spends 1.07 times more for a tertiary student than for a primary student, Mexico spends five times more. These differentials may even underestimate real differences in costs, as in some countries funding provided for tertiary education by private sources has not been adequately taken into account.

Educational expenditure per student over the average duration of tertiary studies

Annual expenditure per student does not always reflect the true cost of tertiary studies.

Since both the typical duration and intensity of tertiary study vary between countries, international variation in annual expenditure per student on educational services as shown in Table B4.1 does not accurately reflect the variability in the total cost of educating the typical tertiary student.

Chart B4.5. **Ratio of educational expenditure per student at various levels of education to educational expenditure per student at the primary level, times 100 (1995)**



* Public institutions.
** Public and government-dependent private institutions.

A ratio of 500 for tertiary education means that expenditure per tertiary student in a particular country is 5 times the expenditure per primary student.
A ratio of 50 for pre-primary education means that expenditure per pre-primary student in a particular country is half the expenditure per primary student.

Countries are ranked in descending order of expenditure per student in tertiary education relative to educational expenditure per student at primary level.

Source: OECD.

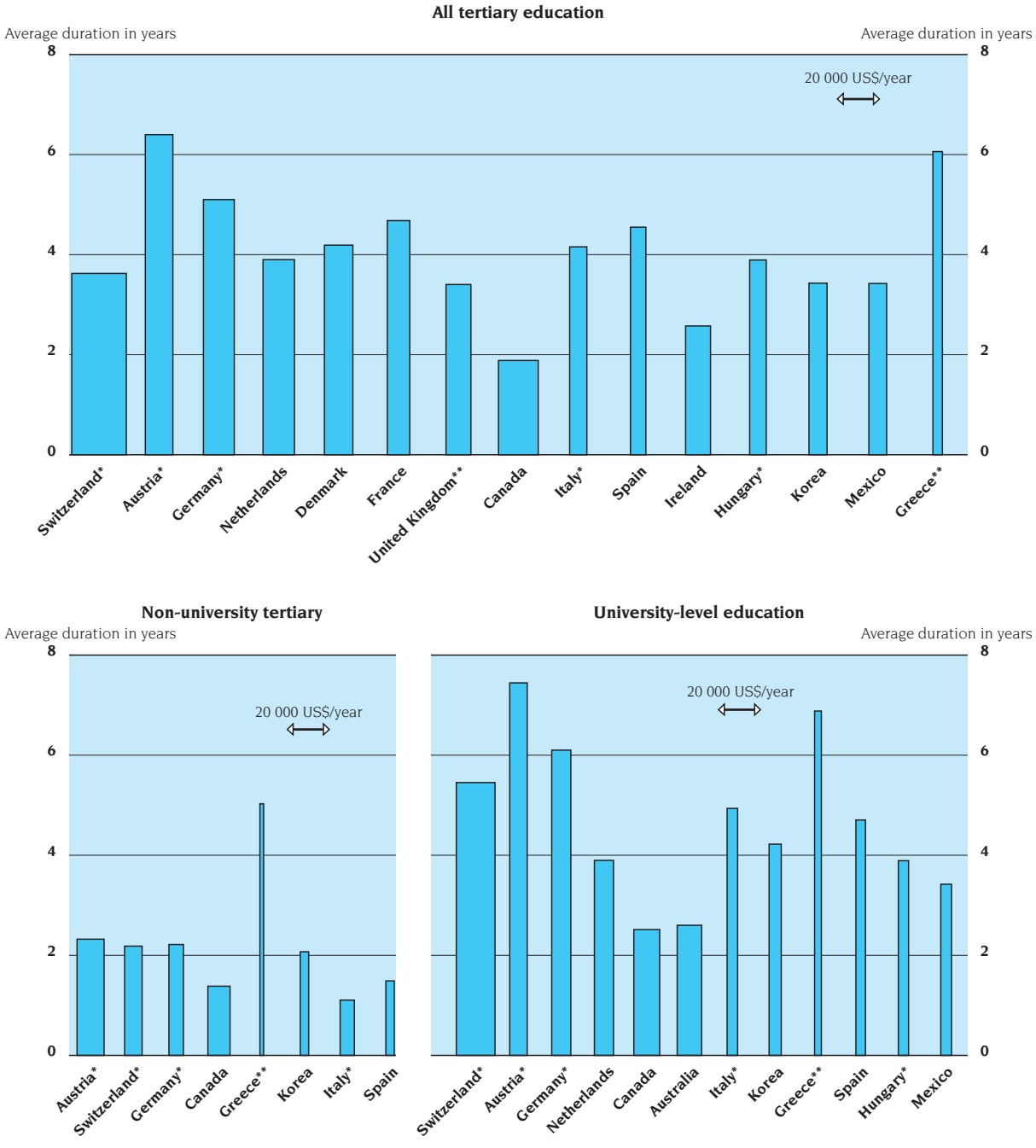
Students can choose from a range of institutions and enrolment options.

Today, students can choose from a range of types of institutions and enrolment options to find the best fit between their degree objectives, abilities, personal interests and social and economic circumstances. Many students attend part-time, work while enrolled, attend sporadically or attend more than one institution before graduating. These varying enrolment patterns can affect the interpretability of expenditure per student.

Part-time attendance may explain some of the differences between countries.

The ranking of countries by annual expenditure per student on educational services is strongly affected by differences in how countries define full-time, part-time and full-time-equivalent enrolment. Some countries count every participant at the tertiary level as a full-time student while others determine a student's intensity of participation by the credits he or she obtains for successful completion of specific course units during a specified reference period. Countries that can accurately account for part-time enrolment will have higher expenditure per full-time equivalent student than countries that cannot differentiate between different modes of student attendance.

Chart B4.6. **Average duration, average expenditure per student per year and cumulative expenditure per student for tertiary education (1995)**



* Public institutions.
** Public and government-dependent private institutions.

The height of the bar indicates the average duration of studies. The width of the bar indicates the average expenditure per student and year. The area of the bar represents the cumulative expenditure per student over the average duration of studies.

Countries are ranked in each chart in descending order of cumulative expenditure per student at the corresponding level.

Source: OECD.

Low annual expenditure may translate into high overall costs of tertiary education if the duration of tertiary studies is long.

Similarly, comparatively low annual expenditure per student may result in comparatively high overall costs of tertiary education if the typical duration of tertiary studies is relatively long. Chart B4.6 shows the average expenditure that is incurred per student throughout the course of tertiary studies for 17 countries. The figures account for all students for whom expenditure is incurred, including those who do not finish their studies. Although the calculations are based on a number of simplifying assumptions and therefore should be treated with some caution (Annex 3), some striking shifts in the rank order of countries across the annual and the aggregate expenditure measures can be noted.

For example, annual spending per university (or equivalent) student in Canada is about a third higher than in Germany (US$12 217 in Canada as against US$9 001 in Germany). But because of differences in the tertiary degree structure (Indicator C4), the average duration of university-equivalent studies is more than twice as long in Germany as in Canada (6.7 years in Germany which provides only "long university or equivalent programmes", compared with 2.5 years in Canada which provides mostly "short" university-equivalent programmes). As a consequence, the aggregate expenditure for each university-equivalent student is almost twice as high in Germany as in Canada (US$60 271 compared to US$30 707).

The total costs per university student in Austria and Germany (about US$60 000) are about twice the cost of university studies in Australia, Canada, Korea, Italy and Spain; costs are even higher in Switzerland.

Although the Netherlands spends 17 per cent more per university student each year than Austria, the duration of tertiary studies in Austria is 6.4 years compared with 3.9 years in the Netherlands, which means that total spending in Austria is US$57 256 compared with only US$35 202 in the Netherlands. In Canada, a low duration of tertiary studies translates an above-average annual cost into a below-average total cost. The total cost per university student in Austria and Germany (about US$60 000) are about twice the cost of university studies in Australia, Canada, Korea, Italy and Spain. Total cost per university studies is even higher in Switzerland – over US$100 000. These differences must be interpreted in light of possible cross-country differences in the level and type of qualifications of students leaving university.

Important notes on interpretation

When differences between countries in expenditure per student are interpreted, a number of factors should be taken into account:

The data include only direct public and private expenditure on institutions.

The data used in calculating expenditure per student include only public and private expenditure on educational institutions. Public subsidies for students' living expenses have been excluded to ensure the international comparability of the data.

For some countries, expenditure data for students in private educational institutions were not available (indicated by one or two asterisks in the table). Many of the countries that do not have data for independent private institutions only have a very small number of them. In such cases, only the expenditure on public and government-dependent private institutions are accounted for.

Variation in expenditure does not always reflect variation in real resources.

The variation in expenditure per student does not always reflect variation in real resources provided to students (for instance, variations in student/teaching staff ratios). In some cases, it reflects variation in relative prices.

DEFINITIONS

Expenditure per student on a particular level of education is calculated by dividing the total expenditure at that level by the corresponding full-time equivalent enrolment. Only those types of educational institutions and programmes are taken into account for which both enrolment and expenditure data are available. The enrolment data are adjusted by interpolation so as to match either the financial year or the calendar year of each country (Annex 3 gives details). The result in national currency is then converted into equivalent US dollars by dividing the national currency figure by the purchasing power parity (PPP) index. The PPP exchange rates used pertain to GDP and were derived from the OECD National Accounts Database for OECD countries and from the World Bank database for non-Member countries (Annex 2 gives further details). The PPP exchange rate gives the amount of a national currency that will buy the same basket of goods and services in a country as the US dollar will in the United States. The PPP exchange rate is used because the market exchange rate is affected by many factors (interest rates, trade policies, expectations of economic growth, etc.) that have little to do with current, relative domestic purchasing power in different countries.

Data refer to the financial year 1995 and are based on the UOE data collection on education statistics and the World Education Indicators Pilot Project, administered in 1997 (for details see Annex 3).

The country mean is calculated as the simple average over all OECD countries for which data are available. The OECD total reflects the value of the indicator when the OECD region is considered as a whole (the Reader's Guide gives details).

Data for 1990 are expressed in 1995 prices.

Expenditure per student relative to GDP per capita is calculated by expressing expenditure per student in units of national currency as a percentage of GDP per capita, also in national currency. In cases where the educational expenditure data and the GDP data pertain to different reference periods, the expenditure data are adjusted to the same reference period as the GDP data, using inflation rates for the country in question (see Annex 2).

Expected expenditure over the average duration of tertiary studies (Table B4.5) is calculated by multiplying current annual expenditure by the typical duration of tertiary studies. The methodology used for the estimation of the typical duration of tertiary studies is described in Annex 3.

For the estimation of the duration of tertiary studies, a special survey was carried out in OECD countries in 1997.

Table B4.1. **Expenditure per student (US dollars converted using PPPs) on public and private institutions by level of education (based on full-time equivalents) (1995)**

	Early childhood	Primary	Secondary	Tertiary			All levels of education combined
				All	Non-university	University-level	
Australia	m	3 121	4 899	10 590	7 699	11 572	m
Austria*	4 907	5 572	7 118	7 943	12 834	7 687	6 763
Belgium (Fl. Community)**	2 391	3 270	5 770	6 043	x	x	4 694
Canada	5 378	x	x	11 471	10 434	12 217	6 717
Czech Republic	2 052	1 999	2 820	6 795	2 502	7 656	2 885
Denmark	4 964	5 713	6 247	8 157	x	x	5 968
Finland	5 901	4 253	4 946	7 315	6 933	7 412	5 323
France	3 242	3 379	6 182	6 569	x	x	5 001
Germany*	4 381	3 361	6 254	8 897	6 817	9 001	5 972
Germany (FTFR)*	m	3 505	6 543	m	m	8 101	m
Greece**	x	x	1 950	2 716	1 750	3 169	1 991
Hungary*	1 365	1 532	1 591	4 792	a	4 792	1 782
Iceland	m	m	m	m	m	m	m
Ireland	2 108	2 144	3 395	7 249	x	x	3 272
Italy*	3 316	4 673	5 348	5 013	6 705	4 932	5 157
Japan	2 476	4 065	4 465	8 768	6 409	9 337	4 991
Korea	1 450	2 135	2 332	5 203	3 980	5 733	2 829
Luxembourg	m	m	m	m	m	m	m
Mexico	1 088	1 015	1 798	5 071	x	5 071	1 464
Netherlands	3 021	3 191	4 351	9 026	a	9 026	4 397
New Zealand	2 262	2 638	4 120	8 737	10 018	8 380	4 099
Norway*	m	m	m	9 647	x	x	6 360
Poland	m	m	m	m	m	m	m
Portugal*	m	m	m	6 073	x	x	m
Spain	2 516	2 628	3 455	4 944	3 973	4 966	3 374
Sweden	3 287	5 189	5 643	13 168	x	x	5 993
Switzerland*	2 436	5 893	7 601	15 685	8 226	18 365	7 241
Turkey*	m	m	m	m	m	m	m
United Kingdom**	5 049	3 328	4 246	7 225	x	x	4 222
United States	m	5 371	6 812	16 262	7 973	19 965	7 905
Country mean	**3 180**	**3 546**	**4 606**	**8 134**	**6 016**	**8 781**	**4 713**
OECD total	**2 631**	**3 595**	**4 971**	**10 444**	**7 447**	**12 018**	**5 206**
WEI Participants							
Argentina*[1]	1 075	1 158	1 575	m	m	m	m
Brazil*	562	870	1 018	m	m	m	1 121
Chile[1]	1 346	1 807	2 059	8 436	4 086	10 385	2 481
Indonesia*[1]	m	m	740	m	m	m	m
Israel[2]	2 433	3 162	4 305	10 132	7 426	10 883	4 482
Jordan*[1]	m	710	710	m	m	m	m
Malaysia[1]	395	1 228	2 308	11 016	7 290	14 520	2 176
Paraguay*[1]	m	343	492	m	20 667	m	m
Philippines*	m	337	342	m	m	m	m
Uruguay*[1]	548	920	1 022	2 441	3 340	2 289	1 092

* Public institutions.
** Public and government-dependent private institutions.
1. 1996 data.
2. 1994 data.
Source: OECD Education Database. See Annex 3 for notes.

Table B4.2. **Expenditure per student (US dollars converted using PPPs) on public and private institutions by level of education (1990)**

	Early childhood	Primary	Secondary	Tertiary			All levels of education combined
				All	Non-university	University-level	
Australia	m	2 737	4 359	9 288	8 024	9 887	4 257
Austria*	3 169	3 942	6 779	7 621	11 725	7 401	6 057
Belgium (Fl. Community)**	m	m	m	m	m	m	m
Canada	4 884	m	m	11 662	13 030	10 934	6 220
Czech Republic	m	m	m	m	m	m	m
Denmark	m	m	m	m	m	m	m
Finland	6 967	4 717	5 813	7 070	7 219	7 025	5 675
France	2 506	3 106	5 382	6 601	m	m	4 546
Germany (FTFR)*	m	3 491	6 866	m	m	8 459	m
Greece**	m	m	m	m	m	m	m
Hungary*	m	m	m	m	m	m	m
Iceland	m	m	m	m	m	m	m
Ireland	1 567	1 596	2 785	8 032	m	m	m
Italy*	m	m	6 315	7 300	m	m	6 004
Japan	m	m	m	m	m	m	m
Korea	m	m	m	m	m	m	m
Luxembourg	m	m	m	m	m	m	m
Mexico*	601	484	1 233	4 463	x	4 463	862
Netherlands	2 650	2 867	4 064	10 036	a	10 036	4 164
New Zealand	m	m	m	m	m	m	m
Norway*	m	m	m	m	m	m	m
Poland	m	m	m	m	m	m	m
Portugal*	m	m	m	m	m	m	m
Spain	2 056	1 961	2 865	3 696	m	m	2 667
Sweden	m	m	m	m	m	m	m
Switzerland*	m	6 287	6 937	16 022	7 091	19 663	m
Turkey*	m	m	m	m	m	m	m
United Kingdom**	4 566	3 015	4 456	9 805	m	m	4 344
United States	m	m	m	m	m	m	m
Country mean	**3 218**	**3 109**	**4 821**	**8 466**	**m**	**m**	**4 480**

* Public institutions.
** Public and government-dependent private institutions.
Source: OECD Education Database. See Annex 3 for notes.

Table B4.3. **Expenditure per student relative to GDP per capita on public and private institutions by level of education (1995)**

	Early childhood	Primary	Secondary	Tertiary			All levels of education combined
				All	Non-university	University-level	
Australia	m	16	25	54	39	59	m
Austria*	24	27	35	39	62	37	33
Belgium (Fl. Community)**	11	16	27	29	x	x	22
Canada	26	x	52	55	50	58	32
Czech Republic	20	19	27	66	24	74	28
Denmark	23	27	29	38	x	x	28
Finland	33	24	28	41	39	41	30
France	16	17	31	33	x	x	25
Germany*	21	16	n	43	33	44	29
Greece**	x	17	16	22	14	26	16
Hungary*	20	22	23	70	a	70	26
Iceland	m	m	m	m	m	m	m
Ireland	12	12	20	42	x	*x*	19
Italy*	17	24	27	26	34	25	26
Japan	11	19	20	40	29	43	23
Korea	12	17	19	42	32	46	23
Luxembourg	m	m	m	m	m	m	m
Mexico	15	14	24	69	x	69	20
Netherlands	15	16	22	45	a	45	22
New Zealand	13	16	24	52	59	49	24
Norway*	m	m	m	42	x	x	28
Poland	m	m	m	m	m	m	m
Portugal*	m	m	m	49	x	x	m
Spain	18	18	24	35	28	35	24
Sweden	18	28	30	70	x	x	32
Switzerland*	10	24	30	63	33	74	29
Turkey*	m	m	m	m	m	m	m
United Kingdom**	28	19	24	40	x	x	24
United States	m	20	26	61	30	75	30
Country mean	**18**	**19**	**27**	**46**	**32**	**50**	**26**
OECD total	**16**	**18**	**25**	**49**	**32**	**56**	**26**
WEI Participants							
Argentina*[1]	11	12	17	m	m	m	m
Brazil*	10	15	17	m	m	m	19
Chile[1]	11	15	18	72	35	88	21
Indonesia*[1]	m	m	23	m	m	m	m
Jordan*[1]	m	20	20	m	m	m	m
Malaysia[1]	4	12	22	103	68	136	20
Paraguay*[1]	m	10	14	m	600	m	m
Philippines*	m	11	11	m	m	m	m
Uruguay*[1]	7	12	13	32	44	30	14

* Public institutions.
** Public and government-dependent private institutions.
1. 1996 data.
2. 1994 data.
Source: OECD Education Database. See Annex 3 for notes.

Table B4.4. **Educational expenditure per student by level of education relative to educational expenditure per student at the primary level (1995)**

	Early childhood education	Primary education	Secondary education	Tertiary education
Australia	m	100	157	339
Austria*	88	100	128	143
Belgium (Fl. Community)**	73	100	176	185
Canada	m	m	m	m
Czech Republic	103	100	141	340
Denmark	87	100	109	143
Finland	139	100	116	172
France	96	100	183	194
Germany*	130	100	186	265
Greece**	m	m	m	m
Hungary*	89	100	104	313
Iceland	m	m	m	m
Ireland	98	100	158	338
Italy*	71	100	114	107
Japan	61	100	110	216
Korea	68	100	109	244
Luxembourg	m	m	m	m
Mexico	107	100	177	500
Netherlands	95	100	136	283
New Zealand	86	100	156	331
Norway*	m	m	m	m
Poland	m	m	m	m
Portugal*	m	m	m	m
Spain	96	100	131	188
Sweden	63	100	109	254
Switzerland*	41	100	129	266
Turkey*	m	m	m	m
United Kingdom**	152	100	128	217
United States	m	100	127	303
Country mean	**92**	**100**	**138**	**252**
WEI Participants				
Argentina*[1]	93	100	136	m
Brazil*	65	100	117	m
Chile[1]	74	100	114	467
Israel[2]	77	100	136	320
Jordan*[1]	m	100	100	m
Malaysia[1]	32	100	188	897
Paraguay*[1]	m	100	143	m
Philippines*	m	100	101	m
Uruguay*[1]	60	100	111	265

* Public institutions.
** Public and government-dependent private institutions.
1. 1996 data.
2. 1994 data.
Source: OECD Education Database. See Annex 3 for notes.

Table B4.5. **Expenditure per student over the average duration of tertiary studies (1995)**

	Method	Average duration of tertiary studies (in years)			Cumulative expenditure per student over the average duration of tertiary studies		
		All	Non-university	University-level	All	Non-university	University-level
Australia	CM	m	m	2.6	m	m	30 086
Austria*	AF	6.4	2.3	7.4	50 832	29 841	57 256
Canada	CM	1.9	1.4	2.5	21 574	14 446	30 707
Denmark	AF	4.2	2.1	4.4	34 177	x	x
France	AF	4.7	2.8	5.3	30 752	x	x
Germany*	CM	5.1	2.2	6.1	45 023	15 117	54 822
Greece**	CM	6.1	5.0	6.9	16 461	8 809	21 802
Hungary*	CM	3.9	a	3.9	18 644	a	18 644
Ireland	CM	2.6	2.0	3.0	18 666	x	x
Italy*	CM	4.2	1.1	4.9	20 824	7 427	24 342
Korea	CM	3.4	2.1	4.2	17 846	8 239	24 192
Mexico	AF	3.4	x	3.4	17 356	x	17 356
Netherlands	CM	3.9	a	3.9	35 202	a	35 202
Norway*	AF	3.3	2.5	4.0	31 547	x	x
Spain	AF	4.6	1.5	4.7	22 496	5 917	23 376
Switzerland*	CM	3.6	2.2	5.5	56 847	17 988	100 142
United Kingdom**	CM	3.4	1.8	3.5	24 563	x	x
Country mean		**4.1**	**1.9**	**4.5**	**28 926**	**x**	**x**
OECD total		**4.2**	**1.8**	**4.4**			
WEI Participants							
Russian Federation	CM	4.9	6.9	4.2	m	m	m

The average duration of studies refers to the academic year 1994.
Either the Chain Method (CM) or an Approximation Formula (AF) was used to estimate the duration of tertiary studies.
* Public institutions.
** Public and government-dependent private institutions.
Source: OECD Education Database. See Annex 3 for notes.

EDUCATIONAL EXPENDITURE BY RESOURCE CATEGORY

B5

POLICY CONTEXT

This indicator compares countries with respect to the division of spending between current and capital outlays and the distribution of current expenditure by resource category.

How spending is allocated between different functional categories can affect the quality of instruction (through teachers' salaries, for example), the condition of educational facilities (such as expenditure on school maintenance) and the ability of the education system to adjust to changing demographic and enrolment trends. Comparisons of how different countries distribute educational expenditure between the resource categories can provide some insight into variations in the organisation and operation of educational institutions. Decisions on the allocation of resources made at the system level, both budgetary and structural, eventually feed through to the classroom and affect the nature of instruction and the conditions under which it is provided.

EVIDENCE AND EXPLANATIONS

Educational expenditure can first be divided into current and capital expenditure. Capital expenditure includes outlays for assets that last longer than one year and includes spending on the construction, renovation and major repair of buildings. Current expenditure includes financial outlays for school resources used each year for the operation of schools.

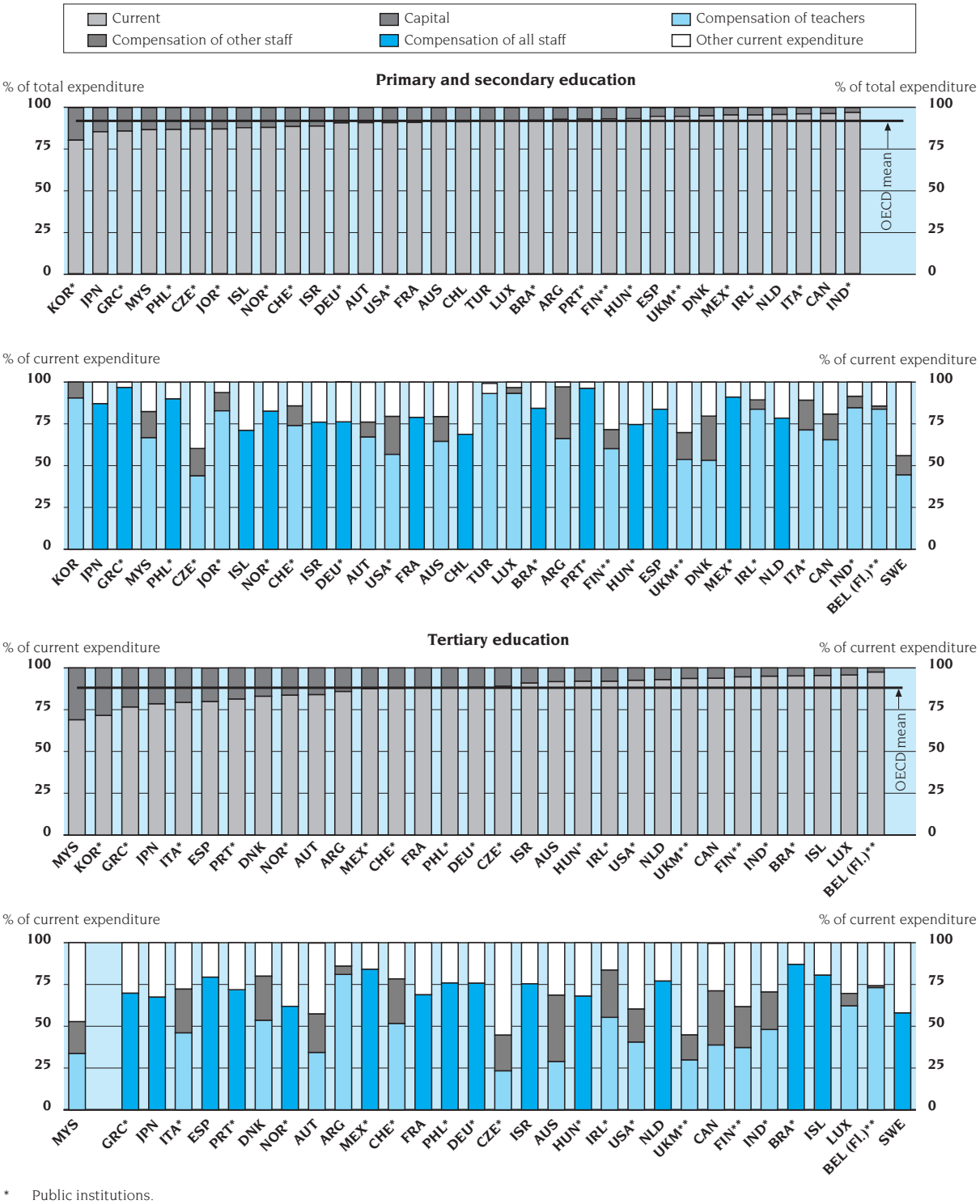
Current expenditure can be further subdivided into three broad functional categories: compensation of teachers, compensation of other staff and current expenditure other than on compensation of personnel (on, for example, teaching materials and supplies, maintenance of school buildings, preparation of student meals and the rental of school facilities). The amount allocated to each of these functional categories will depend in part on current and projected changes in enrolment, in the salaries of educational personnel and in costs for the maintenance and construction of educational facilities.

In primary and secondary education combined, current expenditure accounts, on average, for 92 per cent of total outlays on educational institutions.

Education takes place mostly in school and university settings. The labour-intensive technology of education explains the large proportion of current spending in total educational expenditure. In primary and secondary education combined, current expenditure accounts, on average across all OECD countries, for 92 per cent of total outlays. In terms of expenditure per full-time equivalent student enrolled, this amounts to an average of US$3 847, converted using purchasing power parity indices. The corresponding figure for capital outlays is US$315 per student.

There is wide variation between countries with respect to the relative proportion of current and capital spending: at the primary/secondary level, the capital proportion ranges from less than 5 per cent in Canada, Ireland, Italy, Mexico and the Netherlands to 15 and 20 per cent, respectively, in Japan and Korea (Chart B5.1). The picture is similar among WEI participants, with the capital share ranging from 3 per cent in India to 13 per cent in Jordan, Malaysia and the Philippines.

Chart B5.1. **Distribution of total expenditure and distribution of current expenditure by resource category, by level of education (1995)**



* Public institutions.
** Public and government-dependent private institutions.

Countries are ranked in ascending order of current expenditure.

Source: OECD.

In most countries, over 80 per cent of current expenditure at the primary and secondary levels is devoted to staff salaries.

The salaries of teachers and other staff employed in education comprise the largest share of current expenditure in OECD and WEI countries alike. On average across OECD countries, expenditure on the compensation of educational personnel accounts for 82 per cent of current expenditure at the primary and secondary levels of education combined (equivalent to an expenditure of US$3 063 spent per full-time equivalent student enrolled). Although less than 60 per cent of expenditure in the Czech Republic and Sweden is devoted to the compensation of educational personnel, the proportion is above 90 per cent in Greece, Korea, Luxembourg, Mexico, Portugal and Turkey. In Greece, Hungary, Ireland and Mexico this commitment leaves around US$400 or less per full-time student for expenditure other than for the compensation of education personnel, such as for teaching materials and supplies, maintenance of school buildings, preparation of student meals and rental of school facilities.

OECD countries with smaller education budgets invest more in personnel and less in other contracted or purchased services.

OECD countries with relatively smaller education budgets (Greece, Mexico and Portugal, for example) tend to devote a larger share of current educational expenditure to the compensation of personnel and less to other contracted and purchased services such as support services (for the maintenance of school buildings, for example), ancillary services (such as the preparation of meals for students) and rents paid for school buildings and other facilities. The notable exceptions to this pattern are the Czech Republic and Hungary, which spend less than the OECD average (82 per cent of current expenditure) on the compensation of staff (60 and 75 per cent respectively) for primary and secondary education combined. The pattern is less uniform among WEI participants.

The distribution of expenditure by resource category and, in particular, the proportion of expenditure accounted for by the compensation of educational personnel depends among other things on the ratio of students to teaching staff (Indicator B7), teachers' salaries (Indicator E1), the number of instructional hours for teachers (Indicator E3) and the division of teachers' time between teaching and other duties.

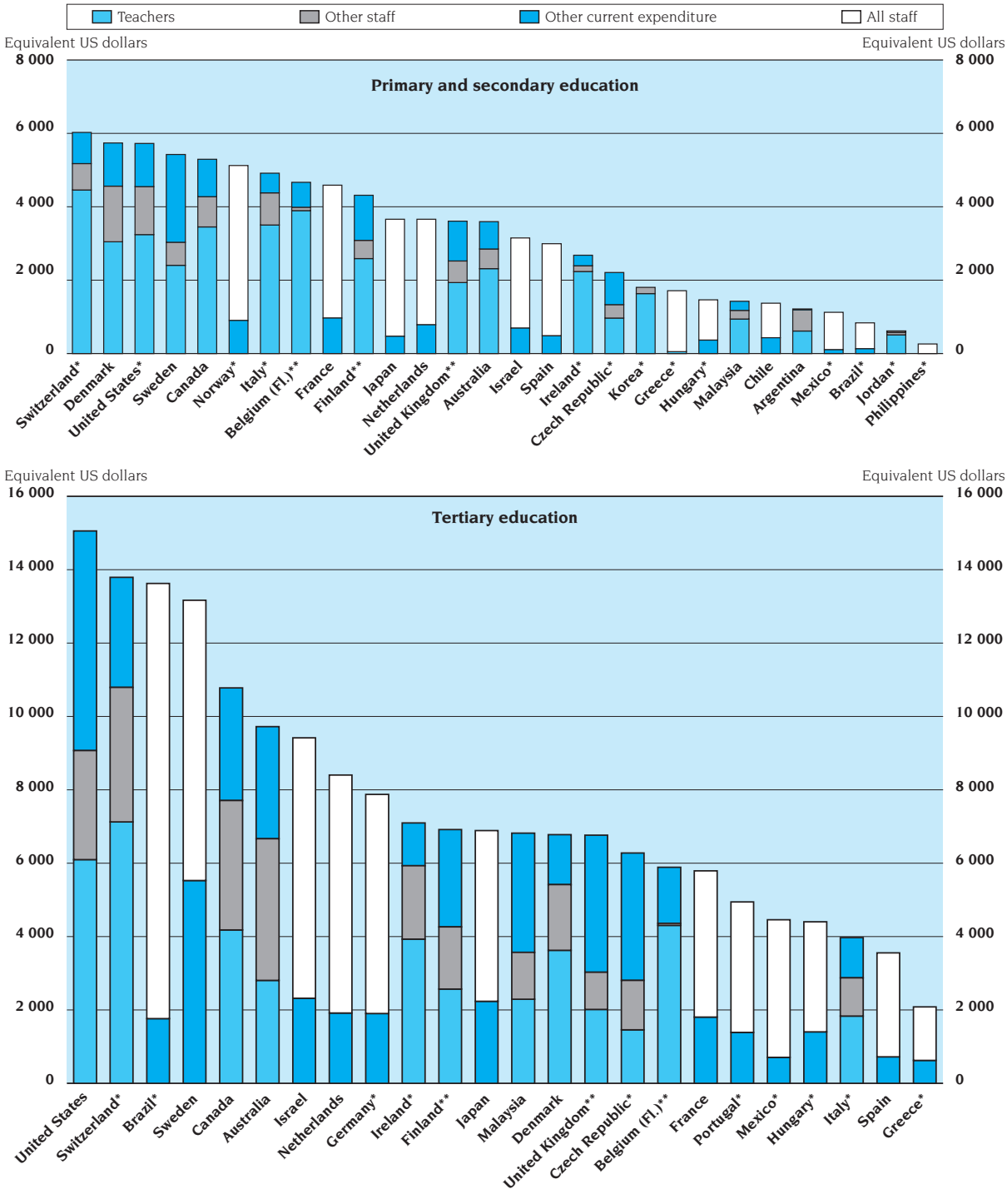
Countries vary in the proportions of current expenditure they allocate to the compensation of teachers and of other staff.

In Denmark and the United States around 25 per cent of staff expenditure in primary and secondary education combined goes towards compensation of personnel other than teachers; in the Flemish Community of Belgium, Ireland and Luxembourg the figure is 6 per cent or less. These differences are likely to reflect the degree to which educational personnel specialise in non-teaching activities in a particular country (for example, principals who do not teach, guidance counsellors, bus drivers, school nurses, janitors and maintenance workers), as well as the relative salaries of teaching and non-teaching personnel.

In practice, the allocation of salary expenditure between teaching and non-teaching personnel is not clear-cut. Some countries define "teachers" narrowly as those who teach students in the classroom; others include heads of schools and other professional personnel. Because of these (and other) differences in definitions, as well as differences between countries in the coverage of non-teaching staff, the variation observed in the reported percentages of expenditure on non-teaching staff should be viewed with caution.

Among the 13 OECD countries for which data are available, the average amount of teacher compensation per student ranges from below US$1 000 in the Czech Republic to over US$4 400 in Switzerland (Chart B5.2).

Chart B5.2. **Average current expenditure per student by resource category (1995)**



* Public institutions.
** Public and government-dependent private institutions.

Countries are ranked in descending order of total current expenditure.

Source: OECD.

At the tertiary level, the proportion of total expenditure spent on capital outlays is larger than at the primary/secondary level. In 14 out of 25 OECD countries, the proportion spent on capital expenditure is above 10 per cent, and in Greece, Italy, Japan, Korea and Spain, it lies between 20 and 28 per cent (Chart B5.1). Malaysia invests more than 31 per cent of total tertiary expenditure in capital outlays, Brazil and India, by contrast, invest only 5 per cent.

At the tertiary level, the proportion of capital expenditure is generally larger, because of more differentiated and advanced teaching facilities.

This difference can also be seen in comparisons to the average capital outlay per student, although the distribution of outlays is wide. At the tertiary level, capital outlays per student range from less than US$460 in the Flemish Community of Belgium, Finland, Hungary and the United Kingdom to more than US$1 800 in Japan and Switzerland.

These wide differences are likely to reflect differences in how tertiary education is organised in each country, as well as the degree to which expansion in enrolments is being accommodated by new construction.

At the same time, the proportion of current expenditure spent on staff is considerably lower at the tertiary level than at the primary/secondary level: all OECD countries for which data are available spend 16 per cent or more of current expenditure on purposes other than the compensation of educational personnel, and in more than half of the countries the proportion is 30 per cent or more. This trend is similar among WEI participants, with the share of current expenditure other than for the compensation of personnel reaching as much as 47 per cent in Malaysia.

At the tertiary level, countries tend to devote a higher share of current expenditure to contracted and purchased services.

DEFINITIONS

The distinction between current and capital expenditures is the standard one used in national income accounting. Current expenditures are those for goods and services consumed within the current year, which have to be made recurrently to sustain the production of educational services. Capital expenditures are those for assets which last longer than one year, including outlays for construction, renovation, major repair of buildings and expenditures for new or replacement equipment. The capital expenditures reported here represent the value of educational capital acquired or created during the year in question – that is, the amount of capital formation – regardless of whether the capital outlays were financed from current revenue or by borrowing. Neither current nor capital expenditure include expenditure for debt service.

Data refer to the financial year 1995 and are based on the UOE data collection on education statistics and the World Education Indicators Pilot Project, administered in 1997 (for details see Annex 3).

Calculations cover expenditure by public institutions or, where available, those of public and private institutions combined. Only expenditure on educational institutions is considered. The proportions of current expenditure allocated to compensation of teachers, compensation of other staff, total staff compensation and other (non-personnel) current outlays are calculated by expressing the respective amounts as percentages of total current expenditure. In some cases, compensation of teaching staff means compensation of classroom teachers only, but in others it includes that of heads of schools and other professional educators. Capital expenditure does not include debt-servicing.

The average expenditure per student by resource category is calculated by multiplying expenditure per student in purchasing power parities as shown in

Indicator B4, by the respective proportions of teacher and staff compensation in total expenditure for educational institutions. Current expenditure other than for the compensation of personnel includes expenditure on contracted and purchased services such as expenditure on support services (for the maintenance of school buildings, for instance), ancillary services (such as the preparation of meals for students) and rent paid for school buildings and other facilities. These services are obtained from outside providers (as opposed to the services produced by the education authorities or educational institutions themselves using their own personnel).

The country mean is calculated as the simple average over all OECD countries for which data are available. The OECD total reflects the value of the indicator when the OECD region is considered as a whole (the Reader's Guide gives details).

Table B5.1*a*. **Educational expenditure on primary and secondary education by resource category for public and private institutions (1995)**

	Percentage of total expenditure		Percentage of current expenditure				Average compensation per student (in equivalent US dollars)				
	Current	Capital	Compensation of teachers	Compensation of other staff	Compensation of all staff	Other current expenditure	Teachers	All staff	Other current expenditure	Current	Capital
Australia	92	8	64	15	79	21	2 313	2 849	741	3 589	333
Austria	91	9	67	9	76	24	m	m	m	m	m
Belgium (Fl. Community)**	m	m	84	2	86	14	3 899	3 988	673	4 661	10
Canada	96	4	65	16	81	19	3 455	4 277	1 012	5 289	196
Czech Republic*	87	13	44	16	60	40	968	1 330	877	2 207	327
Denmark	95	5	53	27	80	20	3 044	4 566	1 168	5 733	295
Finland**	93	7	60	12	72	28	2 589	3 085	1 228	4 313	310
France	91	9	x	x	79	21	x	3 617	975	4 592	449
Germany*	92	8	x	x	76	24	x	3 262	1 057	4 319	371
Greece*	86	14	x	x	97	3	x	1 658	57	1 715	280
Hungary*	93	7	x	x	75	25	x	1 096	374	1 470	102
Iceland	88	12	x	x	71	29	m	m	m	m	m
Ireland*	96	4	84	6	89	11	2 243	2 391	288	2 679	123
Italy*	96	4	71	18	89	11	3 501	4 380	532	4 912	187
Japan	85	15	x	x	87	13	x	3 182	479	3 661	621
Korea*	80	20	90	10	100	x	1 636	1 810	x	1 810	439
Luxembourg	92	8	93	4	97	3	m	m	m	m	m
Mexico*	96	4	x	x	91	9	x	1 023	101	1 124	52
Netherlands	96	4	x	x	78	22	x	2 869	792	3 661	153
New Zealand	m	m	m	m	m	m	m	m	m	m	m
Norway*	88	12	x	x	82	18	x	4 220	900	5 120	690
Poland	m	m	m	m	m	m	m	m	m	m	m
Portugal*	93	7	x	x	96	4	m	m	m	m	m
Spain	95	5	x	x	84	16	x	2 502	486	2 988	160
Sweden	m	m	44	12	56	44	2 410	3 035	2 394	5 430	x
Switzerland*	89	11	74	12	86	14	4 452	5 174	858	6 032	771
Turkey	92	8	93	m	94	6	m	m	m	m	m
United Kingdom**	95	5	54	16	70	30	1 940	2 522	1 092	3 614	196
United States*	91	9	57	23	80	20	3 241	4 554	1 168	5 722	559
Country mean	**92**	**8**	**69**	**13**	**82**	**19**	**2 745**	**3 063**	**822**	**3 847**	**315**
WEI Participants											
Argentina*[1]	93	7	66	31	97	3	617	1 190	34	1 225	93
Brazil*	92	8	x	x	84	16	x	708	133	840	69
Chile*[1]	92	8	x	x	69	31	x	943	431	1 373	127
India*[1]	97	3	85	7	91	9	m	m	m	m	m
Israel[2]	89	11	x	x	76	24	x	2 453	698	3 151	393
Jordan*[1]	87	13	83	11	94	6	512	580	39	619	91
Malaysia[1]	87	13	67	16	82	18	949	1 173	252	1 425	214
Paraguay[1]	93	7	82	12	93	7	282	324	23	346	27
Philippines*	87	13	x	x	90	10	x	264	30	294	44
Uruguay[1]	93	7	78	14	92	8	696	824	69	893	72

* Public institutions.
** Public and government-dependent private institutions.
1. 1996 data.
2. 1994 data.
Source: OECD Education Database. See Annex 3 for notes.

Table B5.1*b*. **Educational expenditure on tertiary education by resource category for public and private institutions (1995)**

	Percentage of total expenditure		Percentage of current expenditure				Average compensation per student (in equivalent US dollars)				
	Current	Capital	Compensation of teachers	Compensation of other staff	Compensation of all staff	Other current expenditure	Teachers	All staff	Other current expenditure	Current	Capital
Australia	92	8	29	40	69	31	2 814	6 674	3 047	9 722	868
Austria	84	16	34	23	58	42	m	m	m	m	m
Belgium (Fl. Community)**	98	2	73	1	74	26	4 304	4 368	1 526	5 894	149
Canada	94	6	39	32	72	28	4 189	7 714	3 061	10 775	696
Czech Republic*	89	11	23	21	45	55	1 462	2 805	3 470	6 276	770
Denmark	83	17	54	26	80	20	3 628	5 422	1 354	6 776	1 381
Finland**	95	5	37	24	62	38	2 580	4 271	2 654	6 925	389
France	88	12	x	x	69	31	x	3 985	1 803	5 788	781
Germany*	89	11	x	x	76	24	x	5 967	1 912	7 879	1 017
Greece*	77	23	x	x	70	30	x	1 453	630	2 083	633
Hungary*	92	8	x	x	68	32	x	2 999	1 413	4 412	380
Iceland	96	4	x	x	81	19	m	m	m	m	m
Ireland*	92	8	55	28	84	16	3 933	5 939	1 161	7 100	605
Italy*	79	21	46	26	72	28	1 834	2 876	1 104	3 980	1 033
Japan	79	21	x	x	67	33	x	4 642	2 244	6 886	1 882
Korea*	72	28	m	m	m	m	m	m	m	m	m
Luxembourg	96	4	62	7	70	30	m	m	m	m	m
Mexico*	88	12	x	x	84	16	x	3 751	710	4 461	629
Netherlands	93	7	x	x	77	23	x	6 481	1 918	8 399	626
New Zealand	m	m	m	m	m	m	m	m	m	m	m
Norway*	84	16	x	x	62	38	m	m	m	m	m
Poland	m	m	m	m	m	m	m	m	m	m	m
Portugal*	81	19	x	x	72	27	x	3 552	1 390	4 942	1 130
Spain	80	20	x	x	79	21	x	2 831	731	3 562	889
Sweden	m	m	x	x	58	42	x	7 637	5 531	13 168	x
Switzerland*	88	12	52	27	78	22	7 126	10 798	2 991	13 789	1 896
Turkey	m	m	m	m	m	m	m	m	m	m	m
United Kingdom**	94	6	30	15	45	55	2 020	3 033	3 738	6 770	454
United States	93	7	41	20	60	40	6 100	9 071	5 987	15 059	1 203
Country mean	**88**	**12**	**44**	**22**	**69**	**31**	**3 636**	**5 060**	**2 304**	**7 364**	**871**
WEI Participants											
Argentina*[1]	86	14	81	5	86	14	m	m	m	m	m
Brazil*	95	5	x	x	87	13	x	11 859	1 762	13 621	682
India**[1]	95	5	48	22	71	29	m	m	m	m	m
Israel[2]	91	9	x	x	75	25	x	7 103	2 319	9 422	930
Malaysia[1]	69	31	34	19	53	47	2 289	3 577	3 247	6 824	3 013
Philippines*	88	12	x	*x*	76	24	m	m	m	m	m
Uruguay[1]	93	7	72	7	79	21	1 625	1 795	469	2 264	178

* Public institutions.
** Public and government-dependent private institutions.
1. 1996 data.
2. 1994 data.
Source: OECD Education Database. See Annex 3 for notes.

PUBLIC FUNDS BY LEVEL OF GOVERNMENT

B6

POLICY CONTEXT

This indicator shows the sources of public funds by level of government…

The level of government that has responsibility for, and control over, the funding of education is also likely to have influence over decisions regarding how those funds are spent. An important factor in educational policy is, therefore, the division of responsibility for educational funding between national, regional and local authorities. Important decisions regarding educational funding are made both at the level of government where the funds originate and at the level of government in which they are finally spent or distributed. At the initial source of educational funding, decisions are made concerning the volume of resources allocated, and any restrictions on how that money can be spent. At the final governmental source of educational funding, additional restrictions may be attached to the funds, or this level of government may even pay directly for educational resources (by paying teachers' salaries, for example).

Complete centralisation can cause delays in decision-making and decisions that are far removed from those affected can fail to take proper account of changes in local needs and desired practices. Under complete decentralisation, however, units of government may differ in the level of educational resources they spend on students, either because of differences in priorities related to education or differences in the ability to raise education funds. Wide variability in educational standards and resources can also lead to inequality of educational opportunity and insufficient attention to long-term national requirements.

… and the distribution of public expenditure on public and private educational institutions.

Although the source of educational funds is typically the public sector, the provision of education can be organised by private institutions. This way of organising, or subcontracting, education is seen in many countries as a cost-effective strategy for providing education.

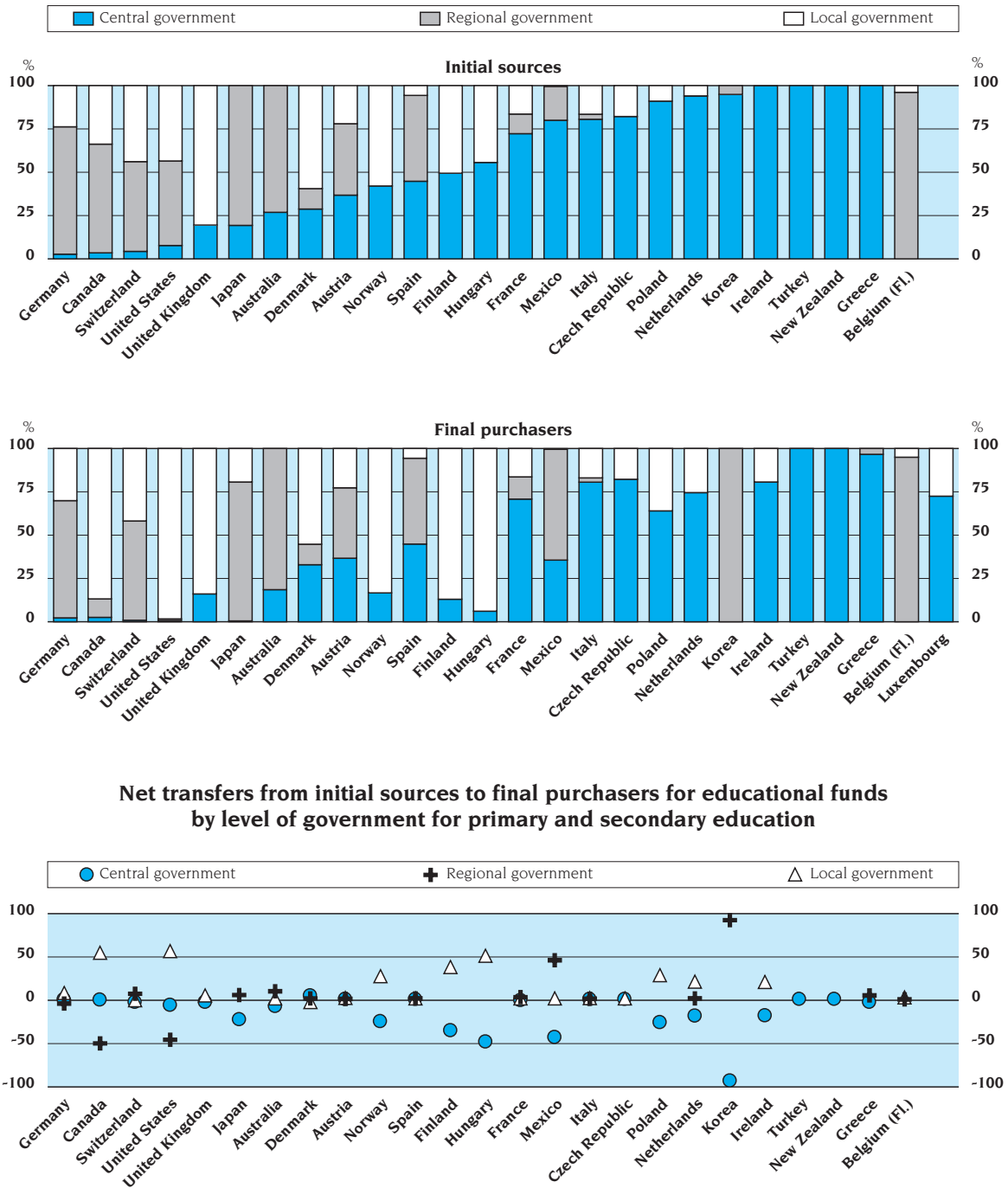
EVIDENCE AND EXPLANATIONS

With some notable exceptions, responsibility for funding tertiary education in OECD countries is more than 85 per cent centralised.

The way responsibility for funding education is divided between levels of government differs between the primary/secondary and the tertiary level. Although countries differ considerably in the origin of funding for primary and secondary education, the pattern is quite similar at the tertiary level for most OECD countries. At this level of education, by far the largest part of public funds originate from central government. In 20 out of 27 OECD countries, central government is the initial source of more than 85 per cent of public funds for tertiary education (Chart B6.1*b*). On average, the central government is also the final source of 78 per cent of all public education funds in OECD countries (after transfers between levels of government). In fact, in all except six of the OECD countries considered, more than 50 per cent of the final funds come from central government, and in 18 countries it is about 85 per cent or more.

In Canada, Spain, Switzerland and the United States around half of the initial funds for tertiary education are generated by regional governments, and

Chart B6.1*a*. **Educational spending by level of government for primary and secondary education (1995)**



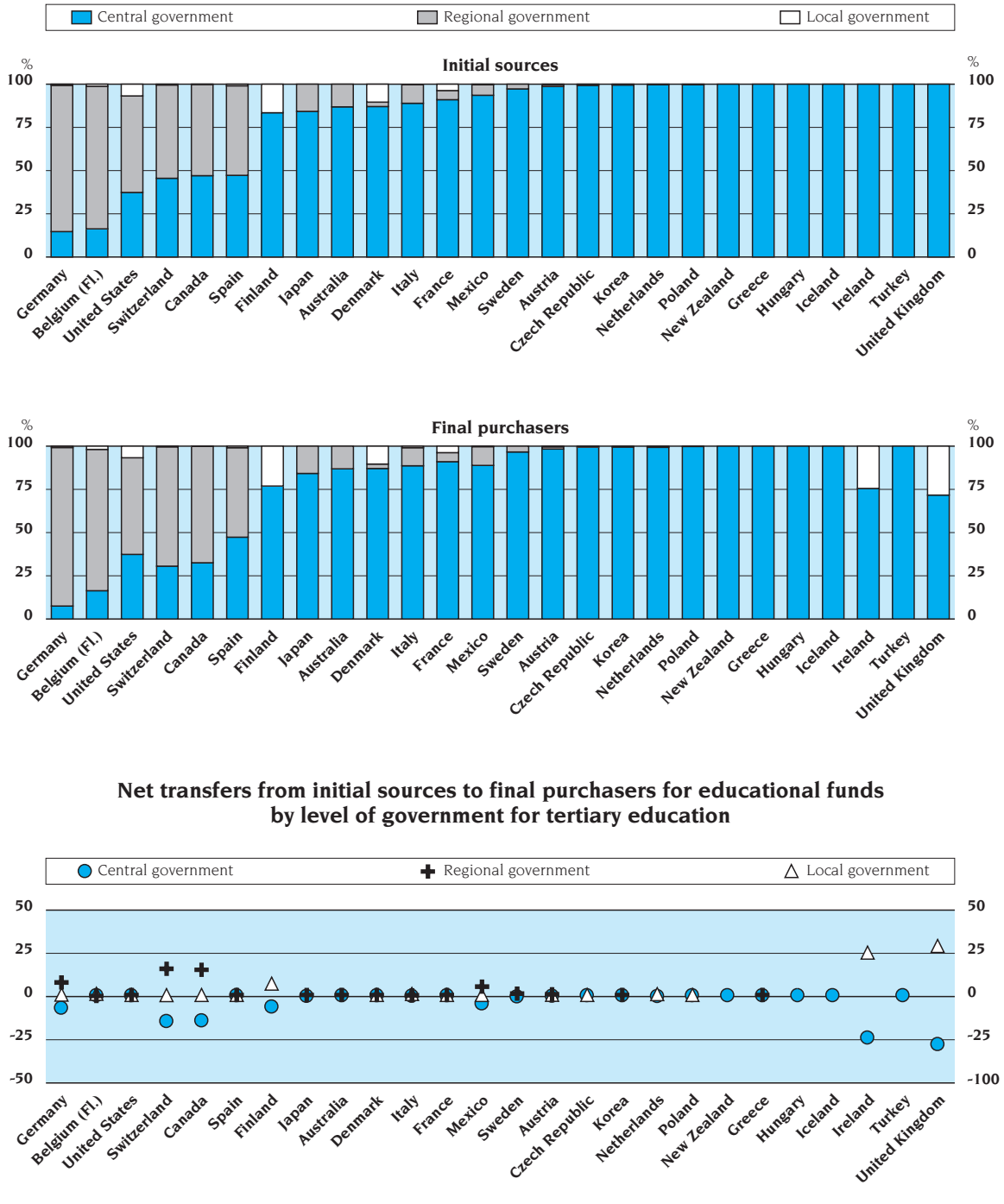
Net transfers from initial sources to final purchasers for educational funds by level of government for primary and secondary education

Example: Net transfer from initial to final sources in Canada are transfers from the regional to the local government. The proportion of regional goverment sources decreases by 52 per cent points after intergovernmental transfers, the proportion of local governmental sources increases by 52 per cent points, central government sources remain unchanged.

Countries are ranked in ascending order of the percentage of initial funds from the central government.

Source: OECD.

Chart B6.1*b*. **Educational spending by level of government for tertiary education (1995)**



Net transfers from initial sources to final purchasers for educational funds by level of government for tertiary education

Example: Net transfer from initial to final sources in the United Kingdom are transfers from the central to the local government. The proportion of central goverment sources decreases by 28 per cent points after intergovernmental transfers, the proportion of local governmental sources increases by 28 per cent points, regional government sources remain unchanged.

Countries are ranked in ascending order of the percentage of initial funds from the central government.

Source: OECD.

50-70 per cent is also spent by regional authorities. In the Flemish Community of Belgium and Germany tertiary education is funded almost exclusively by regional government, where 82 per cent or more of the initial funds and final spending are located.

Local authorities do not have an important role in financing tertiary education, with the exception of Denmark and Finland, where 10 per cent or more of the funds are initially generated and spent by local government.

In Ireland and the United Kingdom resources are generated centrally but a large part is spent locally.

Although in most countries the level of government that is the initial source of tertiary funds is also the final source, exceptions to this pattern are Ireland and the United Kingdom, where the initial funding is completely centralised, but a quarter to a third of the final spending takes place locally.

Countries differ in the division of responsibility for funding primary and secondary education between levels of government.

The division of responsibility for funding primary and secondary education varies much more across OECD countries than it does at the tertiary level. In many countries the funding of primary and secondary education shows much more decentralisation. Countries can be grouped according to the percentage of public funds generated and spent by central, regional and local governments.

Four basic patterns can be observed:

The central government is both the main initial source of funds and the main final spender on education.

- In New Zealand and Turkey the funding of primary and secondary education is completely centralised. There the central government is the only main initial source of funds and the only final purchaser. In Ireland and Greece 100 per cent of the initial funds and 81 and 97 per cent, respectively, of the final spending comes from the central level. In the Czech Republic, France, Italy and the Netherlands, the central government is still the source of the majority of initial funds and the main final spender.
  In contrast, in Belgium, Canada, Germany, Switzerland and the United States, the central government generates less than 10 per cent of educational funds. In these five countries, as well as in Japan and Korea, less than 5 per cent of final educational funds are spent by the central government.

The central government is the main initial source but funds are transferred to regional or local authorities, which are the main direct sources of funds.

- The central government is the main initial source of funds, but regional or local authorities are the main final purchasers of educational services in Hungary, Korea and Mexico. In Korea 95 per cent of the initial funds originate from central government and the regional government is the only spender.

Regional authorities are both the main initial sources and the main final purchasers.

- Regional governments are both the main initial sources and the main final spenders of educational funds in Australia, Belgium, Finland, Germany, Japan, Spain and Switzerland, although in Australia, Finland and Spain between 27 and 49 per cent of funds are generated by the central government.

Funding responsibilities are shared between regional and local authorities.

- In Canada and the United States, regional governments are the main initial source of funds, but in these countries local authorities are the main final purchasers of educational services, with the regional governments spending 11 and 1 per cent of funds respectively.
  In Denmark, Norway and the United Kingdom, local authorities are both the main initial source of funds and the main final purchasers of educational services.

An alternative form of final spending is the transfer of public money to private institutions.

While in the majority of OECD countries education funded from public sources is also organised and delivered by public institutions, in some countries, a considerable amount of final funds is transferred to government-dependent private institutions. In other words, the final spending and delivery of education is subcontracted to non-governmental institutions (Table B6.2).

On average across OECD countries, 10 per cent of the public funds designated for educational institutions are spent in institutions that are privately managed. In the Netherlands, where the central government is the major final source of funds, 75 per cent of public funds for primary and secondary educational institutions and 46 per cent of public funds for tertiary institutions are transferred from the central government to government-dependent private institutions. In the Flemish community of Belgium 63 per cent of the funds for educational institutions are transferred to government-dependent private institutions at the primary/secondary levels and 64 per cent at the tertiary level.

In the Flemish Community of Belgium and the Netherlands, a considerable proportion of public funds are transferred to private institutions at both the primary/secondary and the tertiary levels.

In Argentina, Chile, India and Israel the share of public funds transferred to private institutions ranges at the primary/secondary level from 12 to 33 per cent while in all other WEI participants such transfers are negligible.

Although such funds are spent in privately managed institutions, they can also come with attendant restrictions. For example, teachers may be required to meet some minimum level of qualification and students may be required to pass a government-regulated examination in order to graduate. Government-dependent private institutions are commonly subject to a range of government legislation and supervision (*e.g.* inspection).

In the United Kingdom 100 per cent of public funding of tertiary education is spent by government-dependent private institutions; in Israel this figure is 88 per cent.

At the primary and secondary levels of education, government funding of independent private institutions (defined as institutions receiving less than 50 per cent of their core funding from public sources) is negligible in OECD countries (only in Japan and Germany are public funds used for independent institutions at these levels – 4 and 2 per cent respectively). It is more usual for independent tertiary institutions to receive public funding. In Japan, Korea and the United States 16 per cent or more of public funds designated for tertiary education institutions are spent in independent private institutions.

DEFINITIONS

Data refer to the financial year 1995 and are based on the UOE data collection on education statistics and the World Education Indicators Pilot Project, administered in 1997 (for details see Annex 3).

The initial educational expenditure of each level of government – also referred to as the expenditure originating at that level – is the total educational expenditure of all public authorities at the level in question (direct expenditure plus transfers to other levels of government and to the private sector), less the transfers received from governments at other levels. The share of initial expenditure by a particular level of government is calculated as a percentage of the total, consolidated expenditure of all three levels. Only expenditure specifically designated for education is taken into account in determining the share of initial expenditure borne by a particular level. General-purpose transfers between levels of government, which provide much of the revenue of regional and local governments in some countries, have been excluded from the calculations.

The final expenditure of each level of government includes funds spent directly on educational institutions and transfers to households or other private entities (after transfers from other levels of government have occurred).

The country mean is calculated as the simple average over all OECD countries for which data are available. The OECD total reflects the value of the indicator when the OECD region is considered as a whole (the Reader's Guide gives details).

The Glossary at the end of this volume gives a definition of public, government-dependent private and independent private institutions.

Table B6.1*a*. **Initial sources of public educational funds and final purchasers of educational resources by level of government for primary and secondary education (1995)**

	Initial funds (before transfers between levels of government)				Final funds (after transfers between levels of government)			
	Central	Regional	Local	Total	Central	Regional	Local	Total
Australia	27	73	n	100	19	81	n	100
Austria	37	41	22	100	37	41	23	100
Belgium (Fl. Community)	n	96	4	100	n	95	5	100
Canada	3	63	34	100	3	11	87	100
Czech Republic	82	a	18	100	82	a	18	100
Denmark	29	12	59	100	33	12	55	100
Finland	49	a	51	100	13	a	87	100
France	72	11	16	100	71	13	16	100
Germany	3	74	24	100	2	68	30	100
Greece	100	n	a	100	97	3	a	100
Hungary	56	x	44	100	6	x	94	100
Iceland	m	m	m	m	m	m	m	m
Ireland	100	a	n	100	81	a	19	100
Italy	81	3	17	100	81	3	17	100
Japan	24	76	x	100	n	80	19	100
Korea	95	5	a	100	n	100	a	100
Luxembourg	m	m	m	m	72	a	28	100
Mexico	80	20	n	100	36	64	n	100
Netherlands	94	n	6	100	75	n	25	100
New Zealand	100	a	a	100	100	a	a	100
Norway	43	a	59	100	17	a	85	100
Poland	91	a	9	100	64	a	36	100
Portugal	m	m	m	m	m	m	m	m
Spain	45	49	6	100	45	49	6	100
Sweden	m	m	m	m	m	m	m	m
Switzerland	4	52	44	100	1	57	42	100
Turkey	100	a	a	100	100	a	a	100
United Kingdom	20	a	80	100	16	a	84	100
United States	8	49	43	100	1	1	98	100
Country mean	**54**	**26**	**22**	**100**	**44**	**27**	**34**	**100**

Source: OECD Education Database. See Annex 3 for notes.

Table B6.1*b*. **Initial sources of public educational funds and final purchasers of educational resources by level of government for tertiary education (1995)**

	Initial funds (before transfers between levels of government)				Final funds (after transfers between levels of government)			
	Central	Regional	Local	Total	Central	Regional	Local	Total
Australia	87	13	n	100	87	13	n	100
Austria	99	1	n	100	98	1	n	100
Belgium (Fl. Community)	16	82	1	100	16	82	2	100
Canada	47	53	n	100	33	67	n	100
Czech Republic	99	a	1	100	99	a	1	100
Denmark	87	3	10	100	87	3	10	100
Finland	83	a	17	100	77	a	23	100
France	91	5	4	100	91	5	4	100
Germany	15	85	1	100	7	92	1	100
Greece	100	n	a	100	100	n	a	100
Hungary	100	n	n	100	100	n	n	100
Iceland	100	n	n	100	100	n	n	100
Ireland	100	a	n	100	76	a	24	100
Italy	89	11	n	100	89	10	1	100
Japan	85	15	1	100	84	15	1	100
Korea	100	n	a	100	100	n	a	100
Luxembourg	m	m	m	m	m	m	m	m
Mexico	94	6	n	100	89	11	n	100
Netherlands	100	n	n	100	99	n	1	100
New Zealand	100	a	a	100	100	a	a	100
Norway	100	a	a	100	100	a	a	100
Poland	100	a	n	100	100	a	n	100
Portugal	m	m	m	m	m	m	m	m
Spain	47	52	1	100	47	52	1	100
Sweden	97	3	a	100	97	3	a	100
Switzerland	46	54	n	100	31	69	n	100
Turkey	100	a	a	100	100	a	a	100
United Kingdom	100	a	n	100	72	a	28	100
United States	37	56	7	100	37	56	7	100
Country mean	**82**	**17**	**2**	**100**	**78**	**18**	**4**	**100**

Source: OECD Education Database. See Annex 3 for notes.

Table B6.2. **Proportion of public expenditure on public and private educational institutions (1995)**

	Primary and secondary education				Tertiary education			
	Public institutions	Government-dependent private institutions	Independent private institutions	All private institutions	Public institutions	Government-dependent private institutions	Independent private institutions	All private institutions
Australia	83	17	n	17	100	a	a	a
Austria	100	n	a	n	100	n	a	n
Belgium (Fl. Community)	37	63	n	63	36	64	n	64
Canada	98	1	1	2	100	n	n	n
Czech Republic	96	4	a	4	99	1	a	1
Denmark	93	7	a	7	100	a	a	a
Finland	95	5	a	5	94	6	a	6
France	87	13	n	13	96	4	n	4
Germany	93	4	2	7	98	2	n	2
Greece	100	a	a	a	100	a	a	a
Hungary	96	4	a	4	95	5	a	5
Iceland	m	m	m	m	m	m	m	m
Ireland	100	a	n	n	100	a	n	n
Italy	100	a	n	n	99	a	1	1
Japan	96	a	4	4	83	a	17	17
Korea	89	11	n	11	84	a	16	16
Luxembourg	97	3	a	3	97	3	a	3
Mexico	100	a	a	a	100	a	a	a
Netherlands	25	75	n	75	54	46	n	46
New Zealand	100	a	n	n	100	a	a	a
Norway	95	x	x	5	96	x	x	4
Poland	m	m	m	m	m	m	m	m
Portugal	93	6	n	7	100	a	n	n
Spain	87	13	n	13	100	n	n	n
Sweden	98	2	a	2	96	n	4	4
Switzerland	91	x	x	9	97	x	x	3
Turkey	100	a	a	a	100	a	a	a
United Kingdom	85	15	n	15	a	100	n	100
United States	100	a	n	n	84	a	16	16
Country mean	**90**	**10**	**n**	**10**	**89**	**9**	**2**	**11**
WEI Participants								
Argentina[1]	90	10	n	10	98	2	n	2
Brazil	98	x	x	2	97	x	x	3
Chile[1]	67	32	n	33	100	n	n	n
India[1]	67	33	n	33	80	x	x	20
Israel[2]	76	23	n	24	10	88	2	90
Jordan[1]	100	n	n	n	m	m	m	m
Paraguay[1]	100	n	n	n	100	n	n	n
Philippines	99	n	1	1	98	n	2	2
Russian Federation	100	n	n	n	100	n	n	n
Uruguay[1]	100	n	n	n	100	n	n	n

1. 1996 data.
2. 1994 data.

Source: OECD Education Database. See Annex 3 for notes.

RATIO OF STUDENTS TO TEACHING STAFF

POLICY CONTEXT

This indicator shows the ratio of students to teaching staff at the different levels of education.

Although schools in many countries are making more use of computers and other educational technology (see also Indicator E6), teachers are still the most important resource in student instruction. The ratio of students to teaching staff is therefore an important indicator of the resources countries devote to education. Because of the difficulty of constructing direct measures of educational quality, indicators on the quantity of school inputs are often used as proxies to measure educational quality.

As countries face increasing constraints on education budgets, many are considering trade-offs in their investment decisions. Smaller student/teaching staff ratios may have to be weighed against higher salaries for teachers and larger class sizes, more investment in instructional technology, or more widespread use of teacher aides and paraprofessionals, whose salaries are often considerably lower than those of teachers. Moreover, as larger numbers of children arrive at school with special educational needs, more use of specialised personnel and support services may limit the resources available for reductions in student/teaching staff ratios (see also Indicator C6).

EVIDENCE AND EXPLANATIONS

Primary and secondary education

In Korea the ratio of students to teaching staff in primary education (31) is almost three times as large as in Denmark and Italy (11).

Student/teaching staff ratios in primary and secondary education vary widely between countries. In primary education, student/teaching staff ratios, expressed in full-time equivalents, range from more than 28:1 in Korea and Mexico to less than 13:1 in Austria, Denmark, Hungary, Italy and Sweden.

At around 20:1, student/teaching staff ratios in primary education in Malaysia and Thailand are close to those in typical OECD countries; in Argentina, Brazil, Chile, China, India and the Philippines ratios of between 25:1 and 52:1 are well above the OECD average of 18.3.

The range in secondary education is slightly narrower, extending from over 19:1 in Canada and Korea to 10:1 or below in Austria, Hungary and Italy with an OECD average of 15:1. Comparable student/teaching staff ratios among WEI participants are almost all well above the OECD average, ranging from 17:1 in Argentina to 36:1 in Brazil.

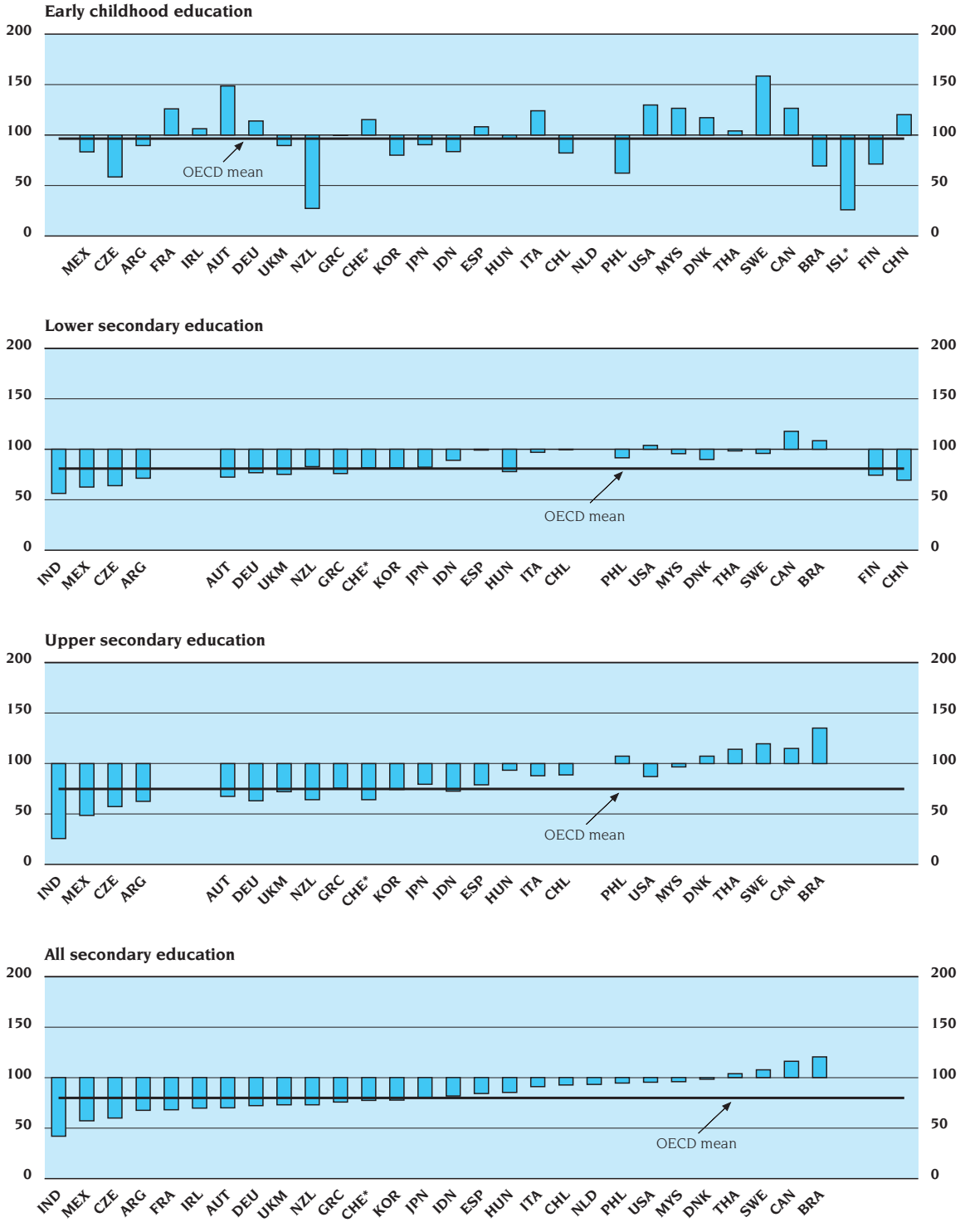
Student access to teachers improves from primary to secondary education.

Average student/teaching staff ratios tend to be higher in primary than in secondary education: as one moves up the education ladder there are more teachers per enrolled students. On average across OECD countries, student/teaching staff ratios decrease from 18:1 in primary education to 15:1 in secondary.

Chart B7.1. **Ratio of students to teaching staff by level of education (1995)**

* Public institutions only.
Source: OECD.

Chart B7.2. **Ratio of students to teaching staff in early childhood and secondary education relative to the student/staff ratio at the primary level, in full-time equivalents, times 100 (1995)**



Countries are ranked in ascending order of the student/teaching staff ratio in all secondary education relative to that in primary education.

Source: OECD.

Although countries' positions on this indicator tend to be similar for both primary and secondary education, there are notable exceptions. In the Czech Republic, France, Ireland, Korea and Mexico the decrease in student/teaching staff ratios from primary to secondary education is much more visible than in all other countries. On the other hand, Canada has comparatively large student/teaching staff ratios in secondary education whereas is closer to the OECD average at the primary level. These exceptions can be an indication of differences in the relative importance countries give to student access to teaching staff at a particular level of education but they can also reflect delays in the adaptation of the teaching force to changing demographic conditions or differences in teaching time for teachers at the different levels of education.

Some countries appear to compensate for low teacher salaries with low student/teaching staff ratios.

Another point to consider in primary and secondary education is the relationship between the ratios of students to teaching staff and teachers' salaries. Are teachers who have to face more students paid more? The evidence is mixed. Examining student/teaching staff ratios and average starting salaries of teachers with minimum training (Indicator E1), there appear to be trade-offs of this type in a few countries. Austria, Italy and Sweden have both relatively low student/teaching staff ratios and average or below average starting salaries for teachers. Germany, in contrast, tends to pay teachers higher starting salaries, but the trade-off is a relatively high student/teaching staff ratio.

An analysis of trade-offs between student/teaching staff ratios and teachers' salaries must also consider a few other points. First, the salary measure used in this comparison measures only statutory starting salaries for teachers with minimum training. This does not reflect the distribution of teachers on the salary scale or the average salary paid to teachers in a given country. Similarly, the relationship between student/teaching staff ratios and teachers' salaries in secondary education is not necessarily the same as that in primary education. Assessments of the trade-offs that countries make between lower student/teaching staff ratios and higher teachers' salaries should therefore be regarded as tentative.

Many factors contribute to these differences.

A broad range of factors have to be considered to interpret differences in student/teaching staff ratios in tertiary education, including institutional structures, typical class or lecture sizes, the number of classes that a typical "teacher" teaches per term, the degree of "hands-on" training and the duration of studies. In addition, more accurate definitions of "teachers" and more precise counts of full-time-equivalent students and teachers may be required to produce comparable ratios of teacher resources in tertiary education.

The student/teaching staff ratio is not an indicator of class size.

It must be emphasised that the ratio of students to teaching staff does not translate directly into class sizes: although one country has a lower ratio of students to teaching staff than another does not necessarily imply that classes are smaller in the first country or that students in the first country receive more instruction. The relationship between student/teaching staff ratio and both average class size and the amount of instruction per student is complicated, for example, by differences between countries in the length of the school year, the number of hours that a student attends class each day, the length of a teacher's working day, the number of classes or students for which a teacher is responsible, the division of the teacher's time between teaching and other duties, the grouping of students within classes and the practice of team teaching.

Tertiary education

In general, student/teaching staff ratios at the university level tend to be similar to those in upper secondary education, but there is wide variation between countries.

The average student/teaching staff ratio in public and private universities for all OECD countries is slightly above the average for upper secondary schools. Student/staff ratios in public and private universities range from over 23:1 in Greece and Italy to around 12:1 or below in the Czech Republic, Germany, Hungary, Japan and Mexico. Such comparisons for tertiary education should be undertaken cautiously: difficulties in calculating full-time equivalent students and teachers on a comparable basis still persist.

Early childhood education

Student/teaching staff ratios in early childhood education tend to be similar to those in primary education.

Student/teaching staff ratios in early childhood education tend to be similar to those in primary education although there are notable exceptions. Student/teaching staff ratios in early childhood education range from 6:1 or below in Iceland and New Zealand to about 24 or above in France, Germany, Ireland and Korea. Part of this variation may be ascribable to differences in the organisation of early childhood education between countries. Within countries, early childhood education often includes several rather different types of institutions. Denmark, Hungary and Italy have low student/teaching staff ratios in both early childhood and primary education; Germany, Ireland, Korea and Mexico, have relatively high ratios for both. The pattern for other countries is less consistent.

■ DEFINITIONS

Data refer to the school year 1995/96 and are based on the UOE data collection on education statistics and the World Education Indicators Pilot Project, administered in 1997 (for details see Annex 3).

This indicator shows the ratio of students to teaching staff and is obtained by dividing the number of full-time-equivalent students at a given level of education by the number of full-time-equivalent "teachers" at that same level and for that same type of institution. The definition of "teachers" is sometimes not entirely consistent across countries. For public primary education, the Flemish Community of Belgium, Canada, Finland, Spain, Sweden, Switzerland and the United States include only classroom and other teachers as "teachers" in the data on staff. Several other countries, including Austria, France, Germany, Ireland, Mexico, the Netherlands and the United Kingdom also include headteachers or school principals as "teachers", although in some cases these individuals may also have some teaching duties. Other countries also include professional support staff such as guidance counsellors and school psychologists in their "teacher" counts. Similar classifications apply in public secondary education as well, with the following exceptions. France reports only classroom and other teachers as "teachers", Finland includes headmasters as "teachers", and Ireland includes some other professional support staff as "teachers."

Staff reported as "teachers" in early childhood education are generally similar to those reported in primary education. The situation in tertiary education is somewhat different. A larger number of countries – including Australia, Canada, France, Ireland, the Netherlands, New Zealand, Spain, Switzerland, the United Kingdom and the United States – appear to report only classroom teachers as "teachers", but a clear definition of a "teacher" in tertiary education has not been well established in international data collections. Future work on definitions of "teachers" and other staff in tertiary education may help to clarify this definition.

Table B7.1. **Ratio of students to teaching staff by level of education (calculations based on full-time equivalents) (1996)**

	Early childhood education	Primary education	Lower secondary education	Upper secondary education	All secondary education	Non-university tertiary	University-level	All tertiary education
Australia	m	18.1	m	m	m	m	15.4	m
Austria	18.9	12.7	9.2	8.5	8.9	m	14.5	m
Belgium	m	m	m	m	m	m	m	m
Canada	21.5	17.0	20.0	19.5	19.7	12.8	16.4	14.6
Czech Republic	11.9	20.4	13.0	11.7	12.3	9.0	11.7	11.2
Denmark	13.1	11.2	10.1	12.1	11.0	m	m	m
Finland	11.9	16.8	12.4	m	m	m	m	m
France	24.6	19.5	x	x	13.3	x	17.2	17.1
Germany	23.7	20.9	16.0	13.1	15.0	12.3	12.5	12.5
Greece	14.9	15.0	11.4	11.3	11.3	23.0	23.9	23.6
Hungary	11.7	12.2	9.5	11.3	10.4	a	9.9	9.9
Iceland*	4.5	17.6	m	m	m	m	m	m
Ireland	24.1	22.6	x	x	15.8	12.2	21.6	16.7
Italy	13.9	11.2	10.8	9.8	10.2	7.6	29.0	25.7
Japan	17.8	19.7	16.2	15.6	15.9	10.8	13.5	12.4
Korea	24.9	31.2	25.5	23.1	24.3	m	m	m
Luxembourg	m	m	m	m	m	m	m	m
Mexico	23.6	28.3	17.7	13.8	16.2	x	9.4	9.4
Netherlands	20.0	20.0	x	x	18.6	a	18.7	18.7
New Zealand	6.0	22.0	18.1	14.1	16.1	11.6	16.1	14.9
Norway	m	m	m	m	m	m	m	m
Poland	m	m	m	m	m	m	m	m
Portugal	m	m	m	m	m	m	18.5	m
Spain	19.4	18.0	17.8	14.2	15.1	12.3	17.6	17.4
Sweden	20.2	12.7	12.2	15.2	13.7	m	m	m
Switzerland*	18.3	15.9	13.0	10.2	12.3	m	21.2	m
Turkey	m	m	m	m	m	m	m	m
United Kingdom	19.1	21.3	16.0	15.3	15.6	x	x	16.7
United States	21.9	16.9	17.5	14.7	16.1	19.4	14.1	15.4
Country mean	**17.6**	**18.3**	**14.8**	**13.7**	**14.6**	**13.1**	**16.7**	**15.7**
WEI Participants								
Argentina	22.9	25.6	18.2	16.0	17.3	18.4	m	m
Brazil	20.6	29.7	32.2	40.1	35.8	x	x	11.8
Chile	25.7	31.3	31.2	27.8	29.0	m	m	m
China	30.0	25.0	17.3	m	m	m	m	m
India	m	52.4	29.5	13.4	21.9	m	m	m
Indonesia	18.7	22.4	19.9	16.2	18.3	m	m	m
Jordan	22.2	m	m	16.6	m	15.2	72.4	39.8
Malaysia	24.6	19.4	18.5	18.8	18.6	20.1	20.4	20.2
Paraguay	26.2	20.2	m	m	m	m	m	m
Philippines	22.6	36.4	33.3	39.0	34.4	m	m	m
Russian Federation*	m	m	m	18.8	m	17.6	13.7	15.0
Thailand	21.8	21.0	20.6	23.9	21.8	29.3	m	m
Uruguay*	30.7	m	m	m	15.2	6.4	15.7	12.6

* Public institutions only.
Source: OECD Education Database. See Annex 3 for notes.

ACCESS TO EDUCATION, PARTICIPATION AND PROGRESSION

A well-educated population has become a defining characteristic of a modern society. Education is seen as a mechanism for instilling democratic values, as well as the means for developing the productive and social capacity of the individual. Early childhood programmes prepare young children socially and academically for entry into primary education; primary and secondary education provide a foundation of basic skills that prepare young people to become productive members of society; and tertiary education provides a range of opportunities for individuals to gain advanced knowledge and skills, either immediately after initial schooling or later in life. In addition, many employers encourage and even assist workers in upgrading or reorienting their skills in order to meet the demands of changing technologies.

Information on enrolment rates at various levels of education and on the expected duration of schooling provide a picture of the structure of different education systems, as well as of access to educational opportunities in those systems. Trends in enrolments in the various levels of education and types of educational institutions are also indicators of how the supply and demand of educational resources are balanced in different countries.

Virtually all young people in OECD countries have access to basic education of at least eleven years. But patterns of participation in and progression through education over the life cycle vary widely. As shown in **Indicator C1**, both the timing and the rate of participation in the pre-school years and after the end of compulsory education differ considerably across countries. Some countries have extended participation in education for example by making pre-school education almost universal by the age of three, by retaining the majority of young people in education until the end of their teens, or by maintaining 10 to 20 per cent participation among all age-groups up to the late 20s. Indicator C1 not only provides an overall picture of the size of education systems, but also serves as background information for the interpretation of Indicators B1, B2 and B8 that deal with national resources invested in education.

A range of factors, including an increased risk of unemployment and other forms of exclusion of young people with insufficient education, have strengthened the incentive for young people to stay enrolled beyond the end of compulsory schooling. In addition, patterns of study outside compulsory education are starting to change significantly. This can be seen for example at the upper secondary level, as shown in **Indicator C2**. For example participation in vocational upper secondary education is mainly taking place outside the "expected" age, with a large proportion of participants studying part time.

Beyond the end of upper secondary education, a number of options exist for further education. One avenue is relatively short, vocationally-oriented programmes below university-degree level. Another is university-level education, an option being taken by an ever increasing proportion of school-leavers. Still other options are enterprise-based and labour market training programmes adapted to individual and labour market needs. Completion of tertiary education programmes is generally associated with better access to employment (Indicator F5) and higher earnings (Indicator F7).

The tertiary level is even more heterogeneous, and a series of three indicators present some of the features of tertiary education today. **Indicator C3** shows that of those entering university, there is a wide variation across countries in the proportion leaving with a first qualification. With a new indicator covering completions and drop-outs, it is possible to move from simple statistics on entry or graduation rates to a better understanding of the passage through university education. Indicator C3 looks at the number of years spent in all forms of tertiary education over the life cycle, and shows that the expected years of study is rising rapidly. **Indicator C4** shows some widely differing characteristics of tertiary provision and of the experience of students in different countries.

There is ample evidence that more secondary and tertiary education for young people improves their individual economic and social opportunities. There is also growing evidence, although less direct, of a payoff for whole societies from increasing the educational attainment of the population. But as rapidly changing technology and globalisation transform the pattern of demand for skilled labour throughout the world, raising the proportion of young people who participate in upper secondary or higher education can only be part of the solution, for a number of reasons.

First, an inflow of better-educated young people will only gradually change the overall educational level of the existing workforce.

Secondly, educational attainment is only one component of human capital accumulation. Knowledge and skills continue to be acquired throughout people's lives, through experiences in families, communities and businesses, as well as within formal educational settings. There is a growing demand in the workplace and elsewhere for individuals who are good at using and interpreting knowledge flexibly, and who can work with others effectively. These abilities can be acquired partly through education, but must also be developed in the settings where they will be used. Strategies for developing lifelong learning opportunities must therefore look beyond mainstream educational institutions, to ensure optimal investment in human capital. **Indicator C5** brings together evidence from the International Adult Literacy Survey which provide a richer understanding of participation in education and training among all adults and employed persons.

Students with disabilities, learning difficulties and those from disadvantaged groups often receive additional support in school to enable them to make satisfactory progress. Some continue to be educated in special schools, but increasingly they are included in mainstream education. The orientation of educational policies towards lifelong learning and equity has particular significance for these students since they face the greatest risk of exclusion, not only in schools but also in the labour market and in life generally. Monitoring the educational provision which is made for these students is of great importance especially given the substantial extra resources involved. **Indicator C6** is a developmental indicator which compares the proportion of students which countries consider to have special educational needs. It also presents data on the extent of provision, its location, and its resourcing in terms of student/teaching staff ratios.

OVERALL PARTICIPATION IN FORMAL EDUCATION

Policy context

A well-educated population is critical for the current and future economic, intellectual and social development of a country. Societies, therefore, have an interest in providing a wide variety of educational opportunities to both children and adults and in ensuring broad access to learning opportunities. Early childhood programmes prepare children for primary education; primary and secondary education provide a foundation of basic skills that prepare young people to become productive members of society; and tertiary education provides a range of options for individuals to gain advanced knowledge and skills either immediately following school or later in life.

In most OECD countries, virtually all young people have access to a basic education of at least 11 years, although patterns of participation in and progression through education over the life cycle vary widely. This indicator presents several different measures of participation in formal education in order to portray the variety of structures observed in different education systems, as well as to examine the level of access to educational opportunities in those systems. Trends in enrolment in the various levels of education are also presented as an indicator of how access to education has expanded in recent years – an important component of the growing pressure on scarce educational resources.

Evidence and explanations

Overall participation in education

In 19 out of 25 OECD countries, individuals participate in formal education for on average between 15.6 and 19.3 years.

One way of looking at participation in education is to estimate the number of years of full-time and part-time education that a 5-year-old child can expect to enrol over his or her lifetime. This "school expectancy" is estimated by taking the sum of enrolment rates across each single year of age over 4 (Chart C1.1). Within the OECD, school expectancy varies from 12 years in Mexico to over 18 years in Australia, Belgium and Sweden; in most countries it falls in the range of 16-17 years. Among WEI participants, school expectancy in Argentina and Brazil is, at around 14.4 years, similar to that in the Czech Republic, Greece, Hungary, Korea and Poland, whereas Indonesia, with about 10 years, lags considerably behind.

Most of the variability in this measure comes from differences in enrolment rates in upper secondary education.

Most of the variability across countries in school expectancy comes from differences in enrolment rates in upper secondary education. Although the relative differences in participation are largest at the tertiary level, they apply to a smaller proportion of the cohort and thus have less of an effect on school expectancy.

While measures of the average duration of schooling, also referred to as "school expectancy", are influenced by participation rates over the life cycle, they will underestimate the actual years of schooling for children in systems where access to education is expanding. This measure also does not distinguish between full- and part-time participation, which means countries with relatively

large shares of part-time enrolments, including Australia, Canada, Sweden, the United Kingdom and the United States, will tend to have relatively high values. Furthermore, the expected number of years will not necessarily coincide with the expected number of grades of education completed, because of grade repetition, part-time studies and the inclusion of adult education. In countries in which the school expectancy at a certain level of education exceeds the number of grades at this level, the effect of repetition, or in the case of Australia, the effect of adult education, has greater impact on school expectancy as the event of school leaving before the level of education is completed.

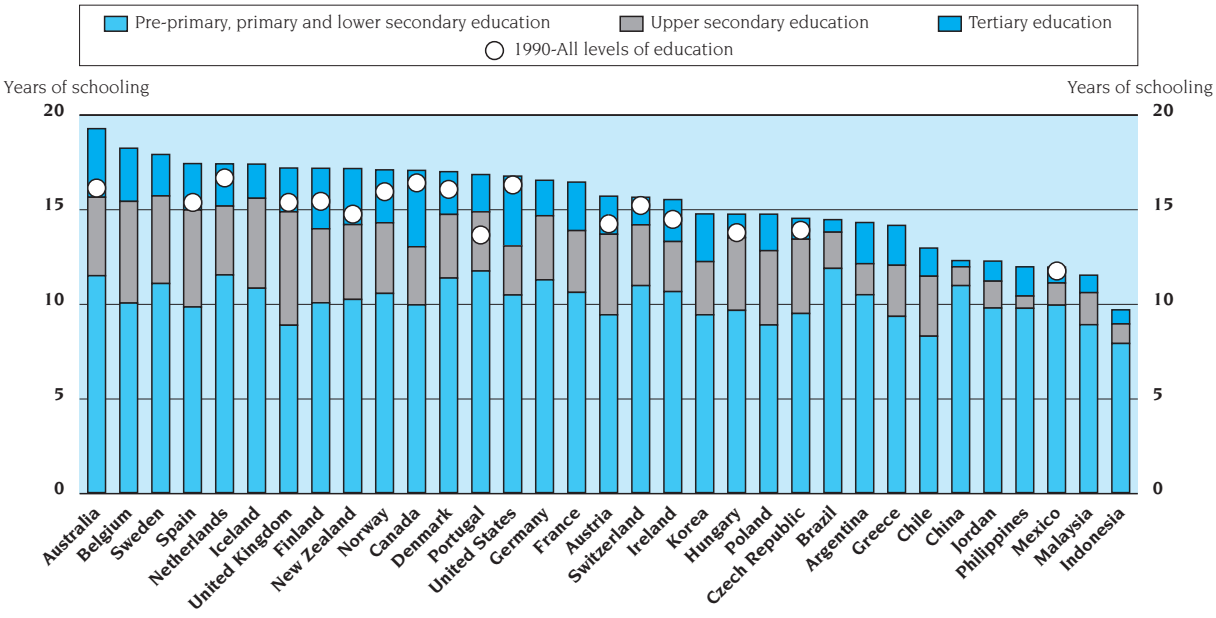
Long school expectancy does not necessarily imply that all young persons have access to education…

Enrolment rates are influenced both by entry rates to a particular level of education and by the typical duration of studies. A high level of school expectancy therefore does not necessarily imply that all young persons will participate in education for a long period of time. For example, in both Finland and the Netherlands the expectancy of formal education for persons aged 5 and over is, on average, slightly more than 17 years in both countries, but enrolment rates are over 90 per cent for only 11 years of education in Finland and for fully 14 years in the Netherlands (Chart C1.2).

… but in most OECD countries, virtually all young people participate in at least 11 years of formal education.

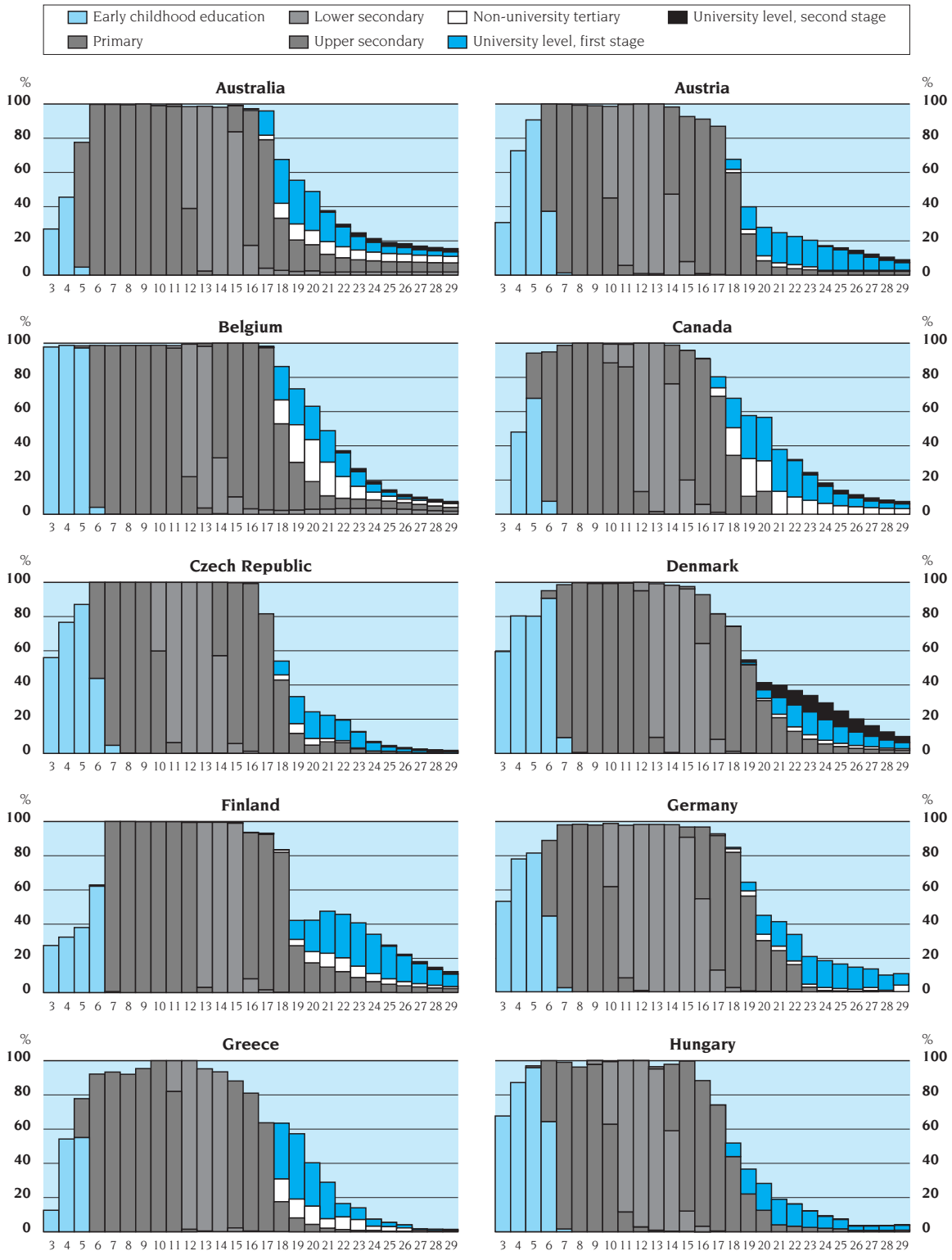
In most OECD countries, virtually all young people have access to a basic education of at least 11 years. The age-band in which at least 90 per cent of students are enrolled spans 13 or more years in Belgium, France, Japan, the Netherlands, New Zealand and Sweden. Mexico and Greece, by contrast, have enrolment rates exceeding 90 per cent for a period of nine or fewer years, and in half of the WEI participants countries for which data are available enrolment rates do not exceed 90 per cent for more than 6 years.

Chart C1.1. **Full-time and part-time school expectancy under current conditions* (1996)**



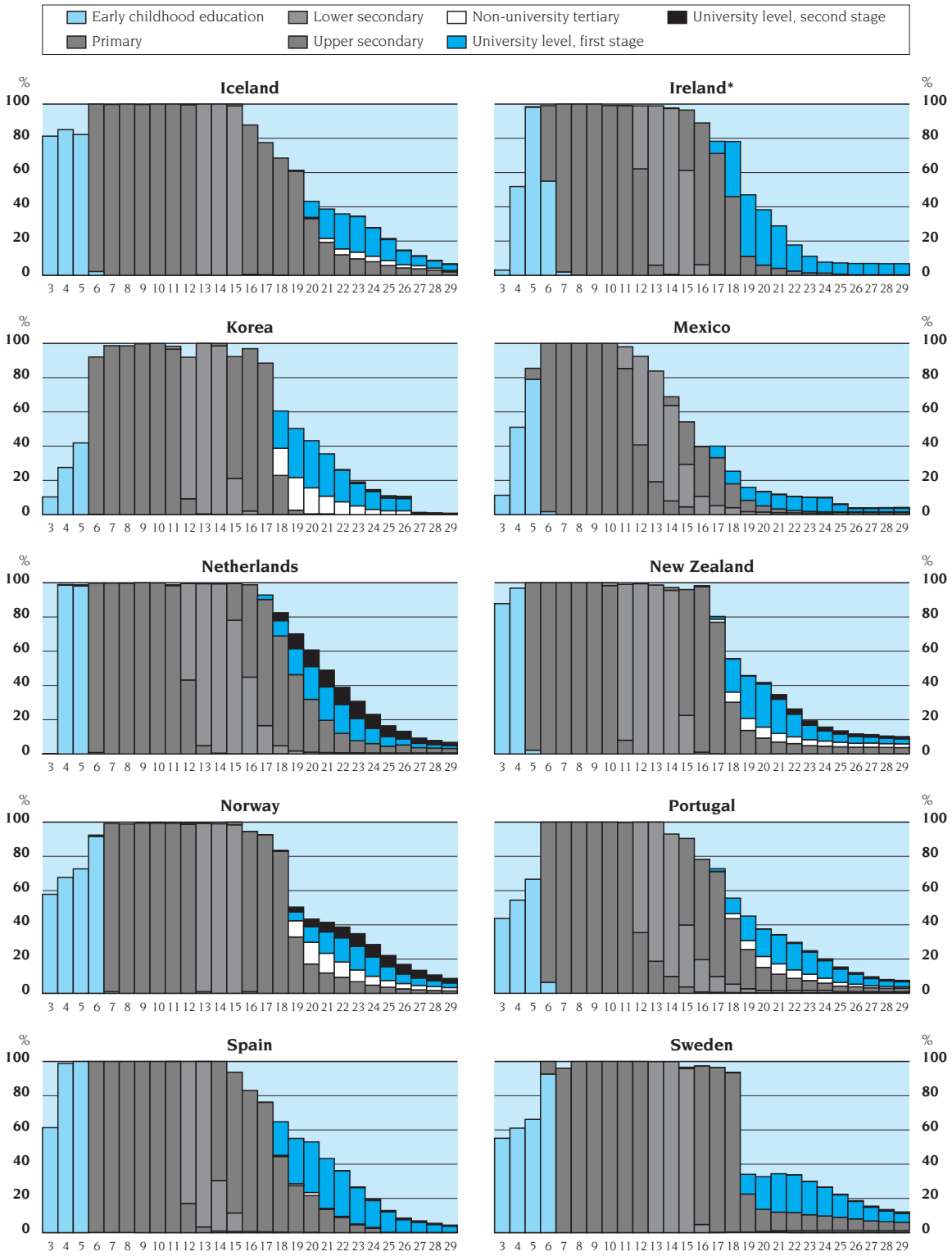
* Education for children under the age of five is excluded.
Source: OECD.

Chart C1.2. **Net enrolment rates by single year of age and level of education (head counts, 1996)**



Source: OECD.

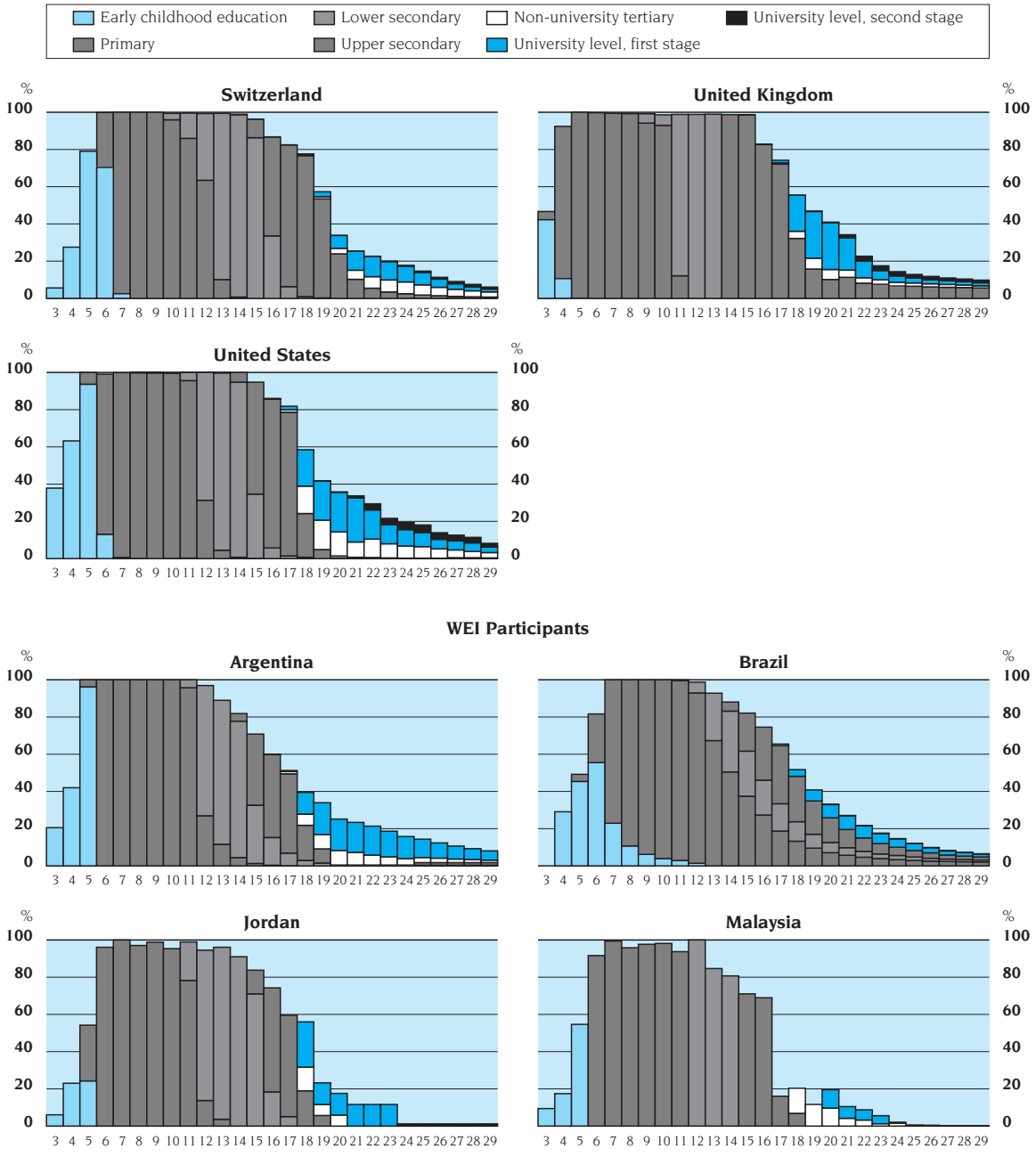
Chart C1.2. (*cont.*) **Net enrolment rates by single year of age and level of education (head counts, 1996)**



* Ireland: University level, first stage includes all students at the tertiary level.

Source: OECD.

Chart C1.2. (*cont.*) **Net enrolment rates by single year of age and level of education (head counts, 1996)**



Source: OECD.

Trends in participation in education

Enrolment increased between 1990 and 1996 in 17 out of the 25 countries.

In 17 out of 25 countries for which comparable trend data are available, total enrolment in formal education increased between 1990 and 1996 (Table C1.4). In the Czech Republic, Italy, Japan and Korea, a decline of 5 per cent or more in enrolment followed an earlier decline in birth rates. In Australia, Canada, Denmark, Finland, Iceland, New Zealand, Turkey, the United Kingdom and the United States the total number of students increased by around 10 per cent or more over the period 1990-1996.

Projections of the size of the population indicate that primary and secondary enrolment is still expected to increase until the year 2005 in ten out of 14 countries.

In almost all countries the highest increase of enrolment occurred at the tertiary level (Table C3.5). Nevertheless some countries also had a substantial increase in the number of students in primary and secondary education. In Australia and New Zealand the number of primary and secondary students increased since 1990 by more than 10 per cent. Projections of the size of the youth population forecast that primary and secondary enrolment can be expected to increase until the year 2005 in ten out of 14 countries.

Participation in early childhood education

Enrolment rates of 2-4 year-olds range from less than 25 per cent in nine OECD countries to over 75 per cent in Belgium, France, Iceland and New Zealand.

In the majority of OECD countries, universal enrolment starts between the ages of 5 and 6 years, although in Belgium, France, the Netherlands, New Zealand and Spain virtually all 4 year-olds are already enrolled in either pre-primary or primary programmes. (Table C1.2) Enrolment rates of 2-4 year-olds range from less than 25 per cent in Australia, Canada, Finland, Greece, Ireland, Korea, Mexico, Poland and Switzerland to over 75 per cent in Belgium, France, Iceland and New Zealand. Participation in education at younger ages is lower among WEI participants than in OECD countries. In most WEI participants, enrolment rates at ages 2 to 4 are between 9 and 15 per cent and in Indonesia enrolment in pre-primary education is negligible. Only in Argentina and the Russian Federation are enrolment rates above the OECD average for these ages.

Participation towards the end of compulsory schooling and beyond

A number of factors, including an increased risk of unemployment and other forms of exclusion for young people with insufficient education, influence the decision to stay enrolled beyond the end of compulsory schooling. In many countries, the transition from education to employment has become a longer and more complex process, providing the opportunity, or the necessity, for students to combine learning and work in order to develop marketable skills (Indicators D1 and D2).

Compulsory schooling ends in OECD countries between the ages of 14 and 18, in most countries at age 15 and 16.

Compulsory schooling ends in OECD countries between the ages of 14 (Italy, Korea, Portugal and Turkey) and 18 (Belgium, Germany and the Netherlands), with the most common ages being either 15 or 16. In the majority of WEI participants, compulsory education ends at 14 years, although the range runs from 12 years in the Philippines to 16 years in Malaysia (Table C1.2).

The age at which students are required by law and regulation to be enrolled in school is not always an age for which enrolment is universal. While in most countries participation rates are high until the end of compulsory schooling, in the United States (where compulsory schooling ends at age 17) participation rates drop below 90 per cent as early as two years before the age at which students are

legally required to be enrolled in school. In China, Jordan, Indonesia, Malaysia, Mexico and the Russian Federation rates fall below 80 per cent as early as 3 or more years before the end of compulsory education.

In contrast, 12 OECD countries succeed in retaining virtually all children in school beyond the age at which compulsory schooling ends (Table C1.2). In Australia, Belgium and Sweden more the 95 per cent of all 17 year-olds are still enrolled (Table C1.3).

The sharpest decline in participation occurs not at the end of compulsory schooling…

In half the OECD countries, enrolment in education remains close to universal beyond the end of compulsory schooling, particularly in countries where the age at which compulsory schooling ends is relatively low, and there is no close correspondence between the end of compulsory schooling and the decline in enrolment rates. After the age of 16, however, enrolment rates begin to decline in most OECD countries. On average across OECD countries, the enrolment rate is 84 per cent at age 17, 68 per cent at age 18, and 52 per cent at age 19. Only five countries have a participation rate of 50 per cent or above at the age of 20, and only in Belgium and the Netherlands does this figure exceed 60 per cent (Table C1.3).

Among WEI participants, participation at age 16 is 60 per cent or more in Argentina, Chile, Jordan, Malaysia and the Russian Federation whereas at age 17 enrolment rates exceed 60 per cent only in Chile.

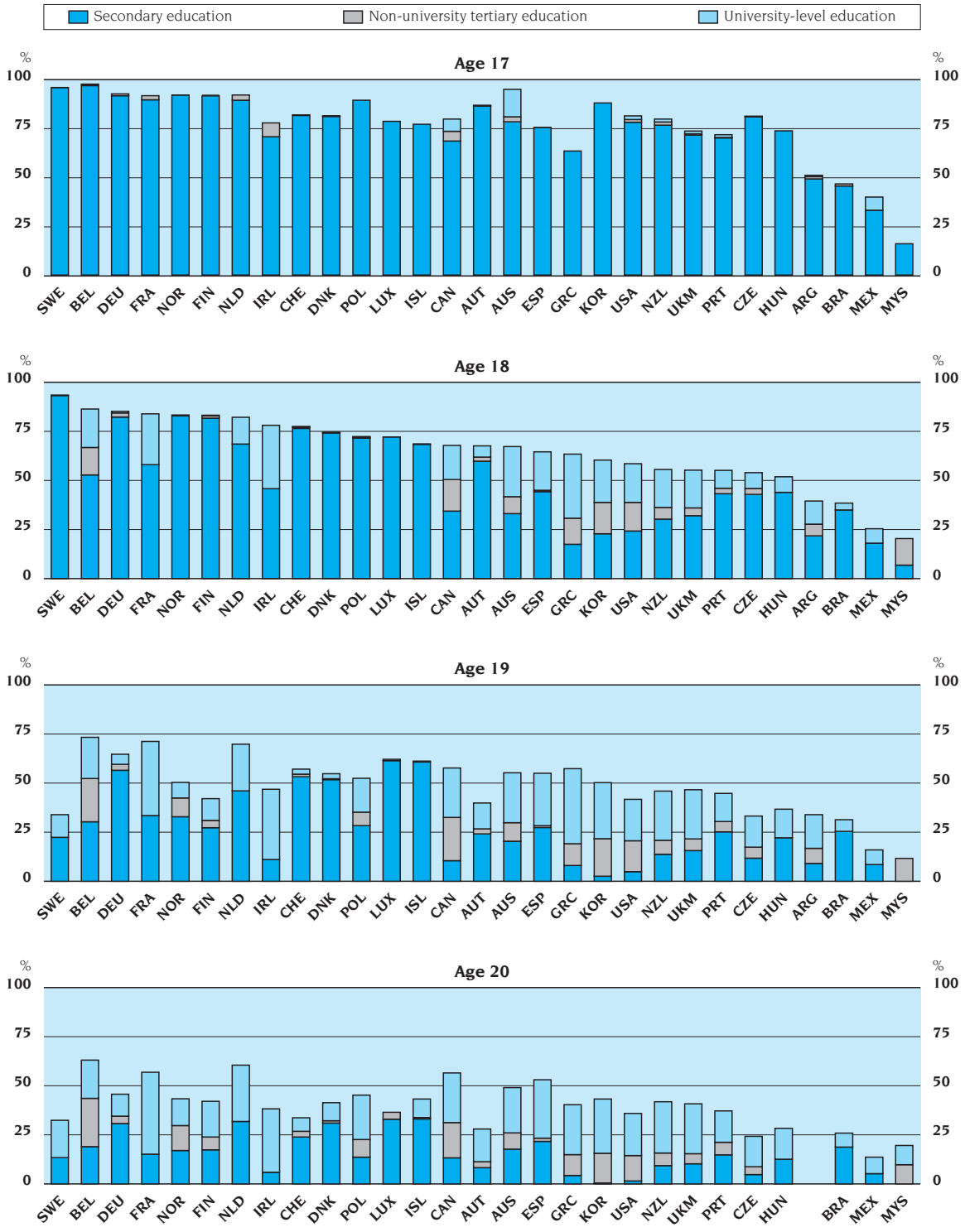
… but at the end of upper-secondary education.

In most OECD countries, the typical age in which a student completes an upper secondary programme is between 2 and 4 years after the legal age at which they can leave school – as early as 16 for some programmes in Hungary, Spain and the United Kingdom to age 20 for some programmes in Belgium, Denmark, France, Iceland, Poland and Switzerland. It is notable that in Belgium, the Netherlands, Spain and the United Kingdom compulsory schooling includes the typical ending age of upper secondary schooling. This might in part explain the high participation rates in Belgium and the Netherlands. In 23 out of 27 OECD countries the sharpest decline in enrolment rates occurs at the end of upper-secondary education. In Sweden, participation rates fall from 94 to 34 per cent after age 18, the typical age at which upper-secondary programmes end. In Argentina, Austria, the Czech Republic, Finland, Korea, Norway and Thailand participation rates decline by 27 percentage points or more after upper secondary education ends. In other countries the decline in participation after compulsory schooling or even upper secondary schooling is less pronounced: in Belgium, Canada, France, Mexico, the Netherlands and Spain the decline from one year to the next never exceeds 15 percentage points.

Yet countries with longer compulsory education tend to keep more young people at school until the end of upper secondary education.

Although the proportion of young people remaining in school until the age of 17 or 18 exceeds 80 or even 90 per cent in some countries where compulsory schooling ends at age 16, the data in Table C1.3 show that education systems with a higher age of compulsory schooling tend to succeed in keeping more young people at school until the end of upper secondary education. At the same time, it should be noted that the reasons which students in different countries give for leaving school before finishing their studies suggest that the extension of compulsory schooling may have only a limited effect: recent research based on the 1994 International Adult Literacy Survey has shown that approximately twice as many drop-outs cite reasons over which they have no control (institutional pressures, economic need or family reasons) as they do personal choice.

Chart C1.3. **Transition characteristics at each year of age from 17 to 20: net enrolment by level of education (head counts, 1996)**



Countries are ranked in descreasing order of net enrolment rates at age 18.

Source: OECD.

Although in most countries there is a gradual decline in enrolment rates starting in the last years of upper secondary education, there are several notable exceptions. Some countries continue to maintain relatively high enrolment rates until age 25. In Australia and the Nordic countries, enrolment rates at 25 still exceed 20 per cent. The countries that retain students longer in school are also those in which the majority of students follow upper secondary vocational courses (Indicator C2).

In Australia and the Nordic countries one 25-year-old out of five participates in education.

The transition from secondary to tertiary education

Recent years have also seen the dissolving of traditional age boundaries in the transition from secondary to tertiary education, with the transition now occurring throughout the age range from 17 to 24 years. These changes provide an opportunity for countries to explore new organisational frameworks for learning outside as well as inside the classroom.

Recent years have also seen the dissolving of traditional age boundaries in the transition from secondary to tertiary education.

Table C1.3 shows net rates of participation in secondary, non-university tertiary and university (or equivalent) education by single year of age. The transition from secondary education to tertiary education occurs at different ages in different countries (Chart C1.2). At age 17 secondary students still form more than 90 per cent of the total enrolment in all but three countries; only in Australia, Canada and Mexico is more than 10 per cent of the enrolment at age 17 at the tertiary level.

By age 19 about half of the OECD countries have more students in tertiary than in secondary education and by age 20 only five countries (Denmark, Germany, Iceland, the Netherlands and Switzerland) still have more students in secondary education than in tertiary education. The situation is different in many WEI participants, most notably Brazil, where enrolment remains heavily concentrated at the upper secondary level at ages 19 and 20 rather than at the tertiary level. It should be noted, however, that some countries classify as upper secondary some types of programmes which are similar in content to others classified as tertiary elsewhere, which will clearly affect the relative proportion of students of a particular age enrolled at a particular level.

By age 19 about half of the OECD countries have more students in tertiary than in secondary education.

In many countries the transition to university-level education continues up to the age of 25 and over.

Participation in tertiary education

On average in OECD countries, a 17 year-old can expect to receive 2.3 years of tertiary education over his or her lifetime. The expectancy of tertiary education is affected by both tertiary entry rates and the typical duration of study. In Australia, Canada, Finland, New Zealand and the United States this value exceeds 3 years. In the Czech Republic, Hungary, Mexico and Switzerland, by contrast, the expectancy of tertiary education is 1.5 years or less. Tertiary expectancy among WEI participants ranges from 0.7 years in Brazil and Indonesia to 2.2 years in Argentina.

On average in OECD countries, a 17-year-old can expect to receive 2.3 years of tertiary education.

Expanding youth education policies have, in many countries, increased pressure for greater access to tertiary education. Thus far, this pressure has more than compensated for declines in cohort sizes which until recently led to predictions of stable or declining demand from school leavers in several countries, including Australia and Japan. In some countries, there are now signs of a levelling off in the demand for tertiary education, but the overall trend remains upward.

Expanding youth education policies have, in many countries, increased pressure for greater access to tertiary education.

Participation by gender

In most OECD countries gender differences in enrolment rates are small.

In the majority of both OECD countries and WEI participants, women can expect to receive more years of education than men, although the differences are usually small. There are nonetheless countries with sizeable gender differences. In Korea and Switzerland men can expect to stay one year longer in education than women, whereas in Argentina, Finland, Spain, Sweden and the United Kingdom the expected duration of enrolment for women exceeds that of men by more than a year (Table C1.1). In Korea the gender difference is mainly determined by differences in tertiary education (Indicator C3), whereas in Finland, Spain, Sweden, Switzerland and the United Kingdom differences in enrolment rates according to gender can be found also in secondary education.

■ DEFINITIONS

Data refer to the school year 1995/96 and are based on the UOE data collection on education statistics and the World Education Indicators Pilot Project, administered in 1997 (details can be found in Annex 3).

Net enrolment rates in Table C1.2 are calculated by dividing the number of students of a particular age group enrolled in all levels of education by the number of persons in the population in that age-group (times 100). Table C1.3 presents net enrolment rates by single year of age for age 16 to 20 for each level of education. Except where otherwise indicated, figures are based on head counts, that is, they do not distinguish between full-time and part-time study. A standardised distinction between full-time and part-time participants is very difficult since many countries do not recognise the concept of part-time study, although in practice at least some of their students would be classified as part-time by other countries. Note that in some countries part-time education is not completely covered by the reported data.

The average duration of formal education that a 5-year-old child can expect to enrol in over its lifetime, referred to as "school expectancy" in this indicator, is calculated by adding the net enrolment rates for each single year of age from age 5 onwards, and dividing by 100. Should there be a tendency to lengthen (or shorten) studies during the ensuing years, the actual average duration of schooling for the cohort will be higher (or lower). Caution is required when data on school expectancy are compared. Neither the length of the school year nor the quality of education is necessarily the same in each country.

It should be noted that the data in this indicator on participation do not account for many types of continuing education and training.

Data for the school year 1990 (1989/90) are based on a special survey carried out amongst OECD Member countries in 1997.

Table C1.4 shows the school expectancy under the conditions of the academic year 1989/90. The data on enrolment for 1989/90 were obtained through a special survey in 1997. Countries were asked to collect the data according to the same definitions and coverage used for the UOE data collection on education statistics for the 1995/96 academic year.

The change in total tertiary enrolment is expressed as an index with 1990 as base year (100) (Table C1.4). The absolute number of students in 1996 is therefore expressed as a percentage of the absolute number of students in 1990. Primary and secondary enrolment for the year 2005 and 2015 are projected on the basis of population projections and current enrolment rates. If enrolment rates will continue to increase, the projections underestimate the actual change.

Table C1.1. **School expectancy (in years) under current conditions* (1996)**

	Full-time and part-time						Full-time only			
	Men + Women				Men	Women	Men + Women			
	All levels of education combined	Primary and lower secondary education	Upper secondary education	Tertiary education	All levels of education combined	All levels of education combined	All levels of education combined	Primary and lower secondary education	Upper secondary education	Tertiary education
Australia	19.3	11.4	4.2	3.6	19.1	19.3	14.1	10.7	1.7	1.7
Austria	15.8	8.1	4.3	2.0	16.0	15.5	15.4	8.1	4.1	1.8
Belgium	18.3	9.1	5.4	2.8	18.2	18.5	16.6	8.4	4.6	2.6
Canada	17.1	9.2	3.1	4.1	16.9	17.3	15.1	9.2	3.1	2.8
Czech Republic	14.6	8.2	4.0	1.1	14.5	14.6	14.4	8.2	3.9	1.0
Denmark	17.1	9.6	3.4	2.3	16.8	17.4	17.1	9.6	3.4	2.3
Finland	17.2	9.1	3.9	3.2	16.5	18.0	17.2	9.1	3.9	3.2
France	16.5	9.7	3.3	2.6	16.3	16.7	16.5	9.7	3.3	2.6
Germany	16.6	9.9	3.4	1.9	16.8	16.3	16.5	9.9	3.4	1.8
Greece	14.2	8.9	2.7	2.1	14.2	14.2	14.0	8.8	2.6	2.1
Hungary	14.8	8.1	3.9	1.3	14.7	15.0	13.9	8.1	3.4	0.8
Iceland	17.5	10.0	4.8	1.8	17.2	17.7	16.2	10.0	4.1	1.8
Ireland	15.6	9.1	2.7	2.2	15.4	15.8	14.7	9.1	2.4	1.7
Italy	m	8.2	m	m	m	m	m	8.2	m	m
Japan	m	9.1	3.0	m	m	m	m	9.1	3.0	m
Korea	14.8	9.0	2.8	2.5	15.4	14.2	14.8	9.0	2.8	2.5
Luxembourg	m	m	2.9	m	m	m	m	m	2.9	m
Mexico	12.0	9.1	1.2	0.8	x	x	12.0	9.1	1.2	0.8
Netherlands	17.5	10.6	3.7	2.2	17.8	17.1	16.5	10.4	3.3	1.9
New Zealand	17.2	10.2	4.0	3.0	16.8	17.7	15.3	10.2	3.3	1.8
Norway	17.1	8.9	3.8	2.8	16.9	17.4	15.8	8.9	3.7	2.2
Poland	14.8	7.8	4.0	1.9	m	m	m	m	m	m
Portugal	16.9	10.7	3.1	2.0	16.6	17.2	m	m	m	m
Spain	17.5	8.8	5.2	2.5	17.0	18.0	16.7	8.8	4.4	2.5
Sweden	18.0	9.5	4.6	2.2	17.1	18.9	15.9	9.1	3.5	1.6
Switzerland	15.7	9.5	3.2	1.5	16.3	15.2	15.4	9.5	3.2	1.2
Turkey	m	m	m	m	m	m	m	m	m	m
United Kingdom	17.3	8.9	6.0	2.3	16.6	17.9	14.2	8.9	3.7	1.6
United States	16.8	9.4	2.6	3.7	16.5	17.2	14.8	9.4	2.6	2.2
Country mean	**16.4**	**9.3**	**3.7**	**2.3**	**16.5**	**16.8**	**15.4**	**9.2**	**3.3**	**1.9**
WEI Participants										
Argentina	14.4	9.5	1.7	2.2	13.8	14.9	m	9.5	1.7	m
Brazil	14.5	10.4	1.9	0.7	14.3	14.7	14.5	10.4	1.9	0.7
Chile	13.0	8.2	3.2	1.5	13.2	12.9	13.0	8.2	3.2	1.5
China	12.4	11.0	x	x	m	m	9.8	8.4	x	x
Indonesia	9.7	7.5	1.0	0.7	10.2	9.3	m	7.5	1.0	m
Jordan	12.3	9.6	1.4	1.1	12.2	12.3	12.3	9.6	1.4	1.1
Malaysia	11.5	8.4	1.7	0.9	11.3	11.8	11.5	8.4	1.7	0.9
Paraguay	10.1	8.7	1.0	0.5	m	m	10.1	8.7	1.0	0.5
Philippines	12.0	9.5	0.7	1.6	12.0	12.0	11.7	9.5	0.7	1.6
Russian Federation	m	7.7	1.7	m	m	m	m	7.7	1.7	m
Thailand	m	m	m	m	m	m	m	m	m	m
Uruguay	14.4	9.6	2.2	1.6	13.6	15.2	14.4	9.6	2.2	1.6

* Education for children under the age of five is excluded.
Data for Russian Federation and Thailand are for 1997.
Source: OECD Education Database. See Annex 3 for notes.

Table C1.2. **Enrolment rates in public and private institutions by age, full-time and part-time students (1996)**

	Ending age of compulsory schooling	Number of years at which over 90% of the population are enrolled	Age range at which over 90% of the population are enrolled	Students aged: 5 and older as a percentage of the population aged 5-29	2-4 as a percentage of the population aged 2-4	5-14 as a percentage of the population aged 5-14	15-19 as a percentage of the population aged 15-19	20-29 as a percentage of the population aged 20-29	30-39 as a percentage of the population aged 30-39	40 and over as a percentage of the population aged 40 and over
Australia	15	12	6-17	76.7	24.1	96.6	82.6	24.5	13.6	5.3
Austria	15	12	5-16	58.0	34.8	98.6	75.7	16.8	2.7	0.3
Belgium	18	15	3-17	70.8	79.4	98.9	92.1	m	m	m
Canada	16	12	5-16	68.2	16.5	99.2	78.6	21.4	4.7	1.2
Czech Republic	15	11	6-16	56.3	45.9	98.8	72.2	11.1	0.2	n
Denmark	16	11	6-16	63.9	46.3	96.7	79.6	26.0	4.9	0.7
Finland	16	11	7-17	69.1	20.0	89.5	81.8	29.6	6.8	1.2
France	16	15	3-17	64.5	79.6	100.1	88.3	19.1	m	m
Germany	18	11	7-17	61.8	44.7	96.5	87.9	20.5	2.5	0.1
Greece	14.5	9	6-14	53.0	22.4	94.1	72.0	12.0	0.1	0.1
Hungary	16	11	5-15	56.6	54.5	99.7	68.5	11.7	m	m
Iceland	m	10	6-15	70.5	77.2	98.4	79.7	24.5	3.8	0.8
Ireland	15	11	5-15	64.9	19.0	99.6	79.3	14.6	x	x
Italy	14	10	4-13	53.8	61.6	m	m	m	m	m
Japan	15	14	4-17	57.0	49.2	101.1	m	m	m	m
Korea	14	11	6-16	55.8	12.5	92.3	78.3	16.0	0.6	n
Luxembourg	15	m	m	52.3	m	m	m	m	m	m
Mexico	15	7	6-12	51.9	20.8	94.0	35.6	8.4	0.5	0.1
Netherlands	18	14	4-17	65.3	33.4	99.2	88.5	23.7	3.8	0.7
New Zealand	16	13	4-16	69.3	79.0	100.2	75.3	19.4	8.1	2.6
Norway	16	12	6-17	65.4	42.1	95.4	83.8	25.2	4.9	1.0
Poland	15	12	6-17	63.6	16.0	90.8	80.9	19.3	m	m
Portugal	14	10	*6-15*	62.0	32.8	101.2	67.5	20.5	3.6	0.5
Spain	16	12	4-15	63.0	59.2	104.2	73.8	21.8	2.2	0.2
Sweden	16	13	6-18	69.8	39.5	96.1	83.3	23.6	8.9	1.8
Switzerland	15	10	6-15	59.5	12.1	97.5	80.6	15.8	m	m
Turkey	14	m	m	m	m	m	m	m	m	m
United Kingdom	16	12	4-15	66.8	49.0	98.8	72.1	17.5	8.4	3.3
United States	17	11	5-15	68.8	34.2	101.2	72.9	20.0	5.9	7.7
Country mean	**16**	**12**		**62.8**	**41.0**	**97.6**	**77.2**	**19.3**	**4.5**	**1.5**
WEI Participants										
Argentina	14	8	5-12	60.8	20.7	99.4	51.3	16.5	2.7	0.4
Brazil	14	8	7-14	62.1	9.9	92.5	66.2	16.3	4.1	1.2
Chile	14	10	6-15	57.7	10.4	91.2	m	m	m	m
China	14	6	7-12	55.0	m	m	m	m	m	m
India	14	m	m	m	m	m	m	m	m	m
Indonesia	15	2	7-8	42.4	0.2	73.3	33.9	7.1	n	n
Jordan	15	8	6-13	54.0	9.1	88.7	67.3	m	m	m
Malaysia	16	7	6-12	50.5	8.9	89.1	36.2	6.5	0.2	n
Paraguay	14	5	7-11	50.7	2.9	83.3	m	m	m	m
Philippines	12	5	8-12	52.5	m	75.2	47.3	21.1	0.6	0.1
Russian Federation	15	5	7-11	55.6	47.9	91.7	m	m	m	m
Thailand	14	4	5-8	66.5	14.8	93.0	37.2	1.7	m	m
Uruguay	15	7	7-13	60.2	12.3	96.9	55.3	16.8	3.0	0.3

Data for Russian Federation and Thailand are for 1997.
Source: OECD Education Database. See Annex 3 for notes.

Table C1.3. **Transition characteristics at each year of age from 15 to 20: net enrolment rates by level of education in public and private institutions (based on head counts) (1996)**

	Graduation age of upper secondary education	Age 15	Age 16		Age 17			Age 18			Age 19			Age 20		
		Secondary education	Secondary education	Non-university tertiary education	Secondary education	Non-university tertiary education	University-level education	Secondary education	Non-university tertiary education	University-level education	Secondary education	Non-university tertiary education	University-level education	Secondary education	Non-university tertiary education	University-level education
Australia	19	99	96	1	79	3	14	33	9	26	20	9	25	18	8	23
Austria	17-19	93	91	n	87	n	n	60	2	6	24	3	13	8	3	17
Belgium	18-20	102	100	n	97	n	1	53	14	20	30	22	21	19	25	19
Canada	18	96	91	n	69	5	6	34	16	17	10	22	25	13	18	25
Czech Republic	18-19	100	99	n	82	n	n	43	3	8	12	6	16	5	4	16
Denmark	19-20	98	93	n	82	n	n	74	n	n	52	n	3	31	1	9
Finland	19	99	93	n	92	n	n	82	1	n	27	4	11	17	6	18
France	18-20	96	96	n	90	x	2	58	x	26	33	x	38	15	x	42
Germany	19	97	97	n	92	1	n	82	2	1	57	3	5	31	4	11
Greece	18	m	81	n	64	n	n	17	13	33	8	11	38	4	11	25
Hungary	16-18	100	88	a	74	a	n	44	a	8	22	a	15	13	a	16
Iceland	20	101	88	n	77	n	n	68	n	n	61	n	n	33	1	9
Ireland	17-18	96	89	n	71	x	7	46	x	32	11	x	36	6	x	32
Italy	17-19	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Japan	18	100	98	n	95	n	n	2	m	m	1	m	m	2	m	m
Korea	18	92	97	n	88	n	n	23	16	22	3	19	29	n	15	28
Luxembourg	18-19	92	81	n	79	n	m	72	n	m	61	1	m	33	3	m
Mexico	18	50	40	a	34	n	7	18	n	7	9	n	8	5	n	8
Netherlands	18-19	99	98	a	90	a	3	69	a	14	46	a	24	32	a	29
New Zealand	18	96	98	n	77	2	2	30	6	19	14	7	25	9	6	26
Norway	19	100	94	n	93	n	n	83	n	n	33	10	8	17	13	14
Poland	18-20	m	91	n	90	n	n	72	n	1	28	7	17	14	9	23
Portugal	18	87	77	n	71	n	1	43	3	9	25	5	14	15	6	16
Spain	16-18	93	83	n	76	n	n	44	1	20	27	1	27	22	2	30
Sweden	19	97	97	x	96	x	n	93	x	n	22	x	12	13	x	19
Switzerland	18-20	96	86	n	82	n	n	76	n	1	53	1	3	24	3	7
Turkey	17	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
United Kingdom	16-18	98	82	n	72	1	1	32	4	19	16	6	25	10	5	25
United States	18	95	86	n	79	1	2	24	15	20	5	16	21	1	13	21
Country mean		**95**	**89**	**n**	**81**	**1**	**3**	**51**	**5**	**12**	**26**	**7**	**18**	**15**	**7**	**20**
WEI Participants																
Argentina	17	70	60	n	49	1	1	22	6	12	9	8	17	m	8	17
Brazil	17	45	46	n	45	x	1	39	x	4	30	x	6	20	x	7
Chile	18	86	79	m	70	m	m	50	m	m	19	m	m	8	m	m
China	18-19	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Indonesia	m	44	38	n	34	n	n	28	n	n	11	3	8	4	3	9
Jordan	18	82	73	n	57	n	n	18	12	23	5	m	m	x	m	m
Malaysia	17	67	64	n	11	n	n	7	11	3	1	13	2	1	13	10
Paraguay	17	49	43	n	34	n	m	20	1	m	9	2	m	8	2	m
Philippines	17	65	m	m	m	m	41	m	m	29	m	m	22	m	m	18
Russian Federation	18	64	65	m	22	m	m	10	m	m	3	m	m	1	m	m
Thailand	17	48	45	n	36	n	n	8	14	11	n	12	9	n	1	8
Uruguay	18	75	65	n	52	n	3	35	2	11	23	4	9	12	4	5

Data for Russian Federation and Thailand are for 1997.
Source: OECD Education Database. See Annex 3 for notes.

Table C1.4. **School expectancy (1990, 1996) and index of change in enrolment (1990 = 100)**

	School expectancy under current conditions (full-time and part-time)*				Change in enrolment at all levels of education		Change in enrolment in primary and secondary education			
	All levels of education		Primary and secondary education		Total enrolment (1990 = 100)		Total enrolment (1990 = 100)			
	1990	1996	1990	1996	1990	1996	1990	1996	2005	2015
Australia	16.2	19.3	13.7	15.6	100	114	100	111	m	m
Austria	14.3	15.8	11.8	12.4	100	108	100	104	106	91
Belgium	m	18.3	m	14.5	m	m	m	m	m	m
Canada	16.5	17.1	12.5	12.3	100	110	100	108	110	105
Czech Republic	13.9	14.6	12.0	12.1	100	92	100	90	m	m
Denmark	16.1	17.1	12.6	13.0	100	114	100	94	101	101
Finland	15.5	17.2	12.4	13.0	100	110	100	105	103	97
France	m	16.5	m	13.0	m	m	m	m	m	m
Germany (FTFR)	m	16.3	m	13.4	100	106	100	105	m	m
Greece	m	14.2	m	11.6	m	m	m	m	m	m
Hungary	13.8	14.8	11.6	12.0	100	96	100	90	m	m
Iceland	m	17.5	m	14.8	100	113	100	107	m	m
Ireland	14.5	15.6	11.6	11.8	100	100	100	97	76	73
Italy	m	m	m	m	100	95	100	89	80	70
Japan	12.6	m	12.1	12.2	100	93	100	85	m	m
Korea	m	14.8	m	11.9	100	95	100	88	m	m
Luxembourg	m	m	m	m	m	m	m	m	m	m
Mexico	11.8	12.0	10.2	10.3	100	107	100	104	m	m
Netherlands	16.7	17.5	14.0	14.2	100	100	100	96	99	89
New Zealand	14.8	17.2	13.0	14.2	100	119	100	114	126	131
Norway	16.0	17.1	12.5	12.7	100	109	100	97	104	103
Poland	m	14.8	m	11.7	100	106	100	102	m	m
Portugal	13.7	16.9	12.1	13.9	100	109	100	96	m	m
Spain	15.4	17.5	12.6	14.0	100	97	100	89	70	64
Sweden	m	18.0	m	14.2	100	109	100	103	112	106
Switzerland	15.3	15.7	12.3	12.7	100	107	100	105	113	102
Turkey	m	m	m	m	100	111	100	107	m	m
United Kingdom	15.4	17.3	14.2	14.9	100	114	100	108	106	99
United States	16.3	16.8	11.8	12.0	100	111	100	110	116	113

* Education for children under the age of five is excluded.
Turkey: 1996 data refer to 1995.
Indices for 2005 and 2015 are projections.
Source: OECD Education Database. See Annex 3 for notes.

PARTICIPATION IN AND COMPLETION OF SECONDARY EDUCATION

POLICY CONTEXT

This indicator shows net enrolment and graduation rates for different types of upper secondary programmes.

Rising skill demands in OECD countries have made upper secondary qualifications the minimum level credential required for successful labour market entry. Upper secondary education also serves as the foundation for higher (post-secondary) learning and training opportunities. Although many countries do allow students to leave the education system at the end of the lower secondary level, people in OECD countries who do so tend to face difficulties in the labour market (Indicators A5 and F6).

As completion of upper secondary education becomes the norm, routes to it are becoming more varied.

As completion of upper secondary education is becoming the norm in most OECD countries, routes to it are becoming more varied. In some countries a broader age range is participating in vocational studies at the upper secondary level.

Although high upper secondary completion rates do not guarantee that those finishing compulsory education have acquired the foundation skills necessary to enter the labour market, the upper secondary graduation rate is one indicator of the current success of education system in producing minimally qualified school-leavers.

EVIDENCE AND EXPLANATIONS

Participation and completion in lower secondary education

In OECD countries participation in lower secondary education is generally universal (Chart C1.2). The situation varies among WEI participants: in India and Indonesia less than 65 per cent of an age cohort enters lower secondary education; in Argentina, China, Jordan, Malaysia, the Philippines and the Russian Federation it is around 90 per cent (see Table C2.2*b*). Lower secondary completion rates among WEI participants range from less than 60 per cent in Argentina, Brazil and Indonesia to above 80 per cent in Chile, Jordan, the Philippines and Thailand.

Participation and completion in upper secondary education

In 22 out of 27 OECD countries more than three out of four young persons participate in upper secondary education at some point during their school career.

Participation in upper secondary education is becoming the norm in almost all OECD countries. In 22 out of 27 OECD countries, more than three out of four young persons participate in upper secondary education (Table C2.2*a*). The exceptions to this pattern are Mexico and Portugal, where upper secondary enrolment rates are at most 29 and 61 per cent respectively. Low participation rates in Luxembourg can be explained by a high proportion of students attending schools in neighbouring countries.

Since this measure uses the net enrolment rate for the single year of age with the highest upper secondary enrolment level as a proxy for entry rates to

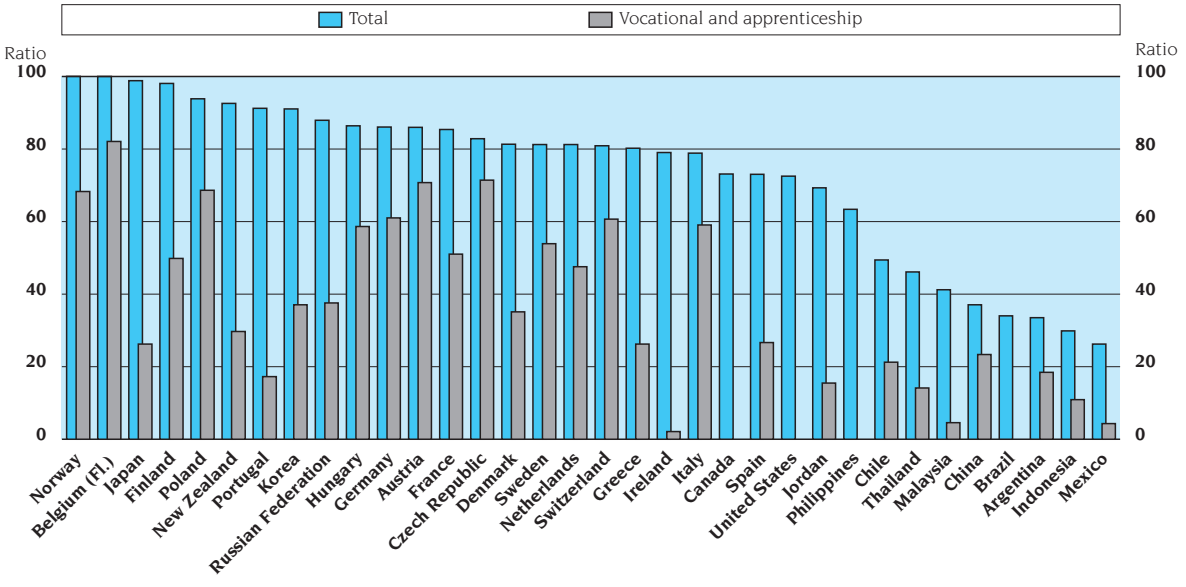
upper secondary education, entry rates can be underestimated in countries, like Portugal, where first-time entry to upper secondary programmes occurs at a variety of ages (*e.g.*, because a large proportion of students repeat one or more grades at lower levels or because lower secondary programmes have different durations) or where the amount of time that students spend in upper secondary education is relatively short (*e.g.*, because of high drop-out rates or short programmes).

In Jordan, Malaysia and the Philippines upper secondary entry rates are 65 per cent or more, whereas in other WEI participating countries they are lower (Table C2.2*b*).

Upper secondary programmes provide learning opportunities for a wide range of ages.

Participation in upper secondary education is in many countries not limited to young persons. More flexible educational pathways, non-continuous school careers and a growing number of upper secondary education programmes open to adults has widened the age distribution of upper secondary participants. By focusing on net enrolment rates at the traditional ages of upper secondary attendance, one can miss significant enrolment patterns among older students. In half of the OECD countries one out of three upper secondary students in vocational education is older than the theoretical graduation age (*i.e.*, the typical age of graduation for students who complete upper secondary education after continuous full-time attendance). The picture is similar among WEI participants.

Chart C2.1. **Ratio of upper secondary graduates to population at typical age of graduation, by type of programme (1996)**
First educational programmes



Countries are ranked in descending order of the ratio of graduates from all types of programmes to the population at typical age.

Source: OECD.

In all countries except one, upper secondary graduation rates exceed 72 per cent.

Upper secondary graduation rates are estimated as the number of all persons who graduated from upper secondary programmes in 1996 per 100 persons at the age at which students typically complete upper secondary education (Annex 1). These rates are influenced by completions of students at the traditional ages of upper secondary completion, as well as completions by older students (*e.g.*, those in second-chance programmes). In all OECD countries except Mexico, upper secondary graduation rates exceed 72 per cent (Table C2.3). In 12 of the 24 countries for which data are available, graduation rates are above 85 per cent and in the Flemish Community of Belgium, Finland, Japan, New Zealand, Norway and Poland they exceed 93 per cent. The lowest upper secondary graduation rates in the OECD are in Mexico (26 per cent). In Canada, Spain and the United States less than 75 per cent of an age cohort completes upper secondary education.

A comparison of the level of educational attainment across age groups (Indicator A1) indicates that there has been a marked increase in the percentage of persons who complete upper secondary education. Although upper secondary completion has firmly become the norm within the OECD a sizeable minority in many countries continues to drop out of education before.

Participation and completion in vocational education

Students in vocational or apprenticeship programmes constitute the majority of all upper secondary students.

In more than half of the OECD countries, the majority of upper secondary students attend vocational or apprenticeship programmes. In countries with dual-system apprenticeship programmes (such as Austria, Belgium, Germany, the Netherlands and Switzerland), as well as in the Czech Republic, Hungary, Italy and Poland, around 70 per cent or more of upper secondary students are enrolled in vocational programmes. Although outside of Europe participation in general programmes is typically higher than participation in vocational programmes, the opposite tends to be the case in Europe (see Table C2.1). Among WEI participants, China has more than half of upper secondary students participating in vocational programmes and in Chile, Indonesia and the Russian Federation participation in vocational programmes is still around 40 per cent.

In most countries vocational education is school-based, although in the Czech Republic, Denmark, Germany, Indonesia, Poland and Switzerland programmes that have both school-based and work-based elements are the most common form of vocational education and training.

In some countries, many upper secondary graduates re-enrol and pursue a second upper secondary qualification.

As an alternative to enrolling in tertiary education, ten OECD countries for which data are available, as well as Malaysia, offer students who have completed upper secondary education the opportunity to re-enrol and pursue additional upper secondary qualifications. Virtually all of the students who pursue a second upper secondary qualification enrol in vocational or apprenticeship programmes. Graduation from a second upper secondary programme is most common in Denmark, Finland, Germany and Ireland, where about every fifth person in the population at the typical graduation age complete a second upper secondary programme. In other countries, graduates from programmes that may be similar in content to these secondary programmes are considered as tertiary graduates.

Part-time study at the upper secondary level

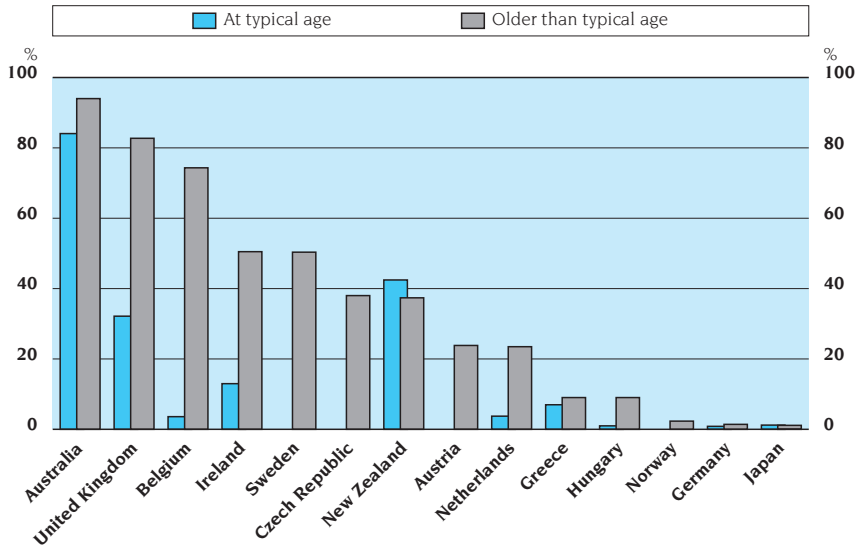
Part-time attendance has become an important option at the upper secondary level, especially for older students.

Upper secondary programmes are becoming more and more flexible in many countries. Today they offer learning opportunities to persons who did not complete an upper secondary qualification as part of their initial schooling, leading to higher overall participation rates. The degree of participation of both younger and older students in part-time programmes (Table C2.1) shows that in all OECD countries for which data are available part-time programmes tend to be relatively more attractive to older students. In contrast, part-time attendance does not appear common in WEI participants.

Virtually all students within the typical age band in general upper secondary education attend upper secondary education on a full-time basis. In several countries, however, part-time attendance is the primary mode of attendance in general programmes among students older than the typical age of attendance. In Hungary and New Zealand about half of the older students in first upper-secondary general programmes attend on a part-time basis and in Japan, the Netherlands, Thailand and Sweden the vast majority of older students in these programmes attend part-time.

Part-time attendance is an important mode of participation in vocational programmes for both younger and older students in at least four OECD countries, and for older students in nine countries.

Chart C2.2. **Percentage of students in vocational upper secondary programmes who are enrolled part time (1996)**



Countries are ranked in descending order of the percentage of students in vocational upper secondary programmes older than the typical age who are enrolled part time.

Source: OECD.

Gender differences in completion rates

Among older age groups women have lower levels of education than men…

The pattern of educational attainment among men and women in the adult population is uneven in most OECD countries (Indicator A1): historically women have not had sufficient opportunities and/or incentives to reach the same level as men. Women are generally over-represented among those who did not proceed to upper secondary education and underrepresented at the higher levels of education.

… but for younger persons the pattern is now reversing.

However, these differences are mostly attributable to the large gender differences in the attainment of older age groups and have been significantly reduced or reversed among younger age groups.

Graduation rates for women exceed those for men in three out of four countries.

Today, graduation rates no longer show significant differences between men and women in many countries (Table C2.3). In fact, in 15 out of 20 OECD countries reporting upper secondary graduation rates for first programmes by gender, graduation rates for women exceed those for men, and in the Flemish Community of Belgium, Denmark, Finland, Greece, New Zealand and Spain by over 10 percentage points. The trend is similar in WEI participants with graduation rates for women exceeding those for men by more than 10 per cent in Brazil, Malaysia and the Russian Federation.

In Norway, by contrast, graduation rates for men exceed those for women by more than 30 percentage points, and in Portugal the graduation rate for men is nearly twice as high as for women. Whereas in Norway this difference is mainly driven by differences in vocational graduation rates, women represent the minority of graduates from both general and vocational programmes in Portugal. In both countries, however, the majority of tertiary graduates are women. China is the only WEI participant in which male upper secondary graduates outnumber female graduates by more than 10 per cent.

In almost all countries, women in upper secondary education are less likely to be in vocational programmes than men (Table C2.1). In some countries the differences are substantial.

DEFINITIONS

Data refer to the school year 1995/96 and are based on the UOE data collection on education statistics and the World Education Indicators Pilot Project, administered in 1997 (details can be found in Annex 3).

The net enrolment rate at the ages with the highest upper secondary enrolment can be considered a proxy for the upper secondary entrance rate. This "maximal enrolment rate" may, however, underestimate upper secondary entrance in countries where first-time entry to upper secondary programmes occurs at a variety of ages (*e.g.*, because a large proportion of students repeat one or more grades at lower levels or because lower secondary programmes have different durations) or where the amount of time that students spend in upper secondary education is relatively short (*e.g.*, because of high drop-out rates or short programmes).

Gross enrolment rates for first and second educational programmes are calculated by dividing the number of students of all ages enrolled in a particular programme by the number of persons at the theoretical age of the programme (times 100). Gross enrolment rates can be influenced by changes in the population size over time as well as by imprecise assumptions about the theoretical

ages and/or the typical duration of programmes. For countries with high participation rates of people older than the typical age, especially high participation rates in adult education and in part-time programmes, the gross enrolment rate can exceed 100 per cent.

Vocational and technical programmes include both school-based programmes and combined school and work-based programmes that are recognised as part of the education system. Entirely work-based education and training, for which no formal education authority has oversight, is not taken into account.

Upper secondary graduates are those who successfully complete the final year of upper-secondary education. In some countries, successful completion requires a final examination; in others it does not. In some countries, students may enrol in and complete additional programmes at the same level of education after initial completion. For this indicator, graduation rates are therefore separated into first and second (or further) upper secondary programmes. Each country has identified a theoretical age (or average of ages) at which graduation typically occurs (Annex 1). Graduation rates are obtained by dividing the number of first-time or second-time upper secondary graduates by the population at the typical graduation age. Countries with differentiated upper secondary institutions have, in most cases, reported the number of graduates by the type of institution attended, rather than the type of educational programme pursued. A few countries with upper secondary institutions that offer multiple types of programmes have reported the qualifications obtained by type of programme (general or vocational).

In some countries graduation rates may be overestimated because some graduates may be counted more than once if they complete multiple programmes at the same level.

Table C2.1. **Distribution of enrolment in public and private upper secondary education by type of programme and percentage of upper secondary students enrolled in part-time programmes (1996)**

	Distribution of enrolment in upper secondary education by type of programme						Part-time enrolment as a percentage of total enrolment			
	Men + Women				Women		Students at the typical age		Students older than the typical age	
	General programmes	Vocational and technical programmes	*of which:* school-based	*of which:* combined school and work-based	General programmes	Vocational and technical programmes	General programmes	Vocational and technical programmes	General programmes	Vocational and technical programmes
Australia	33	67	x	x	36	64	n	84	n	94
Austria	24	76	42	34	26	74	n	n	25	24
Belgium	32	68	65	3	35	65	a	4	a	74
Canada	m	m	m	m	m	m	m	m	m	m
Czech Republic	16	84	37	47	18	82	n	n	19	38
Denmark	47	53	5	48	53	47	n	n	n	n
Finland	48	52	47	5	50	50	m	m	m	m
France	46	54	43	11	52	48	n	n	n	n
Germany	24	76	24	52	28	72	n	1	n	1
Greece	68	32	32	n	74	26	2	7	6	9
Hungary	32	68	42	26	38	62	4	1	39	9
Iceland	57	31	26	4	75	25	m	m	m	m
Ireland	80	20	15	5	80	20	n	13	10	51
Italy	28	72	72	a	32	68	m	m	m	m
Japan	72	28	28	a	75	25	2	1	87	1
Korea	58	42	42	a	55	45	n	n	n	n
Luxembourg	35	65	50	15	39	61	n	n	n	n
Mexico	84	16	16	a	82	18	n	n	n	n
Netherlands	30	70	47	23	35	65	2	4	71	24
New Zealand	62	38	30	8	62	38	1	42	47	37
Norway	42	58	x	x	50	50	n	n	4	2
Poland	31	69	m	69	42	58	m	m	m	m
Portugal	74	26	26	a	77	23	m	m	m	m
Spain	61	39	37	2	62	38	m	m	m	m
Sweden	46	51	x	x	51	46	n	n	82	50
Switzerland	31	69	9	60	39	61	m	m	m	m
Turkey	m	m	m	m	m	m	m	m	m	m
United Kingdom	43	57	x	x	39	61	n	32	n	83
United States	m	m	m	m	m	m	m	m	m	m
Country mean	**46**	**53**	**35**	**19**	**50**	**50**	**1**	**10**	**20**	**26**
WEI Participants										
Argentina	67	33	33	a	71	29	n	n	n	n
Chile	58	42	42	a	61	39	n	n	n	n
China	43	57	x	x	38	62	n	n	n	n
India	97	3	x	x	98	2	m	m	m	m
Indonesia	61	39	a	39	63	37	n	n	n	n
Jordan	77	23	15	8	85	15	n	n	n	n
Malaysia	78	22	22	a	84	16	n	n	n	n
Paraguay	91	9	9	a	92	8	n	n	n	n
Philippines	100	a	a	a	100	a	m	m	m	m
Russian Federation	57	43	43	a	63	37	n	n	n	n
Thailand	72	28	27	1	75	25	n	n	98	2
Uruguay	80	20	20	a	84	16	n	n	n	n

Russian Federation and Thailand: Data refer to 1997.
Source: OECD Education Database. See Annex 3 for notes.

Table C2.2*a*. **Net enrolment rates for the ages with the highest upper secondary enrolment and gross enrolment rates in upper secondary education at typical ages, based on head counts (1996)**

	Net enrolment rates at ages with the highest upper secondary enrolment						Gross enrolment rate at typical age				Percentage of students enrolled who are older than the typical age			
	All programmes		General programmes		Vocational and technical programmes		First educational programmes		Second and further educational programmes		First educational programmes		Second and further educational programmes	
	Age	Percentage of persons enrolled	Age	Percentage of persons enrolled	Age	Percentage of persons enrolled	General programmes	Vocational and technical programmes	General programmes	Vocational and technical programmes	General programmes	Vocational and technical programmes	General programmes	Vocational and technical programmes
Australia	16	78	16	64	18	19	73	73	x	x	10	75	x	x
Austria	16	90	15	27	16	70	26	92	a	9	13	16	a	81
Belgium	16	97	15	44	17	58	45	75	a	a	7	33	a	a
Canada	16	85	x	x	x	x	m	m	a	a	m	m	a	a
Czech Republic	16	98	15	15	16	84	17	85	a	16	4	4	a	5
Denmark	17	73	18	49	17	25	54	50	2	12	9	48	29	48
Finland	17	90	16	56	17	36	63	83	x	x	14	55	x	x
France	17	86	16	46	17	48	50	44	x	x	15	13	x	x
Germany	18	80	17	25	18	55	26	67	1	20	21	27	84	50
Greece	15	93	15	73	15	21	62	30	n	n	4	32	n	n
Hungary	15	88	15	26	15	62	32	76	x	x	34	23	x	x
Iceland	16	87	16	71	18	20	67	36	m	m	17	50	m	m
Ireland	16	83	16	81	18	21	103	13	n	27	12	81	n	53
Italy	m	m	m	m	m	m	24	54	a	13	m	m	a	m
Japan	15	100	15	73	15	28	73	28	a	a	3	7	a	a
Korea	16	95	16	55	16	40	54	39	a	a	9	10	a	a
Luxembourg	18	66	17	26	18	42	25	54	a	n	31	51	a	n
Mexico	16	29	16	25	17	4	33	6	a	a	22	44	a	a
Netherlands	17	73	16	33	18	48	33	60	n	n	13	45	n	n
New Zealand	16	97	16	81	17	16	83	77	a	a	13	79	a	a
Norway	16	93	18	48	17	50	55	76	a	a	17	41	a	a
Poland	16	91	15	29	16	62	31	67	x	x	9	7	x	x
Portugal	17	61	17	42	17	19	120	27	m	m	66	42	m	m
Spain	16	82	15	68	17	20	78	49	n	26	20	56	n	60
Sweden	17	96	16	45	17	65	75	84	a	a	53	30	a	a
Switzerland	17	76	17	24	18	53	29	65	m	m	13	22	m	m
Turkey	m	m	m	m	m	m	m	m	m	m	m	m	m	m
United Kingdom	14	98	14	98	16	44	67	m	a	a	1	76	a	a
United States	16	80	x	x	x	x	m	m	a	a	m	m	a	a
Country mean	**16**	**84**	**16**	**49**	**17**	**40**	**54**	**56**	**n**	**6**	**17**	**39**	**19**	**33**
WEI Participants														
Argentina	16	45	15	37	17	19	36	18	a	a	15	30	a	a
Brazil	17	29	m	m	m	m	m	m	a	a	m	m	a	a
Chile	16	72	16	40	16	32	46	33	a	a	30	24	a	a
China	m	m	m	m	m	m	15	20	a	a	m	m	a	a
India	m	m	m	m	m	m	21	1	a	a	m	m	a	a
Indonesia	17	29	17	18	17	11	21	12	a	a	10	8	a	a
Jordan	16	55	16	45	17	12	55	17	a	a	12	28	a	a
Malaysia	15	67	15	61	16	8	60	7	13	a	2	n	n	a
Paraguay	17	28	17	25	16	3	29	3	a	a	31	17	a	a
Philippines	16	32	16	32	a	a	65	a	a	a	34	a	a	a
Russian Federation	16	65	15	49	17	22	38	21	a	a	n	15	a	a
Thailand	16	44	16	26	15	23	49	19	a	a	58	3	a	a
Uruguay	16	44	16	40	18	7	59	15	a	a	36	71	a	a

Russian Federation and Thailand: Data refer to 1997.
Source: OECD Education Database. See Annex 3 for notes.

Table C2.2*b*. **Number of new entrants to lower and upper secondary education per 100 persons at the typical age and number of lower secondary graduates per 100 persons at the typical age (1996)**

	New entrants				Graduates		
	Lower secondary education		Upper secondary education		Lower secondary education		
	Age	M + W	Age	M + W	M + W	Men	Women
WEI Participants							
Argentina	12	93	15	58	57	51	63
Brazil	13	m	15	m	53	49	57
Chile	12	m	14	m	84	82	86
China	12 to 13	89	15 to 16	36	71	75	66
India	12	63	15	43	m	m	m
Indonesia	13	56	16	38	41	43	40
Jordan	12	97	16	74	83	81	86
Malaysia	12	99	15	69	74	71	77
Paraguay	12	57	15	m	m	m	m
Philippines	13	90	16	64	81	80	82
Russian Federation	10	98	15	m	m	m	m
Thailand	12	76	15	52	86	87	86
Uruguay	12	72	15	50	m	m	m

Russian Federation and Thailand: Data refer to 1997.
Source: OECD Education Database. See Annex 3 for notes.

Table C2.3. **Ratio of upper secondary graduates to population at typical age of graduation (times 100) by type of programme**
***First educational programmes* (1996)**

	Total			General			Vocational and apprenticeship		
	M + W	Men	Women	M + W	Men	Women	M + W	Men	Women
Australia	m	m	m	m	m	m	m	m	m
Austria	86	88	84	15	13	18	71	76	66
Belgium (Flemish Community)	117	104	130	34	30	39	82	74	90
Canada	73	70	77	x	x	x	x	x	x
Czech Republic	83	81	85	11	9	14	71	72	70
Denmark	81	76	87	46	38	55	35	38	32
Finland	98	93	104	48	40	57	50	53	47
France	85	85	86	34	29	40	51	56	46
Germany	86	86	86	25	22	29	61	64	58
Greece	80	75	86	54	46	63	26	29	23
Hungary	86	m	m	25	18	33	59	m	m
Iceland	m	m	m	m	m	m	m	m	m
Ireland	79	75	83	77	72	82	2	2	2
Italy	79	76	82	19	16	22	59	59	59
Japan	99	96	102	73	69	76	26	27	26
Korea	91	91	91	54	57	50	37	33	41
Luxembourg	m	m	m	m	m	m	m	m	m
Mexico	26	m	m	22	m	m	4	m	m
Netherlands	81	m	m	33	m	m	48	m	m
New Zealand	93	86	99	63	59	67	30	27	33
Norway	117	133	101	49	43	56	68	90	45
Poland	94	m	m	25	m	m	69	m	m
Portugal	91	115	66	79	99	58	17	22	12
Spain	73	65	81	44	m	m	27	25	29
Sweden	81	80	82	27	21	34	54	59	48
Switzerland	81	86	76	20	18	23	61	68	53
Turkey	m	m	m	m	m	m	m	m	m
United Kingdom	m	m	m	m	m	m	m	m	m
United States	72	69	76	x	x	x	x	x	x
Country mean	**85**	**86**	**88**	**40**	**39**	**45**	**46**	**49**	**43**
WEI Participants									
Argentina	34	31	36	15	10	20	18	21	16
Brazil	34	21	47	x	x	x	x	x	x
Chile	49	45	54	28	24	32	21	21	22
China	37	43	30	14	16	11	23	27	19
India	m	m	m	m	m	m	m	m	m
Indonesia	30	32	27	19	20	18	11	12	9
Jordan	69	66	73	54	47	62	15	20	11
Malaysia	41	35	48	37	29	45	5	7	2
Paraguay	m	m	m	16	14	18	m	m	m
Philippines	63	61	65	63	61	65	a	a	a
Russian Federation	88	82	94	49	47	52	38	35	40
Thailand	46	44	48	32	29	35	14	14	14
Uruguay	m	m	m	m	m	m	14	13	14

Brazil: Data refer to 1995. Russian Federation and Thailand: Data refer to 1997.
Source: OECD Education Database. See Annex 3 for notes.

Table C2.4. **Ratio of upper secondary graduates to population at typical age of graduation (times 100) by type of programme**
***Second or further programmes only* (1996)**

	Total			General			Vocational and apprenticeship		
	M + W	Men	Women	M + W	Men	Women	M + W	Men	Women
Australia	a	a	a	a	a	a	a	a	a
Austria	m	m	m	a	a	a	m	m	m
Belgium (Flemish Community)	a	a	a	a	a	a	a	a	a
Canada	a	a	a	a	a	a	a	a	a
Czech Republic	9	11	8	a	a	a	9	11	8
Denmark	19	13	26	3	3	4	16	10	22
Finland	36	23	49	2	1	4	34	23	46
France	14	15	14	a	a	a	14	15	14
Germany	19	19	19	1	1	1	18	18	18
Greece	a	a	a	a	a	a	a	a	a
Hungary	4	m	m	n	n	n	4	m	m
Iceland	m	m	m	m	m	m	m	m	m
Ireland	22	13	31	a	a	a	22	13	31
Italy	11	9	12	a	a	a	11	9	12
Japan	a	a	a	a	a	a	a	a	a
Korea	a	a	a	a	a	a	a	a	a
Luxembourg	m	m	m	m	m	m	m	m	m
Mexico	a	a	a	a	a	a	a	a	a
Netherlands	6	m	*m*	2	m	m	4	m	m
New Zealand	a	a	a	a	a	a	a	a	a
Norway	a	a	a	a	a	a	a	a	a
Poland	m	m	m	m	m	m	m	m	m
Portugal	a	a	a	a	a	a	a	a	a
Spain	14	13	15	n	n	n	14	13	15
Sweden	a	a	a	a	a	a	a	a	a
Switzerland	a	a	a	a	a	a	a	a	a
Turkey	a	a	a	a	a	a	a	a	a
United Kingdom	a	a	a	a	a	a	a	a	a
United States	a	a	a	a	a	a	a	a	a
Country mean	**6**	**5**	**8**	**n**	**n**	**n**	**6**	**5**	**7**
WEI Participants									
Malaysia	6	4	9	6	4	9	a	a	a

Source: OECD Education Database. See Annex 3 for notes.

ACCESS TO AND PARTICIPATION IN TERTIARY EDUCATION

POLICY CONTEXT

This indicator estimates the percentage of today's youth who will enter university-level education during the course of their lives, given current conditions.

Tertiary education is associated with better access to employment (Indicator F6) and higher earnings (Indicator F7). Entry rates to both university-level and non-university level tertiary education are an indication, in part, of the degree to which high level skills are being acquired by the population. High tertiary entry and participation rates help to ensure the development and maintenance of a highly educated population and labour force.

Entry and participation rates reflect both the accessibility of tertiary education and the perceived value of attending tertiary programmes.

As students' awareness of the economic and social benefits of tertiary education has increased, so have entry rates into both university-level and non-university-level tertiary education. Continued growth in participation in tertiary education, accompanied by a widening diversity in the backgrounds and interests of those aspiring to university-level studies, will require a new kind of provision to cater for this increase in demand. Tertiary institutions will be challenged not only to meet growing demand through an expansion of places, but also to adapt programmes, teaching and learning to match the diverse set of needs of the new generation of students.

EVIDENCE AND EXPLANATIONS

Overall access to tertiary education

One out of three of today's youth will enter university-level education during the course of their lives.

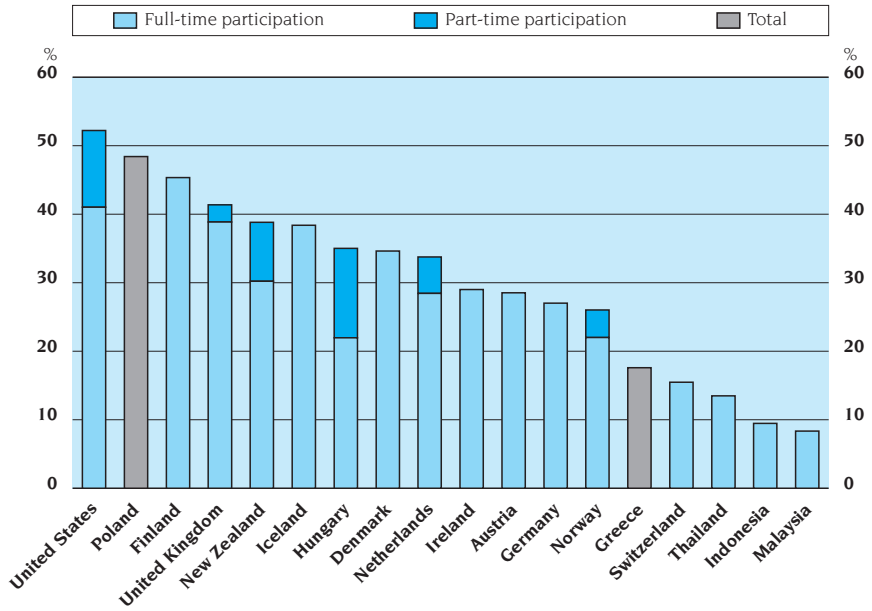
One out of three of today's youth will enter university-level education during the course of their lives, assuming current university-level entry rates. In the 14 countries for which data are available, first-time university entry rates exceed 40 per cent in Finland, Poland and the United Kingdom and over 50 per cent in the United States (Table C3.1). Other countries have considerably lower rates of first-time university entry. The estimated first-time university entry rate for Switzerland is 16 per cent, although this is balanced, to some degree, by high participation in advanced upper secondary programmes and non-university tertiary programmes.

Net entry rates to non-university tertiary education and to university-level education need to be interpreted with care. Persons who enter non-university tertiary programmes may also enter university-level programmes later in their lives. First-time entry rates for each level of education cannot be added together to obtain tertiary-level entrance rates because of the possible double-counting of entrants.

On average in OECD countries one out of five of today's youth will enter non-university tertiary education.

The proportion of people who enter non-university tertiary education is generally smaller than for university-level education. On average in 13 OECD countries, every fifth person will enter non-university tertiary education. The range is from less than 15 per cent in Denmark, Greece and Iceland to around 30 per cent or more in Norway, Switzerland and the United States. Hungary and the Netherlands do not provide any non-university tertiary education.

Chart C3.1. **Net entry rates for university-level education (1996)**



Countries are ranked in descending order of the total net entry rates for the university level.

Source: OECD.

In some countries, such as Norway and Switzerland, wide access to non-university education counterbalances comparably low entry rates to university education. But this is not a general rule. For other countries, most notably Finland, the United Kingdom and the United States, entry rates at both the non-university and university tertiary level are among the highest in OECD countries. Net entry rates to tertiary education should be reviewed in the light of participation in advanced upper secondary programmes, which are an important alternative to tertiary education in some countries (Indicator C2).

In Finland, the United Kingdom and the United States, entry rates at both the non-university and university tertiary level are among the highest in the OECD.

Participation in tertiary education

In addition to the entry rates, enrolment rates give a comprehensive picture of total participation in tertiary education. Enrolment rates reflect both the total number of individuals who enter tertiary education and the duration of tertiary studies. The sum of net enrolment rates across single years of age is a proxy for the total number of years that a person will, on average, be enrolled in tertiary education during the course of his or her life. This measure, referred to as the "expectancy of tertiary education", is an overall measure of the amount of tertiary education undertaken by an age cohort and not just individual participants.

On average across OECD countries, a 17-year-old can expect to receive 2.3 years of tertiary education, of which 1.8 years will be full-time (Table C3.2). In Australia, Canada, Finland, New Zealand and the United States 17 year-olds can expect to receive at least 3 years of tertiary education, full- or part-time, over the course of their lives. On the other hand, the expectancy of tertiary education is 1.5 years or less in the Czech Republic, Hungary, Mexico and Switzerland. Among

In Australia, Canada, Finland, New Zealand and the United States young people can expect to receive at least 3 years of tertiary education.

WEI participants, the expectancy of tertiary education ranges from below one year in Brazil, Indonesia, Malaysia and Thailand to nearly 2 years in Argentina.

Only in Finland does the expectancy of full-time studies exceed three years.

In three of the five countries with tertiary expectancy of three or more years, a significant proportion of tertiary students attend part-time courses. Only in Finland does the expectancy of full-time studies exceed three years.

Longer duration of studies in university-level programmes tends to increase the stock of enrolments, and thus the volume of resources required.

The majority of tertiary students are enrolled at the university level in all countries, although more than one student out of three is enrolled in a non-university programme in Australia, Belgium, Canada, Switzerland and the United States (Table C3.3). Longer duration of studies in university-level programmes tends to increase the stock of enrolments, and thus the volume of resources required, all other things being equal. As expenditure per student is, on average, 1.5 times greater in university than in non-university programmes (Indicator B4), this distribution of student enrolment implies that the vast majority of tertiary expenditure is spent on students at the university level. This does not imply, however, that the non-university tertiary sector is an unimportant or unproductive arena for training skilled workers. In fact, the number of graduates from non-university programmes is greater than the number of graduates from university programmes in the Flemish Community of Belgium, Canada, Japan, Norway and Switzerland (see Indicator C4). Higher participation rates at the university level relative to the non-university tertiary level in these countries (Table C3.3) is a result of longer programme durations and not of higher entry rates.

Chart C3.2. **Expected years of tertiary education at age 17 (1996)**

Countries are ranked in descending order of the expected years of tertiary education for women.

Source: OECD.

Trends in participation and enrolment

Participation in tertiary education increased significantly in the early 1990s (Chart C3.3). The total number of students enrolled in tertiary programmes grew by more than 20 per cent between 1990 and 1996 in all except five OECD countries: Canada, Germany, the Netherlands, Switzerland and the United States. Canada and the United States already showed high levels of tertiary participation in 1990 and have maintained the highest levels of tertiary school expectancy in the OECD. Germany and Switzerland, on the other hand, are still among the countries with the shortest tertiary expectancy in 1996.

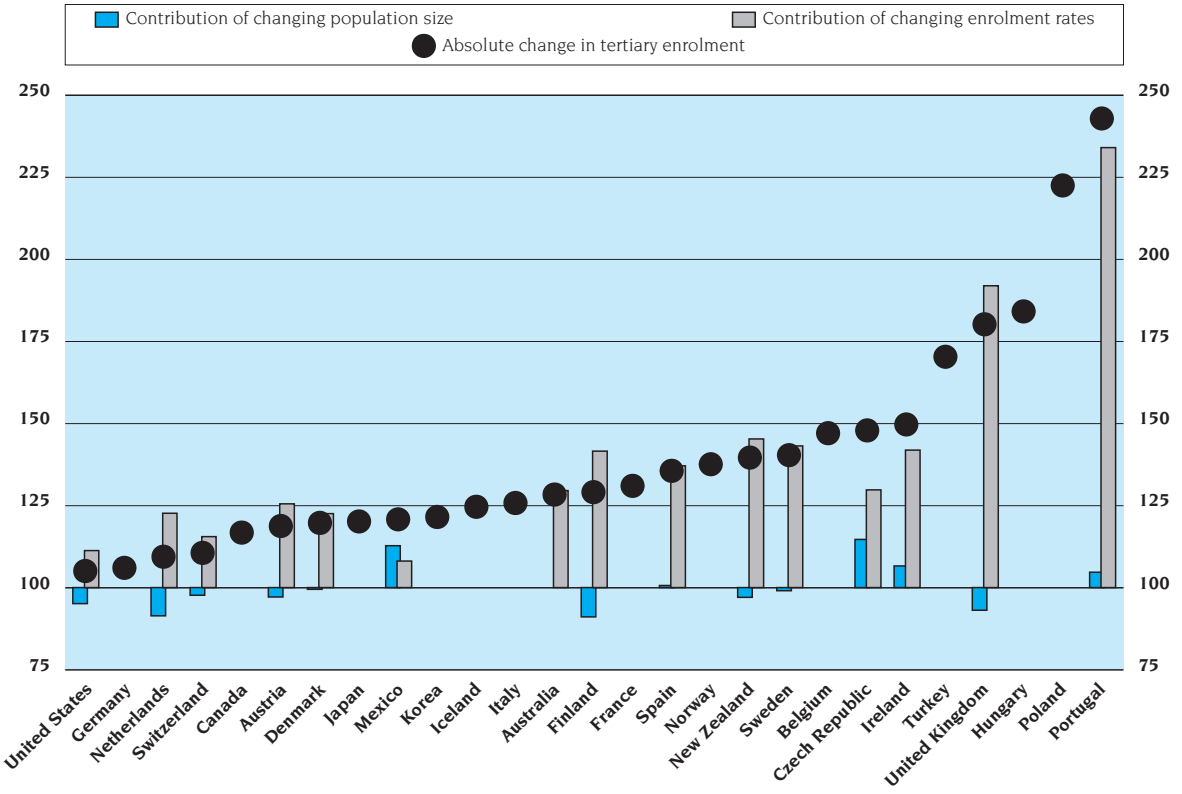
The number of tertiary students grew by more than 50 per cent between 1990 and 1996 in Hungary, Ireland, Turkey and the United Kingdom…

The highest increases over the period 1990-1996 occurred in Hungary, Ireland, Turkey and the United Kingdom, where there was an increase of over 50 per cent, and in Poland and Portugal, where the number of tertiary students enrolled more than doubled.

… in Poland and Portugal the number of tertiary students more than doubled.

The countries with the highest increase in the number of tertiary students tend to be those that had relatively low levels of expectancy of tertiary education in 1990. School expectancy in Ireland and the United Kingdom increased by more than 0.8 years over the last 5 years.

Chart C3.3. **Index of change in the number of students at the tertiary level between 1990 and 1996, and contribution of demographic changes and changing enrolment rates to the change in tertiary enrolment (1990 = 100)**



Countries are ranked in ascending order of the absolute change in enrolment.

Source: OECD.

Growing demand, reflected in higher participation rates, is the main factor driving expansion in tertiary enrolments.

At the tertiary level, changes in enrolment rates are less closely tied to changes in the size of the age-relevant population than is the case at the primary and secondary levels of education. Chart C3.3 decomposes the change in the number of students enrolled into two components: changes in cohort sizes and changes in participation rates. Growing demand, reflected in higher participation rates, is the main factor driving expansion in tertiary enrolments. If there had been no changes in the size of the relevant youth cohort, the number of tertiary students in Portugal and the United Kingdom would have increased by 92 and 134 per cent over the period 1990-1996. Whereas in Portugal the actual change (144 per cent) was amplified by an increase of the population at the relevant ages, the opposite was the case in the United Kingdom where the population at the relevant declined and the actual increase in tertiary participation amounted to 81 per cent. The Czech Republic and Mexico are the only countries where an increase of the population at the relevant ages contributed significantly to the increases in tertiary enrolment. In all other countries the size of the population in the relevant age bracket either declined or rose only very modestly. In the Netherlands a decrease of the population at the relevant ages since 1990 has moderated the increase of participation rates.

Age of entrants and students

In Greece, Ireland and Malaysia more than 80 per cent of all university entrants are aged about 20 years or younger.

Traditionally, entry into university-level education has typically occurred immediately after the completion of upper secondary education. In a number of countries this is still the case. In Greece, Ireland and Malaysia, for example, more than 80 per cent of all first-time entrants are aged about 20 years or younger (Table C3.1).

In other countries, the transition to the tertiary level is often delayed, in some cases by a period of time spend in the work force. In these countries, first-time entrants to the university level are typically older and show a much wider range of entry ages. In Denmark and Norway, for example, more than half of the students enter university-level education for the first time after the age of 22, and less than 20 per cent of first-time entrants are younger than 20 years of age.

The proportion of older first-time entrants to university-level programmes, among other factors, may reflect the flexibility of these programmes and their suitability for non-traditional students. In some countries a sizeable proportion of new entrants is much older than the typical age of entry. In Denmark and Norway more than 20 per cent of first-time entrants are 27 years of age or older.

A similar picture is shown by the age-distribution of students, a measure that is dependent on both the age distribution of entrants as well as on the average duration of studies. Countries with typically young first-time entrants and a short duration of programmes, such as Belgium, Korea and the United Kingdom, show high enrolment rates at the age of 18 to 21 and comparable low enrolment rates at older ages (Table C3.3). By contrast, countries such as Denmark and Norway, with a typically higher age of entrance, show low enrolment rates in the younger age-groups but high enrolment rates at older ages. In other countries, such as Germany and Austria, enrolment rates are high as a consequence of a higher variation of entrance ages, as well as of longer duration of studies. These countries have equally high enrolment rates for several age groups.

Mode of enrolment

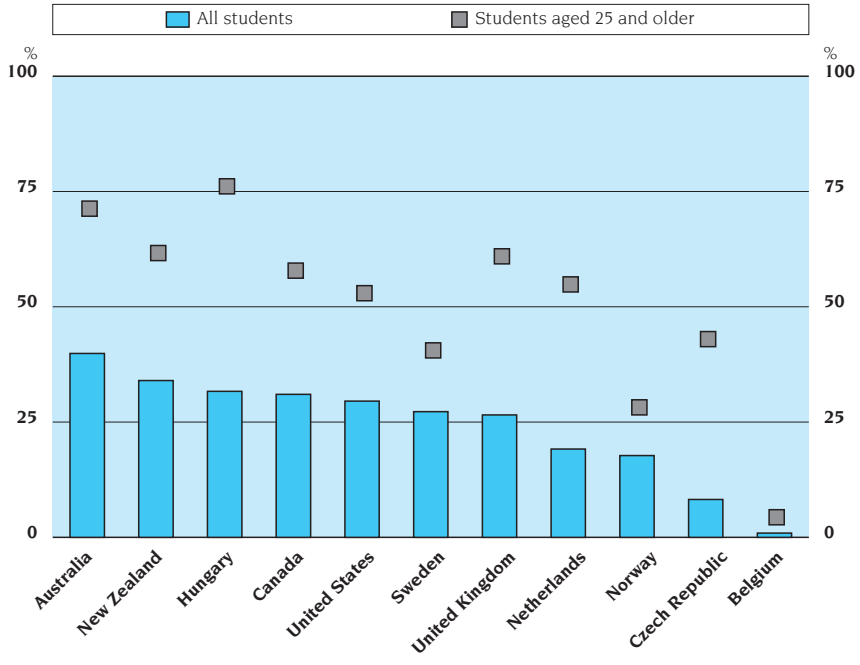
Countries differ widely in how tertiary education is organised and in the modes of participation that are offered. One aspect here is the importance of part-time study.

In some countries, part-time participation is an important option for students. More than one out of five students enters university-level education as a part-time student in New Zealand and the United States; in Hungary the figure is one out of three (Chart C3.1). Among countries for which data are available, the importance of part-time study is even higher at the non-university tertiary level. In Switzerland and the United Kingdom more than 50 per cent of students at this level enter part-time programmes. Examining participation in part-time studies by entry rates may not give a complete picture, however, since students switch from full-time to part-time studies and vice versa during the course of their studies.

On average 12 per cent of all university-level students are enrolled part time. In Australia, Canada, Hungary and New Zealand this proportion is over 30 per cent at the university level.

On average, 12 per cent of all university-level students and 22 per cent of non-university tertiary students are enrolled part time (Table C3.4). The proportion of part-time students varies widely across countries, however. Whereas in Australia, Canada, Hungary and New Zealand over 30 per cent of all university students are in part-time programmes, the proportion is negligible in other countries. At the non-university tertiary level the proportion of part-time students is generally higher. More than 50 per cent of all students are enrolled as part-time students in New Zealand, Switzerland, the United Kingdom and the United States. In Australia part-time students account for about 80 per cent of all non-university tertiary students.

Chart C3.4. **Percentage of university-level students enrolled part time (1996)**



Countries that do not distinguish between full-time and part-time enrolment are not represented in this chart.
Countries are ranked in descending order of the percentage of part-time students.
Source: OECD.

Most countries with a high proportion of part-time students also have relatively high entand graduation rates.

Almost all countries with a high proportion of part-time students also have relatively high entry and graduation rates. Furthermore, the data show that part-time programmes appear to be of particular interest to older students, who re-enter university or take a "second chance". In all countries which offer part-time programmes, the proportion of students studying part time is generally higher among students older than 25 years, sometimes twice as high, than for all students in general.

Enrolment by type of institution

Tertiary education is controlled and managed by public authorities in most countries.

In the majority of OECD countries, tertiary education is controlled and managed by public authorities. At the university level, governmental control is predominant in almost all countries. In 11 out of 26 countries the proportion of students enrolled in private institutions is negligible, and in another 7 countries it is below 10 per cent (Chart C3.5).

The exceptions to this pattern are found in Brazil, Indonesia, Japan, Korea, the Netherlands, the Philippines, Poland and the United Kingdom.

Nevertheless, there are alternative ways tertiary education can be structured. In the Netherlands, Poland and the United Kingdom, universities are controlled by private boards but financed by government money. In Korea and Japan three out of four students are enrolled in independent private institutions, where less than 50 per cent of funds come from public sources. In the United States this is the case for one out of three students. While in most WEI participants public institutions are the primary providers of university-level studies, government-dependent private institutions enrol the majority of students in Brazil and most students attend independent private institutions in Indonesia and the Philippines.

At the non-university tertiary level, there is greater variety in the control of institutions. On average across OECD countries, almost 30 per cent of all students are enrolled in private institutions (Table C3.4). More than 90 per cent of all students in Japan, Korea and the United Kingdom are enrolled in private institutions and 40 per cent or more in the Czech Republic, Germany, Poland and Switzerland.

■ DEFINITIONS

Data refer to the school year 1995/96 and are based on the UOE data collection on education statistics and the World Education Indicators Pilot Project, administered in 1997 (details can be found in Annex 3).

Table C3.1 shows the sum of net entry rates for all ages. The net entry rate of a specific age is obtained by dividing the number of first-time entrants to the university level of that age by the total population in the corresponding age-group (times 100). The sum of net entry rates is calculated by adding the net entry rates for each single year of age. The result represents the proportion of persons of a synthetic age-cohort who enter the tertiary level of education, irrespective of changes in the population sizes and differences between countries in the typical entry age. Table C3.1 shows also the 20th, 50th and 80th percentiles of the age-distribution of first-time entrants, *i.e.*, the ages below which are to be found 20 per cent, 50 per cent and 80 per cent of first-time entrants.

New (first-time) entrants are those enrolling at the relevant level of education for the first time. Students who complete university-level non-degree programmes and transfer to degree programmes are not regarded as first-time entrants at the university level; nor are those who return to university-level education after an absence. Foreign students who enrol in a country's education system for the first time in a post-graduate programme are considered first-time

Chart C3.5. **Distribution of tertiary students enrolled by type of institution (head counts, 1996)**

Countries are ranked in descending order of the percentage of students in public institutions in university-level education.

Source: OECD.

entrants. The definition of first-time entrants may differ somewhat between countries (Annex 3 gives details).

Not all countries can distinguish between students entering a university-level tertiary programme for the first time and those transferring between the different tertiary levels of education or repeating or re-entering a level after a period of absence. For this reason first-time entry rates for each level of tertiary education cannot be added together to get a tertiary-level entrance rate, because of the inevitable double-counting of entrants that would result.

Table C3.2 shows the expected number of years for which 17 year-olds will be enrolled in tertiary education. It is calculated as the sum of net enrolment rates for persons aged 17 and over (divided by 100). This measure is a function of both the number of people participating in tertiary education and of the duration of tertiary studies. Since the denominator also includes those who have never participated in tertiary education, the indicator cannot be interpreted as the average number of years an individual student requires to complete tertiary education.

Table C3.3 shows the net enrolment rates in tertiary education for students in the age-groups 17-34, 18-21, 22-25 and 26-29. Net enrolment rates are calculated by dividing the number of tertiary students in a specific age-group by the total population in that age group (times 100).

The figures are based on head counts; that is, they do not distinguish between full-time and part-time participants. The distinction between full-time and part-time participation at the tertiary level is difficult to make on a standardised basis since many countries do not recognise the concept of part-time study, even if in practice at least some of their students would be classified as part-time students by other countries.

Data for the school year 1990 (1989/90) are based on a special survey carried out amongst OECD member countries in 1997.

Table C3.5 shows the expected years of tertiary education for the academic year 1989/90. The data on tertiary enrolment for 1989/90 were obtained from a special survey carried out in 1997. Countries were asked to report the data according to the same definitions and coverage as for the UOE data collection on education statistics for the 1995/96 academic year.

The change in total tertiary enrolment is expressed as an index the base year of which is 1990 (100). The number of tertiary students in 1996 is therefore expressed as a percentage of the number of tertiary students in 1990. The impact of demographic change on the total enrolment is calculated by applying the enrolment rates as measured in 1990 to the population data for 1996: the population change was taken into account while the enrolment rates by single year of age were kept constant at the level of 1990. The impact of changing enrolment rates is calculated by applying the enrolment rates as measured in 1996 to the population data for 1990, *i.e.*, the enrolment rates by single year of age for 1996 are multiplied by the population by single year of age for 1990 to obtain the total number of students that could be expected if the population would have been constant since 1990.

Table C3.1. **Net entry rates for tertiary-level education by gender and mode of participation and age distribution of university-level new entrants (1996)**

	Non-university tertiary education				University-level education						
	Net entry rates				Net entry rates				Age at:		
	M + W	Men	Women	Full-time only	M + W	Men	Women	Full-time only	20th percentile[1]	50th percentile[1]	80th percentile[1]
Australia	m	m	m	m	m	m	m	m	m	m	m
Austria	m	m	m	m	29	26	31	29	19.1	20.4	23.4
Belgium	m	m	m	m	m	m	m	m	m	m	m
Canada	m	m	m	m	m	m	m	m	m	m	m
Czech Republic	m	m	m	m	m	m	m	m	m	m	m
Denmark	10	11	9	10	35	26	43	35	21.4	23.6	29.4
Finland	22	16	27	22	45	44	47	45	19.8	21.4	26.5
France	m	m	m	m	m	m	m	m	m	m	m
Germany	m	m	m	m	27	28	27	27	20.1	21.6	25.0
Greece	13	m	m	m	18	m	m	m	18.5	19.4	20.5
Hungary	a	a	a	a	35	32	38	22	18.9	20.3	25.3
Iceland	14	m	m	14	m	m	m	38	m	m	m
Ireland	24	23	24	24	29	28	30	29	18.0	18.6	19.4
Italy	m	m	m	m	m	m	m	m	m	m	m
Japan	m	m	m	m	m	m	m	m	m	m	m
Korea	m	m	m	m	m	m	m	m	m	m	m
Luxembourg	m	m	m	m	m	m	m	m	m	m	m
Mexico	m	m	m	m	m	m	m	m	m	m	m
Netherlands	a	a	a	a	34	32	36	28	18.7	20.2	24.0
New Zealand	20	18	21	13	39	33	44	30	18.4	19.2	25.6
Norway	29	24	34	22	26	20	33	22	20.2	22.7	>29
Poland	17	m	m	m	48	m	m	m	19.5	20.6	23.2
Portugal	m	m	m	m	m	m	m	m	m	m	m
Spain	m	m	m	m	m	m	m	m	m	m	m
Sweden	m	m	m	m	m	m	m	m	m	m	m
Switzerland	30	40	21	13	16	17	14	16	20.2	21.3	23.4
Turkey	m	m	m	m	m	m	m	m	m	m	m
United Kingdom	25	24	27	12	41	39	43	39	18.5	19.5	24.3
United States	47	41	52	26	52	46	58	41	18.3	19.0	24.2
Country mean	**19**	**20**	**22**	**14**	**34**	**31**	**37**	**31**			
WEI Participants											
Argentina	29	16	42	29	m	m	m	m	m	m	m
Indonesia	4	5	4	4	9	12	7	9	19.3	19.8	21.3
Malaysia	17	17	18	17	8	8	9	8	19.6	20.3	20.9
Thailand	15	15	15	15	14	12	15	14	18.5	m	m

Thailand: Data refer to 1997.
1. 20/50/80 per cent of new entrants are below this age.
Source: OECD Education Database. See Annex 3 for notes.

Table C3.2. **Expected years of tertiary education for all 17 year-olds (1996)**

	Non-university tertiary education (ISCED 5)				University-level education first stage (ISCED 6)				All tertiary education (ISCED 5,6 and 7)			
	Full-time and part-time			Full-time	Full-time and part-time			Full-time	Full-time and part-time			Full-time
	M + W	Men	Women	M + W	M + W	Men	Women	M + W	M + W	Men	Women	M + W
Australia	1.4	1.6	1.3	0.3	1.8	1.5	2.0	1.2	3.6	3.5	3.7	1.7
Austria	0.2	0.1	0.3	x	1.7	1.7	1.7	1.7	2.0	2.0	2.0	1.8
Belgium	1.4	1.3	1.6	1.2	1.2	1.2	1.1	1.1	2.7	2.6	2.8	2.5
Canada	1.8	1.8	1.7	1.1	2.0	1.7	2.3	1.5	4.0	3.7	4.3	2.7
Czech Republic	0.2	0.1	0.2	0.2	0.9	1.0	0.8	0.8	1.1	1.2	1.0	1.0
Denmark	0.2	0.2	0.2	0.2	1.1	0.8	1.4	1.1	2.3	2.0	2.5	2.3
Finland	0.6	0.5	0.8	0.6	2.3	2.3	2.4	2.3	3.2	3.0	3.4	3.2
France	x	x	x	x	x	x	x	x	2.6	2.3	2.9	2.6
Germany	0.3	0.2	0.4	0.2	1.6	1.8	1.4	1.6	1.9	2.0	1.8	1.8
Greece	0.6	0.7	0.6	0.6	1.4	1.4	1.5	1.4	2.1	2.1	2.1	2.1
Hungary	a	a	a	a	1.1	1.0	1.3	0.8	1.3	1.2	1.4	0.8
Iceland	0.3	0.3	0.4	0.3	1.5	1.2	1.7	1.5	1.8	1.5	2.2	1.8
Ireland	x	x	x	x	x	x	x	x	2.2	2.1	2.2	1.7
Italy	m	m	m	m	m	m	m	m	m	m	m	m
Japan	m	m	m	m	m	m	m	m	m	m	m	m
Korea	0.8	0.9	0.7	0.8	1.6	2.0	1.1	1.6	2.5	3.2	1.9	2.5
Luxembourg	m	m	m	0.2	m	m	m	m	m	m	m	m
Mexico	x	m	m	x	0.8	m	m	0.8	0.8	m	m	0.8
Netherlands	a	a	a	a	1.3	1.3	1.3	1.1	2.2	2.3	2.2	1.9
New Zealand	0.8	0.7	0.9	0.4	1.8	1.5	2.0	1.2	3.0	2.7	3.3	1.8
Norway	0.9	0.8	0.9	0.6	1.2	0.9	1.5	1.0	2.8	2.5	3.2	2.2
Poland	0.3	m	m	x	1.6	m	m	x	1.9	m	m	x
Portugal	0.4	0.4	0.5	x	1.4	1.2	1.6	m	2.0	1.7	2.2	m
Spain	0.1	0.1	0.1	0.1	2.3	2.1	2.5	2.3	2.5	2.3	2.6	2.5
Sweden	x	x	x	x	2.1	1.8	2.4	1.6	2.2	1.9	2.5	1.6
Switzerland	0.6	0.8	0.4	0.3	0.7	0.8	0.6	0.7	1.5	1.8	1.1	1.2
Turkey	m	m	m	m	m	m	m	m	m	m	m	m
United Kingdom	0.6	0.5	0.6	0.2	1.4	1.3	1.5	1.2	2.3	2.3	2.4	1.6
United States	1.4	1.2	1.6	0.5	1.8	1.6	2.0	1.4	3.7	3.3	4.1	2.2
Country mean	**0.5**	**0.5**	**0.6**	**0.3**	**1.4**	**1.3**	**1.5**	**1.2**	**2.3**	**2.3**	**2.5**	**1.8**
WEI Participants												
Argentina	0.5	0.3	0.8	0.5	1.4	1.4	1.3	m	1.9	1.7	2.1	m
Brazil	x	x	x	x	x	x	x	x	0.6	0.5	0.6	0.6
Indonesia	0.2	0.3	0.2	m	0.5	0.7	0.3	m	0.7	0.9	0.6	m
Jordan	0.2	0.2	0.3	0.2	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1
Malaysia	0.6	0.6	0.6	0.6	0.3	0.3	0.3	0.3	0.9	0.8	0.9	0.9
Paraguay	0.1	0.1	0.2	0.1	m	m	m	m	m	m	m	m
Philippines	0.3	0.3	0.3	0.3	1.1	1.0	1.3	1.1	1.4	1.4	1.5	1.4
Thailand	0.3	0.3	0.3	0.3	0.4	0.3	0.4	0.4	0.6	0.6	0.7	0.6
Uruguay	0.3	0.1	0.4	0.3	1.1	0.8	1.4	1.1	1.4	1.0	1.8	1.4

Thailand: Data refer to 1997.
Source: OECD Education Database. See Annex 3 for notes.

Table C3.3. **Net enrolment in public and private tertiary education for persons 17-34, 18-21, 22-25 and 26-29 years of age, by type of tertiary education (based on head counts) (1996)**

	Age 17-34			Age 18-21			Age 22-25			Age 26-29		
	Non-university tertiary education	University-level education	Total	Non-university tertiary education	University-level education	Total	Non-university tertiary education	University-level education	Total	Non-university tertiary education	University-level education	Total
Australia	5.1	9.9	14.9	8.4	22.9	31.3	5.5	9.2	14.7	4.1	5.1	9.3
Austria	0.8	8.9	9.7	2.6	13.5	16.1	1.7	15.0	16.6	x	8.8	8.8
Belgium	6.1	6.3	12.3	20.0	19.6	39.6	6.7	8.7	15.4	2.2	1.8	4.0
Canada	6.9	10.0	16.9	17.3	23.1	40.5	7.3	14.6	21.9	3.7	5.4	9.1
Czech Republic	1.1	5.8	6.9	3.6	13.3	16.9	0.5	7.9	8.3	n	2.1	2.1
Denmark	1.1	10.0	11.1	1.0	7.5	8.5	2.2	21.2	23.5	1.2	10.8	12.1
Finland	2.8	11.8	14.6	4.8	13.3	18.2	5.6	23.2	28.8	1.8	11.8	13.6
France	x	x	13.9	x	x	36.0	x	x	18.6	x	x	4.4
Germany	1.3	8.1	9.4	2.9	7.9	10.8	1.7	15.5	17.2	1.9	9.8	11.8
Greece	3.5	8.0	11.5	10.1	29.3	39.4	4.6	5.3	10.0	1.0	1.0	2.1
Hungary	a	7.4	7.4	a	13.4	13.4	a	9.0	9.0	a	2.8	2.8
Iceland	1.4	7.3	8.7	0.8	6.7	7.5	3.3	17.9	21.3	1.4	5.6	7.0
Ireland	m	m	m	x	x	31.4	m	m	m	m	m	m
Italy	m	m	m	m	m	m	m	m	m	m	m	m
Japan	m	m	m	m	m	m	m	m	m	m	m	m
Korea	4.3	9.4	13.7	15.1	25.6	40.7	4.2	13.2	17.4	0.7	3.0	3.7
Luxembourg	m	m	m	m	m	m	m	m	m	m	m	m
Mexico	x	4.1	4.1	x	6.6	6.6	x	6.1	6.1	x	2.0	2.0
Netherlands	a	10.7	10.7	a	24.0	24.0	a	19.2	19.2	a	5.4	5.4
New Zealand	3.2	9.5	12.6	6.1	23.3	29.4	3.3	10.5	13.8	2.3	4.8	7.1
Norway	4.1	9.3	13.4	8.7	10.3	19.0	6.2	18.6	24.8	2.4	8.1	10.5
Poland	1.9	9.4	11.3	5.5	15.8	21.2	2.2	16.4	18.5	x	x	4.2
Portugal	2.4	8.1	10.5	5.2	14.2	19.3	3.5	12.5	16.0	1.1	5.0	6.1
Spain	0.3	12.5	12.8	1.0	26.3	27.3	0.3	19.4	19.8	n	6.2	6.2
Sweden	x	9.9	9.9	x	13.7	13.7	x	17.9	17.9	x	8.0	8.0
Switzerland	3.4	4.6	8.0	2.4	5.1	7.6	6.1	9.2	15.3	3.5	3.8	7.4
Turkey	m	m	m	m	m	m	m	m	m	m	m	m
United Kingdom	2.0	7.3	9.4	4.7	22.2	26.9	2.2	7.2	9.4	1.4	3.4	4.8
United States	6.0	10.2	16.2	12.9	21.7	34.6	7.4	14.0	21.5	3.8	7.3	11.1
Country mean	**2.4**	**8.3**	**11.2**	**5.3**	**15.2**	**23.2**	**3.1**	**13.0**	**16.9**	**1.4**	**5.1**	**6.8**
WEI Participants												
Argentina	3.4	9.0	12.3	7.0	15.4	22.4	4.0	12.8	16.8	1.8	6.5	8.3
Brazil	x	x	3.6	x	x	6.1	x	x	5.3	x	x	2.3
Indonesia	1.4	m	m	2.3	5.9	8.3	2.4	m	7.1	1.1	m	3.0
Jordan	1.6	5.7	7.2	5.8	19.4	25.2	n	1.6	1.6	n	x	x
Malaysia	3.5	1.8	5.2	11.4	5.0	16.4	2.8	2.4	5.2	0.2	m	0.2
Paraguay	0.6	m	m	1.5	m	m	1.0	m	m	m	m	m
Philippines	1.9	7.7	9.6	m	18.7	m	m	m	m	m	m	m
Uruguay	1.6	7.1	8.7	3.1	8.2	11.3	2.3	11.5	13.8	1.0	7.6	8.6

Source: OECD Education Database. See Annex 3 for notes.

Table C3.4. **Distribution of students by mode of enrolment and by type of institution (1996)**

	Mode of enrolment				Type of institution					
	Non-university tertiary education		University-level education		Non-university tertiary education			University-level education		
	Full-time	Part-time	Full-time	Part-time	Public	Government-dependent private	Independent private	Public	Government-dependent private	Independent private
Australia	20.2	79.8	60.1	39.9	100.0	a	a	100.0	a	a
Austria	90.6	9.4	100.0	a	73.8	26.2	n	99.2	0.9	n
Belgium	81.8	18.2	99.1	0.9	m	m	m	m	m	m
Canada	62.0	38.0	69.0	31.0	98.4	1.4	0.3	99.0	1.1	n
Czech Republic	100.0	n	91.8	8.7	60.0	40.0	a	100.0	n	a
Denmark	100.0	a	100.0	a	100.0	a	a	99.9	0.2	a
Finland	100.0	n	100.0	n	88.7	11.3	a	96.7	3.7	a
France	m	m	m	m	m	m	m	m	m	m
Germany	83.1	16.9	100.0	a	56.5	43.5	x	100.0	a	a
Greece	100.0	n	100.0	a	100.0	a	n	100.0	a	n
Hungary	a	a	68.3	31.7	a	a	a	90.7	10.1	a
Iceland	m	m	m	m	80.9	19.1	n	99.7	0.3	n
Ireland	66.2	33.8	89.7	10.3	95.1	a	4.9	93.1	a	6.9
Italy	100.0	a	100.0	a	97.1	a	2.9	94.3	a	5.7
Japan	96.4	3.6	91.5	9.0	8.9	a	91.1	26.0	a	74.0
Korea	100.0	n	100.0	n	3.5	a	96.5	25.8	n	74.2
Luxembourg	m	m	100.0	n	m	m	m	100.0	n	m
Mexico	100.0	a	100.0	a	x	x	x	76.3	a	23.7
Netherlands	a	a	80.9	19.1	a	a	a	32.7	64.9	4.1
New Zealand	47.6	52.4	66.0	34.0	100.0	a	a	100.0	a	a
Norway	72.5	27.5	82.3	17.7	79.7	20.3	x	93.2	6.8	x
Poland	m	m	m	m	60.6	m	39.4	a	84.6	15.4
Portugal	m	m	m	m	69.3	30.7	x	62.3	37.7	x
Spain	100.0	n	m	m	88.2	7.1	4.7	90.1	9.9	a
Sweden	x	x	72.7	27.3	x	x	x	94.5	4.9	0.6
Switzerland	45.7	54.3	100.0	a	51.9	27.1	21.0	100.0	a	a
Turkey	m	m	m	m	m	m	m	m	m	m
United Kingdom	39.0	61.0	73.5	26.5	a	100.0	n	a	100.0	n
United States	36.0	64.0	70.4	29.9	96.1	a	3.9	66.3	a	33.7
Country mean	**73.4**	**21.8**	**87.6**	**12.4**	**71.8**	**16.3**	**12.6**	**78.5**	**12.5**	**9.5**
WEI Participants										
Argentina	100.0	a	m	m	65.5	24.8	9.7	86.2	a	13.8
Brazil	x	x	100.0	a	m	m	m	41.0	59.0	x
Chile	100.0	a	100.0	a	a	a	100.0	69.0	a	31.0
China	44.3	55.7	87.5	12.5	m	m	m	100.0	a	a
Indonesia	m	m	m	m	66.9	a	33.1	29.5	a	70.5
Jordan	100.0	a	100.0	a	55.5	a	44.5	69.5	a	32.9
Malaysia	100.0	a	100.0	a	48.7	x	51.3	93.8	x	6.2
Paraguay	100.0	a	100.0	a	70.8	2.1	27.0	55.9	n	44.1
Philippines	100.0	a	100.0	a	34.3	a	65.7	23.8	a	76.2
Russian Federation	72.6	27.4	60.3	39.7	m	a	m	94.7	a	5.5
Thailand	85.0	15.0	41.4	58.6	61.6	38.4	a	84.9	15.1	a
Uruguay	100.0	a	100.0	a	85.1	a	14.9	96.4	a	3.7

Russian Federation and Thailand: Data refer to 1997.
Source: OECD Education Database. See Annex 3 for notes.

Table C3.5. **Expected years of tertiary education for all 17 year-olds, based on head counts (1990, 1996), and index of change in total enrolment (1990 =100)**

	Expected years of education (Full-time and part-time)						Change in enrolment				
	Non-university tertiary education (ISCED 5)		University-level education first stage (ISCED 6)		All tertiary education (ISCED 5, 6 and 7)		Total enrolment (1990 = 100) in tertiary education			Attributable to:	
	1990	1996	1990	1996	1990	1996	1985	1990	1996	Change in the size of youth cohort	Change in enrolment rates
Australia	1.2	1.4	1.2	1.8	2.8	3.6	m	100	129	100	130
Austria	0.1	0.2	1.4	1.7	1.6	2.0	80	100	120	97	126
Belgium	m	1.4	m	1.2	m	2.7	89	100	148	m	m
Canada	1.2	1.8	2.1	2.0	3.5	4.0	90	100	118	m	m
Czech Republic	0.1	0.2	0.8	0.9	0.9	1.1	m	100	149	115	130
Denmark	0.1	0.2	0.9	1.1	1.9	2.3	87	100	121	100	123
Finland	0.5	0.6	1.5	2.3	2.2	3.2	77	100	130	91	142
France	m	x	m	x	m	2.6	84	100	132	m	m
Germany	m	0.3	m	1.6	m	1.9	90	100	107	m	m
Greece	m	0.6	m	1.4	m	2.1	m	m	m	m	m
Hungary	m	a	m	1.1	m	1.3	m	100	185	m	m
Iceland	0.1	0.3	0.6	1.5	0.7	1.8	m	100	126	m	m
Ireland	x	x	x	x	1.4	2.2	79	100	151	107	142
Italy	m	m	m	m	m	m	86	100	127	m	m
Japan	m	m	0.1	m	m	m	m	100	121	m	m
Korea	m	0.8	m	1.6	m	2.5	m	100	122	m	m
Luxembourg	m	m	m	m	m	m	m	m	m	m	m
Mexico	x	x	0.7	0.8	0.8	0.8	m	100	122	113	108
Netherlands	a	a	1.0	1.3	1.8	2.2	93	100	110	91	123
New Zealand	0.8	0.8	1.1	1.8	2.0	3.0	86	100	141	97	145
Norway	0.8	0.9	0.9	1.2	2.3	2.8	71	100	139	m	m
Poland	m	0.3	m	1.6	m	1.9	m	100	223	m	m
Portugal	x	0.4	0.9	1.4	0.9	2.0	m	100	244	105	234
Spain	n	0.1	1.8	2.3	1.8	2.5	73	100	137	101	137
Sweden	0.8	x	0.7	2.1	1.6	2.2	97	100	141	99	143
Switzerland	0.5	0.6	0.6	0.7	1.3	1.5	80	100	112	98	116
Turkey	0.1	m	0.6	m	0.7	m	m	100	171	m	m
United Kingdom	0.4	0.6	0.6	1.4	1.2	2.3	85	100	181	93	192
United States	1.3	1.4	1.7	1.8	3.4	3.7	91	100	106	95	111

Source: OECD Education Database. See Annex 3 for notes.

COMPLETION OF AND DROP-OUT FROM TERTIARY EDUCATION

POLICY CONTEXT

Although "dropping-out" is not necessarily an indicator of failure from the perspective of the individual student, high drop-out rates may indicate that the education system is not meeting the needs of its clients.

University drop-out and survival rates can be useful indicators of the internal efficiency of tertiary education systems. The specific reasons for leaving university are varied: students may realise that they have chosen the wrong subject or educational programme; they may fail to meet standards set by their educational institutions; or they may find attractive employment before completing their programme. Although "dropping out" is not necessary an indicator of failure from the perspective of the individual student, high drop-out rates may indicate that the education system is not meeting the needs of its clients. Students may not be finding that the educational programmes offered meet their expectations or their labour-market needs. It may also be possible that students find the programmes longer than the amount of time they can justify outside of the labour market.

This indicator also shows graduation rates from both university and non-university programmes, as well as the distribution of graduates over six broad categories of fields of study.

Unlike measures of educational attainment, which relate to the stock of knowledge and skills in the population, tertiary graduation rates are an indicator of the current production rate of higher-level knowledge by each country's education system. Countries with high graduation rates at the tertiary level are the most likely to be developing or maintaining a highly skilled labour force.

Changing opportunities within the job market may affect the fields which students choose to study. In turn, the fields of study affect the demand for courses and faculty, as well as the supply of new graduates in different fields. The relative popularity of a particular field is likely to be driven by the job opportunities for graduates with skills in that field, as well as by relative earnings across different occupations and industries. It may also be influenced by the level of tertiary completion rates in the various fields.

EVIDENCE AND EXPLANATIONS

Drop-out and survival in first university programmes

On average across OECD countries, about a third of all entrants leave university without graduating.

University-level survival rates differ widely across OECD countries, ranging from around 90 per cent in Hungary and Japan to 55 per cent or less in Austria, France, Portugal and Turkey; in Italy the survival rate is 35 per cent (Chart C4.1). On average across OECD countries, about a third of all entrants leave university without graduating.

Drop-out rates tend to be higher in countries which offer only long programmes.

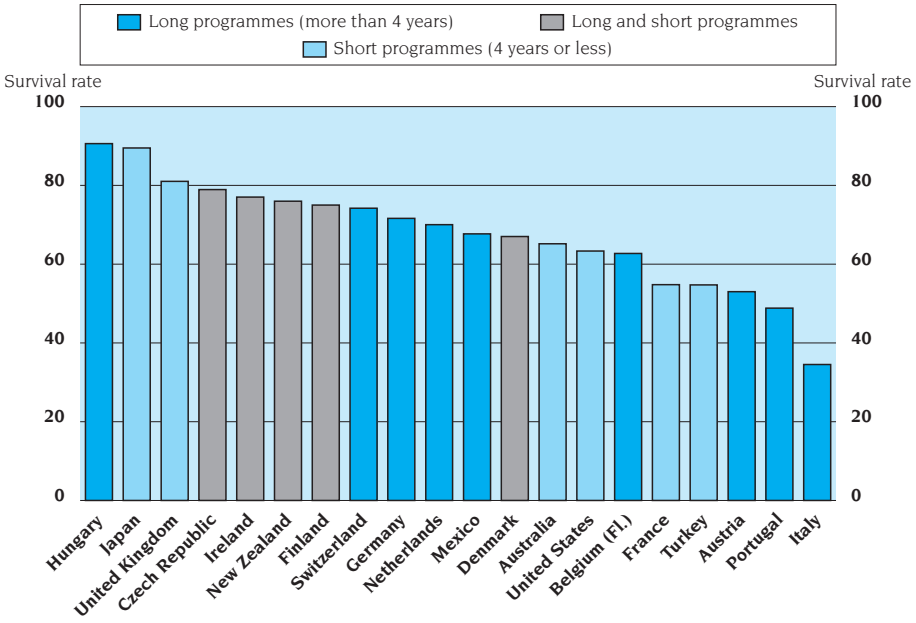
In general, countries that offer mainly long first university programmes tend to have higher drop-out rates than countries offering mainly short programmes.

Data on survival rates do not show a trade-off between wide access to university-level education and high survival rates.

One might expect to see a trade-off between access to university-level education and survival rates. This relationship is not evident across the 20 OECD countries for which data are available, however. For example, the United States – which is among the countries with the highest university entry rates – has comparably low survival rates. In contrast, Finland, New Zealand and the United Kingdom

have both entry and survival rates above the OECD average. Austria, where entry rates are below the OECD average, is among the countries with the lowest university survival rates.

Chart C4.1. **University-level survival rates (first university-degree programmes)**



Source: OECD.

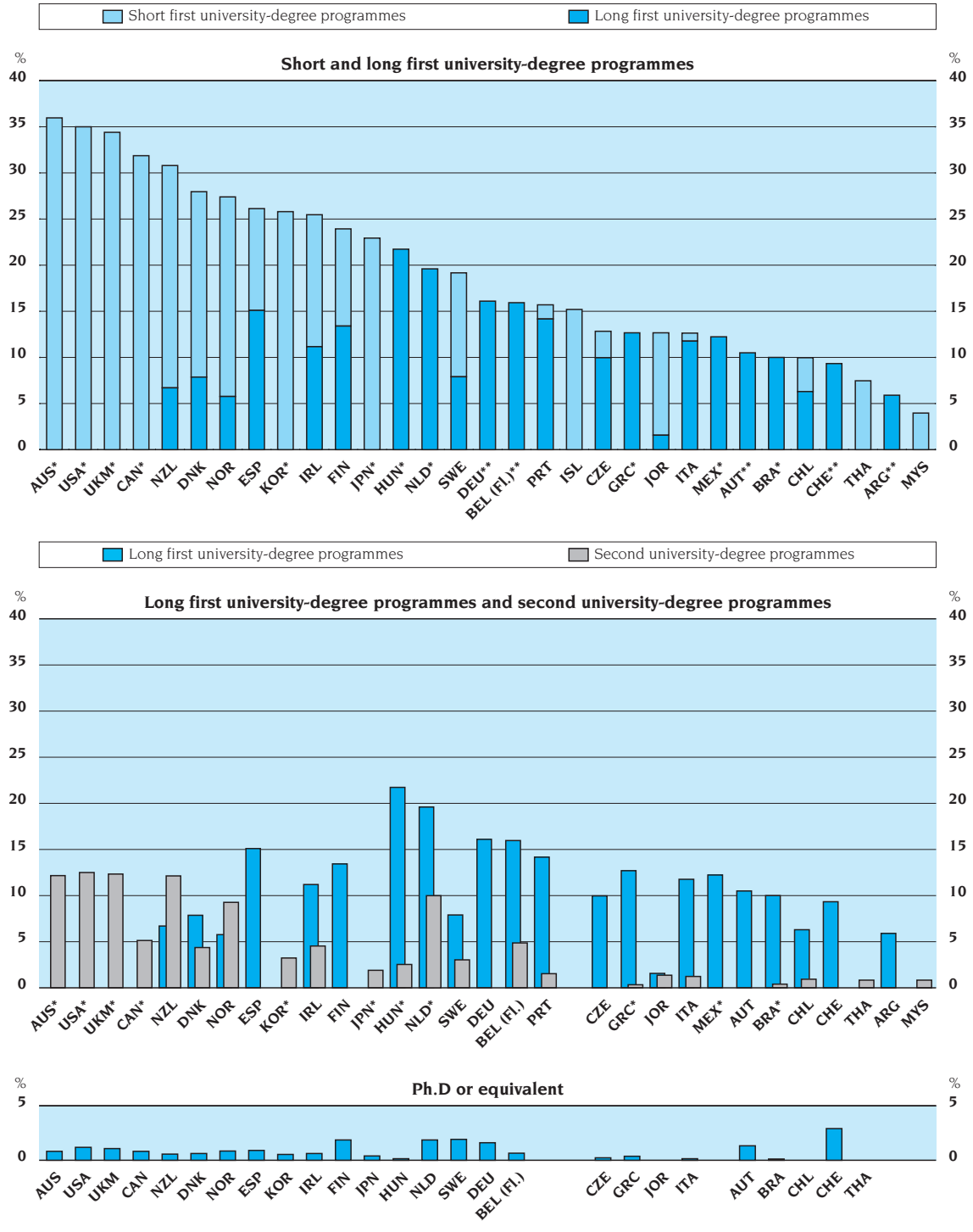
Overall completion rates at the tertiary level

Tertiary programmes vary widely in structure and scope between countries.

Tertiary graduation rates are influenced by the supply of, and degree of access to, tertiary programmes, as well as by the demand for higher skills in the labour market. Graduation rates also appear to be affected by the way in which the degree and qualification structures are organised within countries. University-level programmes vary widely in structure and scope between countries. The duration of programmes leading to the award of a first university-level qualification ranges from three years (*e.g.*, the Bachelor's degree in Ireland and the United Kingdom in most fields of study) to over five years (*e.g.*, the *Diplom* in Germany and the *Doctorandus* in the Netherlands).

This indicator distinguishes between five categories of qualifications: those that are equivalent to *i*) a non-university tertiary qualification; *ii*) a first university qualification from a programme with a theoretical duration typically equal to or less than four years; *iii*) a first university qualification of a theoretical duration typically longer than four years; *iv*) a second university qualification equivalent to a Master's; and *v*) an advanced research degree of doctorate standard. Although the term "equivalent" is used to guide data-reporting for these categories, these distinctions remain dependent to some degree on national definitions of educational qualifications and on historical distinctions between the types of programmes that are, and are not, offered in traditional universities.

Chart C4.2. **Ratio of university-level graduates to population at typical age of graduation (times 100) by type of programme (1996)**



* Short and long first degree programmes combined.
** Short first university-degree programmes not applicable.

Countries are ranked in descending order of ratio of university graduates in long and short first university-degree programmes to population at typical age of graduation.

Source: OECD.

On average across OECD countries, about one person out of five at the typical age of graduation completes a first university-level programme (Table C4.2*b*). Furthermore 4.4 per cent of persons at the typical age complete a second university-level programme and 0.9 per cent a programme leading to an advanced research degree (Chart C4.2). Graduation rates for non-university level programmes account, on average across OECD countries, for 15 per cent of an age-cohort. First university-level graduation rates of WEI participants are significantly lower then in OECD countries, ranging from less than 4 per cent in China and Malaysia to around 10 per cent or more in Brazil, Chile and Jordan.

On average across OECD countries, one person out of five at the typical age of graduation completes a first university-level programme.

On average across OECD countries, 13 per cent of a typical age-cohort complete a short university-level programme, such as the Bachelor's in the United States (Table C4.2*b*). In Australia, Canada, the United Kingdom and the United States about every third person in the typical age of graduation obtains a degree from a short-university programme. Among WEI participants, Jordan and Thailand have the highest graduation rates for short university-level programmes, 11 and 7 per cent respectively.

Completion rates for short university-degree programmes average 13 per cent…

Long first university-degree programmes, such as the German *Diplom* or the Italian *Laurea*, are often equivalent in total duration and academic level to second university degrees in countries such as Australia and the United States. Graduation rates for long first university-level programmes average 9 per cent across countries and are 16 per cent or above in the Flemish Community of Belgium, Germany, Hungary and the Netherlands, exceeding graduation rates from second university-level programmes in Australia, New Zealand, the United Kingdom and the United States, where second university-degree graduation rates are all about 12 per cent (Table C4.2*b*). Graduation rates for long first university-level programmes fall between 9 and 13 per cent in Austria, the Czech Republic, Finland, Greece, Italy, Ireland, Mexico and Switzerland. Among WEI participants, graduation rates at this level are between 2 and 7 per cent, except for Brazil, where they are 10 per cent. Students completing these programmes are generally older than those completing short first university degrees, especially in countries that award both types of degrees.

… and 9 per cent for long university programmes.

It appears that countries whose tertiary education systems offer only long first university-level programmes have, in general, significantly lower overall university-level graduation rates than those that also offer shorter university-level programmes. In OECD countries that offer short first university degrees, graduation rates for all first university-degree programmes average around 27 per cent of a typical age cohort. This figure excludes countries that do not offer short first university degrees or that have just started introducing such programmes in recent years, such as Italy (*Laurea breve*) and the Czech Republic (*Bakálr*). On the other hand OECD countries that do not offer short university programmes or that offer primarily long programmes have an average graduation rate of 14 per cent.

Education systems that award short university-level degrees have higher completion rates in first university-level programmes.

The option to participate in short university programmes seems to lead to wider access to tertiary education (Indicator C3) and to higher rates of successful completion (Tables C4.1 and C4.2). In order to interpret differences in university-level graduation rates, the content of the educational programmes, the labour market opportunities they offer, and the graduation rates and educational content of non-university tertiary programmes and upper secondary programmes should also be considered.

Completion rates for second university degrees range from less than 1 per cent to 12 per cent.

Graduation rates for second university degrees, such as the Master's in the United States, range from less than 1.5 per cent in Greece and Italy to 12 per cent in Australia, New Zealand, the United Kingdom and the United States, with an OECD average of 4.4 per cent. In almost all countries that offer only long first university programmes no second university degrees can be obtained. Among WEI Participants, graduation rates at this level are below 1 per cent, with the exception of Jordan, where 1.4 per cent of a typical age-cohort complete a second university-level programme.

On average, about 1 per cent of the typical age cohort in OECD countries obtain an advanced research degree such as a Ph.D. In Finland, the Netherlands and Sweden it is around 2 per cent, in Switzerland 2.9 per cent. Among WEI participants, graduation from advanced research programmes is less than 0.1 per cent.

Completion rates at the non-university tertiary level range from below 3 to over 20 per cent.

At the non-university tertiary level, the highest number of graduates per 100 people at the most common graduation age are in the Flemish Community of Belgium, Canada, Japan, Norway and Switzerland. In these countries graduation rates exceed 25 for every 100 people at the typical graduation age. In these countries, graduation rates from non-university tertiary programmes are greater than those from university-level programmes. The lowest non-university tertiary graduation rates are in Spain, Italy and Sweden, with fewer than five graduates for every 100 people at the typical graduation age. Hungary and the Netherlands do not offer non-university tertiary degrees.

Non-university tertiary programmes are particularly important in WEI participants.

Among WEI participants, the relative importance of non-university tertiary programmes is greater than in OECD countries. In Argentina, China, Malaysia and Thailand the graduation rates for non-university tertiary programmes exceed those for the university level.

Non-university graduation rates are affected by the availability of technical and professional education at the tertiary level in a particular country, as well as by the extent to which vocational programmes of similar content are offered at the upper secondary level.

The age distribution of tertiary graduates

While in some countries the typical student completes a first university programme at age 22, in others the typical graduate is age 26 or older.

Students complete tertiary education at different stages of their lives. While the median age of graduates from short first-university programmes in Australia, New Zealand and the United Kingdom is less than 23 years, the median age of graduates from similar programmes in Denmark is almost 28 (Table C4.3). The median age of graduates from long first-university programmes in most reporting countries is between 24 and 27 years. In the Flemish Community of Belgium and New Zealand the median age of graduates from this level is younger than 23 years and in Austria, Denmark and Finland it is above 27. The width of the distribution of the ages of graduates also varies widely across countries.

In almost all OECD countries, the age of graduates from non-university programmes varies more widely than among graduates from first university-level programmes. In seven out of ten countries the age difference between the youngest and the oldest quarter of non-university tertiary graduates exceeds seven years. In contrast, first university-level programmes show a more homogeneous age-distribution of graduates.

Overall completion by field of study

The humanities and the combined fields of law and business are the most popular subjects at the university level.

The largest concentration of university-level qualifications awarded is in the humanities in all countries providing data except the Flemish Community of Belgium, Italy, Japan, Spain and Switzerland, in which the largest concentration is in law and business. Patterns of student choices nonetheless still differ markedly between countries (Chart C4.4). The percentage of university-level qualifications awarded in the humanities ranges from about 25 per cent in the Flemish Community of Belgium, Japan and Switzerland to 56 per cent in Canada. The percentage of students in science-related fields (medical science, natural science, mathematics and computer science, engineering and architecture) ranges from less than 30 per cent in Canada, Portugal and the United States to over 45 per cent in Finland, Germany and Switzerland.

The distribution of qualifications awarded by field of study is driven by the relative popularity of these fields among students, the relative number of students admitted to these fields in universities and equivalent institutions and the degree structure of fields of study in a particular country. For example in the United States, degrees are typically earned at several different levels in the humanities (Bachelor's, Master's and Ph.D.), while only one level of degree is typical in the field of law (*Juris Doctor* or J.D.). Thus the relative popularity of the humanities compared to law may be overestimated because an individual can earn multiple degrees in that field.

The humanities, law and business and medical science are popular at the non-university tertiary level.

At the non-university tertiary level, the humanities and the combined field of law and business also have the largest concentration of graduates (Table C4.4). In general the proportion of non-university tertiary graduates in the medical sciences is greater than the proportion at the university level, and in Finland, Germany and Sweden the largest proportion of graduates at this level is in the medical sciences.

Concentration of fields of study at this level is heavily dependent on opportunities to study similar subject matter, or prepare for similar occupations, at the upper secondary or university level. For example, if nurses in a particular country are trained primarily in non-university tertiary programmes, the proportion of students graduating with qualifications in medical sciences from this level will be higher than if nurses were primarily trained in upper secondary or university tertiary-level programmes.

Gender differences in tertiary graduation

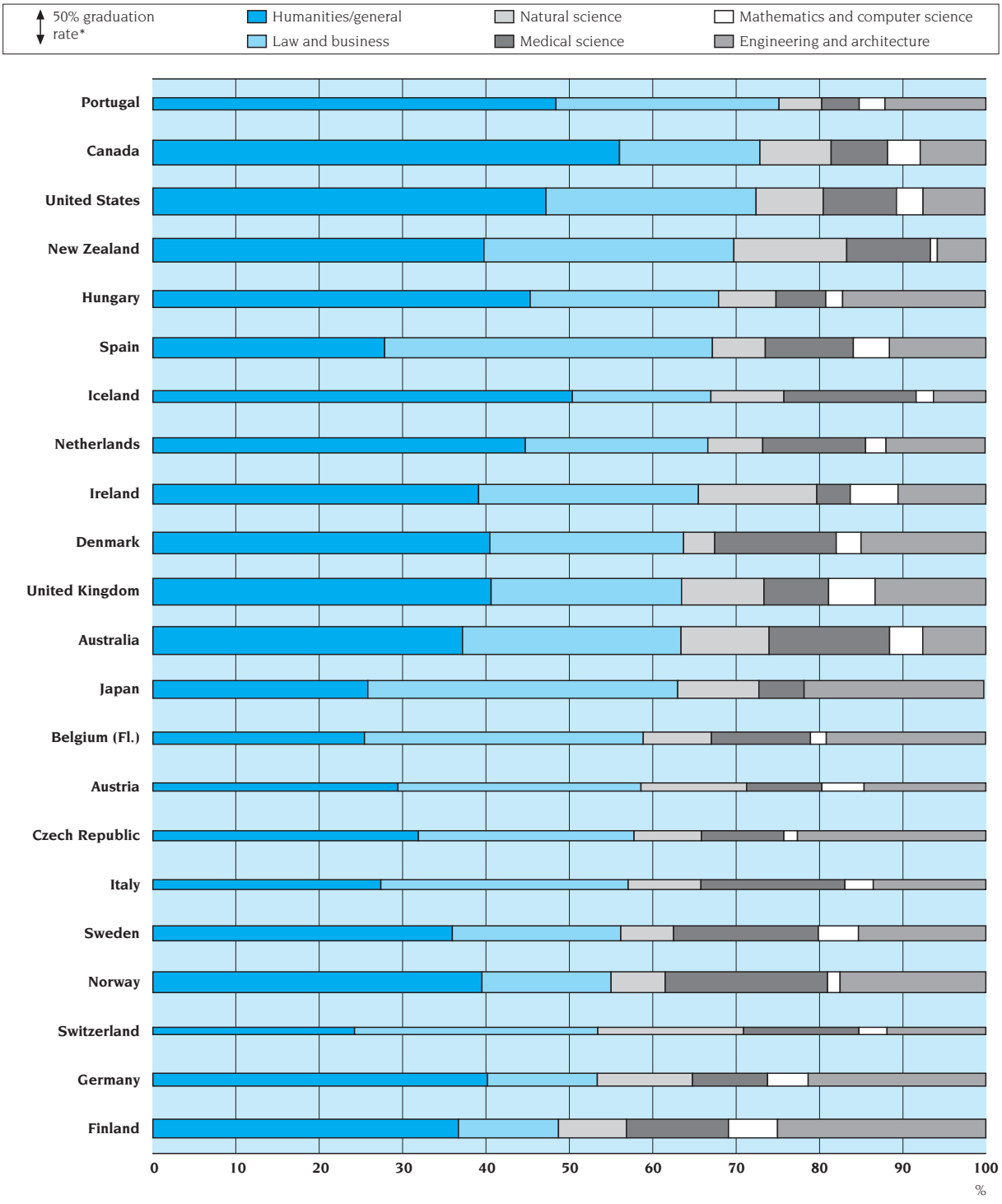
First university-degree graduation rates for women meet or exceed those for men in most countries…

The first university-degree graduation rates for women meet or exceed those of men in most OECD countries (Table C4.5). On average across OECD countries, 53 per cent of all first university-programme graduates are women. In Iceland, Norway, Portugal and Sweden the proportion of women exceeds 60 per cent – though this proportion is below 40 per cent in Japan and Switzerland.

… but men are still more likely than women to earn more advanced degrees.

Men remain more likely than women to attain more advanced degrees in most OECD countries (Table C4.5). For second university degrees and doctorates combined, graduation rates for women are below those for men in all except four countries (Australia, the Flemish Community of Belgium, Portugal and United States). On average across OECD countries, nearly 60 per cent of all graduates at this level are men. In Japan 83 per cent of advanced degrees are

Chart C4.3. **Percentage distribution of subjects in which university-level degrees are awarded (1996)**

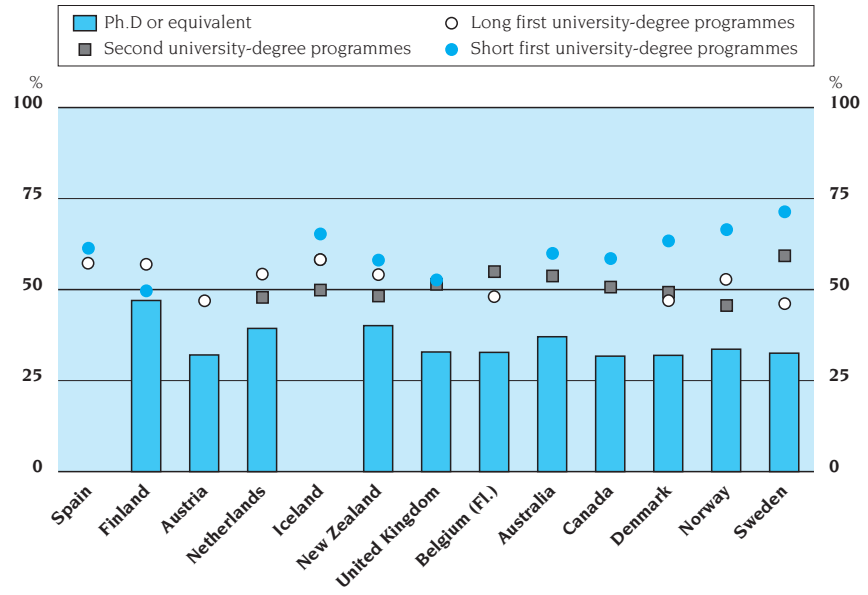


* Bar width is proportional to graduation rates.

Countries are ranked in decreasing order of university-level qualifications in humanities/general and law and business.

Source: OECD.

Chart C4.4. **Proportion of university-level qualifications that are awarded to women (1996)**



Countries are ranked in ascending order of the difference between the proportion of women graduates from short or, if not available, long first university-degree programmes and Ph.D or equivalent programmes or, if not available, second degree programmes.

Source: OECD.

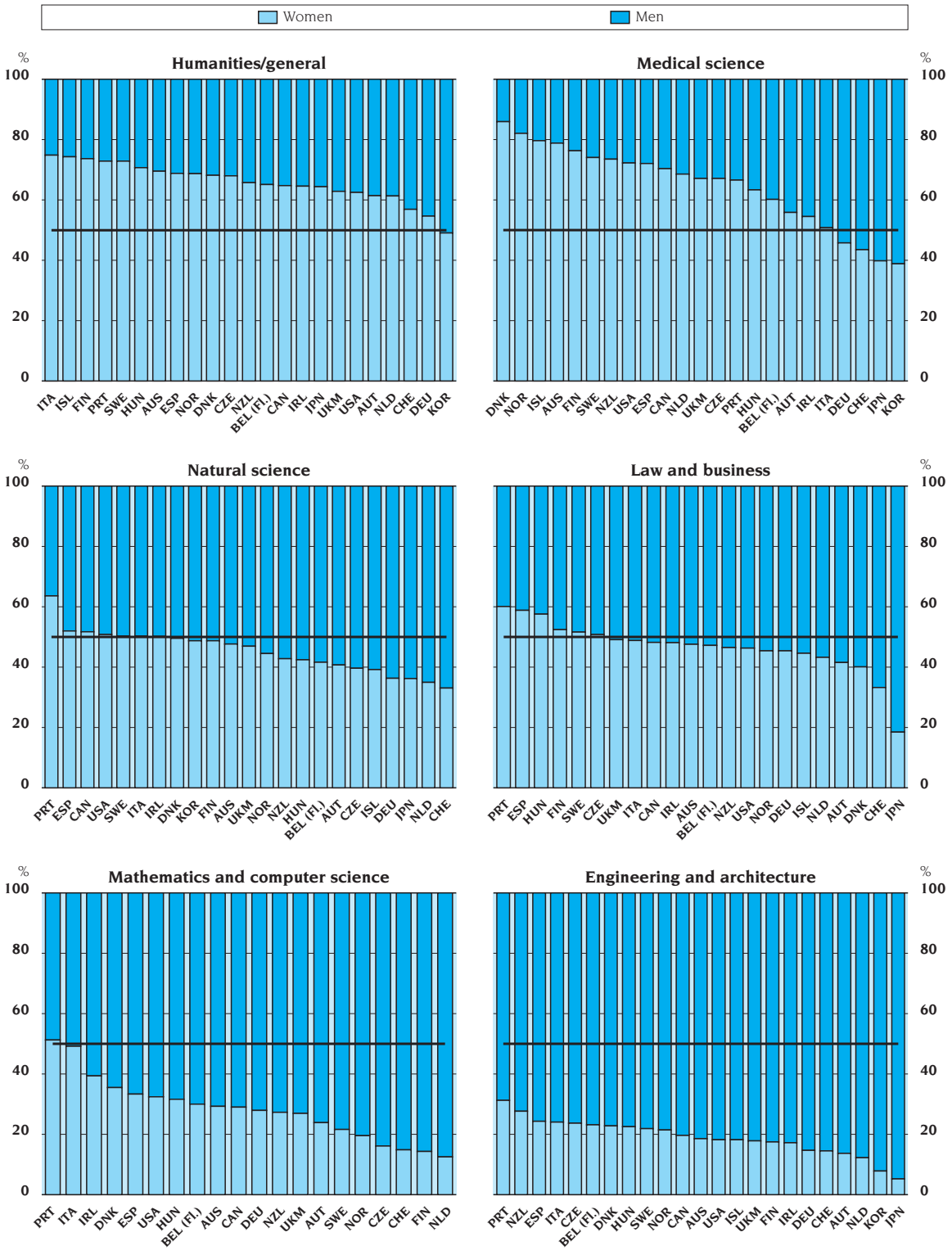
awarded to men. This gender gap can be observed across all fields of study, and is even more pronounced in the humanities and the medical sciences, the fields of study that have the highest proportion of women among first university graduates in all countries.

Women are far less likely than men to earn degrees in mathematics and computer science and in engineering and architecture.

One measure of gender disparity in fields of study is the percentage of degrees or qualifications awarded in a particular field to women**.** Among all OECD countries that provided data on the number of graduates by field and gender, the highest proportion of female graduates is in the humanities and medical sciences (on average 66 and 65 per cent, respectively). In mathematics, computer science, engineering and architecture, however, women earn far fewer university-level qualifications than men. The percentage of university-level degrees in engineering and architecture that are awarded to women ranges from 8 per cent or below in Japan and Korea to 28 per cent or above in New Zealand and Portugal.

Engineering and architecture are also uncommon subjects for women at the non-university tertiary level. The percentage of non-university tertiary qualifications in engineering or architecture awarded to women ranges from 7 per cent in Germany to over 31 per cent in Austria, the Flemish Community of Belgium and the Czech Republic.

Chart C4.5. **Distribution of university-level qualifications in different subject categories by gender (1996)**



Source: OECD.

DEFINITIONS

University-level survival rates are defined as the proportion of entrants to the university level who successfully complete a first university degree, that is, they graduate. Drop-outs at the university level of education are accordingly defined as those students who leave the educational system without obtaining a first university degree or equivalent. The first university degree at the tertiary level refers to any degree, independent of the duration of study, obtained at the end of a programme which does not have as a prerequisite the holding of a prior university degree.

Data on drop-out and survival rates refer to international and national statistics on university-level survival rates.

One way to express university-level survival is the ratio of the number of students who are awarded an initial university degree to the number of new entrants to the level *n* years before, with *n* determined by the number of years of full-time study required to complete the degree. This method, referred to as the "cross-section cohort method", is the methodology presented here as a standard. The "cross-section cohort method" showed a high correspondence with national statistics for most of the countries (Annex 3 gives additional national statistics), but it does not reflect the situation properly for all countries, or could not be calculated for some, because of the absence of reliable data on new entrants *n* years before. For these countries, national estimates are included in this indicator.

Data are based on a special survey carried out amongst OECD member countries in 1997 (details can be found in Annex 3).

Three different ways of calculating survival rates were applied for the national estimates: *i*) the calculations were based on the cross-section cohort method, but more detailed or more reliable national data on entrants and graduates were used; *ii*) the calculations were based on information from individual student registers, referred to as the "true cohort method"; *iii*) the characteristics of two subsequent years were used to model the probabilities of survival and drop out of a cohort. This method is referred to as the "synthetic cohort method".

Where the cross-section cohort method is applied, the year of reference gives the reference year for the number of graduates and the year of entrance gives the reference year for the number of entrants. If the true cohort method is applied, the year of entrance gives the year the observed cohort of students entered the university. These individual students were followed up on an individual basis until the year of reference, whether they dropped out or graduated. In this case the difference between year of reference and year of entrance is no indication of the typical duration of studies. If the synthetic cohort method is applied, the year of reference is the year to which all observations of probabilities of graduation or drop out refer. Since different cohorts of entrants are observed at the same time, no specific year of entrance is relevant.

Tertiary graduates are those who obtain a university-level or non-university qualification or equivalent in the specified reference year. The indicator distinguishes between five categories of qualifications: those that are equivalent to *i*) a non-university tertiary qualification; *ii*) a first university qualification from a programme with a theoretical duration typically equal to or less than 4 years; *iii*) a first university qualification of a theoretical duration typically longer than 4 years; *iv*) a second university qualification at Master's level; and *v*) an advanced research degree of a doctorate standard. For some countries, these distinctions are not always clear and data are not available for the categories requested. In such cases, graduates have been assigned by the country to the most appropriate category. In many countries the duration of studies also varies significantly between

Data on graduates refer to the school year 1995/96 and are based on the UOE data collection on education statistics and the World Education Indicators Pilot Project, administered in 1997 (details can be found in Annex 3).

fields of study. For some countries, the non-university tertiary level includes some programmes that in other countries may be classified at the upper secondary level.

Table C4.2*a* presents net graduation rates. This rate is calculated as the sum of age-specific graduation rates for countries which were able to provide information on graduates by single year of age. The net graduation rate can be interpreted as the percentage of people within a virtual age-cohort who obtain a tertiary qualification, thus being independent of changes in the population sizes or the typical graduation age. For those countries that cannot provide such detailed data, gross graduation rates are presented in Table C4.2*b*. This indicator is less affected by changes in the population size over time. For each category of tertiary education, countries identify the age at which graduation typically occurs. The graduates themselves, by contrast, may be of any age. To estimate graduation rates, the number of graduates is divided by the population at the typical graduation age (Annex 1). In many countries, defining a typical age of graduation is difficult because graduates are dispersed over a wide range of ages. Tertiary education graduates generally do not include graduates from programmes offered by private business institutions operating for profit.

Table C4.4 shows the percentage distribution of qualifications between subject categories. Tertiary graduates who received their qualification in the reference year were divided into categories based on their subject of specialisation. University-level graduates can be at each of the university equivalent levels reported in Table C4.2*a/b* (columns B-E). The comparability of the results depends heavily on the extent to which countries were able to apply consistent subject-definitions in accordance with ISCED (Annex 3). There is still considerable variation between countries in the way educational programmes are classified according to field of study.

Table C4.1. **Rates of survival and drop out in university-level education**

	Year of reference	Year of entrance	Number of years required to complete a typical programme	Method	Source	Survival rate	Drop-out rate
Australia	1996	1994	3	Cross-section cohort	OECD database	65	35
Austria	1996	1989	7	Cross-section cohort	National calculation	53	47
Belgium (Fl. Community)	1996	~	~	Cross-section cohort	OECD database	63	37
Czech Republic	1995	1992	4	Cross-section cohort	OECD database	79	21
Denmark	1995	~	~	Synthetic cohort	National calculation	67	33
Finland	1996	1985	5	True cohort	National calculation	75	25
France	1995	1991	5	Cross-section cohort	OECD database	55	45
Germany	1995	1990	6	Cross-section cohort	OECD database	72	28
Hungary	1996	~	~	Synthetic cohort	National calculation	81	9
Ireland	1995	1992	4	Cross-section cohort	OECD database	77	23
Italy	1996	1991	6	Cross-section cohort	OECD database	35	66
Japan	1995	1992	4	Cross-section cohort	OECD database	90	11
Mexico	1996	1992	5	Cross-section cohort	National calculation	68	32
Netherlands	~	~	~	True cohort	National calculation	70	30
New Zealand	1995	1992	4	Cross-section cohort	OECD database	76	24
Portugal	1993	1991	3	Cross-section cohort	OECD database	49	51
Switzerland	1996	1991	6	Cross-section cohort	OECD database	74	30
Turkey	1995	1992	4	Cross-section cohort	OECD database	55	45
United Kingdom	1996	~	~	Weighted cross-section	National calculation	81	19
United States	1994	1990	4	True cohort	National calculation	63	37

Source: OECD Education Database. See Annex 3 for notes.

Table C4.2*a*. **Net graduation rates in university-level education by type of programme (1996)**

	Non-university tertiary programmes			Short first university degree programmes (*e.g.* US Bachelor's)			Long first university degree programmes (*e.g.* German Diplom or Italian Laurea)			Second university degree programmes (*e.g.* US Master's)			Ph.D or equivalent		
	(A)			(B)			(C)			(D)			(E)		
	M + W	Men	Women	M + W	Men	Women	M + W	Men	Women	M + W	Men	Women	M + W	Men	Women
Australia	m	m	m	35	28	43	x	x	x	12.7	11.8	13.7	0.9	1.1	0.6
Austria	m	m	m	a	a	a	9	10	9	n	n	n	1.3	1.7	0.8
Belgium (Fl. Community)	24	19	30	a	a	a	16	17	16	4.9	4.5	5.4	0.6	0.9	0.4
Canada	44	47	42	30	25	35	x	x	x	4.5	4.4	4.6	0.7	1.0	0.5
Czech Republic	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Denmark	8	10	6	19	14	25	7	8	7	4.2	4.3	4.2	0.7	0.9	0.4
Finland	17	11	23	9	9	9	12	11	14	x	x	x	1.8	1.9	1.7
France	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Germany	m	m	m	a	a	a	m	m	m	a	a	a	m	m	m
Greece	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Hungary	a	a	a	x	x	x	22	18	25	m	m	m	m	m	m
Iceland	14	13	15	16	11	21	8	7	10	1.1	1.1	1.1	n	n	n
Ireland	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Italy	m	m	m	x	x	x	11	11	12	m	m	m	m	m	m
Japan	m	m	m	m	m	m	x	x	x	m	m	m	m	m	m
Korea	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Luxembourg	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Mexico	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Netherlands	a	a	a	x	x	x	21	19	23	10.4	10.9	10.0	1.8	2.2	1.4
New Zealand	16	11	21	24	20	28	7	6	7	12.2	12.6	11.8	0.6	0.7	0.5
Norway	47	40	55	22	15	29	6	6	6	9.4	10.2	8.6	0.9	1.2	0.6
Poland	10	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Portugal	m	m	m	m	m	m	m	m	m	m	m	m	n	n	n
Spain	m	m	m	11	8	13	15	12	17	m	m	m	m	m	m
Sweden	4	3	4	11	6	16	8	8	7	3.0	2.5	3.6	2.0	2.6	1.3
Switzerland	m	m	m	a	a	a	m	m	m	a	a	a	m	m	m
Turkey	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
United Kingdom	11	9	12	33	31	35	x	x	x	11.3	11.0	11.7	1.1	1.5	0.7
United States	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Country mean	**16**	**15**	**19**	**15**	**10**	**15**	**9**	**8**	**10**	**5.3**	**5.6**	**5.7**	**1.0**	**1.2**	**0.7**

Source: OECD Education Database. See Annex 3 for notes.

Table C4.2*b*. **Ratio of tertiary graduates to population at the typical age of graduation (times 100) by type of programme and gender (1996)**

	Non-university tertiary programmes			Short first university degree programmes (*e.g.* US Bachelor's)			Long first university degree programmes (*e.g.* German Diplom or Italian Laurea)			Second university degree programmes (*e.g.* US Master's)			Ph.D or equivalent		
	(A)			(B)			(C)			(D)			(E)		
	M + W	Men	Women	M + W	Men	Women	M + W	Men	Women	M + W	Men	Women	M + W	Men	Women
Australia	m	m	m	36	29	43	x	x	x	12.2	11.2	13.1	0.8	1.0	0.6
Austria	5	2	7	a	a	a	10	11	10	a	a	a	1.3	1.8	0.8
Belgium (Fl. Community)	28	24	30	a	a	a	16	17	15	4.9	4.5	5.3	0.7	0.9	0.4
Canada	57	58	56	32	26	37	x	x	x	5.1	5.0	5.2	0.8	1.1	0.5
Czech Republic	6	4	8	3	3	3	10	10	10	x	x	x	0.3	0.4	0.1
Denmark	8	10	6	20	15	26	8	8	7	4.4	4.4	4.3	0.6	0.9	0.4
Finland	19	13	26	11	11	10	13	12	15	x	x	x	1.9	2.0	1.8
France	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Germany	11	9	13	a	a	a	16	18	14	a	a	a	1.6	2.2	1.0
Greece	5	5	6	x	x	x	13	11	15	0.3	0.3	0.3	0.4	0.5	0.2
Hungary	a	a	a	x	x	x	22	18	26	2.5	2.8	2.2	0.1	0.2	0.1
Iceland	13	13	13	15	11	20	m	m	m	m	m	m	m	m	m
Ireland	16	17	15	14	12	16	11	12	10	4.5	4.6	4.4	0.6	0.8	0.5
Italy	3	2	4	1	1	1	12	11	13	1.2	1.3	1.1	0.1	0.2	0.1
Japan	30	18	43	23	31	15	x	x	x	1.9	3.1	0.7	0.4	0.7	0.1
Korea	20	18	22	26	29	22	x	x	x	3.2	4.5	2.0	0.5	0.9	0.2
Luxembourg	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Mexico	x	x	x	x	x	x	12	12	12	m	m	m	m	m	m
Netherlands	a	a	a	x	x	x	20	18	21	10.0	10.4	9.5	1.9	2.3	1.5
New Zealand	16	11	21	24	20	28	7	6	7	12.1	12.6	11.7	0.6	0.7	0.5
Norway	50	42	58	22	15	29	6	5	6	9.3	10.1	8.4	0.9	1.1	0.6
Poland	10	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Portugal	6	4	9	2	1	2	14	10	18	1.5	1.4	1.6	n	n	n
Spain	2	3	2	11	9	14	15	13	17	x	x	x	0.9	1.1	0.8
Sweden	4	4	4	11	7	16	8	9	7	3.0	2.5	3.6	1.9	2.6	1.2
Switzerland	26	36	17	a	a	a	9	12	7	a	a	a	2.9	3.9	1.9
Turkey	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
United Kingdom	12	10	13	34	33	36	x	x	x	12.3	12.0	12.7	1.1	1.4	0.7
United States	22	18	27	35	31	39	x	x	x	12.5	11.7	13.4	1.2	1.4	0.9
Country mean	**15**	**14**	**17**	**13**	**11**	**14**	**9**	**9**	**10**	**4.4**	**4.4**	**4.3**	**0.9**	**1.2**	**0.7**
WEI Participants															
Argentina	10	5	15	a	a	a	6	5	7	m	m	m	m	m	m
Brazil	x	x	x	x	x	x	10	8	12	0.4	m	m	0.1	m	m
Chile	10	9	10	4	4	3	6	6	7	0.9	1.1	0.7	n.	n.	n.
China	7	m	m	2	m	m	x	m	m	0.1	m	m	n	n	n
Indonesia	3	3	3	6	7	5	x	x	x	m	m	m	m	m	m
Jordan	9	5	13	11	11	12	2	1	2	1.4	1.7	0.9	n.	0.1	n.
Malaysia	12	12	12	4	4	4	n	n	n	0.8	0.6	1.0	n	n	n
Paraguay	4	2	6	1	1	1	2	2	2	m	m	m	n	n	n
Philippines	18	19	17	m	m	m	m	m	m	m	m	m	m	m	m
Thailand	10	12	8	7	7	8	m	m	m	0.8	0.9	0.8	n.	n.	n.
Uruguay	4	3	4	a	a	a	7	5	8	m	m	m	m	m	m

Argentina: University-level public institutions only.
Brazil: Data refer to 1995. Thailand: Data refer to 1997.
Source: OECD Education Database. See Annex 3 for notes.

Table C4.3. **Age distribution of tertiary-level graduates (1996)**

	Age at the 25th percentile	Median age	Age at the 75th percentile	Range 25th-75th percentile and median age
Non-university tertiary programmes				20 25 30 35
Belgium (Flemish Community)	21.1	22.3	26.7	
Canada	21.6	27.1	39.7	
Denmark	24.3	26.9	31.8	
Finland	24.0	26.7	34.2	
Iceland	24.2	27.0	33.5	
New Zealand	21.0	25.3	36.0	
Norway	21.5	23.3	26.3	
Poland	21.5	22.3	23.5	
Sweden	23.4	27.7	37.6	
United Kingdom	20.7	24.6	34.3	
Short first university degree programmes (*e.g.* US Bachelors)				
Australia	20.9	22.5	26.9	
Canada	22.8	23.9	26.1	
Denmark	25.6	27.6	32.0	
Finland	24.4	26.3	30.9	
New Zealand	21.4	22.9	28.8	
Norway	23.5	25.4	29.7	
Spain	22.4	23.8	26.0	
Sweden	23.5	25.7	30.0	
United Kingdom	21.0	22.0	24.9	
Long first university degree programmes (*e.g.* German Diplom or Italian Laurea)				
Austria	25.7	27.4	29.8	
Belgium (Flemish Community)	22.1	22.8	24.1	
Denmark	26.3	28.2	30.8	
Finland	26.1	27.6	29.9	
Hungary	23.1	24.7	25.7	
Iceland	24.8	26.0	27.6	
Italy	25.5	26.8	28.7	
Netherlands	23.8	25.3	28.0	
New Zealand	21.7	22.7	24.8	
Norway	23.7	25.0	27.2	
Spain	23.8	25.1	27.3	
Sweden	25.1	26.8	29.7	
Second university degree programmes (*e.g.* US Masters)				
Australia	26.7	33.1	>40	
Belgium (Flemish Community)	22.9	24.0	27.1	
Canada	26.3	29.8	36.9	
Denmark	26.1	28.5	33.7	
Iceland	26.9	29.0	38.0	
Netherlands	24.1	25.2	26.9	
New Zealand	23.4	27.8	37.0	
Norway	25.3	26.9	29.5	
Sweden	26.1	30.7	39.0	
United Kingdom	24.3	28.8	36.8	

Source: OECD Education Database. See Annex 3 for notes.

Table C4.4. **Percentage distribution of non-university tertiary and university-level qualifications between subject categories (1996)**

	Medical science		Natural science		Mathematics and computer science		Humanities/general		Law and business		Engineering and architecture	
	Non-university tertiary	University-level	Non-university tertiary	University-level	Non-university tertiary	University-level	Non-university tertiary	University-level	Non-university tertiary	University-level	Non-university tertiary	University-level
Australia	m	14	m	11	m	4	m	37	m	26	m	8
Austria	13	9	n.	13	1	5	65	29	11	29	10	15
Belgium (Fl. Community)	13	12	2	8	3	2	26	25	55	33	2	19
Canada	9	7	4	9	2	4	35	56	51	17	n	8
Czech Republic	21	10	1	8	n	2	12	32	58	26	9	23
Denmark	6	15	6	4	n	3	21	40	48	23	19	15
Finland	53	12	8	8	4	6	8	37	7	12	20	25
France	m	m	m	m	m	m	m	m	m	m	m	m
Germany	33	9	6	11	1	5	32	40	10	13	19	21
Greece	m	m	m	m	m	m	m	m	m	m	m	m
Hungary	a	6	a	7	a	2	a	45	a	23	a	17
Iceland	2	16	n	9	5	2	48	50	32	17	13	6
Ireland	2	4	17	14	6	6	11	39	39	26	26	11
Italy	m	17	m	9	m	3	m	27	m	30	m	14
Japan	10	5	14	10	x	x	33	26	23	37	19	21
Korea	8	5	9	18	x	x	m	m	m	m	38	21
Luxembourg	m	m	m	m	m	m	m	m	m	m	m	m
Mexico	m	m	m	m	m	m	m	m	m	m	m	m
Netherlands	a	12	a	7	a	2	a	45	a	22	a	12
New Zealand	12	10	5	14	6	1	50	40	23	30	4	6
Norway	1	19	1	6	1	1	70	39	28	15	n	17
Poland	15	m	n	m	n	m	8	m	63	m	14	m
Portugal	22	5	5	5	2	3	23	48	36	27	12	12
Spain	6	11	1	6	5	4	22	28	40	39	26	12
Sweden	31	17	4	6	3	5	17	36	17	20	29	15
Switzerland	m	14	m	17	m	3	m	24	m	29	m	12
Turkey	m	m	m	m	m	m	m	m	m	m	m	m
United Kingdom	14	8	6	10	8	6	26	41	32	23	14	13
United States	23	9	4	8	2	3	33	47	32	25	6	7
Country mean	**14**	**11**	**4**	**9**	**3**	**3**	**27**	**38**	**30**	**25**	**13**	**14**

Source: OECD Education Database. See Annex 3 for notes.

Table C4.5. **Percentages of non-university tertiary and university-level qualifications in each subject category that are awarded to women (1996)**

	Medical science		Natural science		Mathematics and computer science		Humanities/ general		Law and business		Engineering and architecture		All fields of study		
	Non-university tertiary	University-level	Non-university tertiary	University-level	Non-university tertiary	University-level	Non-university tertiary	University-level	Non-university tertiary	University-level	Non-university tertiary	University-level	Non-university tertiary	First university-level	Second university-level
Australia	m	79	m	48	m	29	m	70	m	48	m	19	m	59	53
Austria	89	56	89	41	32	24	78	61	70	42	39	14	74	45	31
Belgium (Fl. Community)	79	60	49	42	19	30	70	65	48	47	54	23	52	47	51
Canada	68	70	32	52	37	29	60	65	38	48	n	20	48	58	48
Czech Republic	87	67	43	40	a	16	63	68	67	51	31	24	67	51	28
Denmark	91	86	19	50	n	36	64	68	28	40	22	23	37	58	45
Finland	89	76	58	49	21	14	65	74	85	52	11	17	66	52	46
France	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Germany	76	46	34	36	22	28	82	55	28	45	7	15	57	42	31
Greece	m	m	m	m	m	m	m	m	m	m	m	m	54	56	37
Hungary	a	63	a	42	a	32	a	71	a	58	a	22	a	58	42
Iceland	100	80	a	39	21	a	73	74	34	45	21	18	52	63	49
Ireland	85	54	56	50	37	39	55	65	60	48	8	17	46	51	47
Italy	m	51	m	50	m	49	71	75	m	49	m	24	63	54	46
Japan	85	40	96	36	x	x	86	64	63	19	18	5	69	32	17
Korea	78	39	72	49	x	x	72	49	x	x	23	8	54	42	28
Luxembourg	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Mexico	m	m	m	m	m	m	m	m	m	m	m	m	m	50	x
Netherlands	a	69	a	35	a	13	a	61	a	43	a	12	a	53	45
New Zealand	89	74	40	43	40	27	73	66	62	47	11	28	66	58	49
Norway	82	82	49	44	31	20	59	69	52	45	21	21	57	63	44
Poland	m	m	m	m	a	m	m	m	m	m	m	m	m	m	m
Portugal	81	67	49	64	40	51	87	73	65	60	22	31	68	64	53
Spain	78	72	35	52	33	33	39	69	67	59	17	24	46	58	40
Sweden	93	74	20	50	24	22	76	73	27	52	17	22	52	60	47
Switzerland	m	44	m	33	m	15	m	57	m	33	m	14	32	39	32
Turkey	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
United Kingdom	88	67	45	47	25	27	66	63	59	49	13	18	55	51	49
United States	82	72	64	51	49	32	57	63	55	46	13	18	59	55	52
Country mean	**76**	**65**	**43**	**45**	**23**	**27**	**62**	**66**	**48**	**47**	**17**	**19**	**51**	**53**	**42**
WEI Participants															
Argentina	m	m	m	m	m	m	m	m	m	m	m	m	76	60	m
Brazil	m	m	m	m	m	m	m	m	m	m	m	m	x	61	x
Chile	m	m	m	m	m	m	m	m	m	m	m	m	52	50	38
Indonesia	m	m	m	m	m	m	m	m	m	m	m	m	53	45	m
Jordan	m	m	m	m	m	m	m	m	m	m	m	m	68	48	29
Malaysia	m	m	m	m	m	m	m	m	m	m	m	m	47	52	62
Paraguay	m	m	m	m	m	m	m	m	m	m	m	m	73	59	m
Philippines	m	m	m	m	m	m	m	m	m	m	m	m	48	m	m
Thailand	m	m	m	m	m	m	m	m	m	m	m	m	41	m	48
Uruguay	m	m	m	m	m	m	m	m	m	m	m	m	58	62	m

Thailand: Data for 1997.
Source: OECD Education Database. See Annex 3 for notes.

PARTICIPATION IN CONTINUING EDUCATION AND TRAINING BY ADULTS

POLICY CONTEXT

Increasing demand for skills can be addressed only partly by changes in the initial educational system.

There is growing recognition across OECD countries of the importance of investment in human capital through lifelong learning. Increasing demand in the workplace for individuals who are good at using and interpreting knowledge flexibly can only be partially addressed through curricular changes in schools and universities, as changes initiated in the initial education system today will take several generations to have an impact on the population at large. Continuing education and training also allow individuals an opportunity to repair and/or complement previously received education and training.

This indicator introduces data on the incidence, duration and nature of continuing adult education and training in 11 OECD countries from the International Adult Literacy Survey (IALS).

Internationally comparable data on continuing education and training beyond initial education are extremely limited. Up to now the main data sources on continuing education and training have mainly consisted of national labour force surveys, household surveys and occasional enterprise surveys, with substantial cross-national differences in the definitions of training and the reference period in relation to which training is measured. The recent availability of information from the International Adult Literacy Survey (IALS) on the incidence, duration and nature of continuing adult education and training in 11 OECD countries is a step forward in the measurement of training. Considerable efforts were devoted in the IALS to ensuring measurement conformity across countries, with the result that the IALS offers a unique and rich source of international comparisons on a range of indicators which have not been previously available on a comparable basis. This indicator will examine patterns and the intensity of participation in adult and continuing education (broadly defined) using IALS.

EVIDENCE AND EXPLANATIONS

In IALS, continuing education and training is broadly defined.

The IALS background questionnaire records any participation in education or training that has taken place during the 12 months preceding the survey, specifically "any training or education including courses, private lessons, correspondence courses, workshops, on-the-job training, apprenticeship training, arts, crafts, recreation courses or any other training or education". In this indicator, participation rates are reported separately for "all education and training" and "job-related continuing education and training". Measures of incidence nonetheless offer an incomplete account of the amount or intensity of training, since its duration may vary independently of participation rates, both between countries and between population sub-groups. The mean number of hours per participant is the average of the total number of hours spent in the three most recent education or training courses/programmes taken and is an indication of the quantity of training that the typical participant engages in. On the other hand, the mean number of hours per adult is a measure of how many hours are invested in the adult population. It is calculated by multiplying the participation rate by the mean number of hours per participant.

Participation in continuing education and training

Table C5.1 shows the percentage of 25-64 year-olds participating in education and training and the average number of hours of participation by gender and

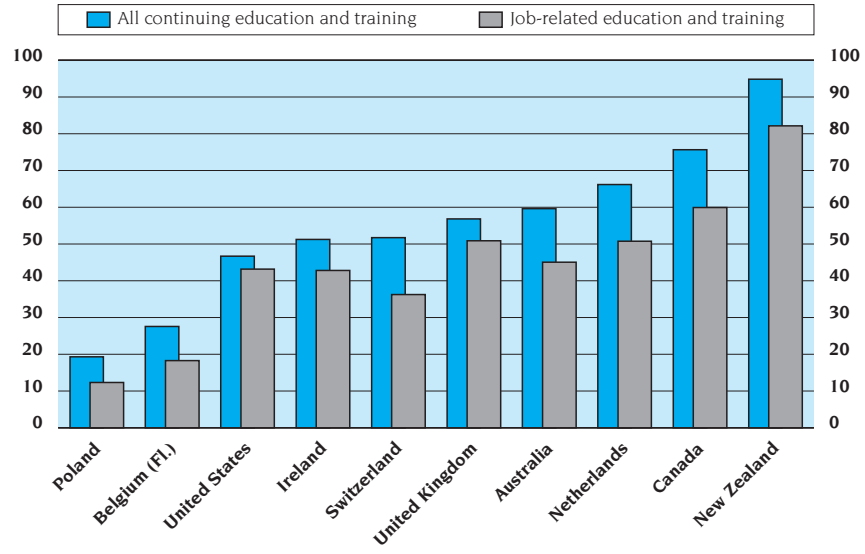
age. Participation rates range from 22 per cent or below in Belgium (Flanders), Ireland and Poland to over 40 per cent in New Zealand, Sweden, Switzerland, the United Kingdom and the United States. The rank order of countries according to participation rates in job- or career-related education and training (CET) is similar to the rank order for all education and training, with New Zealand, the United Kingdom and the United States having participation rates of 38 per cent or above and Belgium (Flanders), Ireland and Poland having rates below 20 per cent.

Participation rates range from 22 per cent or below in three countries to over 40 per cent in five countries.

The impact of adult education is determined not only by the incidence of participation; the intensity of participation is also important. Participation is itself rather a crude measure, because it can relate either to a single course or several courses and the duration of participation can range from a one-day seminar to a one-year part-time university course. Table C5.1 shows the mean number of hours that participants spent in up to three courses or programmes – ranging from below 140 hours in Belgium (Flanders), Poland, Sweden, Switzerland, the United Kingdom and the United States to over 200 hours in Canada, Ireland and New Zealand. Participants in the United States spent, on average, less than half the amount of time in training than did their counterparts in Ireland. Some of this difference may be accounted for, however, by the fact that 20 per cent of participants in the United States take 4 or more courses (for which the hours are not accounted for in these statistics), while only 6 per cent of participants do so in Ireland. In general, countries that have a relatively high duration of job-related training per participant are the same countries that have relatively high duration for all forms of training per participant.

The mean number of hours per participant also varies widely between countries.

Chart C5.1. **Average hours of continuing education and training per adult 25 to 64 years of age (1994-1995)**



Mean number of hours per adult = mean number of hours per participant* participation rate/100.

Countries are ranked by the average hours of all CET *per adult.*

Source: OECD and Statistics Canada/IALS.

The relationship between participation rates and the number of hours that participants spend in training is not clear-cut.

The relationship between participation rates and the number of hours that participants spend in training is not clear cut. Although Switzerland, the United Kingdom and the United States balance high participation rates with relatively low intensity of participation, Canada, New Zealand and the Netherlands are able to maintain both high participation rates and relatively high duration of training. Among countries with relatively low participation in CET, Ireland has relatively high intensity of participation while Belgium (Flanders) and Poland have a relatively low intensity.

Average training hours per adult is a measure of a country's investment in training relative to the size of the adult population.

Because of the wide variability in both participation rates and hours of participation between countries, a more comprehensive measure of the effort that countries invest in adult education and training is required. Multiplying the participation rate by the average hours spent in participation gives training hours relative to the size of the adult population. Hours per adult range from 20 in Poland to over 90 in New Zealand (Chart C5.1). In Belgium (Flanders), Switzerland and in Poland a significant proportion of CET participants take courses for non-job-related reasons (more than 30 per cent of all hours taken); in the United States, by contrast, nine out of ten hours were taken in job-related courses.

Gender differences

There is little evidence of a systematic gender-gap in continuing education and training across countries.

Participation rates in continuing education and training are generally similar for men and women in the 10 countries for which data are available. But there are several exceptions: men are more likely to participate than women among 25-34 year-olds in New Zealand (13 per cent) and in Canada and the Netherlands (9 per cent). Among participants, there is little evidence of a systematic gender-gap in duration across countries, *i.e.*, there is no measurable gender difference in the number of hours of training undertaken by participants (Table C5.1).

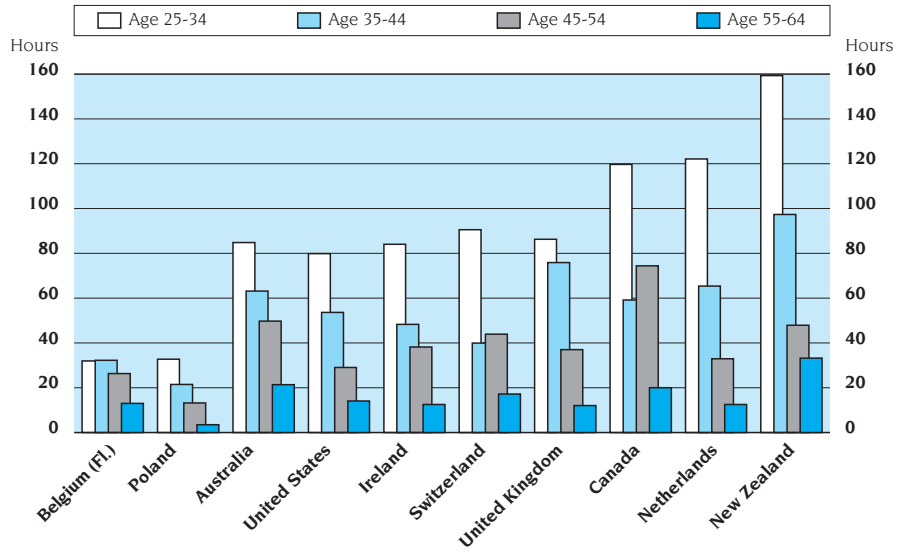
Differences by age

Training rates are generally higher for young people than for older people.

In general, CET participation rates are higher for younger people than for older people. On average across countries adults aged 55-64 are about half as likely to participate in CET as those aged 25-34. The gap in participation rates between the younger and older population is particularly wide in Ireland, the Netherlands and Poland. The relationship between hours of participation and age is similar to that between participation rates and age although the degree of variability across age groups is wider in the former case in all countries except Belgium (Flanders) and Poland.

Altogether this means fewer older people participate in CET and those who do so participate for fewer hours. This is best illustrated by the number of hours of training per adult within the respective age groups. Chart C5.2 shows how the hours in training are distributed across different age groups. In all countries except Belgium (Flanders), more than 4 times as many hours of CET are undertaken by young persons (age 25-34) than older persons (age 55-64). In most cases these gaps are even wider for job-related CET. This may be an indication that CET is being used more to increase or upgrade the skills of those who have recently entered the work force rather than on adapting the older population to changing technologies.

Chart C5.2. **Average hours of continuing education and training per adult by age-group (1994-1995)**



Mean number of hours per adult = mean number of hours per participant* participation rate/100.

Countries are ranked in ascending order of the variability in average hours per adult across age groups (as measured by the standard deviation).

Source: OECD and Statistics Canada/IALS.

C5

Participation by current primary work situation and earnings

Continuing education and training can also help the unemployed develop skills that make them more attractive to employers.

Continuing education and training may also be an effective mechanism for combating unemployment, since potential workers can develop skills that make them more attractive to employers. In the face of changing technologies, work methodologies and markets as well as high unemployment rates, policy-makers in many countries are promoting more general work-related training and informal learning by adults.

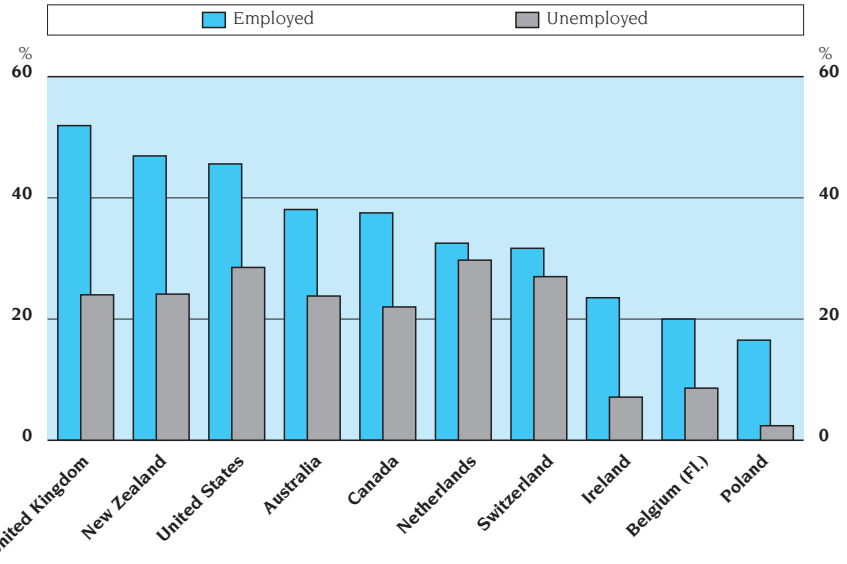
But employed workers are far more likely to participate in continuing education and training than unemployed workers.

In the OECD countries participating in IALS, employed workers are more likely to participate in continuing education and training than unemployed workers (Chart C5.3). With respect to participation in job-related continuing education and training, employed adults in Belgium (Flanders), Ireland, Poland and the United Kingdom are more than two times as likely to participate as unemployed adults. In the Netherlands and Switzerland, the difference between the two groups is not measurably different. Patterns are similar if the comparison is limited to 25-44 year-olds. The gap in participation rates by employment status is similar for men and women, with the exception of the Netherlands and the United States, where unemployed women show similar or even higher participation rates.

CET participation also rises with earnings.

Participation rates also tend to rise with earnings (Table C5.5). In Belgium (Flanders), Ireland, Poland, the United Kingdom and the United States those in the highest income quintile are at least 3 times more likely to participate in continuing education and training than those who have no income or are in the lowest earner quintile.

Chart C5.3. **Participation rates in job-related training of 25-64 year-olds by employment status (1994-1995)**



Countries are ranked in descending order of participation rates for the employed population.

Source: OECD and Statistics Canada/IALS.

Sweden is a notable exception to this pattern, showing less variability in participation rates across different levels of income. However, among those who participate, the duration of training is higher for low earners than high earners in all countries.

Participation by highest level of educational attainment and literacy

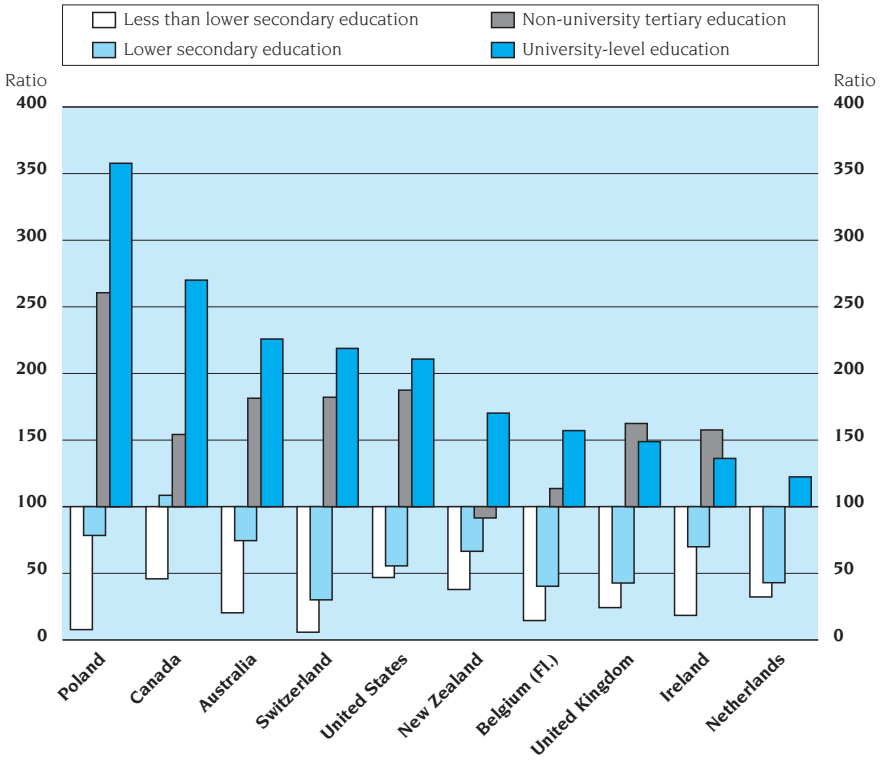
CET participation increases with both educational attainment and the level of literacy skills, with the duration of training relatively uniform across levels of educational attainment.

Participation rates in continuing education and training rise with both educational attainment (Table C5.3) and literacy skills of the population (Table C5.4). Across countries participating in the IALS study, each additional level of education adds, on average, between 12 and 14 percentage points to the proportion receiving education and training. Among participants, however, the duration of training is much more uniform across levels of educational attainment**,** implying that participation is a determining factor in differences in training received. The mean number of hours invested in training per university graduate are (on average across the OECD countries participating in IALS) 10 times larger than those invested per person with a lower secondary education – with the largest variation in Canada and Poland.

Current patterns of participation in CET may contribute to increased earnings inequality.

Skill differences that result from different levels of initial education are thus amplified by subsequent training decisions by employers and employees. Current patterns of participation in continuing education and training may therefore exacerbate rather than reduce earnings inequality.

Chart C5.4. **Ratio (x 100) of the mean number of hours of training per adult at a particular educational level relative to the mean number of hours per adult with an upper secondary qualification (1994-1995)**



Countries are ranked in descending order of the ratio of the mean number of hours of training per adult with university-level education relative to the mean number of hours per adult with an upper secondary qualification.

Source: OECD and Statistics Canada/IALS.

Financial support for CET and location and modes of training

Continuing education and training entails a pay-off to individuals, sponsoring employers and society at large. An important policy issue is what role individuals, enterprises and the public sector should play in supporting participation in continuing education and training. The IALS questionnaire asked about financial support of up to three courses. Table C5.6 presents data on whether or not participants received any financial support for any of these courses from their employers or the government, as well as whether or not they paid for at least part of the costs themselves.

Employers are an important financial supporter of continuing education and training.

Employers were the primary source of financial support for continuing education and training courses in the vast majority of countries participating in IALS. Respondents in IALS indicated that between 42 and 72 per cent of all continuing education and training courses had some form of employer support (including courses offered at work for which there were no fees). Employers were a source of funding for over 60 per cent of courses in Poland, the United Kingdom and the United States. Participants and their families were also important sources of CET

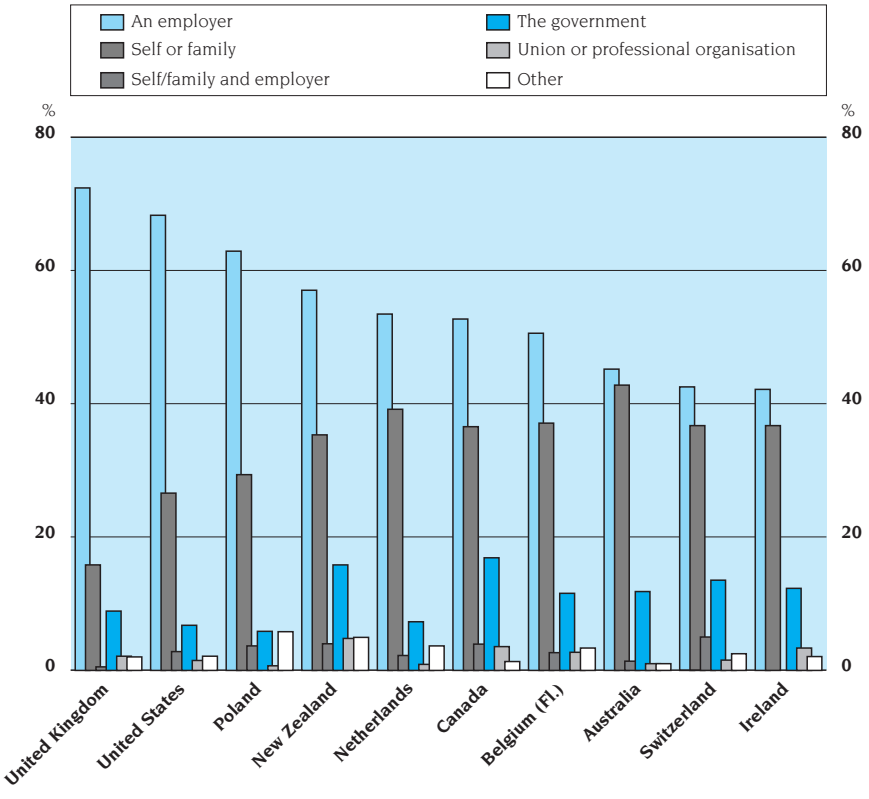
funding, contributing to the cost of around a third of the courses taken in most countries. Exceptions to this general pattern were Switzerland, where participants funded at least a portion of the cost for about half of courses taken, and the United Kingdom, where cost-sharing by individuals was particularly low (15 per cent). Few courses were reported to be co-sponsored by employers and employees (between 0 and 5 per cent) and financial support from government sources were reported for only one out of ten courses. This is likely to underestimate public funding of CET in cases where government transfers are to the provider, rather than to the training recipient.

In general, men are more likely than women to receive financial support from employers for CET courses and women are more likely to pay for courses themselves.

CET courses are taken in a variety of institutional settings…

In most countries, about a quarter of continuing education and training courses were taken at traditional educational institutions. Commercial schools or training centres were the location of between 15 (United States) and 39 per

Chart C5.5. **Percentage of adult education and training courses that received at least partial funding from various sources (1994-1995)**



Countries are ranked in descending order of the percentage of courses that received funding by an employer.

Source: OECD and Statistics Canada/IALS.

cent (Switzerland) of courses. Between a tenth and a third of courses were taken at the workplace, while conference centres or hotels make up about another tenth. Although there is a lot of policy interest in the spread of distance-education and "self-learning", relatively few courses reported in IALS were taken in the home, with the largest share in Australia, Canada, Poland and New Zealand (about 5 per cent) (Table C5.7).

... although distance-learning appears to be a relatively rare means of taking courses.

As technology advances, it is possible both to standardise instruction and to reduce costs by making use of educational software, radio or television broadcasting, and audio or video cassettes. Although these types of media are being utilised to some degree in the countries participating in IALS, the so-called "traditional" medium of classroom instruction is by far the most frequently indicated media, used in between 70 and 90 per cent of CET courses taken (Table C5.8). Reading materials are employed over half of the time, except in Australia (34 per cent), Ireland (2 per cent), the United Kingdom (37 per cent) and the United States (29 per cent). Audio/video cassettes, tapes or disks are also used relatively frequently, in between about 20 and 35 per cent of courses in all countries except Ireland. Relatively few courses make use of radio and television broadcasts (exceeding 10 per cent only in Belgium (Flanders) and the Netherlands). Educational software is becoming an important medium of instruction in CET courses in some countries – ranging from 2 per cent in Ireland to 41 per cent of courses in Belgium (Flanders). In most of the countries participating in IALS, educational software was employed in 10 to 20 per cent of courses taken.

Traditional media, such as classroom instruction and reading materials, remain an important component of continuing education and training.

Reasons for non-participation in adult education and training

Policy-makers interested in increasing participation in adult education and training have to understand the nature of the barriers to participation (Table C5.9). The percentage of 25-64 year-olds that did not participate in continuing education and training ranged from 46 per cent in Sweden and about 55 per cent in New Zealand, Switzerland, the United Kingdom and the United States to over 75 per cent in Belgium (Flanders), Ireland and Poland. The vast majority of these people, however, indicated that there was no training or education that they wanted to take. The proportion of the population that did not participate in CET and that indicated that there was training that they wanted to take ranged from only 9 per cent among the total population in Poland, the United Kingdom and the United States to 22 per cent in Australia. This may be a sign that the current forms of CET on offer in these countries are not regarded as worthwhile by most non-participants.

The biggest barrier to participation in CET is a lack of interest in current offerings.

Among non-participants who wanted to take education and training, the reasons for not doing so can be grouped into two broad categories:

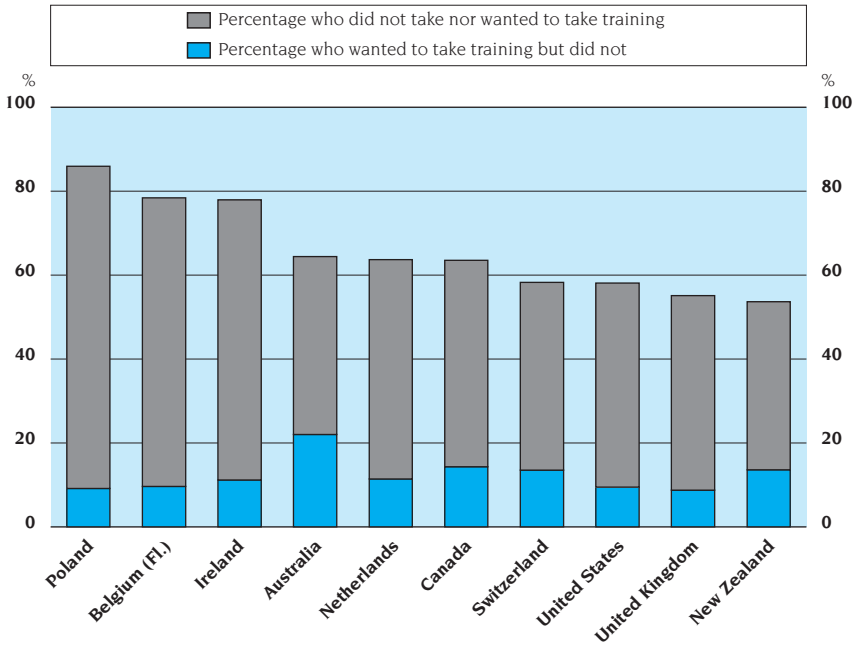
- situational barriers (those arising from one's situation in life – *e.g.*, lack of time because of work, family responsibilities, etc.); and
- institutional barriers (practices and procedures that hinder participation – *e.g.*, fees, lack of evening courses, entrance requirements, range of courses, etc.).

In general, situational rather than institutional barriers are given as reasons for non-participation by those who wanted to take CET but did not.

In general, situational barriers, rather than institutional ones, are given as reasons for not participating in desired training. Among situational barriers, a general lack of time was given most often as a reason for not taking training which respondents wanted to take: it was listed between about 25 per cent of the

A general lack of time was reason given most often by non-participants for not taking desired training.

Chart C5.6. **Percentage of the population 25 to 64 years of age that did not participate in continuing education and training in the previous year (1994-1995)**



Source: OECD and Statistics Canada/IALS.

cases (Ireland and the United Kingdom) and about 50 per cent of the cases [Belgium (Flanders) and New Zealand]. It was less common to refer to a specific situation such as being "too busy at work" or "family responsibilities", with the exception of New Zealand. It was relatively uncommon for "lack of employer support" to be offered as a reason for not taking training that was desired (between 2 and 12 per cent).

Financial barriers existed in most countries for about a fifth of non-participants wanting to participate in CET.

Among institutional barriers, financial reasons (too expensive/no money) was the most prevalent, exceeding 20 per cent in Canada, Ireland, New Zealand, Poland, the United Kingdom and the United States. Health and language problems, which are regarded as "dispositional barriers", were seldom brought up.

These findings may indicate that current CET offerings may not be meeting the lifelong-learning requirements of non-participants.

It is difficult to interpret the implications of these findings for increasing participation in adult education and training. Lack of time, which appears as the dominant barrier for those wanting to participate, is a vague concept. Time is not an endless resource and people have to make choices on how they want to spend their spare time – although for some people mentioning "lack of time" may be a statement of the value they ascribe to current adult education and training provision, as well as the expected outcome of engaging in such a learning activity.

DEFINITIONS

Data are from the International Adult Literacy Survey (IALS), which was undertaken by Statistics Canada and OECD at the end of 1994 and in 1995.

In most countries the achieved national samples in IALS amounted to between 2 000-4 500 respondents. These sample sizes represent relatively small sample sizes for nationally representative surveys, and this necessarily limits the extent to which it is possible to analyse sub-groups within the population without encountering cell sizes that are too small to allow population parameters to be inferred with confidence. Each of the statistical comparisons made in this section have been tested for statistical significance. Standard errors for each of the tables have been calculated and are available from the OECD upon request.

The IALS background questionnaire records any participation in education or training during the 12 months preceding the survey. The Canadian survey, for example, asks: "During the past 12 months, that is since August 1993, did you receive any training or education including courses, private lessons, correspondence courses, workshops, on-the-job training, apprenticeship training, arts, crafts, recreation courses or any other training or education?" This is a very broad definition of education and training, covering a rather wider category of training types than in other surveys. Subsequent questions identify, in respect of up to three education or training courses taken during the previous 12 months, the type of education or training, financial sponsorship, duration of training and purpose of training. The latter question makes it possible to distinguish: *i*) education or training taken for "career or job-related purposes" (shown in this indicators as "job-related training"); and education or training taken for *ii*) "personal interest" and *iii*) "other" reasons.

In this indicator, participation rates are calculated separately for "all education and training", which includes each of the above three types, and "job-related continuing education and training" which includes only the first. Measures of incidence, however, offer an incomplete account of the amount or intensity of training, since the duration of training may vary independently of participation rates, both between countries and between population sub-groups. The mean number of hours per participant is the average number of total hours in the three most recent education or training courses/programmes taken (presumably during the previous 12 months). In the IALS background questionnaire, respondents were asked how many weeks, days per week and hours per day (on average) did a particular course/programme last. Total hours are estimated by taking the product of the answers for these three questions.

While the mean number of hours per participant is an indication of the quantity of training that the typical participant engages in, the mean number of hours per adult is a measure of how those hours are distributed across the population. It is calculated by multiplying the participation rate by the mean number of hours per participant. Annex 3 presents details on the questions that were asked as part of the International Adult Literacy Survey.

Table C5.1. **Percentage of 25-64 year-olds participating in education and training and average number of hours of participation in the previous year, by type of training, gender and age-group (1994-1995)**

All education and training

		Participation rate					Mean number of hours per participant					Mean number of hours per adult[1]				
		Age 25-34	Age 35-44	Age 45-54	Age 55-64	All	Age 25-34	Age 35-44	Age 45-54	Age 55-64	All	Age 25-34	Age 35-44	Age 45-54	Age 55-64	All
Australia	M + W	42	40	32	20	36	201	156	155	107	167	85	63	50	21	60
	Men	46	40	33	20	37	201	144	150	129	165	93	58	49	26	61
	Women	38	41	32	20	34	200	169	160	84	170	77	69	51	17	58
Belgium (Flanders)	M + W	25	22	23	13	22	127	145	115	104*	128	32	32	26	13	28
	Men	25	25	27	14	24	141	128	120	40*	125	35	31	33	6	30
	Women	25	20	18	12	19	112	165	109	135*	130	29	33	20	16	25
Canada	M + W	44	42	32	18	37	275	141	235	109	207	120	59	74	20	76
	Men	48	38	33	18	37	241	168	195	121	199	116	64	65	22	74
	Women	39	45	30	18	36	315	119	272	96	216	123	54	82	18	78
Ireland	M + W	28	25	20	9	22	299	191	196	138*	233	84	48	38	12	51
	Men	26	21	20	10	20	253	182	249	153*	224	66	38	50	15	45
	Women	30	30	19	8	24	336	197	137	124*	241	101	59	26	10	57
Netherlands	M + W	46	41	32	16	36	263	160	102	77	182	122	65	33	12	66
	Men	51	42	36	13	38	287	154	103	69*	194	145	64	37	9	74
	Women	42	40	29	20	34	232	167	100	81	169	97	66	29	16	58
New Zealand	M + W	53	51	45	28	46	302	192	106	119	204	159	97	48	33	95
	Men	59	50	40	31	48	307	191	103	118	212	182	96	41	37	102
	Women	47	51	49	25	45	297	192	108	121	197	139	98	53	30	89
Poland	M + W	18	17	14	3	14	181	123	95	119*	138	33	21	13	3	19
	Men	20	17	16	3	15	147	152	100	55*	136	29	26	16	1	20
	Women	16	18	12	3	13	230	96	89	162*	140	37	17	11	5	18
Sweden	M + W	56	61	58	38	54	m	m	m	m	m	m	m	m	m	m
	Men	57	58	54	37	53	m	m	m	m	m	m	m	m	m	m
	Women	54	64	62	40	56	m	m	m	m	m	m	m	m	m	m
Switzerland	M + W	52	45	39	25	42	175	89	112	67	124	91	40	44	17	52
	Men	55	43	39	29	44	180	95	113	66	131	99	41	44	19	57
	Women	47	46	40	22	40	169	84	111	68	116	80	39	44	15	47
United Kingdom	M + W	54	54	42	23	45	161	141	88	51	127	86	76	37	12	57
	Men	57	52	44	23	46	198	142	63	58	135	112	74	28	14	62
	Women	51	55	40	24	44	121	140	113	44	118	61	77	46	10	52
United States	M + W	46	46	44	28	42	175	117	66	50	111	80	54	29	14	47
	Men	45	49	45	23	42	164	138	67	42	115	74	67	30	10	48
	Women	46	44	43	32	42	183	95	65	56	108	84	41	28	18	46

Job-related education and training

Australia	M + W	37	36	27	13	30	192	134	122	74	149	71	48	33	10	45
	Men	43	38	31	17	34	190	136	127	82	150	82	52	39	14	52
	Women	31	33	23	9	26	195	133	116	57	147	60	44	26	5	38
Belgium (Flanders)	M + W	19	14	15	5	14	122	160	113	100*	131	23	22	17	5	18
	Men	21	17	21	9	18	152	135	120	19*	132	31	23	25	2	24
	Women	17	10	9	2	10	86	199	98*	203*	128	14	20	8	5	13
Canada	M + W	35	32	28	15	30	251	135	254	115	203	89	44	71	17	60
	Men	44	32	32	17	33	231	144	197	116*	189	101	47	64	20	63
	Women	27	32	24	12	26	283	126	319	113*	221	76	41	77	13	57
Ireland	M + W	22	18	13	5	16	316	226	259	198*	271	69	41	34	10	43
	Men	21	18	17	7	16	228	201	301*	202*	234	47	35	51	13	38
	Women	23	18	10	3	15	390	251	185*	192*	309	89	46	18	6	47
Netherlands	M + W	32	29	21	6	24	307	175	101	71*	211	99	51	21	4	51
	Men	40	36	28	7	31	317	159	100	86*	209	127	57	28	6	64
	Women	24	23	12	5	18	288	200	103	49*	214	69	46	13	2	37
New Zealand	M + W	44	43	40	18	38	334	188	107	115	214	146	80	43	21	82
	Men	52	47	38	24	43	342	172	107	134	221	176	80	41	33	94
	Women	37	39	43	12	35	323	204	107	82	206	118	79	46	10	72
Poland	M + W	13	14	11	2	11	164	99	82	76*	116	21	14	9	1	12
	Men	15	15	13	2	12	142	110	81	51*	114	21	16	10	1	14
	Women	10	13	10	2	9	201*	87	82*	90*	118	20	12	8	2	11
Switzerland	M + W	33	27	25	17	26	197	100	121	66	137	65	27	31	11	36
	Men	39	32	27	24	32	206	97	108	65	139	80	31	29	16	44
	Women	26	22	24	12	22	182	105	133	68*	135	48	23	32	8	29
United Kingdom	M + W	49	49	37	16	40	164	137	90	46	128	80	67	33	7	51
	Men	54	49	40	19	43	197	140	66	59	136	107	69	26	11	58
	Women	44	49	33	14	37	125	133	118	25	119	55	65	39	3	44
United States	M + W	42	42	39	24	38	169	128	65	49	114	71	54	26	12	43
	Men	41	47	41	23	39	160	158	70	43	122	66	74	29	10	48
	Women	42	38	38	26	37	176	94	61	53	106	75	36	23	14	39

* Sample size is insufficient to permit a reliable estimate (less than 30 cases for the denominator).
1. Mean number of hours per adult = Mean number of hours per participant * Participation rate/100.
Source: OECD and Statistics Canada/International Adult Literacy Survey. See Annex 3 for notes.

Table C5.2. **Percentage of 25 to 64 year-olds participating in education and training in the previous year by type of training, current primary work situation, gender and age (1994-1995)**

All education and training

		25-64 year-olds			25-44 year-olds		
		Employed	Unemployed	All	Employed	Unemployed	All
Australia	M + W	42	28	36	46	27	41
	Men	40	28	37	45	27	43
	Women	45	28	34	48	26	39
Belgium (Flanders)	M + W	27	17	22	26	17	24
	Men	27	7	24	26	10*	25
	Women	26	22	19	26	21	23
Canada	M + W	42	30	37	46	36	43
	Men	41	26	37	45	30	43
	Women	43	35	36	47	40	42
Ireland	M + W	30	9	22	31	11	27
	Men	25	6	20	27	9	24
	Women	37	17	24	38	20*	30
Netherlands	M + W	43	39	36	47	51	44
	Men	43	33	38	47	45	46
	Women	44	53	34	47	66	41
New Zealand	M + W	53	31	46	57	37	52
	Men	51	39	48	56	48	55
	Women	55	22	45	57	26	49
Poland	M + W	21	8	14	22	8	18
	Men	20	9	15	21	9	19
	Women	22	7	13	24	7	17
Sweden	M + W	60	46	54	62	47	59
	Men	57	50	53	60	56	58
	Women	64	41	56	65	38	59
Switzerland	M + W	46	32	42	51	41	48
	Men	45	23	44	50	44*	50
	Women	47	41*	40	54	39*	47
United Kingdom	M + W	56	33	45	62	34	54
	Men	54	33	46	58	34	54
	Women	59	33	44	67	35	53
United States	M + W	49	30	42	50	33	46
	Men	47	13	42	50	12	47
	Women	51	48	42	51	53	45

Job-related education and training

Australia	M + W	38	24	30	42	24	36
	Men	38	25	34	43	25	41
	Women	38	22	26	42	22	32
Belgium (Flanders)	M + W	20	9	14	19	11	16
	Men	21	7	18	20	10*	19
	Women	18	10	10	18	11	14
Canada	M + W	38	22	30	41	23	34
	Men	38	22	33	41	23	38
	Women	37	22	26	41	23	30
Ireland	M + W	24	7	16	26	9	20
	Men	21	5	16	22	6	19
	Women	29	17	15	31	20*	21
Netherlands	M + W	33	30	24	36	40	31
	Men	35	29	31	38	40	38
	Women	29	32	18	32	42	23
New Zealand	M + W	47	24	38	50	27	43
	Men	46	33	43	50	38	49
	Women	47	13	35	49	15	38
Poland	M + W	17	2	11	17	3	13
	Men	17	4	12	17	5	15
	Women	17	1	9	18	1	12
Switzerland	M + W	32	27	26	34	33	30
	Men	33	15	32	36	26*	36
	Women	30	39*	22	31	39*	24
United Kingdom	M + W	52	24	40	59	27	49
	Men	51	28	43	56	30	52
	Women	53	19	37	62	24	47
United States	M + W	46	29	38	47	30	42
	Men	45	13	39	47	12	44
	Women	47	44	37	48	49	40

* Sample size is insufficient to permit a reliable estimate (less than 30 cases for the denominator).
Source: OECD and Statistics Canada/ International Adult Literacy Survey. See Annex 3 for notes.

Table C5.3. **Percentage of 25 to 64 year-olds participating in education and training and average number of hours of participation in previous year, by type of training, highest level of educational attainment and gender (1994-1995)**

All education and training

		Participation rate						Mean number of hours per participant					
		Less than lower secondary education	Lower secondary education	Upper secondary education	Non-university tertiary education	University education	All	Less than lower secondary education	Lower secondary education	Upper secondary education	Non-university tertiary education	University education	All
Australia	M + W	9	25	35	50	60	36	118*	153	147	190	196	167
	Men	14	26	35	46	59	37	137*	161	148	193	179	165
	Women	5	25	36	54	61	34	76*	148	145	186	213	170
Belgium (Flanders)	M + W	4	13	23	40	47	22	135*	114*	157	103	120	128
	Men	4	12	25	45	49	24	126*	85*	151	112	122	125
	Women	4	14	21	36	44	19	138*	144*	164	97	117	130
Canada	M + W	16	22	31	51	59	37	161	267	177	166	255	207
	Men	17	28	26	55	64	37	75	303	185	215	183	199
	Women	15	18	36	49	53	36	279*	217	171	123	347	216
Ireland	M + W	8	17	26	42	50	22	149	266	245	238	176	233
	Men	8	16	26	35	46	20	119*	289	229	139*	167*	224
	Women	8	18	27	48	55	24	178*	242	258	286	184	241
Netherlands	M + W	17	28	42	a	52	36	163	132	201	a	198	182
	Men	16	27	45	a	53	38	168*	124	225	a	197	194
	Women	17	28	40	a	52	34	159*	138	172	a	200	169
New Zealand	M + W	9	38	49	61	69	46	453*	189	219	160	265	204
	Men	10	39	54	55	70	48	570*	188	226	175	258	212
	Women	7*	36	46	68	67	45	187*	190	214	146	274	197
Poland	M + W	3	9	21	33	37	14	56*	165	93	153	187	138
	Men	4	11	22	41	34	15	65*	153	108	108*	187	136
	Women	2	6	19	29	39	13	42*	201*	79	182	187	140
Sweden	M + W	29	46	56	66	70	54	m	m	m	m	m	m
	Men	29	53	54	64	67	53	m	m	m	m	m	m
	Women	29	39	58	68	74	56	m	m	m	m	m	m
Switzerland	M + W	9	21	45	58	59	42	33*	71	111	158	185	124
	Men	10*	17	45	55	60	44	43*	54*	126	147	147	132
	Women	8	23	45	65	56	40	29*	75	98	183	273	116
United Kingdom	M + W	12	35	54	66	75	45	148*	91	140	185	149	127
	Men	11	35	52	59	72	46	195*	106	143	211	134	135
	Women	14	35	57	72	80	44	111*	80	135	168	171	118
United States	M + W	12	15	33	55	67	42	132	125	107	118	110	111
	Men	15	18	28	54	69	42	43*	118*	138	101	113	115
	Women	10	13	36	57	64	42	253*	136*	89	133	107	108

Job-related education and training

Australia	M + W	7	20	30	41	55	30	132*	139	130	176	165	149
	Men	14	24	33	42	57	34	142*	162	133	169	152	150
	Women	2	18	26	40	52	26	68*	117	123	185	180	147
Belgium (Flanders)	M + W	2	6	16	27	33	14	86*	80*	164	114	124	131
	Men	4	7	19	36	36	18	126*	71*	163*	114	127	132
	Women	1	4	12	21	28	10	9*	93*	165	113	118*	128
Canada	M + W	11	15	25	43	50	30	111	262	157	182	252	203
	Men	15	20	23	52	61	33	77*	292	143	221	186	189
	Women	7	11	27	37	38	26	193*	210	170	140	364	221
Ireland	M + W	5	12	19	28	40	16	176*	297	292	319	201	271
	Men	6	15	19	26	38	16	140*	270	284*	161*	191*	234
	Women	3	9	18	30	43	15	246*	349*	300	407*	211	309
Netherlands	M + W	8	16	27	a	40	24	187*	156	254	a	193	211
	Men	13	21	35	a	44	31	201*	151	262	a	174	209
	Women	5	13	19	a	34	18	153*	163	238	a	227	214
New Zealand	M + W	9	30	39	53	63	38	453*	205	214	171	283	214
	Men	10	34	46	52	67	43	570*	207	236	184	267	221
	Women	7*	27	34	53	58	35	187*	203	194	157	305	206
Poland	M + W	2	7	17	20	27	11	39*	125	88	175	140	116
	Men	3	9	19	26	26	12	46*	113	111	129*	137*	114
	Women	1	4	16	17	27	9	21*	167*	66	210*	142*	118
Switzerland	M + W	4	7	29	41	41	26	35*	51*	120	162	203	135
	Men	8*	9	33	41	42	32	43*	54*	127	148	181	139
	Women	3	7	26	42	40	22	28*	50*	111	201	256	131
United Kingdom	M + W	8	30	48	60	70	40	41*	94	138	189	152	128
	Men	7	32	49	56	68	43	24*	112	141	215	135	136
	Women	9	28	46	62	72	37	55*	78	133	169	177	119
United States	M + W	10	12	29	49	62	38	108*	83*	104	121	111	114
	Men	15	15	25	50	66	39	52*	83*	134	102	114	122
	Women	6	9	32	48	58	37	241*	84*	86	139	106	106

* Sample size is insufficient to permit a reliable estimate (less than 30 cases for the denominator).
Source: OECD and Statistics Canada/International Adult Literacy Survey. See Annex 3 for notes.

Table C5.4. **Percentage of 25 to 64 year-olds participating in education and training and average number of hours of participation in previous year, by type of training, literacy level and gender, document scale (1994-1995)**

All education and training

	Participation rate					Mean number of hours per participant				
	IALS Level 1	IALS Level 2	IALS Level 3	IALS Level 4/5	All	IALS Level 1	IALS Level 2	IALS Level 3	IALS Level 4/5	All
Australia	13	26	43	59	36	210	167	146	192	167
Belgium (Flanders)	5	15	26	39	22	177*	87	135	134	128
Canada	15	30	38	59	37	414	253	226	123	207
Ireland	7	19	31	44	22	309	255	225	185	233
Netherlands	17	26	41	53	36	175	160	193	182	182
New Zealand	26	38	56	69	46	309	206	183	185	204
Poland	8	15	24	34	14	128	130	124	211	138
Sweden	31	42	57	62	54	m	m	m	m	m
Switzerland	20	36	48	63	42	106	95	123	166	124
United Kingdom	22	35	56	71	45	119	112	130	136	127
United States	18	34	52	63	42	108	104	132	90	111

Job-related education and training

	Participation rate					Mean number of hours per participant				
	IALS Level 1	IALS Level 2	IALS Level 3	IALS Level 4/5	All	IALS Level 1	IALS Level 2	IALS Level 3	IALS Level 4/5	All
Australia	9	21	37	54	30	198	154	138	152	149
Belgium (Flanders)	2	10	17	28	14	214*	78	146	130	131
Canada	9	23	31	51	30	501	250	203	137	203
Ireland	4	13	23	36	16	388*	257	285	219	271
Netherlands	10	16	27	37	24	155*	203	234	185	211
New Zealand	20	32	47	57	38	303	219	194	200	214
Poland	7	11	17	23	11	89	113	125	181*	116
Switzerland	10	21	32	44	26	107	103	140	173	137
United Kingdom	18	29	51	65	40	124	113	129	139	128
United States	15	31	46	58	38	92	98	135	104	114

* Sample size is insufficient to permit a reliable estimate (less than 30 cases for the denominator).
Source: OECD and Statistics Canada/International Adult Literacy Survey. See Annex 3 for notes.

Table C5.5. **Percentage of 25 to 64 year-olds participating in education and training and average number of hours of participation in previous year, by type of training and level of earnings (1994-1995)**

All education and training

	Participation rate					Mean number of hours per participant				
	No income/ Lowest earner quintile	Next to lowest earner quintile	Mid level earner quintile	Next to highest earner quintile	Highest earner quintile	No income/ Lowest earner quintile	Next to lowest earner quintile	Mid level earner quintile	Next to highest earner quintile	Highest earner quintile
Australia	24	34	33	48	57	248	191	115	125	159
Belgium (Flanders)	13	24	43	46	47	174	128	94	65	63*
Canada	25	37	37	49	49	446	157	162	115	84
Ireland	14	16	26	33	49	371	357	151	217	137
Netherlands	26	35	39	45	48	305	170	138	160	118
New Zealand	29	46	46	51	64	412	298	168	115	126
Poland	9	14	19	27	28	200*	144	142	111	144
Sweden	54	45	57	56	67	m	m	m	m	m
Switzerland	29	36	43	52	52	234	151	94	115	102
United Kingdom	24	47	49	62	72	240	134	77	103	90
United States	22	48	59	64	75	180	136	74	92	94

Job-related education and training

	Participation rate					Mean number of hours per participant				
	No income/ Lowest earner quintile	Next to lowest earner quintile	Mid level earner quintile	Next to highest earner quintile	Highest earner quintile	No income/ Lowest earner quintile	Next to lowest earner quintile	Mid level earner quintile	Next to highest earner quintile	Highest earner quintile
Australia	16	29	29	45	55	258	165	114	117	119
Belgium (Flanders)	5	17	34	37	34	217	140	94	65	52*
Canada	12	33	33	44	45	707	152	110	116	86
Ireland	8	10	20	28	39	541	402*	173	244	149
Netherlands	10	24	29	34	39	485	194	160	189	121
New Zealand	16	36	42	46	59	599	343	167	119	122
Poland	5	11	15	22	23	191*	143*	122	81	115
Switzerland	7	23	31	35	39	581*	204	101	114	109
United Kingdom	16	39	46	59	69	297	128	78	103	91
United States	17	45	54	60	70	218	135	73	88	100

* Sample size is insufficient to permit a reliable estimate (less than 30 cases for the denominator).
Source: OECD and Statistics Canada/ International Adult Literacy Survey. See Annex 3 for notes.

Table C5.6. **Percentage of adult education and training courses that received at least partial funding from various sources, by gender of individual taking the course (1994-1995)**

		Self or family	An employer	Self/family and employer	The government	Union or professional organisation	Other
Australia	M + W	43	45	1	12	1	1
	Men	35	54	1	12	1	1
	Women	52	36	1	11	1	1
Belgium (Flanders)	M + W	37	51	3	12	3	3
	Men	27	61	2	13	3	2
	Women	49	38	3	9	3	5
Canada	M + W	37	53	4	17	4	1
	Men	34	59	4	13	3	2
	Women	39	47	3	21	4	1
Ireland	M + W	37	42	n	12	3	2
	Men	23	57	n	13	4	2
	Women	48	30	n	12	3	2
Netherlands	M + W	39	54	2	7	1	4
	Men	24	70	3	7	1	3
	Women	58	33	2	8	n	4
New Zealand	M + W	35	57	4	16	5	5
	Men	29	64	4	15	5	4
	Women	41	51	4	16	5	6
Poland	M + W	29	63	4	6	1	6
	Men	26	68	3	5	1	5
	Women	33	58	4	7	n	6
Switzerland	M + W	52	43	5	14	2	3
	Men	42	53	6	13	2	1
	Women	62	32	4	14	1	4
United Kingdom	M + W	16	72	1	9	2	2
	Men	12	77	1	8	2	3
	Women	20	67	n	10	2	1
United States	M + W	27	68	3	7	2	2
	Men	23	74	4	6	2	3
	Women	30	64	2	7	1	1

Source: OECD and Statistics Canada/ International Adult Literacy Survey. See Annex 3 for notes.

Table C5.7. **Percentage distribution of the location of adult education and training courses (1994-1995)**

	Public school/college or university campus	Commercial school/training centre	Conference centre or hotel	Workplace	Community centre or sports facility	Home	Elsewhere
Australia	42	23	13	22	6	5	12
Belgium (Flanders)	23	23	m	21	17	1	16
Canada	27	17	14	24	5	5	7
Ireland	26	17	14	20	6	2	15
New Zealand	23	20	14	25	4	6	9
Poland	14	29	7	25	2	5	18
Switzerland	10	39	14	11	7	3	17
United Kingdom	22	19	11	36	2	2	8
United States	27	15	17	33	1	2	5

Table C5.8. **Percentage of adult education and training courses using various media (1994-1995)**

	Classroom instructions, seminars or workshops	Educational software	Radio or TV broadcasting	Audio/video cassettes, tapes or disks	Reading materials	On-the-job training	Other methods
Australia	91	16	3	11	34	m	2
Belgium (Flanders)	79	41	17	37	85	35	25
Canada	90	17	3	39	67	29	3
Ireland	79	2	1	2	2	10	4
Netherlands	73	22	12	32	70	21	9
New Zealand	85	19	5	36	70	43	2
Poland	86	15	7	29	58	40	9
Switzerland	88	19	5	28	56	20	26
United Kingdom	83	11	2	21	37	24	3
United States	87	11	1	18	29	18	3

Table C5.9. **Perceived barriers to participation in continuing education and training among non-participants who wanted to take training (1994-1995)**

	Percentage who did not take training in the past year	Among those who did not take training, percentage who wanted to	Percentage of non-participants who gave various reasons for not taking continuing education and training that they wanted to take										
			Situational barriers				Institutional barriers				Dispositional barriers		Other
			Lack of time	Too busy at work	Family responsibilities	Lack of employer support	Course not offered	Too expensive/ no money	Lack of qualifications	Inconvenient time	Language reasons	Health	
Australia	64	34	43	16	7	2	2	9	21	5	1	7	9
Belgium (Flanders)	78	12	48	14	14	5	3	7	1	7	4	1	14
Canada	64	23	42	9	23	4	7	25	4	9	n	4	16
Ireland	78	14	24	10	21	2	18	24	2	7	n	4	2
Netherlands	64	18	46	11	7	7	6	17	1	7	1	6	12
New Zealand	54	25	51	35	42	9	14	37	9	30	4	7	17
Poland	86	11	37	15	18	12	19	29	3	5	n	5	15
Sweden	46	m	m	m	m	m	m	m	m	m	m	m	m
Switzerland	58	23	42	14	14	7	17	11	1	7	1	6	15
United Kingdom	55	16	27	13	20	9	15	24	2	13	2	5	15
United States	58	16	44	14	21	5	4	33	1	7	1	5	10

Source: OECD and Statistics Canada/International Adult Literacy Survey. See Annex 3 for notes.

Developmental indicator

STUDENTS WITH SPECIAL EDUCATIONAL NEEDS (disabilities, learning difficulties and disadvantage)

Policy Context

Students with disabilities, learning difficulties and those from disadvantaged groups often receive additional support in school to enable them to make satisfactory progress. Some continue to be educated in special schools, but increasingly they are included in mainstream education.

This developmental indicator compares the proportion of students considered to have special educational needs.

The orientation of educational policies towards lifelong learning and equity has particular significance for these students since they face the greatest risk of exclusion, not only in schools but also in the labour market and in life generally. Monitoring the educational provision which is made for these students is of great importance especially given the substantial extra resources involved.

It also presents data on the extent of provision, its location, and its resourcing in terms of student/teaching staff ratios.

Many countries have positive policies towards equitable provision and the inclusion of those with special needs into society. However, legislative frameworks, traditional attitudes, teacher training, segregated systems and categorical descriptions (such as disability categories) among other factors may militate against inclusion and even favour exclusion.

To deliver education for these students, most countries make additional resources available to schools. These usually take the form of extra teaching staff or assistants and para-professional services, such as speech and language therapists and physiotherapists, alongside physical adaptations to buildings and equipment. Countries vary substantially in both the extent of these services and the location where they are delivered (special schools, special classes in regular schools, regular classes in regular schools or other locations).

An innovative approach is used that focuses on the additional resources made available to students with special needs.

The data presented in this indicator are still developmental and comparisons between countries need to be interpreted with caution. Although most countries use categories to identify different types of need there is a lack of consistency between countries in the extent to which, and the way in which, they are used. Moreover, some countries include the disadvantaged within special needs education nationally while others do not.

However, the data for this indicator are still developmental.

Evidence and explanations

Proportion of students considered to have special educational needs

The possibility of making international comparisons of the numbers and proportions of students with special educational needs has previously been hindered by a lack of agreement on definitions. Approaches based on counting the

Students with special needs are now defined in terms of the additional public and/or private resources provided to support them.

numbers of students in special schools, or on models of handicap based on medical categories, do not reflect the reality in many countries of increasing inclusion of students with special educational needs in mainstream education, and of an appreciation that such medical models are of limited value in planning educational provision to meet the needs of students.

A new tri-partite international taxonomy classifies special programmes in an internationally consistent way.

This indicator takes a different approach by using data based on the additional resources made available for supporting students with special educational needs during their education. Special needs education is thus defined operationally in terms of the additional public and/or private resources provided to support the education of these students.

Category A corresponds broadly to needs arising from impairing conditions; Category B for those experiencing difficulties in learning for no clear reason and Category C comprises disadvantage.

To provide a basis for comparisons, countries have now located their own national categories of special needs education within a simple tri-partite international taxonomy. Category A in this taxonomy corresponds broadly to needs arising from impairing conditions; Category B to those experiencing difficulties in learning for no clear reason and Category C comprises disadvantage (see definitions below). Table C6.1 summarises the results of this reclassification of national categories. It reveals that there is substantial overlap between the categories placed in cross-national category A, albeit with some slight differences in the labels used [*e.g.* "trainable mental handicap" (Switzerland); "severe mental handicap" (Italy); "medium grade of mental retardation" (Hungary)].

Countries bring to bear different conceptual frameworks in administrating special education.

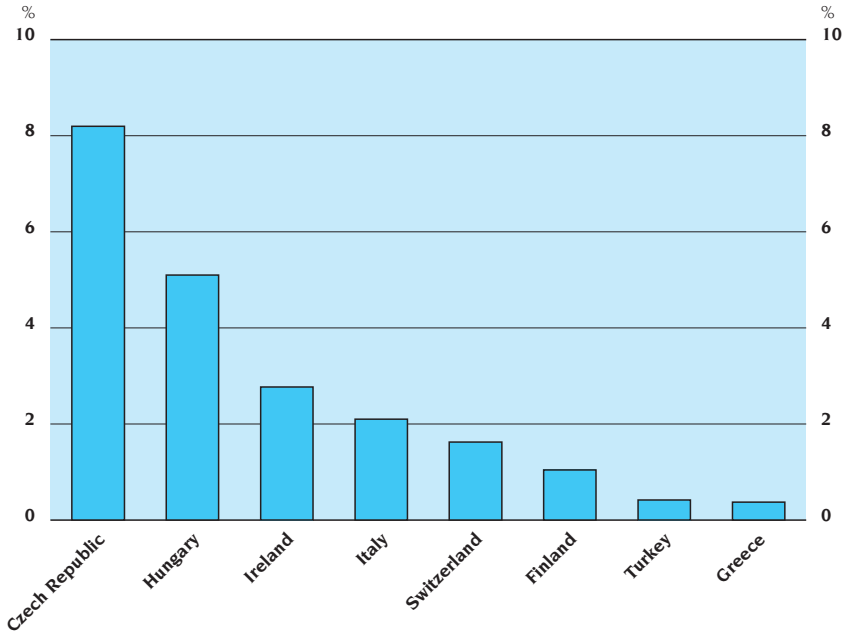
Table C6.1 shows the different conceptual frameworks that countries bring to bear in administrating special education. Some countries include only students with medical disabilities in what they refer to nationally as special education (*e.g.* the Czech Republic and Italy) while Turkey includes gifted and talented and yet others include those who are disadvantaged in various ways (*e.g.* Switzerland). Students falling into this last category are those who tend to be included in the broader resources model (*e.g.* Finland and Hungary). Students with emotional problems are also perceived very differently between countries. In some countries these problems are seen to have a transactional basis, in others to have a clear organic basis, and in yet others they do not appear at all. The resources model provides an inclusive framework to bring together all categories of students receiving additional support since it does not rely on national definitions of special education, and hence provides the basis for potential international comparisons.

Chart C6.1 presents the country differences for students in category A (where the data are most complete). The percentage of students in category A is relatively low in Greece and Turkey, intermediate in Finland, Ireland, Italy and Switzerland and high in the Czech Republic and Hungary.

If category B is included, the extent of provision triples in Switzerland and doubles in Finland with the other countries remaining unchanged.

Category C, which covers the provision made for disadvantaged students, shows the considerable extent of additional resources being put into the education of these children. The figures reflect education policies of positive discrimination in favour of disabled and disadvantaged students (Table C6.2).

Chart C6.1. **Number of students in cross-national category A receiving additional resources as a percentage of all primary and lower secondary students (1996)**



Countries are ranked in descending order of the percentage of cross-national category A students.

Source: OECD.

Location of students with special educational needs

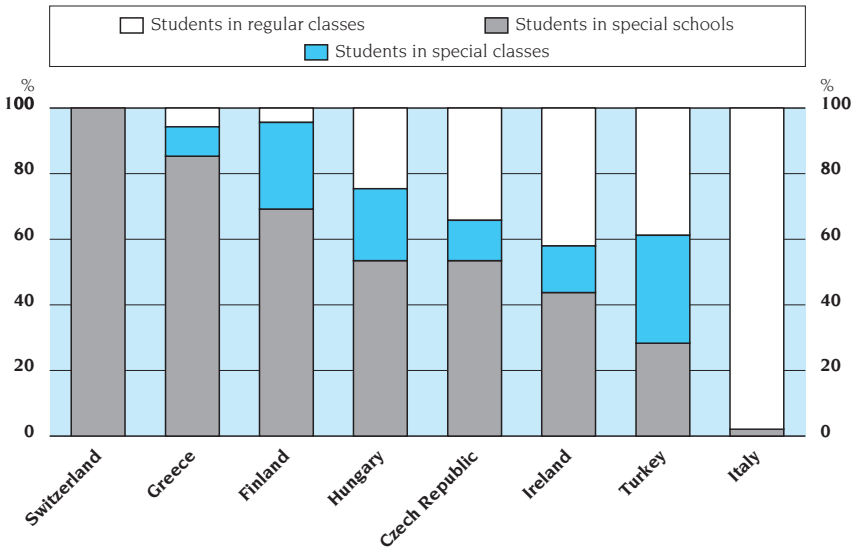
Table C6.4 shows the number of children in special schools, special classes in regular schools and regular classes in regular schools and the ways in which the students in cross-national categories A, B and C are distributed across them. The table shows that in most countries, special schools are providing for category A and B students only, while special classes and regular classes provide for all three categories. Table C6.3 and Chart C6.2 show how category A students are distributed across special schools, special classes and regular classes. The pattern across countries is varied. In Italy there are virtually no students in special schools or classes, whereas for most other countries, although there is some variation, these are the preferred forms of provision for category A students.

In most countries, special schools are providing for category A and B students only, while special classes and regular classes provide for all three categories.

OECD countries are in a period of transition from systems which operate largely segregated provision for students with special educational needs (typically categorised in terms of different impairments) to more integrated systems seeking to include all students in the same schools. Some countries (*e.g.* Italy) already have long traditions of such inclusive education. Many others are in the process of change in line with international agreements advocating inclusion on principles of equity and equality of opportunity. Debate continues about the feasibility and desirability of including all students in regular or mainstream provision. This indicator responds to the need to monitor this changing situation, and to provide comparative information about the extent and nature of integration in different national systems.

OECD countries are in a period of transition from systems in which special needs students are segregated towards more integrated systems seeking to include all students in the same schools.

Chart C6.2. **Distribution of students with special educational needs receiving additional resources in cross-national category A by location of students (1996)**



Countries are ranked in descending order of the percentage of students in special schools.

Source: OECD.

Resources and special needs education

Additional resources for students with special education needs can be of many kinds.

The resources definition acknowledges that additional resources provided for students with special educational needs can be of many kinds. These include personnel, covering both teachers and others such as para-professionals and assistants; material resources such as aids or supports of various kinds; and financial resources including favourable funding formulas. As the salaries of teachers constitute a major part of educational expenditure and resourcing, student/teaching staff ratios for students with special educational needs are an important indicator. Table C6.5 shows the student/teaching staff ratios for cross-national categories A, B and C, broken down for primary and lower secondary education. For purposes of comparison the student/teaching staff ratios for regular education are also shown (see also Indicator B7).

In all countries, student/teaching education needs are comparatively low.

Student/teacher ratios for students with special education needs are comparatively low, ranging for category A students in special schools from 2.3 to 8.6 and in special classes in regular schools from 1.7 to 10.7 (primary and lower secondary education). These ratios indicate a substantially more favourable resourcing than for all students in regular schools, which range in primary schooling from 11.2 to 27.9 and lower secondary from 9.5 to 16. This is, at least in part, a recognition of the complexity of the teaching task and of the likely need for individualised attention. It is also clear that substantial resources in terms of support teachers are often made available. Data on this point are difficult to obtain, however.

The special needs education indicator

Based on the additional resources countries make available for supporting special needs education, this indicator reveals:

First, that different countries identify very different proportions of children as being in need of additional support.

Second, the use of three broad categories for identifying the perceived "causes" of educational difficulty uncovers apparent differences between countries in the identification of "causes" and seems a promising way forward. The combined use of the resources definition and the tri-partite classification helps to remove differences simply arising from differences in definition as applied to the concept of special needs education and should assist in improving the quality of international comparisons in this area.

Third, the data reveal the great differences between countries in the type of school in which special needs students are educated and thus their socialising and educational experiences, which may be linked to later experiences of social exclusion. It is clear that some countries regard it as feasible to educate in regular classes students who would, in other national systems, be educated in special schools. The combined effect of the increasing use of the concept of special needs education and the moves towards inclusion present formidable challenges to the collection of statistical data in this area.

Fourth, the additional resources made available, proxied by favourable student/teaching staff ratios, reveal the extent of the additional support provided to special needs students and their schools. This may be viewed as an effort by countries to improve opportunities for students with disabilities, learning difficulties and disadvantages by means of positive discrimination.

Several countries do not collect data on students with special needs educated in regular classrooms. With moves toward integration and inclusive education increasing the numbers of students in these settings, data on such students should be a priority in the further development of data collection systems.

Developments in methodology which permit the widespread collection of such data, including quantification of the resources made available in these settings, encourage an objective comparison of different systems. If coupled with development work on the outcomes of education for those with special needs, wherever educated, an economic rationale could be added to the philosophical and educational case for integration.

■ DEFINITIONS

The percentage of students with special educational needs in Table C6.2 is calculated by dividing the number of students with special educational needs by the total number of students in primary and lower secondary education (times 100). This is taken to be the students involved in programmes at ISCED levels 1 and 2, unless otherwise indicated. The figures for students with special educational needs are based on full-time study.

Data refer to the school year 1995/96 unless indicated and are based on a UOE special study on special needs education carried out in 1996/97 (for details see Annex 3).

Students with special educational needs are defined by the additional public and/or private resources provided to support their education. "Additional resources" are those made available over and above the resources generally available for students who have no difficulties in accessing the regular curriculum. Figures in the tables are based on both public and private institutions, unless otherwise indicated.

Figures based on national categories of special needs education, where these are used by countries, have been aggregated into cross-national categories A, B and C.

- Category A refers to educational needs of students where there is substantial normative agreement – such as blind and partially sighted, deaf and partially hearing, severe and profound mental handicap, multiple handicaps.
- Category B refers to educational needs of students who have difficulties in learning which do not appear to be directly or primarily attributable to factors which would lead to categorisation as A or C.
- Category C refers to educational needs of students which are considered to arise primarily from socio-economic, cultural and/or linguistic factors.

Special schools are defined as segregated settings, separately administered from regular or mainstream schools. Special classes are classes or units attached to regular schools. Teaching staff, as used in the calculation of student/staff ratios in Table C6.5, refers to the total of full and part-time staff (calculated on a full-time equivalent basis), unless otherwise indicated.

Table C6.1. **Allocation of national categories of special needs education to cross-national categories A, B and C (1996)**

	Cross-national category A	Cross-national category B	Cross-national category C
Czech Republic	*i* Mentally retarded *ii* Hearing handicaps *iii* Sight handicaps *iv* Speech handicaps *v* Physical handicaps *vi* Multiple handicaps *vii* Sick lying in hospitals *viii* Developmental, behavioural and learning problems *ix* Other handicaps *x* Children with weakened health		
Finland	*i* Moderate mental impairment *ii* Hearing impairment *iii* Visual impairment *iv* Physical and other impairment *v* Others	*i* Mild mental impairment *ii* Emotional and social impairment *iii* Specific learning disabilities *iv* Support teaching	*i* Immigrants/emigrants
Greece	*i* Blind – partially sighted *ii* Deaf – hearing impaired *iii* Physically handicapped *iv* Mentally retarded	*i* Autistic	*i* Learning difficulties
Hungary	*i* Slight grade of mental retardation *ii* Medium grade of mental retardation *iii* Visual disabilities *iv* Hearing disabilities *v* Motoric disabilities *vi* Speech disabilities *vii* Other disabilities		*i* Children of minorities *ii* Disadvantaged pupils/pupils at risk
Ireland	*i* Visually impaired *ii* Hearing impaired *iii* Mild mental handicap *iv* Moderate mental handicap *v* Physically handicapped *vi* Specific speech and language disorder *vii* Specific learning disability *viii* Severely and profoundly mentally handicapped *ix* Multiply handicapped	*i* Children in need of remedial help *ii* Emotionally disturbed *iii* Severely emotionally disturbed	*i* Children of travelling families *ii* Young offenders *iii* Children of refugees *iv* Children in regular schools who are disadvantaged
Italy	*i* Visual impairment *ii* Hearing impairment *iii* Mild mental handicap (psychiatric) *iv* Severe mental handicap (psychiatric) *v* Mild physical handicap *vi* Severe physical handicap *vii* Multiply handicapped		
Switzerland	*i* Educable mental handicap *ii* Trainable mental handicap *iii* Multiply handicapped *iv* Physical disabilities *v* Behaviour disorders *vi* Deaf or hard of hearing *vii* Language disability *viii* Visual handicap *ix* Chronic conditions/need for prolonged hospitalisation *x* Multiple disabilities	*i* Learning disabilities/introductory classes *ii* Learning disabilities/special classes *iii* Learning disabilities/vocationally oriented classes *iv* Behavioural difficulties *v* Physical disabilities *vi* Sensory and language impairments *vii* Students who are ill/hospital classes *viii* Others of the group 'special curriculum'	*i* Foreign first language
Turkey	*i* Visually impaired *ii* Hearing impaired *iii* Orthopaedically handicapped *iv* Educable mentally handicapped *v* Trainable mentally handicapped *vi* Speech impairment *vii* Chronically ill	*i* Gifted and talented	

Source: OECD Education Database. See Annex 3 for notes.

Table C6.2. **Number of students in cross-national categories A, B and C receiving additional resources as a percentage of all students in primary and lower secondary education and of all students with special educational needs receiving additional resources (based on head counts) (1996)**

	As a percentage of all students in primary and lower secondary education			As a percentage of all students receiving additional resources		
	Cross-national category A	Cross-national category B	Cross-national category C	Cross-national category A	Cross-national category B	Cross-national category C
Czech Republic	8.2	a	a	m	m	m
Finland	1.0	13.2	1.7	6.5	82.8	10.7
Greece	0.4	(n)	0.9	30.0	n	70.0
Hungary	5.1	a	11.1	31.5	a	68.5
Ireland	2.8	6.6	(14.2)	(11.8)	(27.9)	(60.3)
Italy	2.1	a	a	100.0	a	a
Switzerland	1.6	4.2	0.4	28.0	64.8	7.2
Turkey	0.4	n	a	99.3	0.8	a
United Kingdom	m	m	m	m	m	m

Table C6.3. **Numbers of students with special educational needs receiving additional resources as a percentage of all students in primary and lower secondary education and percentage of students in cross-national category A by location (special schools, special classes in regular schools, regular classes in regular schools) (based on head counts) (1996)**

	Students with special educational needs as a percentage of all students in primary and lower secondary education			Distribution of students in cross-national category A by location		
	Percentage of students in special schools	Percentage of students in special classes	Percentage of students in regular classes	Percentage of students in special schools	Percentage of students in special classes	Percentage of students in regular classes
Czech Republic	4.4	1.0	2.8	53.5	12.3	34.3
Finland	1.9*	1.1	11.3	69.2	26.4	4.3
Greece	2.1*	0.9	n	85.4	8.9	5.7
Hungary	2.7	1.1	12.3	53.5	21.9	24.7
Ireland	1.4	0.4	(21.7)	43.8	14.2	(42.0)
Italy	0.04	n	2.1*	1.9	0.2	97.9
Switzerland	1.6	4.6	m	100.0	n	n
Turkey	0.1	0.1	0.2	28.1	32.6	39.3
United Kingdom	1.2	x	1.6	m	m	m

Table C6.4. **Number of students with special educational needs receiving additional resources and percentages of cross-national categories A, B and C by location (special schools, special classes in regular schools, regular classes in regular schools) (1996)**

	Special schools				Special classes in regular schools				Regular classes in regular schools			
	Number of students	Percentage in cross-national category A	Percentage in cross-national category B	Percentage in cross-national category C	Number of students	Percentage in cross-national category A	Percentage in cross-national category B	Percentage in cross-national category C	Number of students	Percentage in cross-national category A	Percentage in cross-national category B	Percentage in cross-national category C
Czech Republic	47 543	100.0	a	a	10 896	100.0	a	a	30 445	100.0	a	a
Finland	11 353	53.8	46.2	n	6 159	26.3	73.7	n	66 478	0.4	0.7	98.9
Greece	3 276*	99.8	0.2	n	9 282	3.7	n	96.3	218	100.0	n	n
Hungary	29 219	100.0	n	n	11 948	100.0	n	n	132 145	10.2	n	89.8
Ireland	7 530*	87.5	6.4	6.1	2 289*	100.0	n	n	(121 160)*	4.7	30.9	64.4
Italy	1 737	100.0	a	a	180	a	a	a	91 594*	100.0	a	a
Switzerland	12 557	100.0	n	n	32 329	n	90.0	10.0	m	n	m	m
Turkey	7 504	100.0	n	a	8 733	100.0	n	a	10 498	98.1	1.9	a
United Kingdom	114 420	m	m	m	x	m	m	m	1 362 180	m	m	m

* Public institutions only.
( ) Figures in parentheses are estimates.
Hungary: some students in upper secondary education are also included.
United Kingdom: Students in pre-primary and upper secondary education are also included.
Source: OECD Education Database. See Annex 3 for notes.

Table C6.5. **Ratio of all students with special educational needs receiving additional resources to teaching staff and regular student/teaching staff ratios in full-time equivalents, by level of education and cross-national category (1996)**

	All categories			Cross-national category A			Cross-national category B			Cross-national category C		
	Primary and lower secondary education	Primary education	Lower secondary education	Primary and lower secondary education	Primary education	Lower secondary education	Primary and lower secondary education	Primary education	Lower secondary education	Primary and lower secondary education	Primary education	Lower secondary education
Special schools												
Czech Republic	7.0	7.0	a	7.0	7.0	a	a	a	a	a	a	a
Finland	4.5	m	m	4.5	m	m	5.7	m	m	m	m	m
Greece	5.0*	5.4	3.0	5.0*	5.4	3.0	3.5	3.5	m	m	m	m
Hungary	4.2	3.7	12.2	4.2	3.7	12.2	a	a	a	m	m	m
Ireland	6.9* **	m	m	8.6* **	m	m	8.0* **	m	m	(8.8)* **	m	m
Italy	2.3**	2.4**	1.5**	2.3**	2.4**	1.5**	a	a	a	a	a	a
Switzerland	m	m	m	m	m	m	m	m	m	m	m	m
Turkey	5.8	5.8	a	5.8	5.8	a	m	m	m	a	a	a
United Kingdom	6.6**	m	m	m	m	m	m	m	m	m	m	m
Special classes in regular schools												
Czech Republic	10.2	10.2	a	10.2	10.2	a	a	a	a	a	a	a
Finland	7.4	m	m	6.3	m	m	10.5	m	m	m	m	m
Greece	12.1	13.6	2.7	3.0	5.3	2.7	a	a	a	13.7	13.7	m
Hungary	m	m	m	m	m	m	a	a	a	m	m	m
Ireland	9.8* **	m	m	9.8* **	m	m	m	m	m	(15.2)* **	(15.2)* **	m
Italy	1.7*	1.6*	2.3*	1.7*	1.6*	2.3*	a	a	a	a	a	a
Switzerland	m	m	m	m	m	m	m	m	m	m	m	m
Turkey	10.7	10.7	a	10.7	10.7	a	m	m	m	a	a	a
United Kingdom	m	m	m	m	m	m	m	m	m	m	m	m
Regular schools												
Czech Republic		20.4	13.0									
Finland		16.8	12.4									
Greece		15.0	11.4									
Hungary		12.2	9.5									
Ireland		22.6	15.8									
Italy		11.2	10.8									
Switzerland*		15.9	13.0									
Turkey		27.9	a									
United Kingdom		21.3	16.0									

Turkey: Data refer to 1995.
Ireland, the Netherlands: Data include upper secondary education.
* Public institutions only.
** Full-time teachers only.
( ) Figures in parentheses are estimates.
Source: OECD Education Database. See Annex 3 for notes.

THE TRANSITION FROM SCHOOL TO WORK

The labour-market situation of young people has returned to the forefront of public debate in recent years. There is a general perception that the transition from education to work has become more difficult, despite the fact that the size of youth cohorts has been declining in most countries and that young people entering the labour market are generally more educated than was the case ten years ago. This chapter attempts a preliminary look at the nature of the transition problem and is based largely on a special collection of data from labour force surveys, focused on youth in the labour market.

The initial exposure of young people to the world of work can take place either while in education or following the completion of initial education. **Indicator D1** presents a broad picture of the labour force participation of young people 15 to 29 years of age, both while in education and following the completion of initial education. In some countries many young people combine education and work, while in others education and work occur largely consecutively. Work during education generally takes two forms, namely work performed in the context of work-study programmes, where there is a close link between the work performed and the studies undertaken, and part-time jobs undertaken while in education, which provide early labour-market experience but generally have little connection with eventual labour-market destinations following the completion of schooling.

With increasing age, the percentage of young persons no longer in education rises. However, the general state of the labour market for youth in countries seems to have a significant influence on the propensity of young people to continue their studies beyond compulsory education. People who leave education early are heavily penalised in the labour market; later exiters fare significantly better. There is evidence which suggests that work while in education may facilitate later (definitive) entry into the labour market. This is partly because of the relatively seamless transition into the world of work offered by many apprenticeship programmes and because work while in education conveys greater familiarity with job search and with potential working conditions and environments.

Indicator D2 shows the increase over a decade in the years of education which a person aged 15 can expect to attain between the ages of 15 and 29. Corresponding to this increase is a parallel decline in the expected number of years not in education. The fall in the number of years not in education of course means that the time spent in at least some of the labour force statuses after completion of education must have declined as well. Despite the general perception that the labour-market situation of youth has deteriorated, the expected years spent by youth in unemployment and out of the labour force have generally declined over the period 1985-1996, both in absolute terms and relative to the expected years spent in employment. On the other hand, the time spent in employment may not be in jobs of good quality from the perspective of the job holders.

In the public's mind, youth unemployment is generally associated with difficulties in obtaining the first job following the completion of schooling. **Indicator D3** provides information on the various reasons for youth unemployment. Although difficulty in finding a first job is the main reason for youth unemployment in some countries, in others over half of young people not in education who are unemployed have had a previous post-schooling job, often temporary. Lower youth unemployment rates are found in countries with strong apprenticeship systems or with less employment protection.

Finally, **Indicator D4** describes the relationship between educational attainment and labour-market outcomes in the early years of work following the completion of education. As attainment increases, so generally do labour-market opportunities, with young persons having tertiary attainment being particularly favoured. However, even high qualifications do not guarantee a job in some countries. Employment/population ratios behave very much like unemployment rates: as unemployment rates decline, employment/population ratios increase with age and with educational attainment. Among older youth cohorts, it is the incidence of work among women that explains country differences in the prevalence of employment among youth.

EDUCATION AND WORK OF THE YOUTH POPULATION

Policy context

The initial exposure of young people to the world of work can take place either while in education or following the completion of initial education. OECD countries vary considerably in the extent to which young persons combine work and study and to which they tend to prolong their education. The general state of the labour market seems to have a significant influence on both these phenomena.

Evidence and explanations

In some countries many young people combine education and work, while in others education and work occur largely consecutively.

Young adulthood is generally the period when initial schooling is completed and young persons enter the labour market for the first time. In certain countries education and work take place largely consecutively, while in other countries they take place concurrently for many people. The various patterns of education/work participation can have significant effects on the success of the transition process. It is of particular interest to know, for example, the extent to which work while in school might favour eventual (definitive) entry into the labour force. Table D1.1 gives the work/study situation of young people in a number of OECD countries for the three age groups 15 to 19, 20 to 24 and 25 to 29.

Combining work and education

Work during education can occur in the context of work-study programmes or in the form of part-time jobs in the regular labour market.

Situations vary considerably across countries (Chart D1.1). There are, first of all, countries in which work-study programmes (see definitions, p. 239) are relatively common (Austria, Germany, Switzerland and, to a lesser extent, France and the United Kingdom), countries in which working students are frequent (Australia, Canada, the United Kingdom, the United States and, to a lesser extent, Finland, Sweden and Switzerland) and finally, countries in which school and work are rarely associated (Belgium, the Czech Republic, Greece, Italy and Spain). Generally, the older students are, the more they tend to combine work and school. Employment/population ratios of students 25-29 years of age exceed 50 per cent in a number of countries and are especially high (exceeding 70 per cent) in Australia, Switzerland and the United States. In the Czech Republic, Greece and Italy, they are less than 25 per cent.

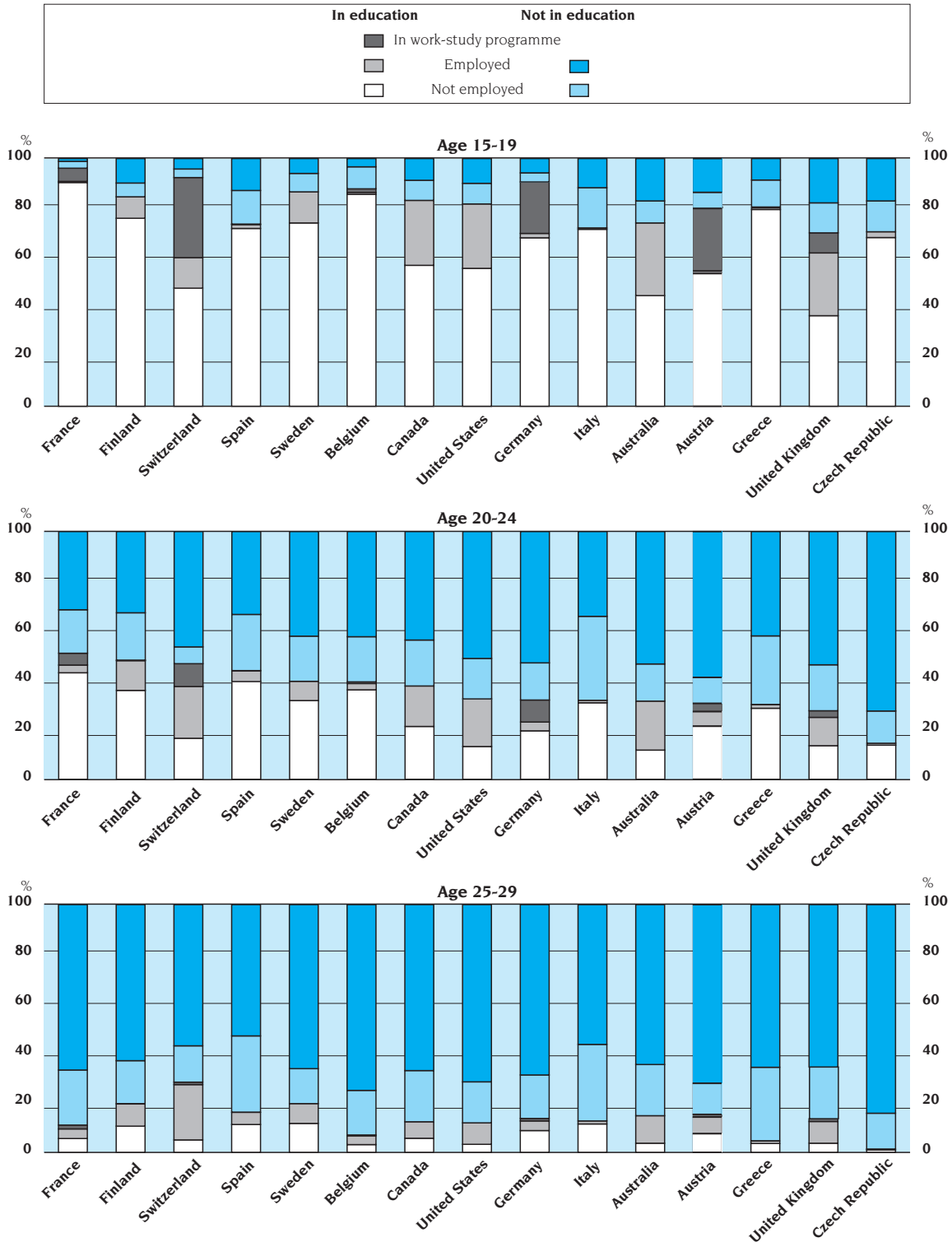
The employment situations of men and women are broadly similar during the years of education, with the exception of Austria, Germany and Switzerland, where there is a greater participation of men in work-study programmes.

Entry into the labour market following the completion of schooling

Continuing enrolment beyond compulsory education often reflects the general state of the labour market.

With increasing age, the percentage of young people no longer in education of course rises (Chart D1.2) and participation in the labour force increases. The percentage of youth not in education in most countries falls within the 15 to 30 per cent band for 15 to 19 year-olds, rises to between 60 and 70 per cent for the

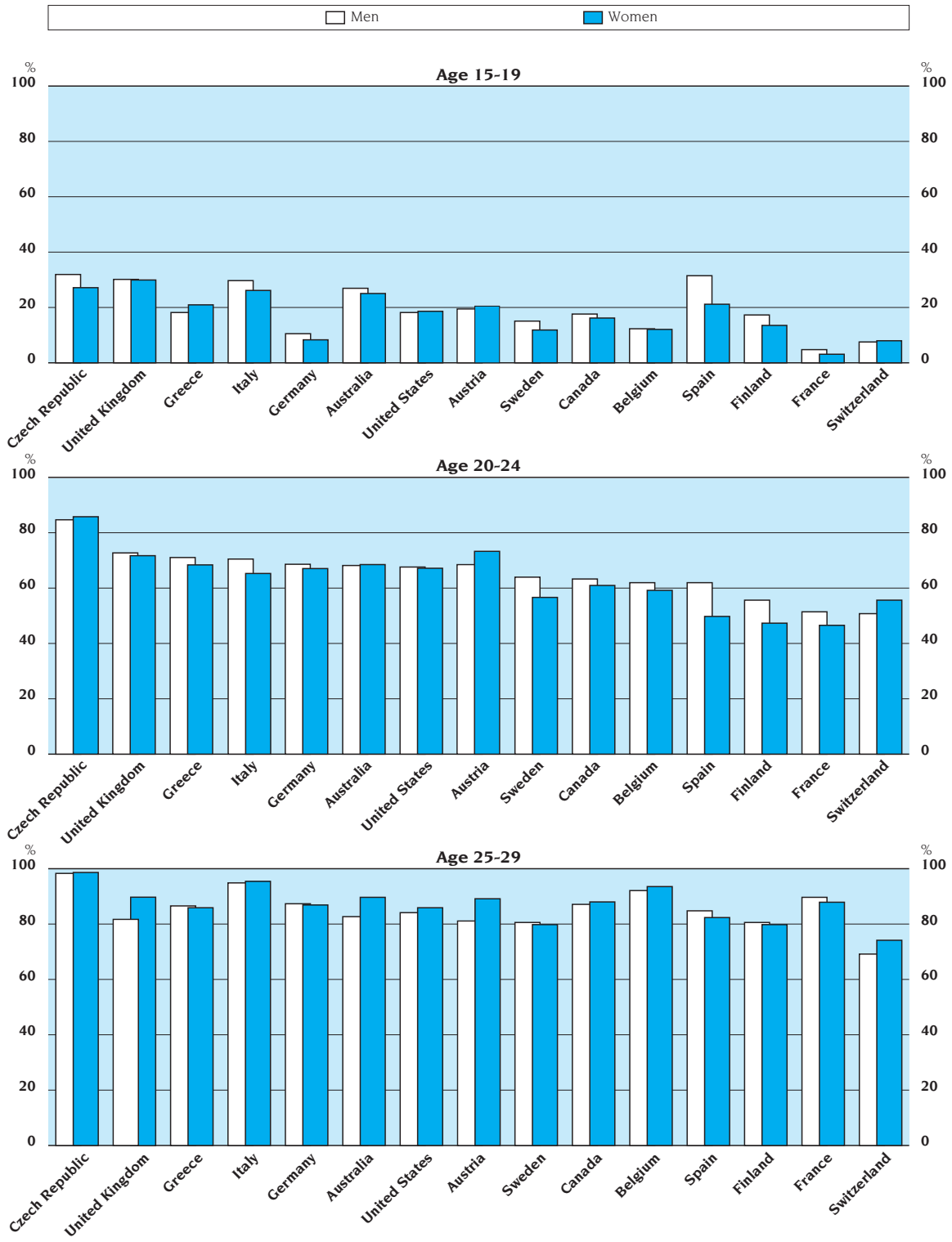
Chart D1.1. **The education and work status of the youth population, by age group (1996)**



Countries are ranked in descending order of the percentage of the youth population in education in the age group 20-24.

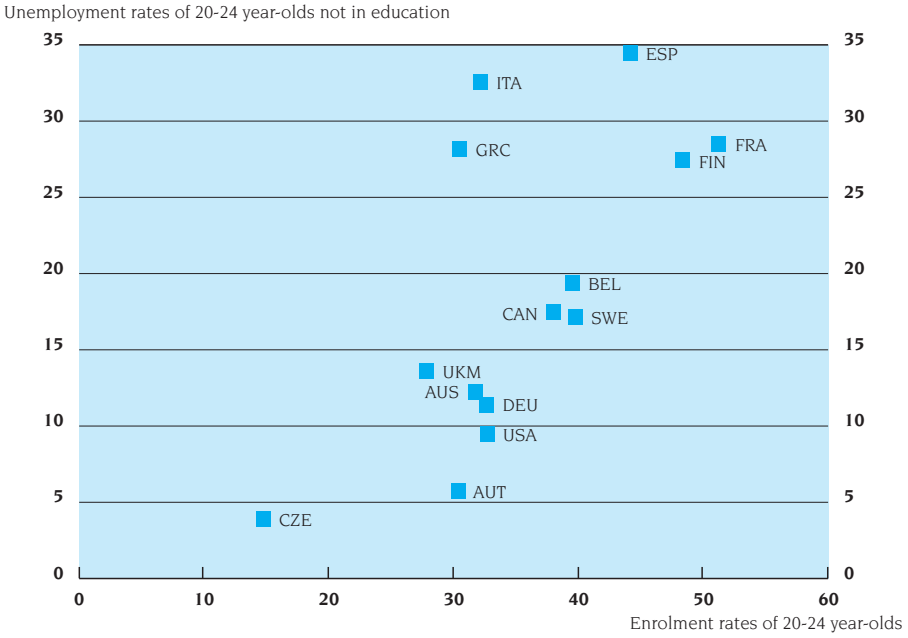
Source: OECD.

Chart D1.2. **Percentage of youth not in education, by gender (1996)**



Countries are ranked in descending order of the percentage of men not in education in the age group 20-24.
Source: OECD.

Chart D1.3. **Enrolment rates of 20-24 year-olds and unemployment rates of 20-24 year-olds not in education (1996)**



Source: OECD.

20 to 24 age group and attains 80 to 90 per cent for 25 to 29 year-olds. Over the past ten years, the expected years spent in education has risen (Indicator D2). Continuing enrolment beyond compulsory education reflects not only the demand for education, but also the general state of the labour market, the length of education programmes, the prevalence of part-time education and any limits direct (by restricting admission) or indirect (*e.g.* by high tuition fees) on access to education. In particular, the effect of adverse labour market conditions on enrolment is evident in the significant cross-country correlation (over 0.50) between enrolment rates among 20-24 year-olds and unemployment rates of young persons not in education in this age group (Chart D1.3).

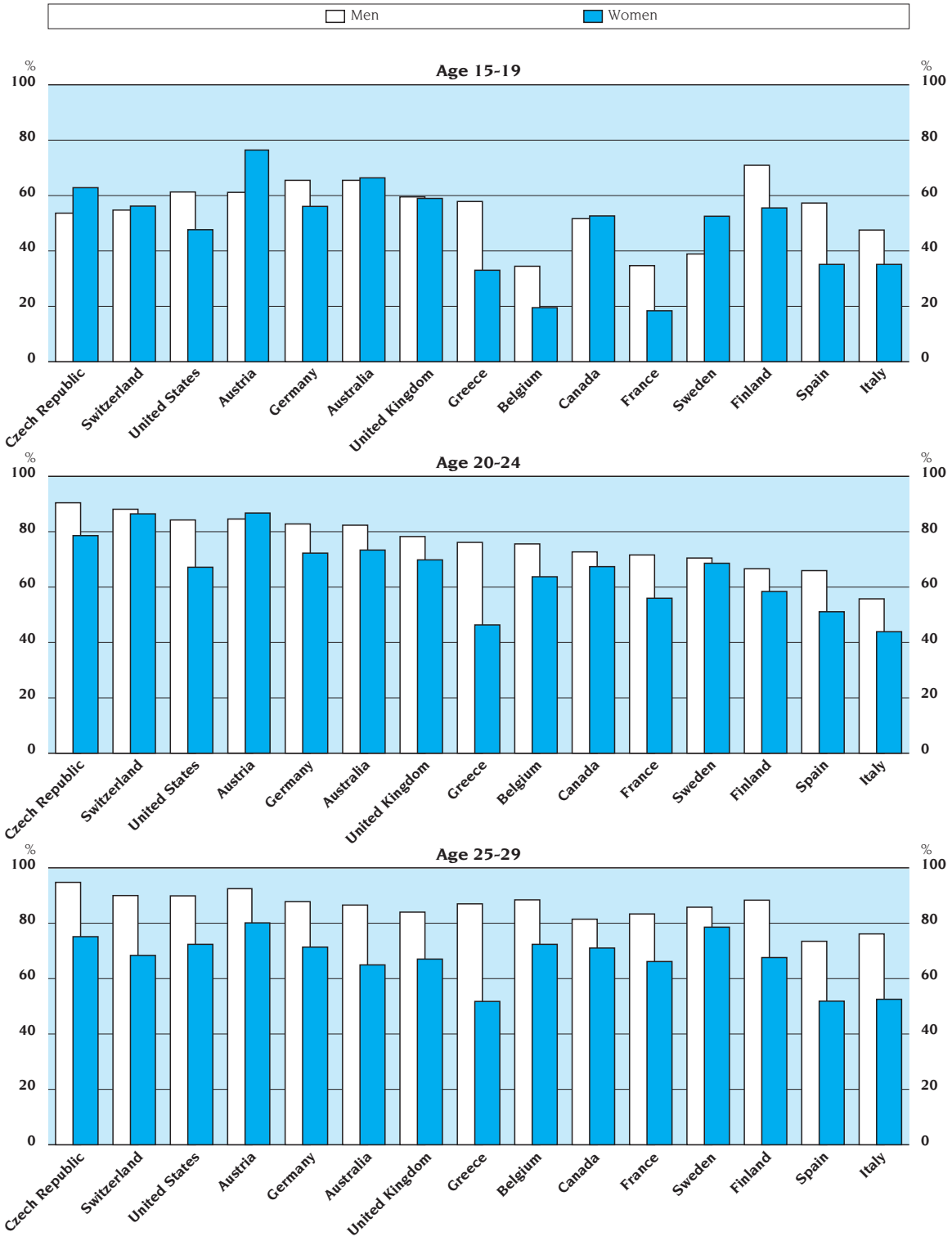
Persons who leave education early are heavily penalised in the labour market…

Entry into the labour market following the completion of education has rather different employment consequences depending on age (Chart D1.4). In most countries, less than 60 (and in some even less than 40) per cent of 15 to 19 year-olds not in education are working; it is clear that young people in this age group, because of leaving school early, are not viewed by employers as having the skills necessary for productive employment. Indeed, many of them are not even searching for work (Table D1.1), which may well reflect how difficult the labour-market situation for this group really this.

… later exiters fare significantly better.

Employment/population ratios for 20 to 24 year-olds who are not enrolled generally exceed 70 per cent (exceptions are Finland, France, Greece, Italy, Spain) and among 25 to 29 year-olds are between 70 and 85 per cent in most countries. The uniformity that can be observed in employment/population ratios of men and women during the years of education begins to diverge after completion of education, with relatively more women than men out of the labour force, particu-

Chart D1.4. **Employment/population ratios of persons 15 to 19, 20 to 24 and 25 to 29 years of age not in education (1996)**



Countries are ranked in descending order of the employment/population ratios of men in the age group 20-24.
Source: OECD.

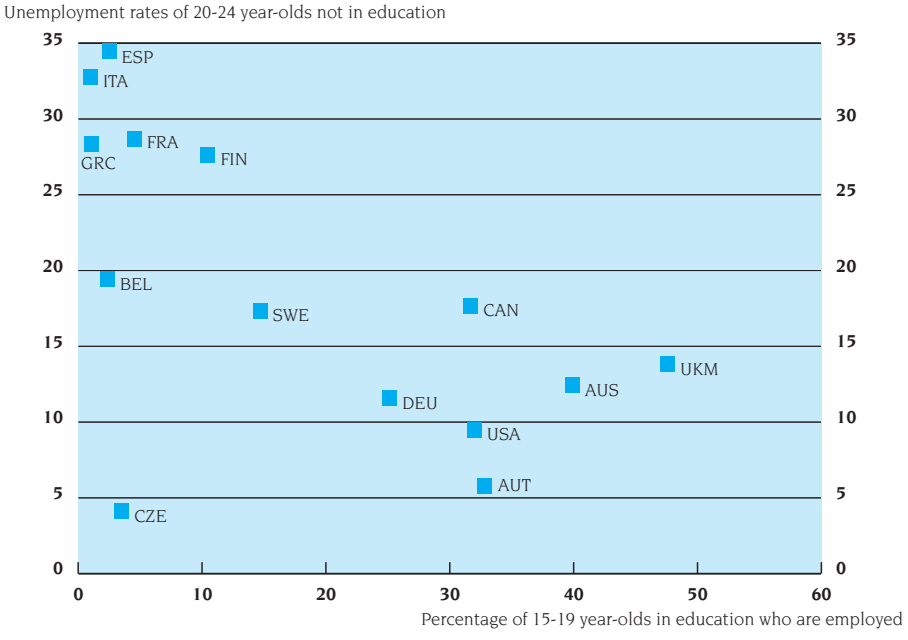
larly between the ages of 25 and 29 and undoubtedly for reasons associated with child-bearing and child-rearing.

The effect of work while in education on the risk of unemployment following the completion of education

Work while in education seems to facilitate eventual definitive entry into the labour market.

There is a strong association across countries between a relatively high incidence of work while in education and a relatively low incidence of post-schooling unemployment (Chart D1.5). In countries with strong apprenticeship programmes, this reflects the fact that such programmes ensure a relatively seamless transition from education into work. In other countries, the high employment rates of students and the relatively low prevalence of post-education unemployment (Australia, Canada, the United Kingdom and the United States) may both reflect a generally more favourable labour market for young people, whether they are in education or have already completed their schooling. There is also reason to suspect that early contact with the labour market may facilitate later integration into the work force, because of greater familiarity with job search and with potential working conditions and environments. However, because the two age groups shown in Chart D1.4 are for different cohorts and the association is at the aggregate level, this conclusion must be considered tentative. It is nonetheless striking that youth unemployment rates tend to be lower precisely in countries where work by students is a more common phenomenon.

Chart D1.5. **Percentage of 15-19 year-olds in education who are employed and unemployment rates of 20-24 year-olds not in education (1996)**



Source: OECD.

DEFINITIONS

Data were obtained from a special OECD collection.

The data for this chapter were obtained from a special OECD collection with a reference period in the early part of the calendar year; they therefore exclude summer employment. The labour force statuses shown in this section are defined in accordance with the ILO guidelines, with one exception. For the purposes of these indicators, persons in work-study programmes (see below) have been classified separately, without reference to their labour force status during the survey reference week (except for Chart D1.5). Because such persons may not necessarily be in the work component of their programmes during the reference week, they may not be observed as employed at the time the survey is conducted.

"Work-study programmes" are combinations of work and study periods where both aspects are parts of an integrated, formal education/training activity (examples are the "dual system" in Germany, "apprentissage" or "formation en alternance" in France and Belgium, internship or co-operative education in Canada, apprenticeship in Ireland and youth training in the United Kingdom). Vocational education/training occurs not only in school settings but also in the workplace. Sometimes students or trainees are paid, sometimes not. There is a strong relationship between the nature of the work and the courses or training given.

The enrolment rates shown in Table D1.1 are from labour force survey data and are essential to understanding the education/work patterns described in this chapter. However, they may not agree with those produced from national administrative statistics. There are a number of reasons for this.

The first is that age may not be measured in the same way. For example, in the administrative data, both enrolment and age is measured as of January 1st for countries in the northern hemisphere, whereas in some labour force surveys, enrolment is measured as of the reference week but the recorded age is the age that will be attained at the end of the calendar year, even if the survey is conducted in the early part of the year. Under these conditions, the recorded enrolment rates may reflect in some cases a population that is in fact almost one year younger than the specified age range. At ages when movements out of education may be significant, this can have an important impact on enrolment rates.

A second source of discrepancy concerns the fact that there may be young people enrolled in more than one programme. Such persons would be counted twice in the administrative statistics but only once in the labour force survey. In addition not all enrolments may be captured in the administrative statistics, particularly enrolment in for-profit institutions.

For all of these reasons (and there may be others), the enrolment rates shown cannot be directly compared with those appearing in Chapter C of this publication, nor are they necessarily comparable across countries, particularly if the measurement of age is different. Thus the estimates here need to be treated with some caution.

Table D1.1. **The education and work status of the youth population, by age group (1996)**

	Age group	In education					Not in education				Total
		In work-study programme	Employed	Unemployed	Not in labour force	Sub total	Employed	Unemployed	Not in labour force	Sub total	
Australia	15-19	m	29.4	6.0	38.6	74.0	17.2	6.0	2.8	26.0	100
	20-24	m	19.8	2.4	9.3	31.5	53.4	7.5	7.6	68.5	100
	25-29	m	11.2	0.8	2.8	14.8	64.5	5.7	14.9	85.2	100
Austria	15-19	25.3	1.0	0.5	53.1	79.9	13.7	1.9	4.5	20.1	100
	20-24	3.3	5.9	0.7	20.6	30.6	58.9	3.7	6.9	69.4	100
	25-29	1.1	6.7	0.4	7.1	15.4	72.1	4.0	8.5	84.6	100
Belgium	15-19	1.5	0.7	0.2	85.4	87.8	3.3	1.6	7.3	12.2	100
	20-24	0.7	2.5	0.9	35.2	39.3	42.5	10.4	7.9	60.7	100
	25-29	0.3	3.7	0.5	2.6	7.0	75.0	8.9	9.1	93.0	100
Canada	15-19	m	26.2	5.0	51.9	83.0	8.9	3.7	4.4	17.0	100
	20-24	m	16.4	1.5	19.9	37.7	43.7	9.3	9.2	62.3	100
	25-29	m	6.6	0.5	5.2	12.3	67.0	8.7	12.1	87.7	100
Czech Republic	15-19	m	2.3	0.1	67.9	70.4	17.2	3.1	9.3	29.6	100
	20-24	m	0.8	0.1	13.7	14.6	72.4	3.0	10.0	85.4	100
	25-29	m	0.3	n	1.0	1.3	84.2	3.5	11.0	98.7	100
Finland	15-19	n	8.7	13.2	62.7	84.5	10.0	3.2	2.3	15.5	100
	20-24	0.2	12.0	9.8	26.1	48.1	32.8	12.4	6.6	51.9	100
	25-29	0.1	9.0	2.9	7.6	19.7	62.9	8.3	9.1	80.3	100
France	15-19	5.3	0.4	0.1	90.2	96.1	1.1	1.6	1.3	3.9	100
	20-24	4.8	3.1	0.7	42.4	50.9	31.5	12.6	4.9	49.1	100
	25-29	1.6	3.9	0.5	5.0	11.0	66.7	13.2	9.1	89.0	100
Germany	15-19	20.8	1.8	0.7	67.2	90.5	5.8	1.6	2.0	9.5	100
	20-24	8.9	3.6	0.2	19.4	32.0	52.9	6.8	8.2	68.0	100
	25-29	1.1	3.9	0.2	8.5	13.7	68.7	6.6	11.0	86.3	100
Greece	15-19	0.3	0.6	0.9	78.5	80.4	8.7	5.9	5.1	19.6	100
	20-24	0.2	1.4	1.6	27.1	30.3	42.0	16.5	11.1	69.7	100
	25-29	n	1.1	0.6	3.0	4.6	65.7	13.0	16.7	95.4	100
Italy	15-19	m	0.6	0.7	70.7	72.0	11.8	6.3	9.9	28.0	100
	20-24	m	1.0	1.6	29.3	32.0	34.2	16.6	17.3	68.0	100
	25-29	m	1.3	0.8	10.7	12.7	56.4	12.2	18.6	87.3	100
Spain	15-19	0.2	1.6	2.7	69.0	73.5	13.0	9.1	4.4	26.5	100
	20-24	0.1	4.3	5.5	34.0	43.9	33.4	17.6	5.0	56.1	100
	25-29	n	4.9	4.4	6.9	16.2	53.0	19.3	11.5	83.8	100
Sweden	15-19	m	12.5	3.3	70.6	86.5	6.1	1.8	5.6	13.5	100
	20-24	m	7.8	4.8	26.9	39.6	42.1	8.8	9.5	60.4	100
	25-29	m	8.0	2.5	9.2	19.6	66.2	7.8	6.3	80.4	100
Switzerland	15-19	32.3	12.4	(1.4)	46.1	92.3	4.3	(0.9)	(2.5)	7.7	100
	20-24	9.2	20.9	(1.4)	15.3	46.7	46.6	(2.4)	(4.3)	53.3	100
	25-29	1.0	22.4	(0.8)	4.2	28.3	57.0	5.3	9.4	71.7	100
United Kingdom	16-19	8.1	25.3	3.9	32.6	69.9	17.9	7.2	5.0	30.1	100
	20-24	2.7	11.4	1.2	12.3	27.6	53.8	8.5	10.1	72.4	100
	25-29	1.1	8.7	0.8	3.0	13.6	65.6	6.9	13.9	86.4	100
United States	15-19	m	25.9	4.3	51.4	81.6	10.1	2.8	5.5	18.4	100
	20-24	m	19.3	1.1	12.2	32.5	51.2	5.5	10.8	67.5	100
	25-29	m	8.6	0.4	2.9	11.9	71.5	4.1	12.5	88.1	100
Country mean	**15-19**	**10.4**	**10.0**	**2.9**	**62.4**	**81.5**	**9.9**	**35.8**	**4.8**	**18.5**	**100**
	20-24	**3.3**	**8.7**	**2.2**	**22.9**	**35.8**	**46.1**	**9.4**	**8.6**	**64.2**	**100**
	25-29	**0.7**	**6.7**	**1.1**	**5.3**	**13.5**	**66.4**	**8.5**	**11.6**	**86.5**	**100**

( ) Figures in brackets are subject to high sampling variability.
Source: OECD Education Database. See Annex 3 for notes.

Table D1.2*a*. **The education and work status of young men, by age group (1996)**

	Age group	In education					Not in education				Total
		In work-study programme	Employed	Unemployed	Not in labour force	Sub total	Employed	Unemployed	Not in labour force	Sub total	
Australia	15-19	m	27.5	5.2	40.4	73.1	17.7	7.3	1.9	26.9	100
	20-24	m	20.5	2.2	9.0	31.7	56.3	9.1	2.9	68.3	100
	25-29	m	12.4	0.6	2.7	15.7	73.1	7.2	4.1	84.3	100
Austria	15-19	32.6	1.2	0.4	45.9	80.2	12.0	1.6	6.2	19.8	100
	20-24	4.3	5.9	0.9	22.0	33.0	56.1	4.5	6.4	67.0	100
	25-29	1.3	7.8	0.6	8.7	18.4	73.9	4.3	3.3	81.6	100
Belgium	15-19	2.1	1.0	0.2	84.3	87.7	4.3	1.5	6.6	12.3	100
	20-24	0.8	2.8	0.9	33.5	38.0	47.0	9.4	5.7	62.0	100
	25-29	0.4	4.1	0.4	2.9	7.7	81.8	6.3	4.2	92.3	100
Canada	15-19	m	24.7	5.7	51.9	82.4	9.1	4.4	4.1	17.6	100
	20-24	m	15.0	1.6	20.0	36.6	46.1	11.5	5.7	63.4	100
	25-29	m	6.9	0.6	5.3	12.7	71.2	10.2	5.8	87.3	100
Czech Republic	15-19	m	2.6	n	65.4	68.0	17.2	2.9	11.9	32.0	100
	20-24	m	1.0	0.1	14.0	15.1	76.9	3.3	4.6	84.9	100
	25-29	m	0.3	0.1	1.1	1.5	93.5	2.4	2.7	98.5	100
Finland	15-19	n	9.1	12.9	60.7	82.6	12.3	3.6	1.4	17.4	100
	20-24	0.3	11.8	8.8	23.3	44.2	37.2	13.8	4.7	55.8	100
	25-29	0.2	9.2	2.5	7.3	19.3	71.5	7.2	2.1	80.7	100
France	15-19	7.3	0.5	0.1	87.3	95.3	1.7	1.8	1.3	4.7	100
	20-24	5.1	2.7	0.4	40.2	48.5	36.9	11.8	2.8	51.5	100
	25-29	1.7	3.8	0.4	4.3	10.1	75.1	12.3	2.5	89.9	100
Germany	15-19	23.6	1.7	0.8	63.4	89.4	6.9	1.8	1.9	10.6	100
	20-24	8.6	3.6	n	19.1	31.3	57.0	7.9	3.8	68.7	100
	25-29	1.1	4.8	0.3	10.9	17.1	72.9	7.1	2.9	82.9	100
Greece	15-19	0.5	0.9	0.4	80.0	81.8	10.6	4.2	3.5	18.2	100
	20-24	0.1	1.1	1.1	26.5	28.8	54.3	12.9	4.0	71.2	100
	25-29	n	1.3	0.5	3.2	5.0	82.8	10.0	2.3	95.0	100
Italy	15-19	m	0.7	0.4	69.2	70.2	14.2	6.4	9.2	29.8	100
	20-24	m	1.1	1.0	27.3	29.4	39.4	16.5	14.7	70.6	100
	25-29	m	1.3	0.7	10.5	12.5	66.8	12.1	8.6	87.5	100
Spain	15-19	0.2	2.0	2.6	63.7	68.5	18.1	9.0	4.4	31.5	100
	20-24	0.1	4.0	3.7	30.3	38.0	41.0	17.5	3.6	62.0	100
	25-29	n	4.8	3.4	6.8	15.0	62.5	18.4	4.1	85.0	100
Sweden	15-19	m	10.9	2.5	71.5	84.9	5.9	1.8	7.4	15.1	100
	20-24	m	5.5	4.8	25.6	35.9	45.2	10.4	8.4	64.1	100
	25-29	m	7.8	2.6	8.8	19.2	69.4	8.3	3.0	80.8	100
Switzerland	15-19	36.5	11.9	(1.6)	42.4	92.5	4.1	(1.3)	(2.0)	7.5	100
	20-24	10.9	20.5	(1.8)	15.9	49.2	44.9	(2.3)	(3.7)	50.8	100
	25-29	0.9	24.8	(0.2)	4.8	30.7	62.5	5.0	(1.8)	69.3	100
United Kingdom	16-19	10.6	22.6	4.2	32.5	69.9	18.0	9.1	3.1	30.1	100
	20-24	3.3	10.3	1.4	12.2	27.2	57.1	11.8	3.9	72.8	100
	25-29	1.1	8.8	0.8	2.7	13.3	73.0	8.9	4.8	86.7	100
United States	15-19	m	24.7	4.5	52.6	81.8	11.2	3.3	3.7	18.2	100
	20-24	m	18.8	0.9	12.7	32.3	57.1	5.6	4.9	67.7	100
	25-29	m	8.5	0.4	2.4	11.4	79.9	4.2	4.6	88.6	100
Country mean	**15-19**	**12.6**	**9.5**	**2.8**	**60.7**	**80.5**	**10.9**	**4.0**	**4.6**	**19.5**	**100**
	20-24	**3.7**	**8.3**	**2.0**	**22.1**	**34.6**	**50.2**	**9.9**	**5.3**	**65.4**	**100**
	25-29	**0.8**	**7.1**	**0.9**	**5.5**	**14.0**	**74.0**	**8.3**	**3.8**	**86.0**	**100**

( ) Figures in brackets are subject to high sampling variability.
Source: OECD Education Database. See Annex 3 for notes.

Table D1.2*b*. **The education and work status of young women, by age group (1996)**

	Age group	In education					Not in education				Total
		In work-study programme	Employed	Unemployed	Not in labour force	Sub total	Employed	Unemployed	Not in labour force	Sub total	
Australia	15-19	m	31.4	6.8	36.7	75.0	16.7	4.6	3.8	25.0	100
	20-24	m	19.0	2.6	9.7	31.4	50.4	5.9	12.3	68.6	100
	25-29	m	9.9	1.0	3.0	14.0	56.0	4.3	25.7	86.0	100
Austria	15-19	17.4	0.7	0.6	60.8	79.5	15.4	2.3	2.7	20.5	100
	20-24	2.4	5.8	0.6	19.3	28.1	61.7	2.8	7.4	71.9	100
	25-29	1.0	5.6	0.3	5.4	12.2	70.3	3.6	13.9	87.8	100
Belgium	15-19	0.9	0.4	0.1	86.5	87.9	2.4	1.7	8.1	12.1	100
	20-24	0.5	2.3	1.0	36.9	40.7	37.8	11.4	10.1	59.3	100
	25-29	0.2	3.2	0.7	2.2	6.3	67.9	11.7	14.1	93.7	100
Canada	15-19	m	27.7	4.3	51.8	83.8	8.6	2.9	4.8	16.2	100
	20-24	m	17.8	1.3	19.8	38.9	41.3	7.0	12.8	61.1	100
	25-29	m	6.4	0.4	5.1	11.9	62.7	7.1	18.3	88.1	100
Czech Republic	15-19	m	2.1	0.2	70.6	72.9	17.1	3.4	6.6	27.1	100
	20-24	m	0.6	n	13.4	14.0	67.7	2.7	15.6	86.0	100
	25-29	m	0.2	n	0.9	1.2	74.4	4.8	19.7	98.8	100
Finland	15-19	n	8.2	13.5	64.7	86.5	7.5	2.8	3.1	13.5	100
	20-24	0.1	12.2	10.9	29.3	52.6	27.8	10.8	8.8	47.4	100
	25-29	n	8.8	3.4	7.9	20.1	54.1	9.5	16.3	79.9	100
France	15-19	3.3	0.2	0.2	93.2	96.9	0.6	1.3	1.2	3.1	100
	20-24	4.4	3.5	1.0	44.5	53.4	26.1	13.4	7.0	46.6	100
	25-29	1.5	4.0	0.6	5.8	11.9	58.4	14.0	15.7	88.1	100
Germany	15-19	17.8	1.8	0.7	71.4	91.7	4.7	1.4	2.2	8.3	100
	20-24	9.2	3.5	0.3	19.7	32.8	48.6	5.7	12.9	67.2	100
	25-29	1.0	3.0	0.2	6.0	10.1	64.3	6.0	19.6	89.9	100
Greece	15-19	0.1	0.4	1.3	77.2	79.0	7.0	7.5	6.5	21.0	100
	20-24	0.2	1.7	2.1	27.6	31.5	31.8	19.6	17.2	68.5	100
	25-29	n	0.9	0.7	2.8	4.3	49.6	15.8	30.2	95.7	100
Italy	15-19	m	0.5	1.0	72.4	73.8	9.2	6.2	10.7	26.2	100
	20-24	m	1.0	2.2	31.4	34.6	28.8	16.7	19.9	65.4	100
	25-29	m	1.2	1.0	10.8	13.0	45.8	12.3	28.9	87.0	100
Spain	15-19	0.1	1.2	2.9	74.6	78.8	7.5	9.2	4.5	21.2	100
	20-24	0.1	4.7	7.5	37.9	50.2	25.5	17.8	6.5	49.8	100
	25-29	0.1	5.0	5.5	7.0	17.5	42.9	20.3	19.4	82.5	100
Sweden	15-19	m	14.2	4.2	69.7	88.1	6.3	1.9	3.7	11.9	100
	20-24	m	10.2	4.8	28.3	43.3	38.9	7.1	10.7	56.7	100
	25-29	m	8.2	2.4	9.5	20.1	62.9	7.2	9.8	79.9	100
Switzerland	15-19	27.8	13.0	(1.2)	50.0	92.0	4.5	(0.4)	(3.1)	8.0	100
	20-24	7.5	21.2	(1.0)	14.6	44.2	48.3	(2.5)	(5.0)	55.8	100
	25-29	1.0	19.7	(1.4)	3.6	25.7	50.9	5.6	17.8	74.3	100
United Kingdom	16-19	5.6	28.1	3.6	32.7	70.0	17.8	5.2	7.0	30.0	100
	20-24	2.0	12.7	1.0	12.4	28.1	50.2	5.1	16.5	71.9	100
	25-29	1.1	8.7	0.7	3.3	13.9	57.9	4.9	23.4	86.1	100
United States	15-19	m	27.2	3.9	50.2	81.4	8.9	2.3	7.3	18.6	100
	20-24	m	19.8	1.3	11.7	32.7	45.3	5.4	16.6	67.3	100
	25-29	m	8.7	0.4	3.4	12.5	63.5	4.0	20.0	87.5	100
Country mean	**15-19**	**8.1**	**10.5**	**3.0**	**64.2**	**82.5**	**8.9**	**3.5**	**5.0**	**17.5**	**100**
	20-24	**2.9**	**9.1**	**2.5**	**23.8**	**37.1**	**42.0**	**8.9**	**12.0**	**62.9**	**100**
	25-29	**0.6**	**6.2**	**1.2**	**5.1**	**13.0**	**58.8**	**8.7**	**19.5**	**87.0**	**100**

( ) Figures in brackets are subject to high sampling variability.
Source: OECD Education Database. See Annex 3 for notes.

EXPECTED YEARS IN EDUCATION, EMPLOYMENT AND NON-EMPLOYMENT BETWEEN THE AGES OF 15 AND 29

POLICY CONTEXT

The past decade has seen an extension of participation in education by young people in all countries, who as a result delay their definitive entry into the world of work. The increase in expected years of education over the 15 to 29 age period over the last decade has occurred at the expense of time spent about equally out of employment and in employment.

EVIDENCE AND EXPLANATIONS

Young people spend more time in education today than their counterparts did a decade ago.

The tendency for young people to prolong their education over the last decade has been, in part, a reaction to unfavourable labour-market conditions. When young people do eventually enter the labour market following completion of education, they now have higher formal qualifications than was the case in the past, which they have generally obtained at the expense of earlier participation and experience in the labour market. One question of interest is whether the additional education actually pays off in labour-market terms, particularly in adverse economic conditions. Education of course has pay-offs throughout working life, so that even if the benefits are not evident in the immediate, they may be so over the longer term. What currently is the expected pattern of participation in education and the labour market of the average 15 year-old over the 15 to 29 age period and how has this changed over time?

The increase corresponds on average to almost one and a half additional years of education.

Table D2.1 provides some indicative information on this. It shows the number of years which a person at age 15 can expect to spend in education and out of education between the ages of 15 and 29, as well as how many years he/she can expect to spend in employment and out of employment during each of those periods (see definitions below for the method of calculation). The calculation assumes unchanging labour-market conditions.

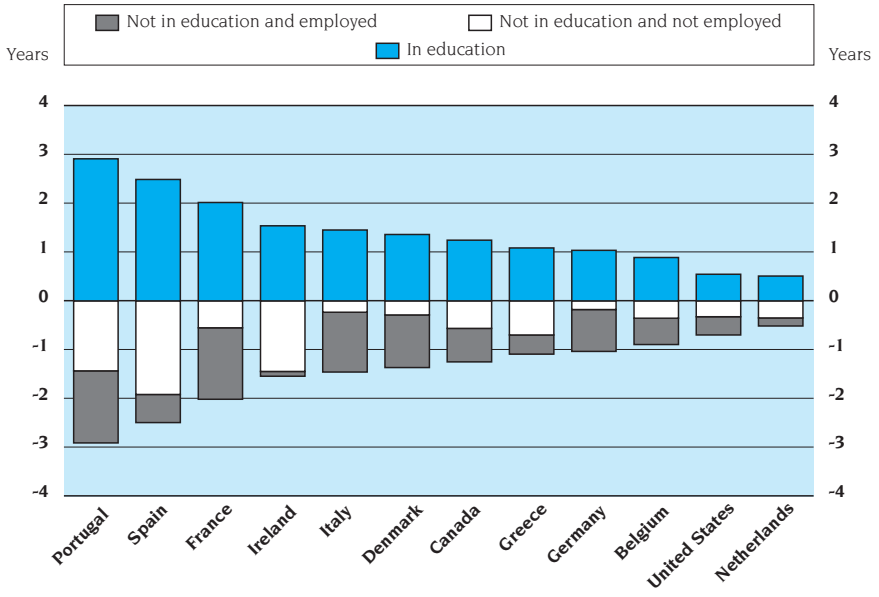
On average, a person aged 15 could expect to be in education for 5.3 years between the ages of 15 and 29 in 1985 and for 6.7 years in 1996. Young persons in Denmark, Finland and the Netherlands had the highest expected years in education in 1996 (between 7.5 and 8.0 years), whereas Greece and Ireland (5.7 years for both) had the lowest.

The largest increases in expected years in education over the period considered were recorded for France (2 years), Spain (2.5 years) and Portugal (2.9 years). Expected years in education have on average increased more for women (1.6 years) than for men (1.2 years).

Time spent out of education has declined, with the decline being divided about equally between employment and non-employment.

The expected years out of education has of course decreased correspondingly (from 9.7 years to 8.3 years), with all three labour force statuses showing reductions. Expected years in employment have decreased on average by 0.7, in unemployment by 0.3 and in inactivity by 0.4 years. The situation for women has not evolved in quite the same way as for men. Whereas expected years in employ-

Chart D2.1. **Change in expected time spent in education and out of education for 15-29 year-olds between 1985 and 1996**



Countries are ranked in descending order of the change between 1985 and 1996 of the expected time spent in education.
Source: OECD.

ment have decreased by a full year for men compared to 0.5 years for women, women can expect to spend, on average, about one year less out of the labour force, while men can expect to spend about 0.3 years more. Both can expect to spend less time in unemployment (by about 0.4 years).

In absolute terms, young people can expect to spend less time in unemployment today after completion of schooling than ten years ago…

It is worthy of note that the expected amount of time spent by young people out of education and in unemployment has decreased in absolute terms in almost all countries and for both men and women (with the notable exception of Greece). This is not entirely surprising because with the reduction in expected years spent out of education, one would expect a reduction as well in time spent in some of the labour force statuses. Still, given the general perception that the youth unemployment situation has been deteriorating, one would not a priori have expected to observe that young people can expect to spend less time in unemployment than ten years ago. On the other hand, if young people are prolonging their education, then one would hope to see some payoff in the labour market after completion of schooling. And there has been a proportionally greater drop in expected time spent in unemployment (from 1.5 to 1.2 years) than in expected time spent in employment (from 6.6 to 5.9 years).

… but the jobs they are finding may not be of the same quality as in the past.

Although young people can expect to spend less time in unemployment, the time spent in employment may not necessarily be in jobs of good quality from the perspective of the job-holders, that is, young people may be accepting temporary jobs, part-time jobs or jobs of lower pay than in the past because those

types of jobs are what the labour market currently has to offer (see E*mployment Outlook*, OECD 1998, Chapter 3). An investigation into the characteristics of jobs held by the young employed population will figure in future issues of this publication.

DEFINITIONS

The statistics presented here are calculated from labour-force survey data on age-specific proportions of young people in each of the specified categories. These proportions are then summed up over the 15 to 29 age-group to yield the expected number of years spent in the indicated statuses. The calculation thus assumes that young people currently 15 will show the same pattern of education and work between the ages of 15 and 29 as people currently between those age limits are experiencing in the given data year.

Data for European countries are from the Community Labour Force Survey (CLFS), *for Canada from the Labour Force Survey and for the United States from the Current Population Survey.*

Persons in apprenticeship programmes are considered to be both in education and employed. Persons in education may include those attending part-time as well as full-time. The definitions of the various labour force statuses are based on the ILO guidelines. Data for European Union countries are taken from the harmonised data supplied to EUROSTAT in the framework of the Community Labour Force Survey.

Table D2.1. **Expected years in education and work of the population 15 to 29 years of age (1985, 1996)**

		Expected years in education			Expected years not in education			
		Not employed	Employed	Total	Employed	Unemployed	Not in labour force	Total
Austria	1996	4.3	2.1	6.4	7.3	0.5	0.8	8.6
Belgium	1985	5.5	0.3	5.7	6.6	1.4	1.2	9.3
	1996	6.3	0.4	6.6	6.1	1.0	1.2	8.4
Canada	1985	3.5	1.9	5.4	6.7	1.4	1.5	9.6
	1996	4.2	2.4	6.6	6.0	1.1	1.3	8.4
Denmark	1985	2.7	3.9	6.6	6.9	1.0	0.6	8.4
	1996	3.0	4.9	8.0	5.8	0.6	0.7	7.0
Finland	1996	6.4	1.5	7.9	4.9	1.2	0.9	7.1
France	1985	4.5	0.7	5.2	6.8	1.7	1.2	9.8
	1996	6.5	0.7	7.2	5.4	1.5	0.8	7.8
Germany	1985	4.3	2.0	6.3	6.7	0.7	1.3	8.7
	1996	5.0	2.4	7.3	5.8	0.7	1.1	7.7
Greece	1985	4.4	0.2	4.6	6.2	1.2	2.9	10.4
	1996	5.6	0.1	5.7	5.8	1.6	1.8	9.3
Ireland	1985	3.6	0.5	4.1	7.1	2.0	1.7	10.9
	1996	5.0	0.6	5.7	7.0	1.2	1.1	9.3
Italy	1985	4.5	0.2	4.7	6.4	1.8	2.1	10.3
	1996	5.9	0.2	6.1	5.1	1.7	2.0	8.9
Netherlands	1987	4.2	2.8	7.0	5.7	0.8	1.4	8.0
	1996	3.8	3.7	7.5	5.6	0.5	1.4	7.5
Portugal	1986	3.1	0.5	3.6	8.1	1.5	1.8	11.4
	1996	5.7	0.8	6.5	6.7	0.9	0.9	8.5
Spain	1986	4.5	n	4.5	5.3	3.1	2.0	10.5
	1996	6.5	0.5	7.0	4.7	2.2	1.0	8.0
United States	1985	3.6	2.0	5.6	7.0	1.2	1.2	9.4
	1996	3.6	2.6	6.2	6.6	0.6	1.4	8.7
Country mean[1]	**1985**[2]	**4.0**	**1.4**	**5.3**	**6.6**	**1.5**	**1.6**	**9.7**
	1996	**5.1**	**1.6**	**6.7**	**5.9**	**1.2**	**1.2**	**8.3**

1. Excludes Austria and Finland.
2. The mean specified for 1985 also includes countries for which the reference year was 1986 or 1987.

Sources: European countries: European Union Labour Force Survey (EUROSTAT); United States: Current Population Survey; Canada: Labour Force Survey.

Table D2.2*a*. **Expected years in education and work of men 15 to 29 years of age (1985, 1996)**

		Expected years in education			Expected years not in education			
		Not employed	Employed	Total	Employed	Unemployed	Not in labour force	Total
Austria	1996	4.1	2.7	6.8	7.3	0.6	0.4	8.2
Belgium	1985	5.5	0.4	5.8	7.5	1.0	0.6	9.2
	1996	6.2	0.4	6.6	6.7	0.9	0.8	8.4
Canada	1985	3.6	1.8	5.5	7.1	1.7	0.7	9.5
	1996	4.2	2.3	6.5	6.4	1.3	0.8	8.5
Denmark	1985	2.4	4.1	6.5	7.4	0.8	0.3	8.5
	1996	2.7	5.2	7.9	6.2	0.5	0.4	7.1
Finland	1996	6.2	1.6	7.8	5.4	1.3	0.4	7.2
France	1985	4.4	0.9	5.2	7.8	1.7	0.3	9.8
	1996	6.3	0.8	7.1	6.1	1.5	0.3	7.9
Germany	1985	4.4	2.3	6.7	7.3	0.7	0.3	8.3
	1996	4.9	2.6	7.6	6.1	0.8	0.4	7.4
Greece	1985	4.8	0.3	5.1	8.2	1.1	0.5	9.9
	1996	5.6	0.2	5.8	7.4	1.3	0.6	9.2
Ireland	1985	3.5	0.7	4.2	8.1	2.5	0.3	10.8
	1996	4.8	0.7	5.5	7.5	1.5	0.6	9.5
Italy	1985	4.6	0.2	4.9	8.0	1.7	0.5	10.1
	1996	5.7	0.2	6.0	6.1	1.8	1.1	9.0
Netherlands	1987	4.4	3.4	7.7	6.1	0.7	0.5	7.3
	1996	3.8	3.9	7.8	5.7	0.5	1.0	7.2
Portugal	1986	2.8	0.6	3.4	9.7	1.3	0.6	11.6
	1996	5.3	0.7	6.1	7.4	0.9	0.7	8.9
Spain	1986	4.4	0.04	4.5	6.6	3.5	0.4	10.5
	1996	6.1	0.5	6.6	5.6	2.2	0.6	8.4
United States	1985	3.7	2.1	5.8	7.8	1.3	0.1	9.3
	1996	3.8	2.5	6.3	7.4	0.7	0.7	8.7
Country mean[1]	**1985**[2]	**4.0**	**1.4**	**5.4**	**7.6**	**1.5**	**0.4**	**9.6**
	1996	**5.0**	**1.7**	**6.6**	**6.6**	**1.2**	**0.7**	**8.4**

1. Excludes Austria and Finland.
2. The mean specified for 1985 also includes countries for which the reference year was 1986 or 1987.

Sources: European countries: European Union Labour Force Survey (EUROSTAT); United States: Current Population Survey; Canada: Labour Force Survey.

Table D2.2*b*. **Expected years in education and work of women 15 to 29 years of age (1985, 1996)**

		Expected years in education			Expected years not in education			
		Not employed	Employed	Total	Employed	Unemployed	Not in labour force	Total
Austria	1996	4.5	1.6	6.0	7.3	0.5	1.2	9.0
Belgium	1985	5.4	0.2	5.7	5.7	1.8	1.8	9.3
	1996	6.4	0.3	6.7	5.5	1.2	1.6	8.3
Canada	1985	3.4	1.9	5.3	6.3	1.1	2.3	9.7
	1996	4.2	2.6	6.7	5.6	0.8	1.8	8.3
Denmark	1985	3.0	3.7	6.7	6.3	1.1	0.8	8.3
	1996	3.4	4.6	8.0	5.4	0.6	1.0	7.0
Finland	1996	6.6	1.5	8.0	4.4	1.1	1.4	7.0
France	1985	4.6	0.6	5.2	6.0	1.7	2.1	9.8
	1996	6.7	0.7	7.4	4.7	1.6	1.3	7.6
Germany	1985	4.2	1.8	5.9	6.1	0.7	2.2	9.1
	1996	5.0	2.1	7.1	5.5	0.6	1.7	7.9
Greece	1985	4.2	0.2	4.3	4.4	1.3	4.9	10.7
	1996	5.6	0.1	5.7	4.4	1.9	2.9	9.3
Ireland	1985	3.7	0.4	4.0	6.2	1.6	3.1	11.0
	1996	5.3	0.6	5.8	6.6	1.0	1.6	9.2
Italy	1985	4.4	0.1	4.5	4.8	2.0	3.7	10.5
	1996	6.1	0.2	6.3	4.1	1.7	2.9	8.7
Netherlands	1987	4.1	2.2	6.3	5.4	0.8	2.4	8.7
	1996	3.8	3.5	7.3	5.4	0.4	1.8	7.7
Portugal	1986	3.4	0.4	3.8	6.7	1.6	3.0	11.2
	1996	6.1	0.8	6.9	5.9	1.0	1.2	8.1
Spain	1986	4.6	0.03	4.6	3.9	2.7	3.8	10.4
	1996	7.0	0.5	7.5	3.7	2.3	1.5	7.5
United States	1985	3.5	2.0	5.5	6.2	1.1	2.2	9.5
	1996	3.7	2.7	6.4	5.9	0.6	2.2	8.6
Country mean[1]	**1985**[2]	**4.0**	**1.1**	**5.2**	**5.7**	**1.5**	**2.7**	**9.8**
	1996	**5.3**	**1.6**	**6.8**	**5.2**	**1.1**	**1.8**	**8.2**

1. Excludes Austria and Finland.
2. The mean specified for 1985 also includes countries for which the reference year was 1986 or 1987.

Sources: European countries: European Union Labour Force Survey (EUROSTAT); United States: Current Population Survey; Canada: Labour Force Survey.

THE REASONS FOR YOUTH UNEMPLOYMENT

POLICY CONTEXT

Youth unemployment in the popular imagination is associated with difficulties in finding a first job. However, not all youth unemployment is of this kind. A clearer picture of the nature of youth unemployment is necessary in order to appropriately define policies to facilitate the transition to working life and to direct such policies to persons at risk.

EVIDENCE AND EXPLANATIONS

The youth labour market is characterised by the massive nature of labour force entry every year.

There is one particularity that characterises youth participation in the labour force, and that is the massive nature of labour-market entry by youth. On average, the equivalent of almost a full single-year cohort enters the labour market every year. The annual flow into unemployment for this group tends to be larger than that of any other demographic group. This by itself would result in higher unemployment rates for youth, all other things being equal. In addition, many young entrants have had little to no previous experience of job search or of working life, which may further complicate the matching of job-seekers and jobs in the labour market.

Problems in finding the first job are one of many reasons for youth unemployment.

In the general public's mind, youth unemployment is generally associated with problems in obtaining a first job following the completion of schooling. However, not all unemployed and out-of-school youth are looking for their first post-schooling job. Some may have lost jobs obtained after completion of schooling as a result of economic layoffs. Indeed, because of seniority provisions and "last-to-be-hired-first-to-be-fired" practices, one might expect young persons to be more subject to such layoffs. Furthermore it is common for young workers, at least in countries where jobs are relatively easy to find, to engage in "job-shopping", changing employment until a satisfactory job is found or until family responsibilities essentially impose employment stability on them. In addition, in some countries, young workers are often hired on a temporary basis, either because employers use temporary jobs to screen for productive workers or to manage fluctuating labour requirements in the face of restrictions on layoffs, or because such jobs are subsidised in the framework of government job-creation programmes for youth. In many cases, unemployment resulting from the end of such temporary jobs may very well reflect a disguised form of first-entry unemployment.

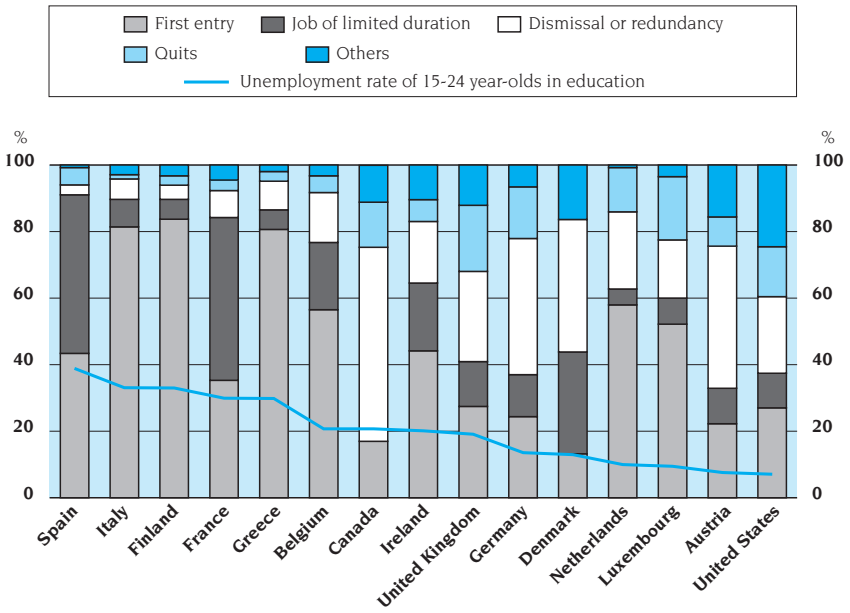
This indicator looks at the extent of first-entry problems relative to other reasons for youth unemployment.

The question of interest in this context is how significant are first-entry problems among unemployed youth and to what extent are they responsible for the high levels of youth unemployment. Chart D3.1 shows the distribution of youth unemployment by reason.

First-entry problems are serious in some countries. In others, significant numbers of young unemployed have had a previous job.

The first observation one can make is that the extent of first-entry problems varies considerably across countries, accounting for as much as 80 per cent of youth unemployment in Finland, Greece and Italy and as little as around 20 to 25 per cent in Austria, Canada, Germany, the United Kingdom and the United States and even less than 15 per cent in Denmark. In all but three countries

Chart D3.1. **Distribution of unemployed 15-24 year-olds not in education by self-report of most important reason for unemployment (1996)**



Countries are ranked in descending order of unemployment rate of 15-24 year-olds not in education.
Source: OECD.

(Finland, Greece and Italy), close to half or more of the young unemployed have had a previous post-schooling job, although in certain countries, especially Denmark, France and Spain, this was often a temporary job. Secondly, there is clearly a strong cross-country relationship between the relative importance of first-entry/temporary-job unemployment and the size of the youth unemployment rate (correlation = 0.75).

Youth unemployment seems to be less common in countries where apprenticeship systems are strong or where employment protection legislation is relatively weaker.

Countries where first-entry and temporary-job unemployment account for a smaller percentage of youth unemployment and where youth unemployment rates are lower are those where the apprenticeship system is strong (Austria, Denmark and Germany) or those where employment protection legislation is relatively weaker (Canada, Netherlands, the United Kingdom and the United States).

These results are not entirely surprising. Apprenticeship systems ensure a relatively seamless transition from school into work, particularly if employers retain apprentices as employees after their period of training is over, which seems to be generally the case. Moreover, if employment-protection legislation is relatively weak (that is, there are few constraints on dismissals or layoffs), employers may be less reluctant to hire inexperienced labour in the face of economic uncertainty, and need not hire on a temporary basis. However, apprenticeship programmes may be more effective than flexible labour markets in keeping youth unemployment rates at low levels, because they generally ensure that the school-to-work transition takes place without an intervening period of unemployment.

DEFINITIONS

Previous employment at casual or summer jobs while in education are not counted for the purposes of determining first entry. In the CLFS, under reasons for unemployment there is no explicit category for "quits"; however, there is a category "other" (different from the "other" specified in Table D3.1) which includes persons quitting or leaving their jobs. Since this latter group was the one most notably absent from the CLFS coding scheme, it has been identified with the CLFS "other" category for the purposes of this analysis.

Unemployment is defined in accordance with the ILO guidelines on labour statistics.

Data for European countries are from the Community Labour Force Survey (CLFS), for Canada from the Labour Force Survey and for the United States from the Current Population Survey.

Table D3.1. **Distribution of reasons for unemployment of youth not in school, by age group (1996)**

	Age group	Unemployment rate	First entry	Dismissal or redundancy	Job of limited duration	Quits	Others	Total
Austria	15-24	7.6	22.2	42.7	10.7	8.7	15.7	100
	25-29	5.4	6.0	49.2	8.3	11.3	25.2	100
Belgium	15-24	20.7	56.5	15.0	20.2	5.1	3.3	100
	25-29	10.6	24.1	28.0	30.1	12.4	5.5	100
Canada	15-24	20.7	16.9	58.4	n	13.5	11.1	100
	25-29	10.6	8.4	59.2	n	15.7	16.6	100
Denmark	15-24	12.9	13.2	39.9	30.6	n	16.4	100
	25-29	7.4	1.0	55.6	34.7	n	8.7	100
Finland	15-24	32.9	83.7	4.3	6.0	2.8	3.2	100
	25-29	13.3	34.8	11.4	38.8	8.6	6.3	100
France	15-24	29.9	35.3	8.1	48.9	3.2	4.5	100
	25-29	15.8	12.7	19.7	51.8	8.7	7.1	100
Germany	15-24	13.5	24.4	40.9	12.6	15.5	6.6	100
	25-29	8.7	9.9	51.8	10.0	17.8	10.5	100
Greece	15-24	29.8	80.6	8.6	5.9	2.9	2.0	100
	25-29	14.7	50.5	20.4	12.3	8.9	7.8	100
Ireland	15-24	20.1	44.2	18.5	20.3	6.5	10.4	100
	25-29	11.7	18.4	33.5	18.6	11.4	18.1	100
Italy	15-24	33.0	81.4	6.1	8.3	1.3	2.9	100
	25-29	17.7	61.5	13.5	15.7	3.3	6.0	100
Luxembourg	15-24	9.4	52.1	17.5	7.9	19.0	3.5	100
	25-29	4.5	24.8	42.4	6.5	20.4	5.9	100
Netherlands	15-24	9.9	58.0	23.2	4.8	13.3	0.7	100
	25-29	6.6	35.1	37.3	4.3	19.9	3.5	100
Spain	15-24	38.9	43.3	2.9	47.7	5.2	0.8	100
	25-29	27.6	20.9	5.4	64.0	8.0	1.7	100
United Kingdom	15-24	19.1	27.4	27.1	13.5	19.9	12.1	100
	25-29	11.2	4.7	35.2	15.3	23.1	21.7	100
United States	15-24	7.1	27.0	23.0	10.4	15.0	24.6	100
	25-29	4.8	11.1	32.6	13.2	16.5	26.5	100
Country mean	**15-24**	**20.4**	**44.4**	**22.4**	**17.7**	**9.4**	**7.8**	**100**
	25-29	**11.4**	**21.6**	**33.0**	**23.1**	**13.3**	**11.4**	**100**

United Kingdom: data refer to 1994.
United States: data refer to 1995.
Sources: European countries: European Union Labour Force Survey (EUROSTAT); United States: Current Population Survey; Canada: Labour Force Survey.

YOUTH UNEMPLOYMENT AND EMPLOYMENT BY LEVEL OF EDUCATIONAL ATTAINMENT

Policy context

Youth represent the principal source of new skills in our societies. In most OECD countries, education policy seeks to encourage young people to complete at least secondary education. Since jobs on offer in the labour market require ever higher skill levels, persons with low attainment are often severely penalised in the labour market. Despite progress in attainment levels, many young people are subject to unemployment. Differences in unemployment rates and employment/population ratios by level of educational attainment are an indicator of the degree to which further education improves the economic opportunities of young people.

Evidence and explanations

Unemployment rates for people with less than upper secondary attainment are very high in a number of countries and although falling with age, tend to persist at relatively high levels.

In OECD countries, the unemployment rate of 20 to 24 year-olds with less than upper secondary attainment is on average 21.5 per cent. It is about 10 per cent or less in Austria, Brazil, Korea, Luxembourg, Malaysia, Switzerland, Thailand and Turkey and about 30 per cent or more in Belgium, Finland, France, Ireland, Italy, Poland, Spain and Sweden. Unemployment among persons 25 to 29 years of age who have not completed upper secondary education is a persistent phenomenon; it is about 17 per cent on average in OECD countries and exceed 25 per cent in Finland, France, Poland and Spain.

With completion of upper secondary education, unemployment rates on average drop by about 6 to 7 percentage points.

Upper secondary completion reduces the unemployment rate of 20-24 year-olds by about 6 percentage points on average across OECD countries, and of 25-29 year-olds by about 7 percentage points. To the extent that upper secondary completion has become the norm in most OECD countries, many young persons who do not complete this level can expect to have employment problems throughout their working lives. Among WEI participants, however, unemployment rates of people who have completed upper secondary education in these age-groups remain similar to those who have not.

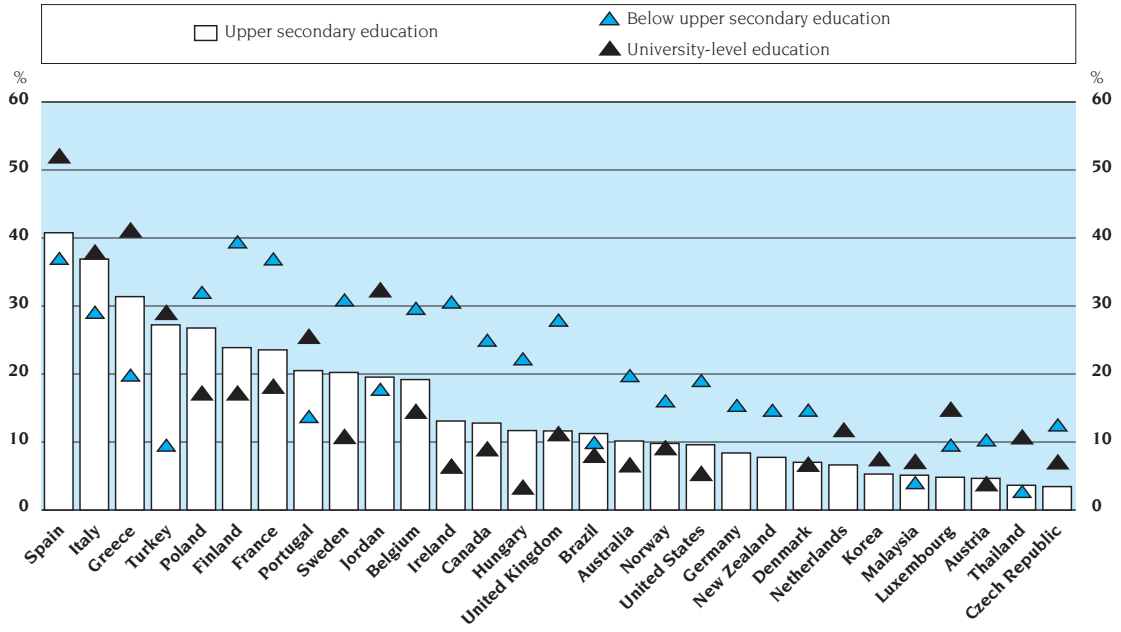
Even high qualifications do not guarantee a job in some countries.

Even persons 25 to 29 years of age who have completed upper secondary education are subject to considerable unemployment in a number of countries, despite having been in the labour market for over five years. The unemployment rate for this group is 25 per cent in Spain and between 15 and 18 per cent in Finland, France, Greece and Italy. Thus possessing what is commonly regarded as the minimum formal qualifications required for the jobs of today does not seem enough in a certain number of countries.

Unemployment rates decline with age and educational attainment.

In most countries, unemployment rates decline with increasing age and educational attainment. University graduates 25 to 29 years of age have rather favourable employment prospects, with unemployment rates of less than 8 per cent in 19 out of 26 OECD countries. Rates nevertheless remain high in a small group of countries, exceeding 10 per cent in France, Jordan and Turkey, 20 per

Chart D4.1. **Unemployment rates for 20-24 year-olds by level of educational attainment (1996)**



Countries are ranked in descending order of the unemployment rate for persons with upper secondary attainment.
Source: OECD.

cent in Greece, and 30 per cent in Italy and Spain. It is in these same countries that unemployment differences between men and women are the greatest, with women having higher rates in all cases.

High unemployment rates among 25 to 29 year-olds tend to be associated with the general state of the labour market.

In general, the unemployment rate of 25 to 29 year-olds, in particular of those with less than tertiary attainment, is closely related to the general state of the labour market. In countries with high unemployment rates among prime age workers, unemployment rates of 25 to 29 year-olds with secondary attainment are also high.

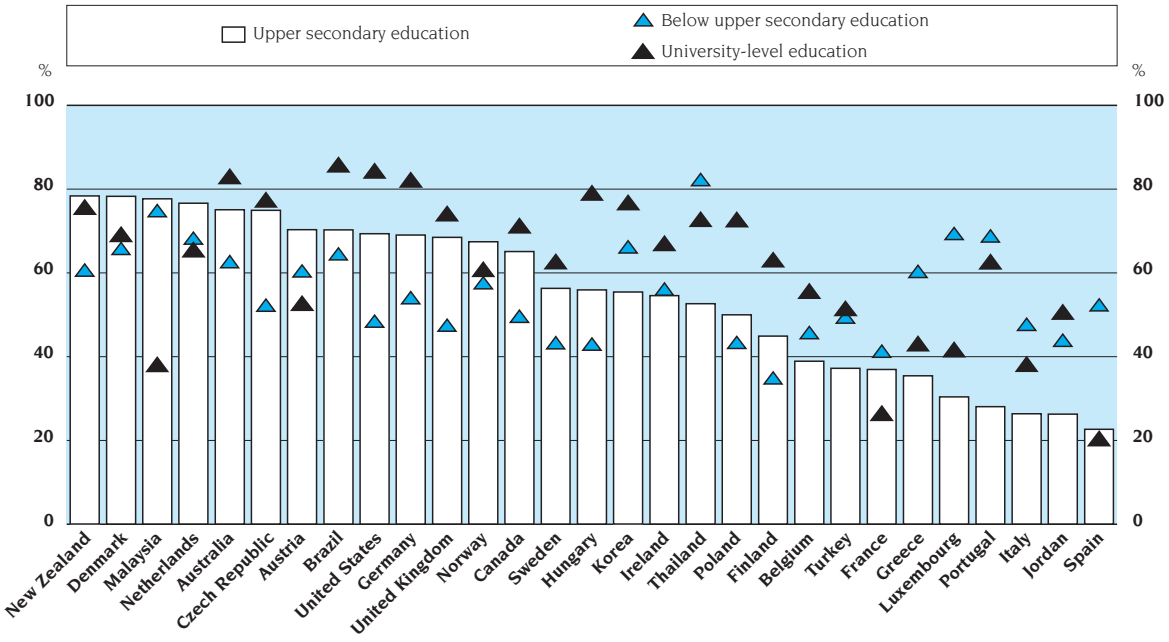
Differences in employment/population ratios of 15 to 19 year-olds across countries are largely attributable to differences in the incidence of working students.

Employment/population ratios convey largely the same general story as unemployment rates. As unemployment rates decline, employment/population ratios increase with age and educational attainment. However, the large country differences evident for 15 to 19 year-olds are attributable largely to the differences in the prevalence of working students.

Among older age-groups (20-24 and 25-29), it is the incidence of work by women that explains country differences in employment/population ratios.

Overall the percentage of persons aged 25 to 29 in employment is about 73 per cent in OECD countries. It is less than 60 per cent in Italy, Spain and Turkey and exceeds 80 per cent in Austria, the Czech Republic, the Netherlands and Thailand. It is the employment of women which explains most of the observed differences between countries. The employment/population ratio of women 25 to 29 years of age is on average across OECD countries about 18 percentage points smaller than that of men; for the younger 20 to 24 age-group, the difference is about 9 per cent. Situations vary considerably across countries for the older age-group. Differences between employment/population ratios of men and women

Chart D4.2. **Employment/population ratios for 20-24 year-olds by level of educational attainment (1996)**



Countries are ranked in descending order of the employment/population ratios for persons with upper secondary attainment.
Source: OECD.

are less than 10 per cent in Austria, Ireland, Portugal and Sweden but larger than 30 per cent in Brazil, Greece, Jordan, Hungary, Korea, Malaysia and Turkey.

In southern Europe, labour markets are not creating enough skilled jobs compared to the number of young people with high-level qualifications in the labour market.

Having a university degree is no guarantee of employment in southern Europe. The percentage of persons with this level of attainment who are employed is relatively low and often lower than for persons with lower attainment. It seems that labour markets in these countries are not generating enough jobs for the relatively large number of university graduates produced by their educational systems.

DEFINITIONS

Data are derived from national labour-force surveys.

The unemployment rate is calculated as the percentage of unemployed people in the labour force, where these statuses are defined according to the ILO guidelines. Rates for age-groups are defined correspondingly.

The data for this indicator, unlike that for the other indicators in this chapter, may cover the entire year (for countries with monthly or quarterly surveys). The unemployment rates and employment/population ratios thus include the effect of activity during the summer months.

Table D4.1*a*. **Unemployment rates of youth by level of educational attainment and age group (1996)**

	Below upper secondary education			Upper secondary education			Non-university tertiary education		University-level education		All levels of education		
	Age 15-19	Age 20-24	Age 25-29	Age 15-19	Age 20-24	Age 25-29	Age 20-24	Age 25-29	Age 20-24	Age 25-29	Age 15-19	Age 20-24	Age 25-29
Australia	22.6	19.8	12.0	16.5	10.1	7.1	8.2	5.9	6.7	4.2	20.4	11.9	8.0
Austria	7.4	10.4	8.6	5.7	4.6	3.2	14.2	4.4	3.9	6.5	6.8	5.7	4.2
Belgium	22.9	29.7	18.9	27.3	19.1	11.0	9.7	4.7	14.6	5.8	25.3	20.0	10.7
Canada	22.7	25.0	21.2	15.9	12.7	11.7	11.5	8.8	9.0	5.7	20.1	13.6	10.4
Czech Republic	22.3	12.6	17.9	11.6	3.4	3.6	x	x	7.1	1.1	14.1	4.0	4.1
Denmark	2.4	14.7	18.9	5.2	7.0	7.4	11.1	6.0	6.8	6.3	2.6	9.9	10.5
Finland	24.9	39.5	28.5	36.0	23.8	17.0	20.5	12.2	17.2	7.6	29.0	26.7	17.0
France	24.3	37.0	25.5	26.5	23.5	15.0	19.0	10.1	18.2	14.4	24.7	26.6	16.4
Germany	6.8	15.4	17.4	8.4	8.4	7.5	7.2	4.9	m	6.5	7.3	9.6	8.4
Greece	32.0	19.9	13.9	54.2	31.3	15.6	39.4	19.4	41.2	22.4	41.8	29.5	16.9
Hungary	42.3	22.3	20.8	24.6	11.7	10.0	x	x	3.4	4.1	29.4	13.1	10.9
Ireland	32.3	30.6	24.7	19.4	13.1	7.9	8.4	5.2	6.5	4.9	25.4	15.9	11.5
Italy	33.1	29.1	16.8	45.9	36.8	17.7	x	x	37.9	31.0	36.1	33.1	18.3
Korea	9.8	7.6	3.0	6.7	5.3	3.0	x	x	7.7	4.0	7.5	5.9	3.3
Luxembourg	15.0	9.6	5.9	18.8	4.8	2.8	x	x	14.9	0.6	15.2	9.1	4.6
Netherlands	18.9	11.8	8.6	8.8	6.6	4.5	x	x	11.6	6.6	16.9	8.8	6.0
New Zealand	17.3	14.7	10.8	11.2	7.6	3.5	10.8	6.1	6.3	2.3	15.1	9.6	5.9
Norway	18.9	16.1	10.5	14.3	9.7	6.2	7.4	5.8	9.2	5.2	17.9	10.2	6.4
Poland	30.6	32.0	26.1	50.8	26.7	14.4	26.0	8.8	17.2	7.4	44.2	27.1	14.5
Portugal	16.6	13.8	9.2	38.7	20.4	8.9	17.7	8.8	25.6	9.0	18.4	15.9	9.1
Spain	50.3	37.0	31.7	51.7	40.7	24.8	36.8	24.9	52.1	31.2	50.8	39.2	29.3
Sweden	22.2	30.9	22.8	23.8	20.2	13.6	11.0	8.0	10.9	5.1	22.2	20.6	12.7
Switzerland	(13.7)	m	(14.7)	m	4.6	5.3	5.2	1.7	m	(18.1)	12.3	5.3	7.1
Turkey	8.8	9.6	6.7	33.9	27.2	11.8	x	x	29.1	10.5	13.3	15.6	8.1
United Kingdom	31.4	28.0	21.7	14.9	11.6	9.5	8.0	2.9	11.3	4.9	17.9	12.8	9.3
United States	21.3	19.1	16.2	11.2	9.6	7.1	5.3	2.2	5.4	2.8	17.8	9.9	6.4
Country mean	**22.0**	**21.5**	**16.7**	**23.3**	**15.4**	**9.6**	**14.6**	**7.9**	**15.6**	**8.8**	**21.3**	**15.8**	**10.4**
WEI Participants													
Brazil	14.0	10.0	6.8	17.1	11.2	7.2	x	x	8.1	4.3	14.5	10.1	6.6
Jordan	23.3	17.8	9.8	30.4	19.5	9.8	39.4	21.1	32.8	14.1	23.9	22.4	12.7
Malaysia	9.6	4.1	2.0	12.9	5.1	2.0	x	x	7.2	1.2	10.8	4.7	1.9
Paraguay	21.6	14.3	3.3	29.4	9.3	9.3	3.1	3.0	11.6	1.2	23.4	12.0	4.7
Thailand	4.4	2.8	1.9	6.6	3.6	1.2	5.9	3.7	10.8	2.6	4.6	3.5	2.0
Uruguay	25.4	17.0	12.3	30.0	16.0	10.1	11.0	4.2	20.4	8.5	26.6	17.0	10.9

United Kingdom: Data for 15-19 refer to 16-19 year-olds.
( ) Figures in brackets are subject to high sampling variability.
Source: OECD Education Database. See Annex 3 for notes.

Table D4.1*b*. **Unemployment rates of youth by level of educational attainment, age and gender (1996)**

		Below upper secondary education			Upper secondary education			Non-university tertiary education		University-level education		All levels of education		
		Age 15-19	Age 20-24	Age 25-29	Age 15-19	Age 20-24	Age 25-29	Age 20-24	Age 25-29	Age 20-24	Age 25-29	Age 15-19	Age 20-24	Age 25-29
Australia	Men	24.3	23.4	13.4	16.6	9.1	6.6	8.9	7.9	8.9	4.2	21.7	12.8	8.3
	Women	20.8	15.1	10.4	16.5	11.5	7.8	7.8	3.9	5.2	4.2	19.2	10.9	7.5
Austria	Men	5.7	12.8	8.6	3.4	5.0	3.4	9.3	1.1	m	4.4	5.1	6.2	4.2
	Women	10.4	8.3	8.5	8.2	4.2	2.8	15.4	5.6	m	9.1	9.6	5.2	4.3
Belgium	Men	19.3	23.6	13.0	21.0	15.1	6.0	10.5	3.2	9.6	3.7	20.1	16.9	7.2
	Women	30.3	41.5	29.1	36.0	24.1	17.4	9.2	5.7	19.7	7.9	34.0	23.6	14.8
Canada	Men	24.7	25.7	20.2	16.0	13.7	12.5	11.6	9.6	10.1	4.9	21.6	15.0	11.1
	Women	20.3	23.4	23.6	15.8	11.6	10.8	11.4	8.0	8.3	6.5	18.5	12.1	9.5
Czech Republic	Men	17.6	13.9	17.6	11.0	3.6	1.9	x	x	4.0	0.9	12.7	4.2	2.5
	Women	27.4	10.7	18.2	12.1	3.2	5.6	x	x	11.4	1.4	15.7	3.8	6.0
Denmark	Men	2.0	12.1	14.9	4.4	6.6	5.6	11.2	5.5	6.1	6.2	2.2	9.0	8.8
	Women	2.8	18.7	24.3	5.8	7.4	9.4	11.0	6.4	7.4	6.3	3.1	10.9	12.4
Finland	Men	27.0	40.3	25.8	42.9	24.4	15.3	19.2	10.3	14.3	6.3	32.4	27.8	15.6
	Women	22.6	38.1	32.9	29.8	23.1	19.0	21.1	13.9	18.2	9.1	25.4	25.3	18.8
France	Men	20.8	33.6	21.1	18.0	18.1	12.1	13.7	10.7	11.7	11.5	20.3	22.4	14.1
	Women	32.5	42.1	32.4	44.7	30.0	18.4	23.0	9.6	23.1	17.3	34.6	31.6	19.1
Germany	Men	6.7	16.7	18.6	7.9	8.7	7.4	m	4.5	m	7.3	6.7	10.1	8.5
	Women	6.8	13.7	15.8	9.1	8.0	7.7	m	5.5	m	5.6	7.1	8.2	8.2
Greece	Men	23.0	13.6	8.2	40.5	22.2	9.9	33.7	14.4	33.8	19.2	28.5	20.1	11.0
	Women	45.8	32.8	26.7	61.5	40.1	24.1	42.2	23.9	43.4	24.4	54.4	39.3	24.6
Hungary	Men	46.8	25.0	20.5	25.1	13.1	8.7	x	x	4.3	2.7	32.3	15.2	10.0
	Women	33.4	16.6	21.4	24.0	9.8	12.5	x	x	2.7	5.3	25.9	10.2	12.4
Ireland	Men	29.4	28.9	24.7	17.6	14.1	8.5	8.6	6.0	8.4	5.1	23.9	17.6	13.2
	Women	37.5	34.5	24.5	21.8	12.0	7.3	8.2	4.4	5.1	4.7	27.7	14.0	9.3
Italy	Men	29.4	26.2	14.1	35.0	33.1	15.4	x	x	20.0	27.3	30.4	29.1	15.4
	Women	38.9	34.3	22.0	54.5	40.1	20.2	x	x	47.4	34.0	43.7	38.0	22.3
Korea	Men	10.0	9.1	3.5	8.3	7.3	3.6	x	x	13.5	5.2	8.9	8.2	4.1
	Women	9.6	3.2	1.7	5.9	3.9	1.9	x	x	6.2	2.1	6.6	4.5	2.0
Luxembourg	Men	10.4	11.1	6.0	m	9.6	5.5	x	x	m	1.2	10.0	10.7	5.4
	Women	20.6	7.7	5.7	m	1.6	n	x	x	m	n	21.2	7.3	3.5
Netherlands	Men	15.9	10.7	9.0	m	6.8	4.0	x	x	12.2	6.9	13.5	8.8	6.0
	Women	22.5	13.7	8.0	m	6.4	5.1	x	x	11.1	6.3	20.6	8.8	6.0
New Zealand	Men	19.7	14.4	m	14.2	7.5	3.1	m	m	m	2.1	17.8	9.5	6.5
	Women	14.0	15.4	m	8.7	7.8	4.1	12.9	m	m	2.6	12.1	9.8	5.3
Norway	Men	20.6	15.5	9.9	10.8	9.7	6.4	6.7	5.5	4.5	6.3	17.8	9.9	6.6
	Women	17.1	16.8	11.6	18.4	9.8	6.0	7.9	6.0	12.8	4.4	18.1	10.6	6.1
Poland	Men	24.8	27.0	21.8	47.8	25.3	11.3	16.7	7.7	27.3	7.7	39.0	25.4	12.1
	Women	43.8	42.0	34.3	54.2	28.5	19.2	27.7	9.2	11.1	7.1	51.7	29.2	17.9
Portugal	Men	13.2	12.5	8.2	28.8	19.6	7.9	28.6	18.0	17.9	9.8	14.0	14.2	8.6
	Women	21.7	15.8	10.3	43.9	21.2	9.8	13.2	4.5	29.8	8.4	24.5	18.0	9.6
Spain	Men	44.0	33.2	26.3	44.1	33.9	19.9	30.9	20.3	47.3	28.2	44.2	33.7	24.4
	Women	59.1	43.3	41.3	59.6	47.3	30.9	42.3	31.2	53.8	33.3	59.4	45.7	35.5
Sweden	Men	23.0	29.6	20.0	22.9	20.8	13.9	12.9	9.2	20.2	3.6	22.4	21.4	12.9
	Women	21.6	32.8	26.4	24.7	19.5	13.1	8.9	6.8	8.2	6.5	22.1	19.8	12.6
Switzerland	Men	(17.1)	m	m	m	(4.9)	(3.8)	m	m	m	m	(15.7)	5.9	(5.7)
	Women	(9.9)	m	(23.5)	m	(4.3)	7.1	m	m	m	m	(8.7)	(4.8)	(9)
Turkey	Men	10.1	11.2	6.4	27.0	22.7	8.9	x	x	28.9	9.6	12.9	15.0	7.2
	Women	6.4	6.7	7.4	44.1	34.4	20.7	x	x	29.3	11.9	13.8	16.4	10.6
United Kingdom	Men	34.1	32.7	23.6	16.9	14.3	10.5	10.9	2.7	14.0	6.1	20.8	16.0	10.6
	Women	26.4	19.2	17.8	12.8	8.3	8.3	4.7	3.0	8.5	3.4	14.7	8.8	7.6
United States	Men	23.9	16.8	15.7	12.4	11.2	7.6	4.5	3.9	6.8	4.1	20.3	11.1	7.4
	Women	18.2	23.5	17.3	10.2	7.7	6.6	5.9	0.6	4.3	1.6	15.2	8.4	5.1
Country mean	**Men**	**21.1**	**20.8**	**15.5**	**21.4**	**14.6**	**8.6**	**14.9**	**8.3**	**15.4**	**7.8**	**20.0**	**15.2**	**9.7**
	Women	**24.4**	**22.8**	**19.7**	**27.1**	**16.9**	**11.4**	**16.1**	**8.7**	**17.5**	**8.9**	**24.0**	**16.8**	**11.7**
WEI Participants														
Brazil	Men	11.8	8.1	5.4	14.4	9.8	4.7	x	x	7.0	3.6	12.1	8.5	5.1
	Women	18.2	13.6	9.3	19.4	12.6	9.9	x	x	8.8	4.8	18.4	12.7	8.8
Jordan	Men	23.3	17.0	9.3	26.3	16.3	8.4	27.2	13.1	29.9	12.6	23.5	18.6	10.1
	Women	23.9	29.3	17.1	50.0	43.7	19.8	58.2	34.3	36.7	17.2	28.7	43.3	24.6
Malaysia	Men	9.7	4.0	1.8	14.0	5.2	2.1	x	x	7.2	1.1	11.0	4.6	1.9
	Women	9.4	4.4	2.3	11.8	4.9	1.7	x	x	7.1	1.3	10.4	4.9	1.9
Paraguay	Men	21.0	11.5	2.4	32.7	8.8	2.7	m	12.7	12.3	2.3	23.9	10.6	2.7
	Women	22.4	17.9	4.7	24.8	10.1	16.7	3.3	m	10.9	m	22.8	13.8	7.2
Thailand	Men	4.6	3.0	1.8	6.8	4.0	1.2	8.5	3.6	12.6	2.7	4.8	3.8	1.9
	Women	4.1	2.7	2.0	6.4	3.0	1.2	3.1	3.9	9.1	2.5	4.4	3.2	2.2
Uruguay	Men	22.5	14.2	9.7	26.2	13.5	7.6	9.5	4.2	18.7	6.9	23.1	14.4	8.9
	Women	31.5	22.8	17.7	33.5	18.2	12.5	11.7	4.1	21.6	9.7	32.4	20.6	13.8

United Kingdom: Data for 15-19 refer to 16-19 year-olds.
( ) Figures in brackets are subject to high sampling variability.
Source: OECD Education Database. See Annex 3 for notes.

Table D4.2*a*. **Employment/population ratios of youth by level of educational attainment and age group (1996)**

	Below upper secondary education			Upper secondary education			Non-university tertiary education		University-level education		All levels of education		
	Age 15-19	Age 20-24	Age 25-29	Age 15-19	Age 20-24	Age 25-29	Age 20-24	Age 25-29	Age 20-24	Age 25-29	Age 15-19	Age 20-24	Age 25-29
Australia	40.1	62.8	64.0	62.6	74.9	80.2	81.2	80.6	83.0	87.8	46.6	73.2	75.7
Austria	34.8	60.5	69.8	65.4	70.1	82.3	75.2	88.8	52.8	80.1	41.0	68.3	80.2
Belgium	3.5	45.8	65.2	11.4	38.8	78.7	73.9	90.8	55.7	87.9	5.2	45.4	78.9
Canada	31.5	49.7	53.9	52.8	65.0	72.4	71.9	80.8	71.3	84.1	37.8	65.2	75.2
Czech Republic	6.0	52.4	56.2	49.8	74.8	85.9	x	x	77.5	91.9	19.5	73.2	84.4
Denmark	57.5	65.9	63.2	70.9	78.1	83.0	82.4	87.8	69.2	84.6	56.8	71.7	75.7
Finland	12.8	35.0	55.0	30.2	44.8	67.1	66.0	74.4	63.2	82.1	15.8	43.7	67.6
France	5.1	41.4	59.1	6.4	36.8	74.7	39.5	81.7	26.6	67.7	5.3	37.5	71.2
Germany	26.1	54.2	55.3	64.5	68.9	75.4	79.3	88.5	82.2	82.1	28.7	65.7	74.0
Greece	8.5	60.4	62.9	11.3	35.3	66.4	52.0	73.5	43.2	69.6	9.4	43.5	66.8
Hungary	3.7	43.1	48.6	35.4	55.8	69.5	x	x	79.1	78.3	12.2	54.2	66.6
Ireland	9.4	56.2	57.8	31.0	54.4	80.1	77.6	88.6	67.1	85.7	15.6	59.9	75.4
Italy	11.9	47.8	58.3	12.2	26.3	53.4	x	x	38.3	52.5	12.0	34.4	55.6
Korea	3.5	66.3	65.7	29.9	55.3	64.0	x	x	76.8	76.4	10.3	59.1	67.9
Luxembourg	13.0	69.4	75.0	6.0	30.3	77.9	x	x	41.7	84.5	12.3	57.5	76.6
Netherlands	40.0	68.4	68.7	56.8	76.5	85.6	x	x	65.6	86.0	42.7	72.4	81.2
New Zealand	40.4	60.7	61.8	58.5	78.2	81.9	78.4	74.6	75.7	91.4	46.8	72.0	75.0
Norway	31.2	57.7	66.9	52.6	67.3	79.3	57.3	69.6	60.9	81.3	34.5	64.4	77.3
Poland	4.6	43.5	53.4	30.5	49.9	71.0	62.0	78.8	72.7	86.6	9.4	49.8	70.9
Portugal	19.9	68.9	78.8	9.4	28.0	69.7	51.0	83.4	62.7	83.3	18.6	52.4	77.6
Spain	15.8	52.5	54.7	5.6	22.6	61.3	48.6	68.4	20.5	54.3	12.0	36.4	57.5
Sweden	23.1	43.4	58.7	39.2	56.2	75.0	45.9	73.8	62.7	84.6	22.2	53.1	73.7
Switzerland	14.5	42.5	61.8	49.9	74.5	82.3	83.2	90.8	(43.3)	68.9	16.7	67.4	79.4
Turkey	34.8	49.5	53.2	24.6	37.1	64.7	x	x	51.5	80.2	33.0	45.9	57.0
United Kingdom	33.5	47.6	49.7	56.2	68.3	75.5	77.4	89.5	74.1	88.1	51.0	67.3	75.3
United States	26.9	48.6	57.8	55.6	69.2	77.9	80.0	85.3	84.3	87.8	33.2	68.5	78.6
Country mean	**21.2**	**53.6**	**60.6**	**37.6**	**55.3**	**74.4**	**67.5**	**81.6**	**61.6**	**80.3**	**24.9**	**57.8**	**72.9**
WEI Participants													
Brazil	47.5	64.6	66.8	41.0	70.1	75.9	x	x	63.8	85.8	46.3	66.0	70.6
Jordan	10.7	44.0	48.5	8.7	26.2	55.2	40.1	53.6	50.7	73.5	10.5	38.8	53.5
Malaysia	42.7	74.9	70.8	19.8	77.5	78.7	x	x	38.2	87.9	29.5	72.2	75.7
Paraguay	44.4	64.9	70.6	36.7	72.3	77.5	75.4	92.6	70.7	82.7	42.3	68.2	74.9
Thailand	45.2	82.3	84.6	26.2	52.5	86.7	42.8	86.5	72.8	91.7	40.1	75.7	85.4
Uruguay	35.8	62.0	66.2	20.6	66.9	76.5	57.1	86.9	51.0	80.3	30.9	61.3	70.7

United Kingdom: data for 15-19 refer to 16-19 year-olds.
( ) Figures in brackets are subject to high sampling variability.
Source: OECD Education Database. See Annex 3 for notes.

Table D4.2*b*. **Employment/population ratios of youth by level of educational attainment, age and gender (1996)**

		Below upper secondary education			Upper secondary education			Non-university tertiary education		University-level education		All levels of education		
		Age 15-19	Age 20-24	Age 25-29	Age 15-19	Age 20-24	Age 25-29	Age 20-24	Age 25-29	Age 20-24	Age 25-29	Age 15-19	Age 20-24	Age 25-29
Australia	Men	38.8	70.6	78.8	62.4	78.4	88.4	79.9	85.2	82.1	89.8	45.2	76.9	85.5
	Women	41.5	55.4	53.5	62.7	70.7	68.3	82.2	76.7	83.7	85.9	48.1	69.4	65.9
Austria	Men	44.1	59.8	81.0	72.3	71.0	84.8	66.7	84.9	57.0	80.3	49.6	69.0	84.0
	Women	24.6	61.1	62.1	58.8	69.2	79.4	77.8	90.4	49.8	79.7	32.0	67.6	76.3
Belgium	Men	4.7	55.0	78.7	15.5	44.7	87.9	68.3	92.6	61.0	89.7	6.9	50.4	86.2
	Women	2.1	32.2	47.8	7.9	32.9	68.0	77.1	89.7	50.5	86.0	3.5	40.3	71.3
Canada	Men	31.7	59.2	66.0	53.9	67.0	79.5	71.8	84.5	69.6	86.5	37.7	67.0	80.4
	Women	31.3	36.5	37.2	51.9	62.7	65.1	72.0	77.5	72.4	82.0	37.9	63.4	70.1
Czech Republic	Men	6.8	68.6	65.4	45.7	78.6	95.5	x	x	79.1	95.2	19.8	78.0	93.8
	Women	5.3	39.6	49.8	55.1	70.8	75.8	x	x	75.2	87.2	19.2	68.3	74.6
Denmark	Men	61.4	72.6	71.9	73.2	80.5	87.6	81.2	88.8	67.9	85.7	60.2	75.5	80.7
	Women	53.4	57.2	53.4	69.4	75.9	78.2	83.7	86.8	70.5	83.7	53.2	67.8	70.5
Finland	Men	13.0	40.3	63.1	23.6	46.4	73.7	61.8	82.9	50.0	85.7	14.9	45.5	74.0
	Women	12.6	29.1	44.4	37.9	43.0	60.2	68.2	67.9	69.2	78.3	16.7	41.8	61.0
France	Men	7.1	48.9	73.1	10.8	41.9	82.9	42.4	83.5	30.0	74.2	7.6	43.0	79.5
	Women	2.8	32.6	43.5	2.8	31.5	66.2	37.4	80.2	24.3	62.0	2.9	32.0	62.9
Germany	Men	29.8	62.3	68.9	69.9	71.4	78.9	84.2	91.9	77.1	84.1	32.7	69.5	79.0
	Women	22.0	46.1	43.9	58.8	66.0	71.5	86.1	84.4	85.1	79.9	24.7	62.1	68.6
Greece	Men	11.4	80.8	88.9	11.9	44.2	84.0	54.5	83.5	36.1	72.6	11.6	55.5	84.1
	Women	5.4	36.3	34.4	10.9	28.2	48.3	50.6	65.6	46.4	67.8	7.4	33.5	50.5
Hungary	Men	4.5	56.7	64.9	36.1	63.1	86.2	x	x	83.4	91.5	12.7	62.5	82.8
	Women	2.9	29.7	33.6	34.7	48.7	51.0	x	x	75.9	69.5	11.7	46.2	50.4
Ireland	Men	12.2	63.8	69.3	35.5	55.5	85.8	77.0	89.0	66.7	86.5	18.3	61.8	80.3
	Women	6.3	43.5	41.8	26.6	53.4	75.3	78.1	88.2	67.3	84.8	12.7	58.0	70.4
Italy	Men	14.7	56.6	74.5	13.9	27.5	58.3	x	x	44.0	54.8	14.6	39.5	65.8
	Women	8.8	36.4	40.1	10.7	25.2	48.7	x	x	34.7	50.6	9.3	29.0	45.1
Korea	Men	3.6	78.4	88.4	21.8	49.9	82.8	x	x	68.1	88.2	7.9	53.4	84.9
	Women	3.4	46.9	40.8	36.9	59.5	44.9	x	*x*	79.2	63.2	12.7	63.1	50.1
Luxembourg	Men	14.8	72.1	90.3	5.4	24.3	77.2	x	x	59.6	80.7	13.9	59.1	86.4
	Women	11.2	66.5	59.5	6.5	35.8	78.6	x	x	28.2	89.0	10.6	55.7	66.6
Netherlands	Men	43.0	74.9	81.5	60.7	74.4	91.4	x	x	61.4	86.1	45.3	72.8	87.4
	Women	36.7	59.9	55.4	54.1	78.5	79.6	x	x	69.1	85.8	40.0	72.0	74.7
New Zealand	Men	43.0	77.5	77.1	54.1	81.0	91.1	86.3	76.2	70.9	94.2	47.0	78.4	85.7
	Women	37.4	43.3	47.9	62.4	75.1	71.5	73.0	73.8	80.2	88.4	46.5	65.4	64.9
Norway	Men	30.8	60.9	79.7	56.9	71.5	85.4	55.0	69.4	61.5	81.1	35.1	67.9	82.4
	Women	31.7	54.8	53.1	48.0	62.5	72.3	59.0	69.7	60.3	81.5	33.9	60.7	72.1
Poland	Men	6.7	54.3	69.8	34.9	57.9	84.2	66.7	88.9	66.7	88.9	11.9	57.6	82.9
	Women	2.3	29.0	34.8	26.1	42.3	56.3	61.0	75.8	76.2	84.7	6.8	42.6	58.4
Portugal	Men	23.6	71.9	85.3	8.7	29.7	71.3	50.0	72.5	69.6	84.3	22.1	57.3	82.0
	Women	15.7	64.6	71.7	9.9	26.4	68.2	51.3	88.7	58.9	82.7	14.8	47.0	73.3
Spain	Men	19.2	58.5	68.2	6.9	25.8	68.6	50.2	75.6	16.3	54.3	14.9	41.9	66.6
	Women	11.8	43.8	38.1	4.3	19.6	53.1	46.9	59.6	23.0	54.4	8.8	30.7	47.7
Sweden	Men	21.0	49.0	66.9	38.7	58.1	77.9	44.8	72.6	43.8	88.3	20.6	54.9	76.6
	Women	25.3	37.3	50.1	39.7	54.1	71.8	47.2	75.1	70.4	81.2	23.9	51.1	70.7
Switzerland	Men	14.4	37.0	86.2	45.5	72.0	89.7	83.1	92.9	(42.9)	67.6	(16)	65.4	(87.3)
	Women	14.7	47.1	49.9	53.3	77.1	74.8	(83.3)	81.8	(43.6)	71.4	(17.5)	(69.5)	(70.6)
Turkey	Men	45.3	81.3	90.9	30.0	44.3	85.3	x	x	50.3	86.0	42.3	66.2	89.4
	Women	24.9	29.4	22.6	18.2	28.4	34.6	x	x	52.8	72.6	23.9	30.0	27.1
United Kingdom	Men	37.2	56.1	63.7	55.5	72.0	83.8	72.5	92.9	71.0	88.2	51.0	70.2	82.7
	Women	28.8	38.5	35.3	56.9	64.6	67.1	83.4	86.0	77.6	88.0	51.1	64.2	67.5
United States	Men	26.7	64.9	74.7	56.6	71.9	85.9	80.3	89.0	81.8	89.1	32.7	72.3	85.4
	Women	27.2	32.0	38.5	54.8	66.4	69.5	79.7	82.4	86.5	86.5	33.8	64.7	71.8
Country mean	**Men**	**23.4**	**62.8**	**75.7**	**38.5**	**57.8**	**82.6**	**67.2**	**84.0**	**60.3**	**82.8**	**27.1**	**62.0**	**81.9**
	Women	**18.9**	**43.4**	**45.5**	**36.9**	**52.6**	**65.3**	**68.3**	**79.0**	**62.0**	**78.0**	**23.4**	**53.1**	**63.3**
WEI Participants														
Brazil	Men	60.6	84.3	89.2	47.1	80.3	92.5	x	x	65.0	89.5	58.6	82.2	89.9
	Women	32.9	43.3	45.0	36.6	61.6	62.9	x	x	62.9	82.9	33.8	50.1	53.1
Jordan	Men	19.0	74.0	86.9	17.2	43.1	85.5	70.1	86.1	58.3	80.7	18.9	63.6	85.7
	Women	1.4	5.9	6.6	1.9	4.8	14.3	18.7	29.3	42.5	61.7	1.5	9.4	17.7
Malaysia	Men	51.3	93.3	96.5	20.5	87.3	97.0	x	x	40.3	91.8	34.5	85.4	96.2
	Women	32.2	51.8	43.0	19.1	68.4	60.1	x	x	36.0	83.5	24.2	58.1	54.1
Paraguay	Men	53.1	82.2	95.7	42.1	82.9	95.9	m	87.3	74.6	89.9	50.0	81.8	94.8
	Women	37.1	49.9	48.7	31.7	60.4	62.0	73.9	94.2	67.4	76.8	35.7	56.1	58.6
Thailand	Men	47.5	90.4	95.0	27.4	58.0	94.1	38.5	91.6	71.2	94.2	41.9	81.8	94.7
	Women	42.8	74.0	74.0	25.2	46.8	76.0	48.1	81.6	74.2	89.6	38.1	69.4	75.9
Uruguay	Men	45.3	76.5	84.0	25.3	75.9	88.7	69.5	91.8	53.5	85.9	40.1	73.5	84.9
	Women	23.9	43.1	44.8	17.4	60.2	67.0	52.9	85.0	49.3	76.5	21.3	49.0	56.8

United Kingdom: data for 15-19 refer to 16-19 year-olds.
( ) Figures in brackets are subject to high sampling variability.
Source: OECD Education Database. See Annex 3 for notes.

THE LEARNING ENVIRONMENT AND THE ORGANISATION OF SCHOOLS

The indicators in the preceding chapters have focused on financial and human resources devoted to education, as well as on participation in and access to education. Some of these indicators, such as Indicator B4 on expenditure per student or Indicator B7 on student/teaching staff ratios, are sometimes also used as a proxy for the quality of education. While it may be obvious that these are imperfect measures of the quality of education systems, it is not so obvious what should replace them.

How do we identify and measure how schools function? Indicators on the functioning of schools and school systems focus on the inputs to the education process (*i.e.* inputs of human resources to education), as well as the process of transforming educational inputs into outputs. In order to construct a broad picture of the learning environment and the various ways in which school systems are organised, the indicators in this chapter apply currently available data on teacher compensation, demographics of the teaching force, the statutory time that teacher are required to teach and students are required to learn, subject emphasis in the curriculum, how decision-making authority is distributed across levels of government and the use of computers in schools.

The level of teacher salaries can affect the entry of new teachers, as well as the retention of current teachers. **Indicator E1** examines the level of starting, mid-career and maximum statutory salaries of teachers in public primary and secondary education. Statutory salaries are first examined in equivalent US dollars (adjusted for relative purchasing power) to examine the absolute volume of resources invested in each teacher. Teacher salaries are then examined relative to per capita GDP, a rough measure of the investment in teachers relative to a country's ability to finance educational expenditure. Finally, teacher salaries are examined in relationship to salaries of other workers, an indicator of the relative attractiveness of the teaching profession compared to other occupations.

The demography of teachers is becoming a major concern in many OECD countries, particularly in those where student enrolment is expected to further expand (see Indicator C1). **Indicator E2** shows the age and gender distribution of teachers at the lower levels of education. Ensuring that there will be enough skilled teachers to educate all children is an important policy concern. If a large proportion of teachers are concentrated in the older age cohorts, countries may need to develop effective policies for replacing retired teachers. With seniority as an important criterion in teacher's pay scales, the age distribution of teachers is also of interest because it has a significant impact on educational budgets.

Indicator E3 shows the number of hours per year a full-time classroom teacher is required to teach students according to formal policy in his/her country. Together with factors such as student/teaching staff ratios (Indicator B7), intended instruction time (Indicator E4) and teacher salaries (Indicator E1), the amount of time that teachers spend teaching influences the financial resources that go into education. At the same time, teaching time is an important element of the working conditions of teachers. It can affect the amount of time available for planning and other professional activities within the school day, and can affect the relative attractiveness of the teaching profession.

Indicator E4 shows the intended instruction time (in hours per year) for grades in which the majority of pupils are 12, 13 and 14 years of age. Instructional time is the main resource invested in the educational process. Policy-makers seeking to improve educational outcomes often seek to increase the amount of time that students are engaged in learning activities, although tight budgets and strong teacher unions can limit changes in instructional time.

An important factor in educational policy is the division of responsibilities between national, regional and local authorities, as well as schools. Placing more decision-making authority at lower levels of the

educational system has been a key aim in the restructuring and systemic reform in many countries since the early 80s. At the same time there are also frequent examples of strengthening the influence of the central level in certain domains. For example, a freeing of "process" and financial regulations may be accompanied by an increase in output control from the centre, and by national curriculum frameworks. **Indicator E5** shows the percentages of decisions taken at each decision-making level by domain and mode in lower secondary education.

OECD economies are increasingly dependent on technological knowledge and skills in the labour force. Students with little or no exposure to information technology in school may face difficulties in making a smooth transition into the modern labour market. While the issue of how computers should be used by students and teachers so as to maximise students' learning is a matter of debate, measures of student access to information technology can be an indicator of how well schools are responding to technological change. **Indicator E6** shows cross country comparisons of the number of students per computer, as well as students' reports on how often they use a computer during the final year of secondary school.

STATUTORY SALARIES OF TEACHERS IN PUBLIC PRIMARY AND SECONDARY SCHOOLS

Policy context

This indicator shows the starting, mid-career and maximum statutory salaries of teachers in public primary and secondary education.

Good teachers are vital for quality in education. Ensuring that there will be enough skilled teachers to educate all children is an important policy concern in all OECD countries. The level of teacher salaries can affect both the entry into the profession and the retention of current teachers. Although salary is one of the malleable rewards of the teaching profession, the pressure to improve the quality of education and to expand access is under increasing fiscal constraints. The remuneration of teachers is thus a critical component for policy-makers seeking to maintain the quality of teaching and a balanced education budget.

Teacher salaries are the largest single factor in the cost of providing education.

Teacher salaries are the largest single factor in the cost of providing education. The size of education budgets reflects either an explicit or implicit trade-off between a number of interrelated factors, including statutory teacher salaries, student-teacher ratios (Indicator B7), the quantity of instructional time planned for students (Indicator E4), and the designated number of teaching hours (Indicator E3).

Evidence and explanations

Statutory teacher salaries are compared in absolute terms (in equivalent US dollars based on PPPs), relative to GDP and relative to salaries of other workers.

Indicator E1 examines the starting, mid-career and maximum statutory salaries of teachers in public primary and secondary education. Statutory salaries are examined first in comparable US dollars (adjusted for relative purchasing power), to examine the absolute volume of resources invested in each teacher, and then relative to per capita GDP, a rough measure of the investment in teachers relative to a country's ability to finance educational expenditure. Finally, they are examined in relation to the salaries of other workers, an indicator of the relative attractiveness of teaching compared to other occupations.

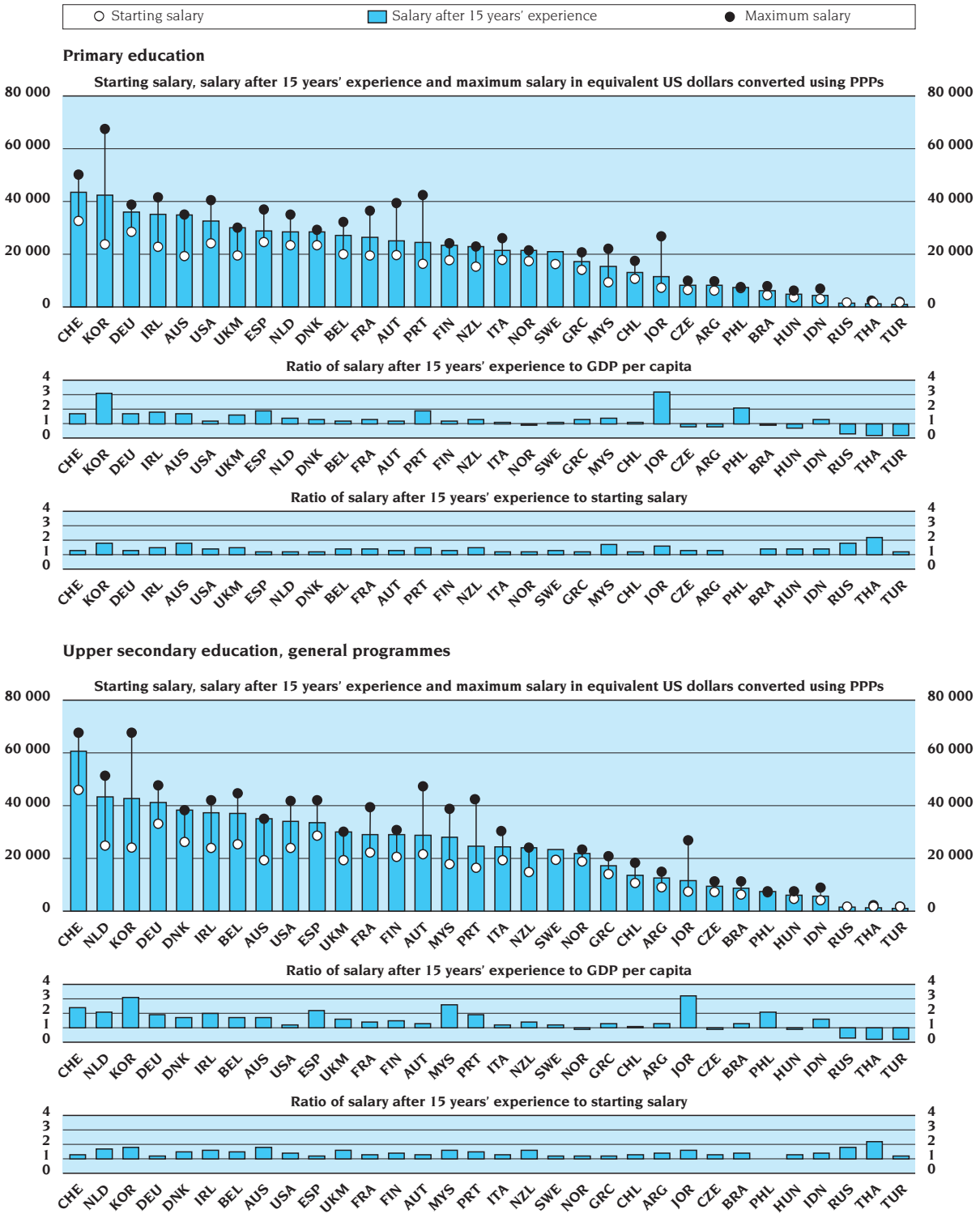
Statutory teacher salaries in US dollars (adjusted for relative purchasing power)

Statutory salaries for teachers with 15 years' experience in Korea and Switzerland are more than five times higher than those in the Czech Republic, Hungary and Turkey.

In the OECD, annual statutory salaries of public primary-school teachers with 15 years' experience range from below US$9 000 in the Czech Republic, Hungary and Turkey to over US$35 000 in Germany, Ireland, Korea and Switzerland. A primary teacher in Switzerland, the country with the highest statutory salary, is paid over 40 times more than a primary teacher in Turkey, where the statutory starting salary is lowest, even after an adjustment for purchasing power parities is made. This difference has a large impact on the variability in education costs per student (Indicator B4).

The salaries for experienced primary teachers in Argentina, Brazil, Chile, Jordan, Malaysia and the Philippines range from US$6 100 to US$15 400 (after adjusting for purchasing power); comparable salaries in the Russian Federation and Thailand are less than US$1 500.comparable salaries in the Russian Federation and Thailand are less than US$1 500.

Chart E1.1. **Annual statutory teachers' salaries in public institutions at the primary and upper secondary general level (1996)**



Countries are ranked in descending order of salary after 15 years' experience.

Source: OECD.

Statutory salaries, as reported in this indicator, refer to scheduled salaries according to official pay scales. These figures should be distinguished from the actual wage bills incurred by governments, as reported in Indicator B5. Furthermore, since teaching time (Indicator E2) and teacher workload can differ considerably across countries, these factors should be taken into account when comparing statutory teacher salaries across countries.

Teaching time should be considered when comparing salaries.

Education ministries typically make conscious decisions on whether or not to pay a premium for teachers in the higher levels of education. In 10 out of 23 OECD countries, the statutory salaries of teachers with 15 years' experience and minimum qualifications are similar in primary and upper secondary education. This pattern also holds in five out of 10 WEI participants for which data are available.

In 10 out of 23 OECD countries the difference between primary and upper secondary teacher salaries is 6 per cent or less...

In contrast, in Belgium, Denmark, the Netherlands and Switzerland statutory salaries of experienced upper secondary teachers are at least 30 per cent higher than those in primary schools. The difference in teacher salaries between primary and upper secondary (general) education is of similar magnitude in Brazil and Indonesia.

... while in four OECD countries upper secondary general teachers earn at least 30 per cent more.

In Argentina and the Netherlands the difference is more than 50 per cent, and in Malaysia salaries for experienced upper secondary teachers are more than 80 per cent higher than those of a primary teacher, nearly reaching the OECD average. Upper secondary teachers in Malaysia are mainly university graduates, while primary teachers are mainly college-trained.

In Malaysia, the salary of an experienced upper secondary teacher is almost twice as high as that of a primary teacher.

In 16 out of 20 OECD countries and in all WEI participants the statutory salaries of general and vocational teachers with 15 years' experience and minimum qualifications are broadly similar (a difference of less than six percentage points), although in Denmark, Finland and the Netherlands, vocational upper secondary teachers earn substantially less than general upper secondary teachers (21, 31 and 11 per cent, respectively).

Salaries for general upper secondary teachers tend to be similar to those for vocational teachers in most countries.

Change in teacher salaries over time

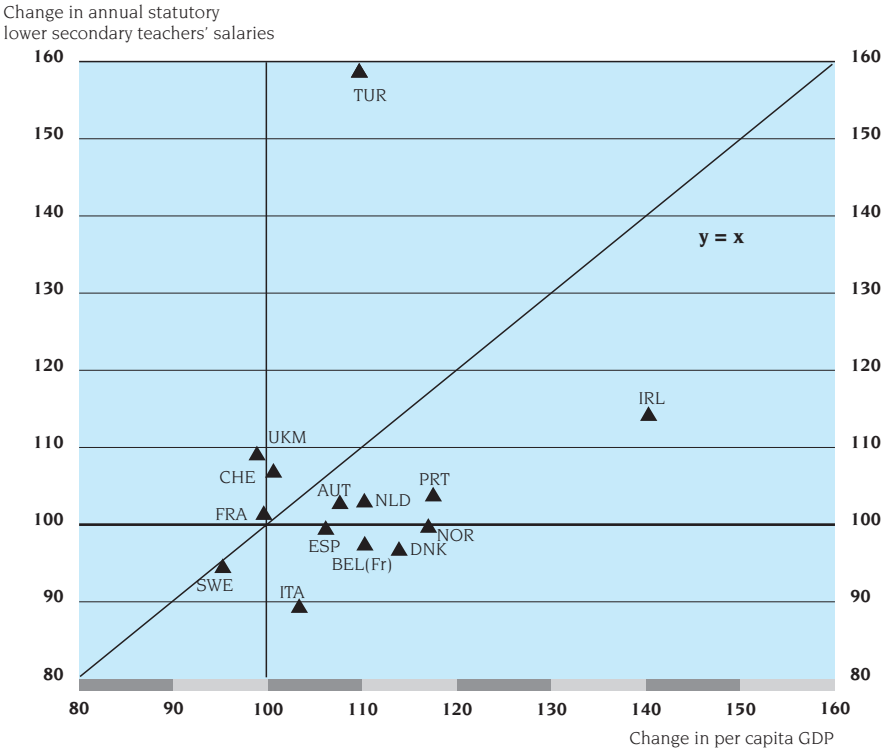
Data on the real (inflation-adjusted) change in teacher salaries between 1990 and 1996 are available for 14 OECD countries (Chart E1.2): annual statutory salaries for general upper secondary teachers with 15 years' experience increased by about 10 per cent or more in Ireland, Turkey and the United Kingdom (England and Scotland). Upper secondary teachers' salaries declined substantially in Italy (11 per cent), Spain (6 per cent) and Sweden (5 per cent).

In many countries, teacher salaries have been stable or increased in real terms.

Although teacher salaries have often been stable or increased in real terms, the increases have generally been slower than growth in GDP per capita (Chart E1.2). Countries where the ratio of salary to per capita GDP declined by 12 per cent or more over the period 1990-1996 include Italy, Norway and Spain. Also in Ireland, where the increase in teacher salaries was considerable (14 per cent), the salary schedule was adjusted more slowly than the increase in per capita GDP. However, there are exceptions: the increase in teacher salaries in Turkey nearly doubled the share of per capita wealth spent on each teacher.

However, the increases have generally been slower than growth in GDP per capita.

Chart E1.2. **Change in annual statutory lower secondary teachers' salaries after 15 years' experience between 1990 and 1996, relative to the change in per capita GDP over the same period (1990 =100)**



Source: OECD.

Statutory teacher salaries relative to per capita GDP

Teachers' salaries relative to per capita GDP are an indication of the extent to which a country invests in teaching resources, relative to the financial ability to fund educational expenditure. A high salary relative to per capita GDP suggests that a country is making more of an effort to invest its financial resources in teachers.

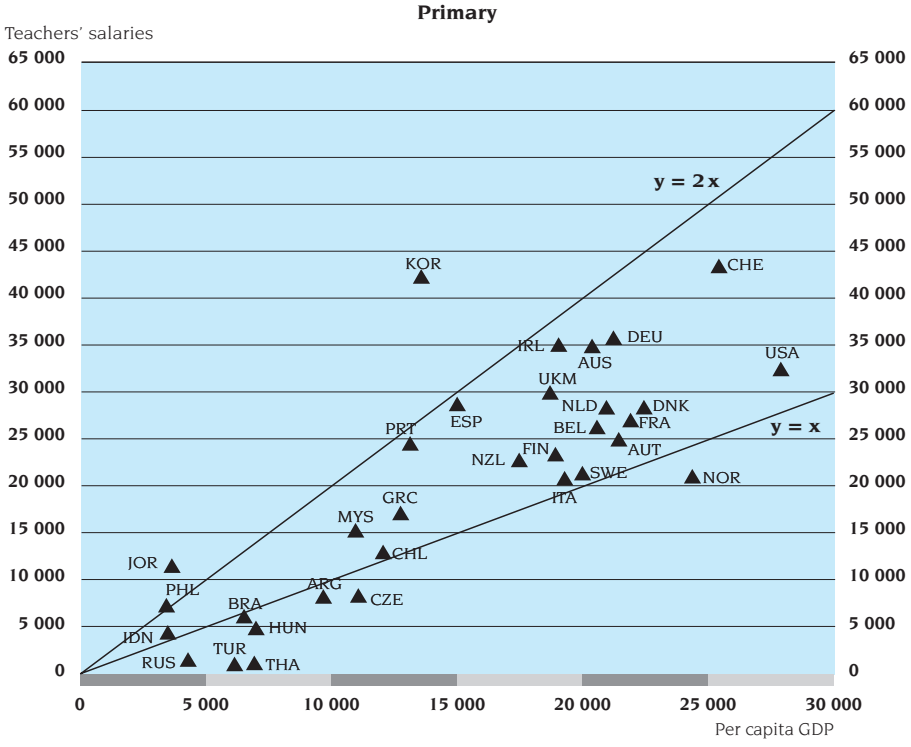
Relative to per capita GDP, teacher salaries are low in the Czech Republic, Hungary, Norway and Turkey and high in Korea, Spain and Switzerland.

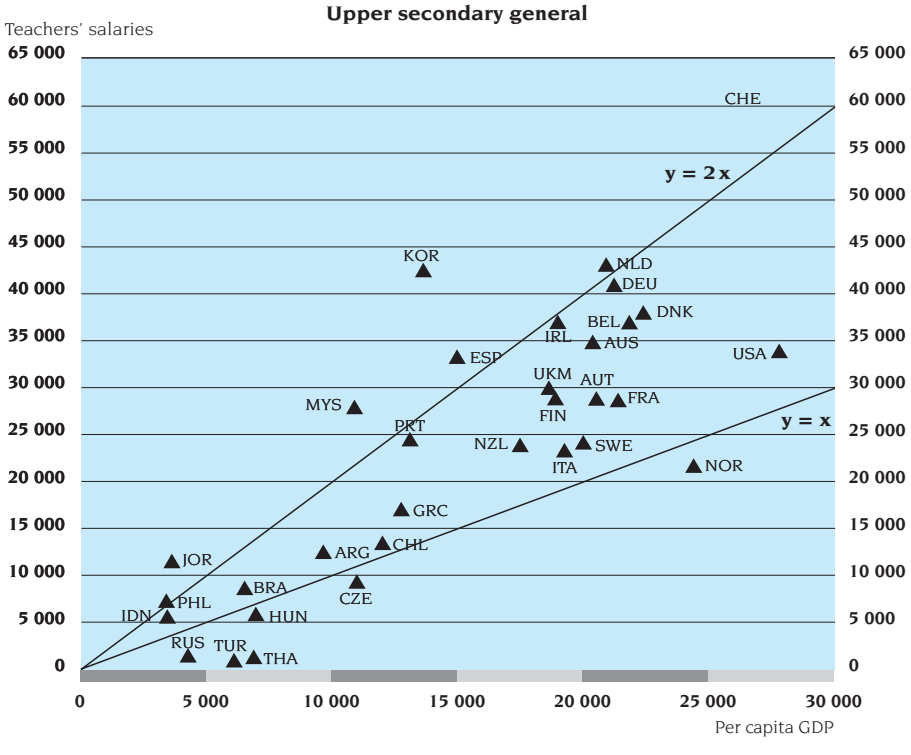
Starting salaries and mid-career salaries are lowest relative to per capita GDP in the Czech Republic, Hungary, Norway and Turkey for both primary and secondary teachers. Starting and mid-career salaries relative to per capita GDP are highest for public primary and secondary teachers in Korea and Spain, as well as in Switzerland for public lower and general upper secondary teachers. In Korea the salaries of teachers are approximately 1.75 times per capita GDP at the beginning of their career and three times per capita GDP after 15 years' experience.

Although teacher salaries in WEI participants are low compared to the OECD average, several of these countries are making more of an effort to invest in teachers.

In absolute terms, teacher salaries in most WEI participants are low as compared to the OECD average but, when comparing statutory teacher salaries to GDP per capita, many of these countries reach positions that are comparable to, or even higher, than those in the OECD countries. In Malaysia and Jordan the salaries of an experienced general upper secondary teacher are 2.6 and 3.2 times as high as per capita GDP.

Chart E1.3. **Annual statutory teachers' salaries after 15 years' experience relative to per capita GDP (1996)**





Source: OECD.

The relationship between teacher salaries and per capita wealth is not straightforward.

The relationship between teacher salaries and GDP is not clear. Although the Czech Republic, Hungary and Turkey have both relatively low GDP per capita and low teacher salaries, other countries with GDP per capita below the OECD average, including Korea and Spain, have comparatively high teacher salaries. Norway and the United States, two countries with relatively high GDP per capita, spend a below-average share of their wealth on teacher salaries, and Switzerland spends an above-average share of its relatively high per capita GDP on teacher salaries.

Statutory teacher salaries relative to earnings of other workers

In most countries teachers are well paid relative to average earnings…

Chart E1.4 compares the statutory salaries of primary and upper secondary teachers with the 10th, 50th and 90th percentile of the overall distribution of gross annual earnings of full-time wage and salary workers for 13 OECD countries. Although data on average earnings are different in kind from data on statutory salaries, comparisons between the two can provide a useful benchmark for teachers' salaries relative to overall salaries. Although primary teachers in most of the reporting countries fare relatively well when compared with other full-time wage and salary workers, teachers in the Czech Republic, Hungary and Sweden receive comparatively low compensation. The general pattern is similar in secondary schools, but in some countries, such as Belgium and Switzerland, secondary teachers appear to have more competitive salaries.

… but not if compared to earnings of university graduates.

In many OECD countries, teachers are among the most highly educated workers and the more relevant salary comparisons are with individuals in other high-skilled occupations. Yet in most of the countries for which data are available, teachers' statutory salaries after 15 years' experience are lower than the average earnings of university graduates, except for Australia and, for secondary-school teachers, France and Switzerland. Teachers' salaries in the Czech Republic, Hungary and Italy are 65 per cent or lower than the average salary of university graduates.

In interpreting this comparison, other aspects of working conditions of teachers have to be taken into account, such as the teaching load and the total working time of teachers compared with that of other professions.

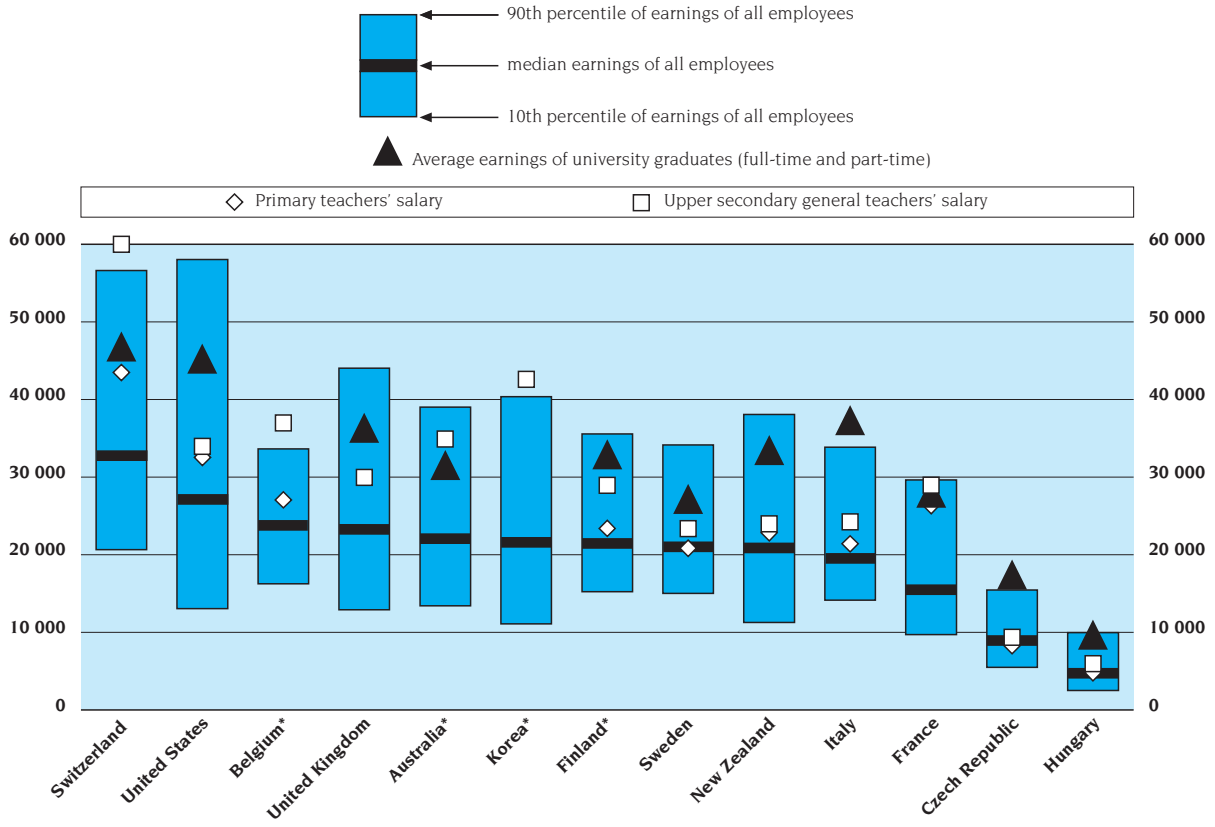
Salary after 15 years' experience per teaching hour

The cost of an hour of upper secondary general teaching in Denmark, Korea and Switzerland is five times the figure in the Czech Republic and Hungary.

An alternative measure of the cost of teaching time is the statutory teacher salary relative to the number of hours per year a full-time classroom teacher is required to teach students (Indicator E3). This measure reflects the fact that teaching time is organised differently across countries, influenced by both the number of instructional hours planned for students each year (Indicator E4) and the proportion of the working day that a full-time teacher is expected to be engaged in direct instruction. Although this measure does not adjust salaries for the amount of time that teachers spend in all teaching-related activities, it can nonetheless provide a rough estimate of the cost of an hour of teaching across countries.

The average statutory salary after 15 years' experience per teaching hour is US$31 in primary education, $40 in lower secondary and US$49 in upper secondary (general) education. For primary education, the Czech Republic and Hungary have relatively low salary costs per hour of instruction (US$13 and US$9, respectively); by contrast, costs are relatively high in Germany (US$46) and in Switzerland (US$50). There is more variability in salary cost per hour of teaching in upper secondary schools, ranging (among OECD countries) from US$16 or below in the Czech Republic and Hungary to more than US$80 in Denmark, Korea and Switzerland. Among WEI participants the figure

Chart E1.4. **Level of annual statutory teachers' salaries after 15 years' experience in primary and upper secondary education and gross average earnings of full-time employees (1996)**



* Gross average earnings of all employees are for 1995.
Belgium: 80th percentile instead of 90th percentile.

Countries are ranked in descending order of the median of gross average earnings of all employees.

Source: OECD.

ranges from US$2 or less per hour of teaching in the Russian Federation and Thailand to US$36 in Malaysia.

Growth in salary schedules for additional years of experience

In OECD countries, 15 years of teaching experience equates to between 20 and 80 per cent higher salaries...

The difference between statutory starting salaries and salaries after 15 years' experience are an indication of the economic returns to experience gained. On average, across OECD countries, statutory salaries for primary teachers with 15 years' experience are 40 per cent higher than starting salaries. The difference ranges from about 20 per cent in Denmark, Greece, Italy, Netherlands, Norway, Spain and Turkey to over 80 per cent in Australia and Korea.

... and among WEI participants, the range is even wider.

The range is even wider among WEI participants. In the Philippines there is only a small difference between the statutory starting salary and the salary after 15 years' experience; in the Russian Federation and Thailand there is an increase of 85 and 115 per cent, respectively (although it is to be noted that the latter are among the countries with the lowest starting salaries).

In most countries, the growth rates for salaries are similar for primary, lower secondary and general upper secondary teachers. The patterns of salary growth for vocational upper secondary teachers vary much more across countries than for other kinds of teachers.

The number of years it takes teachers to progress from minimum to maximum salaries varies from eight to 42 years across countries.

In both New Zealand and the United Kingdom, public teachers reach maximum salary after eight years' experience; in Jordan, Korea, Spain and Thailand, by contrast, it takes some 40 years to attain the maximum. In general, in those countries with the largest average annual increases in the salary schedule (ranging from six to eight per cent in Australia, New Zealand, Portugal and the United Kingdom), the maximum salary is reached fairly quickly, in between seven and 12 years. The exception to this pattern is Portugal, which has an average annual increase of six per cent over a 29-year period.

Additional bonuses to salaries

In some countries teachers may receive bonuses in addition to their gross salaries.

In most countries, teachers are paid according to a uniform scale in which salaries depend mainly on the amount of formal education and the number of years of teaching experience. In a number of countries, salary adjustments or bonuses are awarded for performance, additional administrative duties, school location, overtime compensation and, in some cases, family status of teachers. Substantial bonuses are paid in the Czech Republic, Finland, Greece and the United States, ranging among OECD countries from 15 to 20 per cent for primary-school teachers to between 18 and 27 per cent for general upper secondary. In the Russian Federation, additional bonuses amount to 75 per cent of statutory salaries.

Definitions

Data are from the 1998 OECD-INES survey and the WEI Pilot Project on Teachers and the Curriculum and refer to the school year 1995/96.

The starting salaries reported refer to the average scheduled gross salary per year for a full-time teacher with the minimum training necessary to be fully qualified at the beginning of his or her teaching career. Reported salaries are defined as the sum of wages (total sum of money paid by the employer for the labour supplied minus the employer's contribution to social security and pension funding). Bonuses which constitute a regular part of the salary (such as a 13th month, holidays or regional bonuses) are included in the figures. Additional bonuses (for example, remuneration for teachers in educational priority areas, for participating in school improvement projects or special activities, or for exceptional performance) are excluded from the reported gross salaries but reported separately in percentage terms.

Salaries at 15 years' experience refer to the scheduled annual salary of a full-time classroom teacher with the minimum training necessary to be fully qualified and with 15 years' experience. The maximum salaries reported refer to the scheduled maximum annual salary (top of the salary scale) of a full-time classroom teacher with the minimum training to be fully qualified for his or her job.

Salary data are reported in accordance with formal policies for public institutions.

Data are from the 1998 OECD-INES survey on Teachers and the Curriculum and refer to the school year 1995/96. The purchasing power parity (PPP) exchange rates used to convert salaries into US dollars come from the OECD National Accounts Database and the World Bank publication *World Development Indicators*.

Table E1.1*a*. **Annual statutory teachers' salaries in public institutions at the primary level of education, in equivalent US dollars converted using PPPs (1996)**

	Starting salary/ minimum training	Salary after 15 years' experience/ minimum training	Salary at top of scale/ minimum training	Ratio of starting salary to per capita GDP	Ratio of salary after 15 years' experience to per capita GDP	Ratio of salary after 15 years' experience to starting salary	Years from starting to top salary	Percentage additional bonus*	Salary after 15 years' experience per teaching hour	Salary after 15 years' experience per student enrolled
Australia (New South Wales)	19 166	34 897	34 897	0.9	1.7	1.8	12	n	m	1 931
Austria	19 508	25 005	39 323	0.9	1.2	1.3	34	n	37	1 970
Belgium	19 924	27 055	32 194	0.9	1.2	1.4	27	n	31	m
Czech Republic	6 391	8 279	9 910	0.6	0.8	1.3	32	15	13	405
Denmark	23 269	28 388	29 086	1.0	1.3	1.2	10	1	38	m
Finland	17 664	23 384	24 057	0.9	1.2	1.3	20	13	m	m
France	19 474	26 298	36 409	0.9	1.3	1.4	32	12	29	1 346
Germany	28 384	35 885	38 703	1.3	1.7	1.3	22	n	46	1 720
Greece	13 941	17 156	20 699	1.1	1.3	1.2	32	16	22	1 147
Hungary	3 533	4 789	6 184	0.5	0.7	1.4	37	2	9	394
Ireland	22 681	35 061	41 495	1.2	1.8	1.5	24	13	38	1 550
Italy	17 725	21 392	25 941	0.9	1.1	1.2	35	m	29	1 913
Korea	23 675	42 311	67 353	1.7	3.1	1.8	41	m	m	1 357
Netherlands	23 321	28 424	34 947	1.1	1.4	1.2	26	n	29	m
New Zealand	15 267	22 821	22 821	0.9	1.3	1.5	8	20	28	1 039
Norway	17 328	21 127	21 416	0.7	0.9	1.2	14	n	30	m
Portugal	16 283	24 501	42 303	1.2	1.9	1.5	29	5	31	m
Spain	24 544	28 783	36 850	1.6	1.9	1.2	42	n	32	1 599
Sweden	16 246	20 815	m	0.8	1.1	1.3	m	m	33	1 635
Switzerland	32 508	43 467	50 048	1.3	1.7	1.3	23	n	50	2 733
Turkey	811	954	1 119	0.1	0.2	1.2	20	8	m	m
United Kingdom	19 434	29 948	29 948	1.0	1.6	1.5	8	m	38	m
United States	24 090	32 533	40 398	0.9	1.2	1.4	30	18	34	1 924
Country mean	**18 486**	**25 360**	**31 186**	**1.0**	**1.4**	**1.4**	**25**	**6**	**31**	**1 511**
WEI Participants										
Argentina	6 165	8 176	9 646	0.6	0.8	1.3	23	m	10	320
Brazil	4 402	6 133	7 854	0.7	0.9	1.4	25	m	9	206
Chile	10 587	12 991	17 450	0.9	1.1	1.2	30	44	15	415
Indonesia	3 040	4 384	6 802	0.9	1.3	1.4	34	21	4	196
Jordan	7 278	11 519	26 752	2.0	3.2	1.6	41	a	14	m
Malaysia	9 240	15 342	21 940	0.8	1.4	1.7	29	7	20	790
Philippines	7 090	7 318	7 412	2.1	2.1	1.0	22	32	7	201
Russian Federation	802	1 482	m	0.2	0.3	1.8	15	71	2	m
Thailand	559	1 203	2 149	0.1	0.2	2.2	42	a	2	57
Uruguay	586	717	884	0.07	0.09	1.2	25	29	1	m

* Percentage additional bonus is an average of two ratios: maximum bonus applicable to starting salary and maximum bonus applicable to salary at top of scale.

Source: OECD Education Database. See Annex 3 for notes.

Table E1.1*b*. **Annual statutory teachers' salaries in public institutions at the lower secondary level of education, in equivalent US dollars converted using PPPs (1996)**

	Starting salary/ minimum training	Salary after 15 years' experience/ minimum training	Salary at top of scale/ minimum training	Ratio of starting salary to per capita GDP	Ratio of salary after 15 years' experience to per capita GDP	Ratio of salary after 15 years' experience to starting salary	Years from starting to top salary	Percentage additional bonus*	Salary after 15 years' experience per teaching hour	Salary after 15 years' experience per student enrolled
Australia (New South Wales)	19 166	34 897	34 897	0.9	1.7	1.8	12	n	m	m
Austria	20 181	26 249	42 041	0.9	1.2	1.3	34	n	40	2 861
Belgium	20 386	28 846	35 231	0.9	1.3	1.4	27	n	39	m
Czech Republic	6 391	8 279	9 910	0.6	0.8	1.3	32	15	14	636
Denmark	23 269	28 388	29 086	1.0	1.3	1.2	10	1	38	m
Finland	19 851	27 758	28 936	1.1	1.5	1.4	20	17	m	m
France	22 125	28 949	39 218	1.1	1.4	1.3	32	12	45	2 177
Germany	30 933	38 826	41 424	1.5	1.8	1.3	21	n	54	2 429
Greece	13 941	17 156	20 699	1.1	1.3	1.2	32	20	27	1 511
Hungary	3 533	4 789	6 184	0.5	0.7	1.4	37	2	10	506
Ireland	23 809	37 154	41 889	1.3	2.0	1.6	23	5	51	2 352
Italy	19 236	23 487	28 751	1.0	1.2	1.2	35	m	38	2 170
Korea	23 960	42 597	67 448	1.8	3.1	1.8	41	m	93	1 673
Netherlands	24 555	30 898	38 388	1.2	1.5	1.3	24	n	34	m
New Zealand	14 998	23 393	23 393	0.9	1.3	1.6	8	12	30	1 289
Norway	17 328	21 127	21 416	0.7	0.9	1.2	14	n	35	m
Portugal	16 283	24 500	42 303	1.2	1.9	1.5	29	10	38	m
Spain	24 543	28 783	36 850	1.6	1.9	1.2	42	n	32	1 613
Sweden	17 769	22 845	m	0.9	1.2	1.3	m	m	40	1 872
Switzerland	38 100	51 787	58 377	1.5	2.0	1.4	21	n	61	3 988
Turkey	811	954	1 119	0.1	0.2	1.2	20	10	m	m
United Kingdom	19 262	29 948	29 948	1.0	1.6	1.6	8	m	41	m
United States	23 581	31 327	41 616	0.8	1.1	1.3	30	23	32	1 788
Country mean	**19 305**	**26 649**	**32 688**	**1.0**	**1.4**	**1.4**	**25**	**7**	**40**	**1 919**
WEI Participants										
Argentina	9 001	12 541	14 806	0.9	1.3	1.4	23	m	14	689
Brazil	5 183	7 341	9 504	0.8	1.1	1.4	25	m	11	228
Chile	10 587	12 991	17 450	0.9	1.1	1.2	30	44	15	416
Indonesia	3 404	4 788	7 075	0.1	1.4	1.4	31	19	5	241
Jordan	7 278	11 519	26 752	2.0	3.2	1.6	41	a	14	m
Malaysia	17 682	27 956	38 673	1.6	2.6	1.6	22	7	36	1 508
Philippines	7 090	7 318	7 412	2.1	2.1	1.0	22	32	m	220
Russian Federation	802	1 482	m	0.2	0.3	1.8	15	71	2	m
Thailand	559	1 203	2 149	0.1	0.2	2.2	42	a	2	58
Uruguay	715	857	1 033	0.1	0.1	1.2	25	25	2	56

* Percentage additional bonus is an average of two ratios: maximum bonus applicable to starting salary and maximum bonus applicable to salary at top of scale.

Source: OECD Education Database. See Annex 3 for notes.

Table E1.1c. **Annual statutory teachers' salaries in public institutions at the upper secondary level of education, general programmes, in equivalent US dollars converted using PPPs (1996)**

	Starting salary/ minimum training	Salary after 15 years' experience/ minimum training	Salary at top of scale/ minimum training	Ratio of starting salary to per capita GDP	Ratio of salary after 15 years' experience to per capita GDP	Ratio of salary after 15 years' experience to starting salary	Years from starting to top salary	Percentage additional bonus*	Salary after 15 years' experience per teaching hour	Salary after 15 years' experience per student enrolled
Australia (New South Wales)	19 166	34 897	34 897	0.9	1.7	1.8	12	n	m	m
Austria	21 448	28 740	47 228	1.0	1.3	1.3	34	n	46	3 363
Belgium	25 228	36 971	44 498	1.2	1.7	1.5	25	n	56	m
Czech Republic	7 216	9 355	11 216	0.7	0.9	1.3	32	18	16	800
Denmark	26 061	38 161	38 161	1.2	1.7	1.5	14	8	80	m
Finland	20 524	28 936	30 618	1.1	1.5	1.4	20	19	m	m
France	22 125	28 949	39 218	1.1	1.4	1.3	32	12	46	2 177
Germany	32 992	41 081	47 503	1.6	1.9	1.2	20	n	61	3 128
Greece	13 941	17 156	20 699	1.1	1.3	1.2	32	20	27	1 516
Hungary	4 506	5 943	7 430	0.6	0.9	1.3	37	2	13	524
Ireland	23 809	37 154	41 889	1.3	2.0	1.6	23	5	51	2 352
Italy	19 236	24 218	30 186	1.0	1.2	1.3	35	m	40	2 468
Korea	23 960	42 597	67 448	1.8	3.1	1.8	41	m	100	1 844
Netherlands	24 764	43 137	51 152	1.2	2.1	1.7	24	n	47	m
New Zealand	14 730	23 965	23 965	0.8	1.4	1.6	8	4	32	1 701
Norway	18 747	21 741	23 290	0.8	0.9	1.2	16	m	43	m
Portugal	16 283	24 501	42 303	1.2	1.9	1.5	29	10	43	m
Spain	28 464	33 405	41 915	1.9	2.2	1.2	39	n	53	2 352
Sweden	19 292	23 354	m	1.0	1.2	1.2	m	m	44	1 536
Switzerland	45 739	60 515	67 495	1.8	2.4	1.3	20	n	90	5 933
Turkey	811	954	1 119	0.1	0.2	1.2	20	13	m	m
United Kingdom	19 262	29 948	29 948	1.0	1.6	1.6	8	m	m	m
United States	23 815	33 953	41 615	0.9	1.2	1.4	30	27	36	2 308
Country mean	**20 527**	**29 114**	**35 627**	**1.1**	**1.6**	**1.4**	**25**	**8**	**49**	**2 286**
WEI Participants										
Argentina	9 001	12 541	14 806	0.9	1.3	1.4	23	m	14	785
Brazil	6 148	8 655	11 176	0.9	1.3	1.4	25	m	13	216
Chile	10 587	13 565	18 232	0.9	1.1	1.3	30	43	16	488
Indonesia	4 018	5 655	8 773	1.2	1.6	1.4	33	18	6	349
Jordan	7 278	11 519	26 752	2.0	3.2	1.6	41	a	17	694
Malaysia	17 682	27 956	38 673	1.6	2.6	1.6	22	7	36	1 490
Philippines	7 090	7 318	7 412	2.1	2.1	1.0	22	32	m	188
Russian Federation	802	1 482	m	0.2	0.3	1.8	15	71	2	m
Thailand	559	1 203	2 149	0.1	0.2	2.2	42	a	2	50
Uruguay	786	942	1 137	0.1	0.1	1.2	25	22	2	62

* Percentage additional bonus is an average of two ratios: maximum bonus applicable to starting salary and maximum bonus applicable to salary at top of scale.

Source: OECD Education Database. See Annex 3 for notes.

Table E1.1*d*. **Annual statutory teachers' salaries in public institutions at the upper secondary level of education, vocational programmes, in equivalent US dollars converted using PPPs (1996)**

	Starting salary/ minimum training	Salary after 15 years' experience/ minimum training	Salary at top of scale/ minimum training	Ratio of starting salary to per capita GDP	Ratio of salary after 15 years' experience to per capita GDP	Ratio of salary after 15 years' experience to starting salary	Years from starting to top salary	Percentage additional bonus*	Salary after 15 years' experience per teaching hour	Salary after 15 years' experience per student enrolled
Australia (New South Wales)	31 249	36 388	36 388	1.5	1.8	1.2	3	n	m	m
Austria	20 919	27 688	45 019	1.0	1.3	1.3	34	n	44	3 240
Belgium	23 426	33 747	40 753	1.1	1.5	1.4	26	n	35	m
Czech Republic	6 855	8 874	10 615	0.6	0.8	1.3	32	23	15	759
Denmark	24 200	30 180	31 925	1.1	1.3	1.2	19	12	40	m
Finland	14 973	19 851	20 693	0.8	1.1	1.3	20	35	m	m
France	22 125	28 949	39 218	1.1	1.4	1.3	32	12	46	2 177
Germany	32 992	41 081	47 503	1.6	1.9	1.2	20	n	61	3 128
Greece	13 941	17 156	20 699	1.1	1.3	1.2	32	20	27	1 516
Hungary	4 506	5 943	7 430	0.6	0.9	1.3	37	2	13	524
Ireland	23 809	37 154	41 889	1.3	2.0	1.6	23	5	51	2 352
Italy	19 236	24 218	30 186	1.0	1.2	1.3	35	m	40	2 468
Korea	24 626	43 453	68 400	1.8	3.2	1.8	41	m	95	1 881
Netherlands	24 706	38 388	44 882	1.2	1.8	1.6	23	n	43	m
New Zealand	m	m	m	m	m	m	m	m	m	m
Norway	17 328	21 127	21 416	0.7	0.9	1.2	m	n	36	m
Portugal	16 283	24 501	48 821	1.2	1.9	1.5	29	10	43	m
Spain	27 642	32 783	41 367	1.8	2.2	1.2	39	n	52	2 308
Sweden	18 277	23 354	m	0.9	1.2	1.3	m	m	38	1 536
Switzerland	m	m	m	m	m	m	m	m	m	m
Turkey	811	954	1 119	0.1	0.2	1.2	20	23	m	m
United Kingdom	m	m	m	m	m	m	m	m	m	m
United States	23 815	33 953	41 615	0.9	1.2	1.4	30	27	m	2 308
Country mean	**19 586**	**26 487**	**33 681**	**1.1**	**1.5**	**1.3**	**28**	**10**	**42**	**2 016**
WEI Participants										
Argentina	m	m	m	m	m	m	m	m	m	m
Brazil	m	m	m	m	m	m	m	m	m	m
Chile	10 587	13 565	18 232	0.9	1.1	1.3	30	43	16	488
Indonesia	4 018	5 655	8 773	1.2	1.6	1.4	33	18	6	349
Jordan	7 278	11 519	26 752	2.0	3.2	1.6	41	a	15	694
Malaysia	17 682	27 956	38 673	1.6	2.6	1.6	22	7	34	1 490
Philippines	a	a	a	a	a	a	a	a	a	a
Russian Federation	802	1 482	m	0.2	0.3	1.8	15	71	2	m
Thailand	559	1 203	2 149	0.1	0.2	2.2	42	a	2	50
Uruguay	786	942	1 137	0.1	0.1	1.2	25	22	2	62

* Percentage additional bonus is an average of two ratios: maximum bonus applicable to starting salary and maximum bonus applicable to salary at top of scale.

Source: OECD Education Database. See Annex 3 for notes.

Table E1.2. **Annual statutory teachers' salaries after 15 years' experience in public institutions: index of change between 1990 and 1996 and ratio to per capita GDP (1990, 1996)**

	Index of change in salary between 1990 and 1996, 1996 price level (1990 = 100)			Ratio of salary to per capita GDP, 1990			Ratio of salary to per capita GDP, 1996		
	Lower secondary level of education	Upper secondary level of education, general programmes	Upper secondary level of education, vocational programmes	Lower secondary level of education	Upper secondary level of education, general programmes	Upper secondary level of education, vocational programmes	Lower secondary level of education	Upper secondary level of education, general programmes	Upper secondary level of education, vocational programmes
Austria	103	100	102	1.3	1.5	1.4	1.2	1.3	1.3
Belgium (Fr. Community)	97	97	97	1.5	1.9	1.5	1.3	1.7	1.4
Denmark	97	101	m	1.5	1.9	m	1.3	1.7	1.3
France	101	101	101	1.4	1.4	1.4	m	1.4	1.4
Ireland	114	114	114	2.3	2.3	2.3	2.0	2.0	2.0
Italy	89	89	89	1.4	1.4	1.4	1.2	1.2	1.2
Netherlands	103	100	100	1.6	2.2	2.0	1.5	2.1	1.8
Norway	100	98	103	1.0	1.1	1.0	0.9	0.9	0.9
Portugal	104	104	104	2.0	2.0	2.0	1.9	1.9	1.9
Spain	99	94	104	2.1	2.5	2.3	1.9	2.2	2.2
Sweden	94	95	101	1.2	1.2	1.1	1.2	1.2	1.2
Switzerland	107	m	m	1.8	m	m	2.0	2.4	m
Turkey	159	155	140	0.1	0.1	0.1	0.2	0.2	0.2
United Kingdom	109	109	m	1.5	1.5	m	1.6	1.6	m

Source: OECD Education Database. See Annex 3 for notes.

AGE AND GENDER DISTRIBUTION OF TEACHERS

POLICY CONTEXT

This indicator shows the age and gender distribution of teachers at the lower levels of education.

The demography of teachers is becoming a major concern in many OECD countries, particularly in those where student enrolment is expected to expand further (Indicator C1). Ensuring that there will be enough skilled teachers to educate all children is an important policy concern. If a large proportion of teachers are concentrated in the older age-cohorts, countries may have to develop effective policies for replacing retired teachers. With seniority as an important criterion in teacher's pay-scales, the age-distribution of teachers also requires attention since it has a considerable impact on educational budgets.

EVIDENCE AND EXPLANATIONS

Age

There is an increasing concern in many countries that a large number of teachers will retire at a time when student enrolments are continuing to expand.

General demographic trends, as well as the attractiveness of teaching relative to other professions at different points in time, can influence the age-distribution of the teaching force. In many countries the post-war baby boom, combined with increasing tertiary participation rates, has created a large concentration of teachers between the ages of 40 and 50. In countries where the school-age population is projected to grow over the next decade (Indicator C1), there is an increasing concern that a large proportion of teachers will reach retirement age at a time when student enrolments are continuing to expand.

In 14 out of 16 OECD countries most primary teachers are 40 years old or more.

In most OECD countries, the majority of primary and lower secondary students are taught by teachers aged 40 years or older (Table E2.1). Primary teachers are most evenly distributed across age categories in Belgium, Finland, Ireland, Korea, Norway and Switzerland; in Denmark and Germany they are heavily concentrated in the 40-49 age-group. As teacher salaries (Indicator E1) are typically linked to either age or years of employment, these countries are likely to face relatively higher wage-bills. At the lower secondary level, the pattern is similar in most countries, although lower secondary teachers tend to be older than primary teachers in Belgium, Finland, Italy, the Netherlands and Switzerland, and younger in Korea.

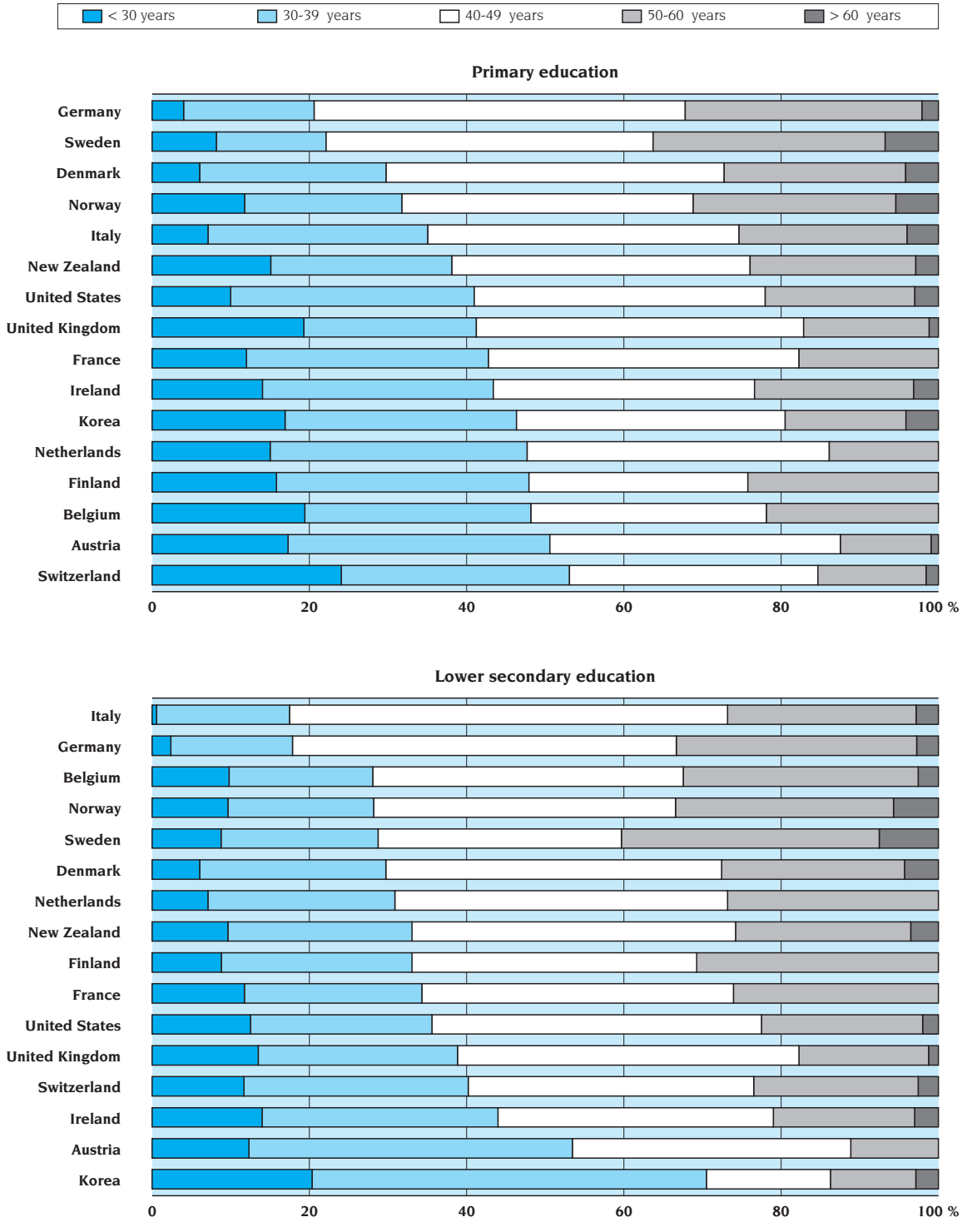
Countries vary in the degree to which they employ young teachers.

About a fifth or more of primary teachers in Belgium, Switzerland and the United Kingdom are less than 30 years of age; fewer than a 10th are that young in Denmark, Germany, Italy and Sweden. Cross-country differences in the proportion of young teachers can be explained, in part, by the typical completion ages of tertiary education (Indicator C3) and the entry requirements to the teaching profession.

Several countries have a large proportion of teachers within a decade of retirement.

The potential for a teacher shortage is biggest in the countries with the largest proportion of older teachers and projections of stable or growing enrolments. Belgium, Finland, Germany, Norway and Sweden have the largest proportion of lower secondary teachers over the age of 50 (more than 30 per cent). The last three countries also have a relatively large proportion of older primary teachers. These teachers will be reaching retirement age just as more students are expected to be enrolling in school.

Chart E2.1. **Distribution of teachers in public primary and lower secondary education by age group (head counts, 1996)**



Countries are ranked in descending order of the percentage of teachers over the age of 40.

Source: OECD.

Gender

Teachers of pre-primary and primary classes are predominantly women.

In both OECD countries and WEI participants, pre-primary and primary teachers are predominantly women. Only in Canada, Japan, the Philippines and Thailand are more than 10 per cent of pre-primary teachers male. Except for Greece and Turkey, 60 per cent or more of primary teachers are female in OECD countries. The picture is slightly different among WEI participants: in China and India more than half of the primary teachers are male.

In 10 out of 13 OECD countries, the gender gap in teaching is wider among younger teachers than among older ones, even though among primary teachers aged 50 or older, women still occupy two-thirds or more of the teaching positions (Table E2.3). The exception is Korea, where women are a minority among older primary teachers and a clear majority among younger primary teachers.

The proportion of male and female teachers in secondary schools is similar in most countries.

In secondary education the percentages of male and female teachers show more similarity. The Czech Republic and Hungary have the lowest percentage of male teachers (24 per cent) in lower secondary schools, and the Netherlands and Switzerland have the highest percentages (67 and 63 per cent respectively). In upper secondary schools, the percentage of male teachers ranges from 32 per cent in Hungary (general upper secondary) to 72 and 75 per cent in Korea (general and vocational upper secondary education, respectively). Among WEI participants, male general upper secondary teachers are a minority in all countries except China, India and Indonesia.

■ DEFINITIONS

Data are from the 1998 OECD-INES survey and WEI Project on Teachers.

The teacher characteristics reported are age and gender, measured as the percentage of teachers per level of education, within each of five age categories, and the percentage of women teachers per level of education.

Data refer to the school year 1995/96.

Table E2.1. **Percentage of teachers in public primary and lower secondary education by age group, based on head counts (1996)**

	Primary education					Lower secondary education				
	< 30 years	30-39 years	40-49 years	50-60 years	> 60 years	< 30 years	30-39 years	40-49 years	50-60 years	> 60 years
Austria	17	33	37	12	1	12	41	35	11	n
Belgium	19	29	30	22	n	10	18	40	30	3
Denmark	6	24	43	23	4	6	24	43	23	4
Finland	16	32	28	24	n	9	24	36	31	n
France	12	31	39	18	n	12	22	39	26	n
Germany	4	17	47	30	2	2	15	49	31	3
Ireland	14	29	33	20	3	14	30	35	18	3
Italy	7	28	40	21	4	1	17	56	24	3
Korea	17	29	34	15	4	20	50	16	11	3
Netherlands	15	33	38	14	n	7	24	42	27	n
New Zealand	15	23	38	21	3	10	23	41	22	4
Norway	12	20	37	26	5	10	19	38	28	6
Sweden	8	14	42	30	7	9	20	31	33	8
Switzerland	24	29	32	14	2	12	29	36	21	3
United Kingdom	19	22	42	16	1	14	25	43	16	1
United States	10	31	37	19	3	13	23	42	21	2
Country mean	**14**	**26**	**37**	**20**	**2**	**10**	**25**	**39**	**23**	**3**

Source: OECD Education Database. See Annex 3 for notes.

Table E2.2. **Percentage of women among teaching staff in public institutions by level of education, based on head counts (1996)**

	Early childhood education	Primary education	Lower secondary education	Upper secondary education (general)	Upper secondary education (vocational)
Austria	98	83	61	55	46
Belgium	x	80	52	x	x
Canada	67	67	67	67	m
Czech Republic	100	93	76	63	50
Denmark	92	62	62	46	40
Finland	96	68	68	63	54
France	x	77	56	x	x
Germany	97	81	56	36	36
Greece	100	55	61	51	45
Hungary	100	94	76	68	51
Ireland	x	79	m	m	m
Italy	100	93	72	57	x
Japan	89	60	39	27	28
Korea	100	61	58	28	25
Netherlands	x	74	33	x	42
New Zealand	94	79	x	55	a
Spain	95	64	x	48	x
Sweden	m	83	58	51	43
Switzerland	98	69	37	37	m
Turkey	100	43	41	41	38
United Kingdom	x	90	x	57	m
United States	94	86	60	51	x
Country mean	**95**	**75**	**57**	**50**	**42**
WEI Participants					
Argentina	97	89	69	62	62
Chile	99	77	77	60	48
China	94	47	38	30	40
India	x	30	28	27	m
Indonesia	95	52	46	44	34
Jordan	100	x	58	58	32
Malaysia	100	60	58	62	38
Paraguay	92	69	m	m	m
Philippines	80	89	77	77	a
Thailand	63	63	63	61	41

Table E2.3. **Percentage of women among teaching staff in public primary and lower secondary education by age group, based on head counts (1996)**

	Primary education				Lower secondary education			
	< 30 years	30-39 years	40-49 years	> 50 years	< 30 years	30-39 years	40-49 years	> 50 years
Austria	92	89	81	62	76	68	53	42
Belgium	89	84	79	68	70	61	54	40
Denmark	63	62	62	62	64	62	62	61
France	88	74	77	74	63	55	58	53
Germany	100	89	81	74	a	68	57	45
Italy	100	96	94	88	a	76	73	67
Korea	77	80	53	33	85	66	40	12
Netherlands	86	77	67	73	57	42	30	24
New Zealand	85	81	79	75	m	m	m	m
Sweden	88	81	82	84	64	59	57	58
Switzerland	80	69	66	61	56	44	36	28
United Kingdom	89	87	91	93	m	m	m	m
United States	83	87	86	88	67	59	60	56
Country mean	**86**	**81**	**77**	**72**	**67**	**60**	**53**	**44**

Source: OECD Education Database. See Annex 3 for notes.

TEACHING TIME

POLICY CONTEXT

Together with factors such as student/teaching staff ratios, intended instruction time and teacher salaries, the amount of time that teachers spend teaching influences the financial resources that go into education. At the same time, teaching time is an important element of the working conditions of teachers. It can condition the amount of time available for planning and other professional activities within the school day, and can affect the relative attractiveness of the profession.

This indicator shows the number of hours per year a full-time classroom teacher is required to teach students according to formal policy in his/her country.

EVIDENCE AND EXPLANATIONS

In primary education in OECD countries the number of teaching hours per year varies from 551 in Hungary to 975 in the Netherlands. In lower secondary schools, it varies from 456 in Korea to 964 in the United States; and in upper secondary the variation is between 428 hours in Korea and 942 hours in the United States in general education and between 456 in Korea and 953 in Belgium in vocational education.

In both primary and secondary education, countries vary in the number of teaching hours per year for the average public school teacher.

Among WEI participants teaching obligations are typically higher, ranging for a primary teacher from 634 hours in Thailand to more than 1 100 in Indonesia and the Philippines.

Indicator E3.1 shows the number of hours per year a full-time classroom teacher is required to teach students according to formal policy in his/her country. It gives no information about the hours devoted to teaching-related tasks, such as preparation of lessons or professional development activities, and general school tasks, such as staff meetings or student support. It is thus important that this indicator should not be interpreted as a measure of the total workload, since it reflects only the proportion of time spent in classroom instruction.

But teaching hours are not the same as teachers' work hours.

In Korea and Hungary the number of teaching hours per year is comparatively low at all three levels of education reported (around 550 hours or less), while in the Netherlands and the United States it is high (900 hours or more).

Teaching hours are low in Korea and Hungary, high in the Netherlands and the US.

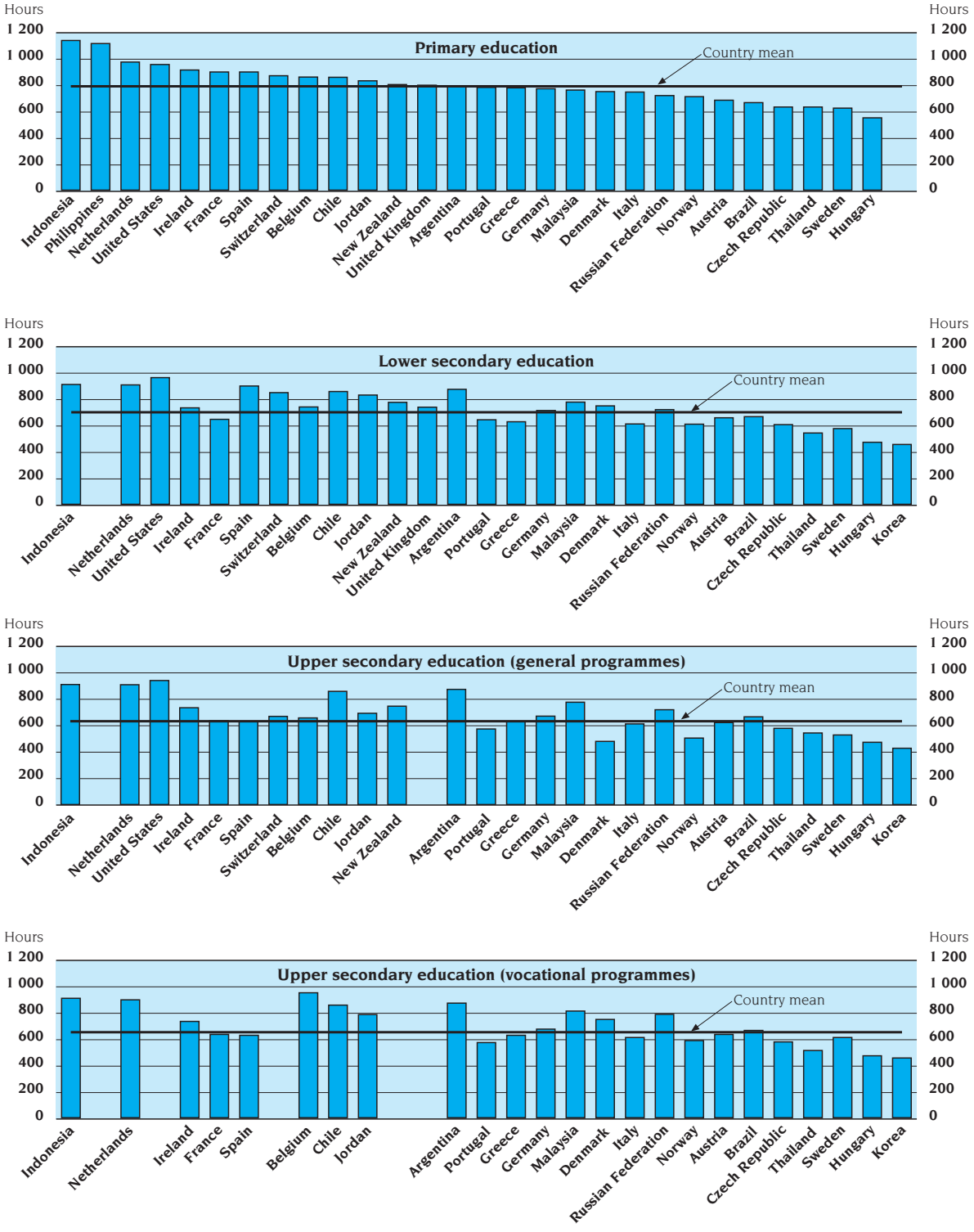
Even though teacher salaries are typically lower in public primary than in public secondary education in many countries, teaching obligations are typically higher – a trend which is even more pronounced among WEI participants than among OECD countries.

Teaching hours are higher in primary than in secondary education.

More instructional time for students does not necessarily translate into more teaching time for teachers. Although in some countries a teacher's school day is spent almost exclusively teaching, in other countries teachers are afforded more time during the day to engage in other activities, such as preparing lessons, correcting assignments and tests, professional development activities and meetings with parents. Chart E3.2 shows the relationship between instructional time and teaching time in lower secondary schools in 18 OECD countries. Countries along the diagonal line (y = x), including New Zealand, Spain and the United

More hours of instruction do not necessarily translate into more teaching time.

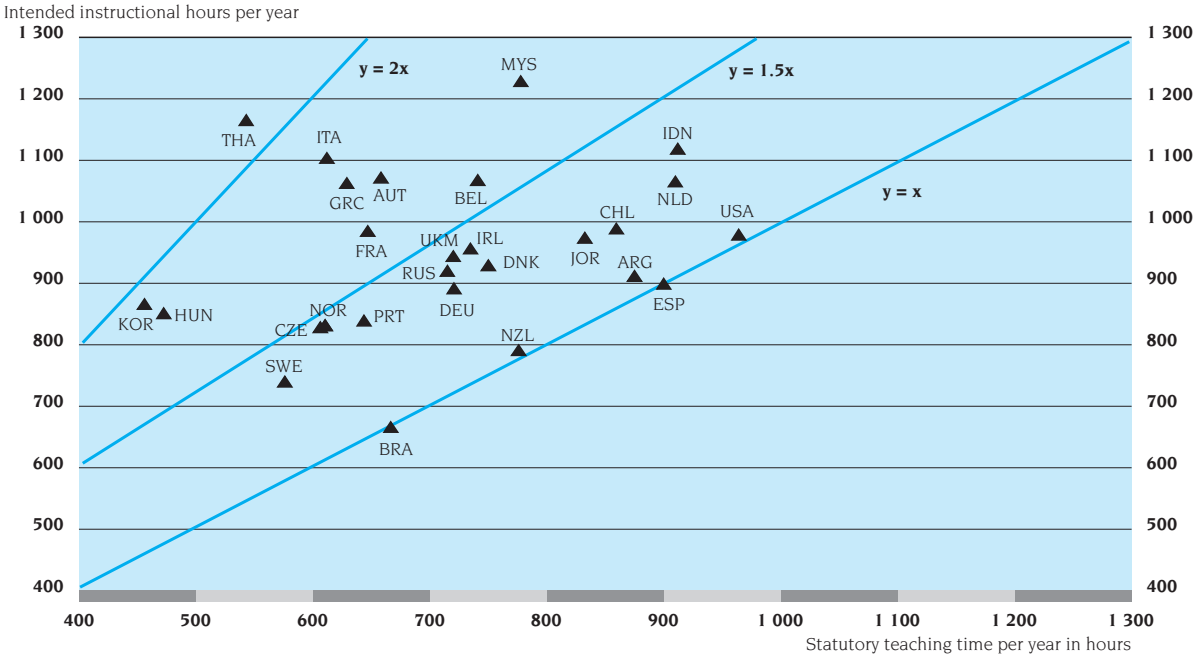
Chart E3.1. **Statutory number of teaching hours per year in public institutions, by level of education (1996)**



Countries are ranked in descending order of the number of teaching hours per year in primary institutions.

Source: OECD.

Chart E3.2. **Relationship between total intended instructional hours and statutory teaching time at the lower secondary level (1996)**



Source: OECD.

States, have instructional time that is roughly equivalent to teaching time – implying that teachers are in front of the classroom for roughly the same amount of time that students are behind their desks. In Hungary, Italy and Korea, by contrast, the number of instructional hours is nearly double the number of teaching hours (diagonal line y = 2x). In these countries, nearly twice as many teachers have to be employed for each instructional hour.

DEFINITIONS

Teaching time is defined as the total number of hours per year for which a full-time classroom teacher is responsible for teaching a group or class of students, according to the formal policy in the specific country. Periods of time formally allowed for breaks between lessons or groups of lessons are excluded. Deviations from this definition are reported in Annex 3.

Data are from the 1998 OECD-INES survey and WEI Project on Teachers and the Curriculum and refer to the school year 1995/96.

Teaching hours per year are calculated on the basis of teaching hours per day multiplied by the number of teaching days per year, or on the basis of teaching hours per week multiplied by the number of weeks per year that the school is open for teaching. The number of hours per year that are accounted for by days when the school is closed for festivities and celebrations are excluded.

They are reported in accordance with formal policies for public institutions.

If no formal data were available, it was acceptable to estimate the number of teaching hours from survey data.

Table E3.1. **Number of teaching hours per year in public institutions by level of education (1996)**

	Teaching time (1996)				Index of change in teaching time between 1990 and 1996 (1990 = 100)		
	Primary education	Lower secondary education	Upper secondary education (general)	Upper secondary education (vocational)	Lower secondary education	Upper secondary education (general)	Upper secondary education (vocational)
Austria	684	658	623	636	101	101	101
Belgium*	861	741	657	953	117	100	100
Czech Republic	635	607	580	580	m	m	m
Denmark	750	750	480	750	100	95	m
France	900	647	636	636	97	95	95
Germany	772	715	671	676	100	103	101
Greece	780	629	629	629	m	m	m
Hungary	551	473	473	473	90	m	m
Ireland	915	735	735	735	100	100	100
Italy	748	612	612	612	100	100	100
Korea	m	456	428	456	m	m	m
Netherlands	975	910	910	900	100	100	99
New Zealand	804	776	747	a	m	m	m
Norway	713	611	505	589	92	93	92
Portugal	783	644	574	574	88	90	90
Spain	900	900	630	630	100	100	100
Sweden	624	576	528	612	96	100	93
Switzerland	871	850	669	m	m	m	m
United Kingdom	800	740	m	m	100	m	m
United States	958	964	942	m	m	m	m
Country mean	**791**	**700**	**633**	**652**			
WEI Participants							
Argentina	788	875	875	875			
Brazil	667	667	667	667			
Chile	860	860	860	860			
Indonesia	1 140	912	912	912			
Jordan	833	833	694	788			
Malaysia	762	778	778	813			
Philippines	1 117	1 176	1 176	a			
Russian Federation	721	721	721	788			
Thailand	634	543	543	513			
Uruguay	732	534	534	534			

* Belgium: The index of change refers only to the French Community of Belgium.
Source: OECD Education Database. See Annex 3 for notes.

TOTAL INTENDED INSTRUCTION TIME FOR PUPILS IN LOWER SECONDARY EDUCATION

POLICY CONTEXT

Instructional time is the main resource invested in the process of education. Policy-makers seeking to improve educational outcomes often seek to increase the amount of time for which students are engaged in learning activities, although tight budgets and strong teacher unions can limit changes in the time given to instruction.

This indicator shows the intended instruction time (in hours per year) for grades in which the majority of pupils are 12, 13 and 14 years of age.

The instruction time that can be devoted to each student is closely related to factors such as class size, teaching time (Indicator E3) and student/teaching staff ratios (Indicator B7). The optimal balance among these factors may be different for different subject areas and for the different levels of education.

It also shows the distribution of intended instruction time by major subject areas in the curriculum.

EVIDENCE AND EXPLANATIONS

Intended instruction time refers to the number of hours per year during which pupils are given instruction according to the compulsory and the flexible part of the curriculum. In many cases, the actual amount of time that students spend in instruction does not fully correspond to the intended instruction time. Time can be lost because of lack of qualified substitutes for absent teachers, student absences or school closure for exams, teachers' meetings or inclement weather. Furthermore, intended instruction time can vary from year to year because of changes to the curriculum or to the required number of teaching hours or because of variability in the length of holiday periods. In some countries there is also variation by region or among different school types as well.

The number of intended instruction hours per year is calculated by multiplying the total intended number of lessons per year by the duration of one lesson.

In the OECD, total intended instruction time for 14 year-olds ranges from 741 to 1 105 hours per year – a range of over 12 weeks, assuming a 30-hour week (Chart E4.1). The total intended instruction time per year for 14 year-olds is longest in Italy (1 105 hours) and around 1 050 hours or above in Australia, Austria, Belgium, Greece and the Netherlands. Instruction time is shortest in Sweden (741 hours) and New Zealand (792 hours).

In OECD countries, total intended instruction time for 14 year-olds ranges from 741 to 1 105 hours per year.

There is similar variation among WEI participants reporting data, ranging from less than 670 hours in Brazil to more than 1 200 hours in Malaysia and the Philippines.

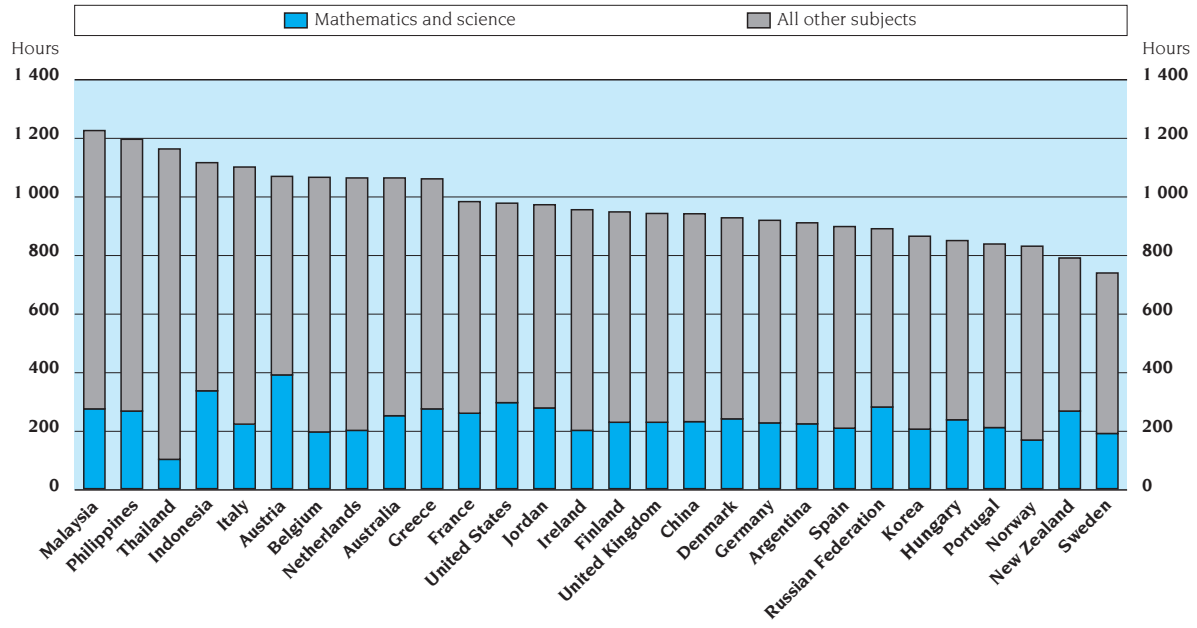
There is similar variation among WEI participants.

Chart E4.1 also shows the absolute amount of intended instruction time in mathematics and science per 14 year-old pupil in hours per year, that is, the number of hours in these subjects required of all students at this age in every school. Among OECD countries, intended instruction time in mathematics and science ranges from 167 hours in Norway to 390 hours in Austria. The mean is 234 hours.

Intended instruction time in mathematics and science ranges from 167 hours to 390 hours among OECD countries.

Except for Argentina, China and Thailand, the proportion of the curriculum for 14 year-olds that is devoted to mathematics and science instruction in WEI

Chart E4.1. **Total intended instruction time for 14 year-olds in hours per year (1996)**



Countries are ranked in descending order of the total intended instruction time.

Source: OECD.

All but three WEI participants place more emphasis on instruction in mathematics and science than does the average OECD country.

participants exceeds the OECD average of 234 hours by at least 30 hours per year – although it should be taken into account, when interpreting these figures, that some countries distribute a significant proportion of the intended curriculum hours flexibly among the different compulsory school subjects. These hours are not accounted for in Tables E4.1a and E4.1b. Indonesia, Jordan, Malaysia and the Russian Federation devote more than 270 hours per year to mathematics and science instruction for 14 year-olds.

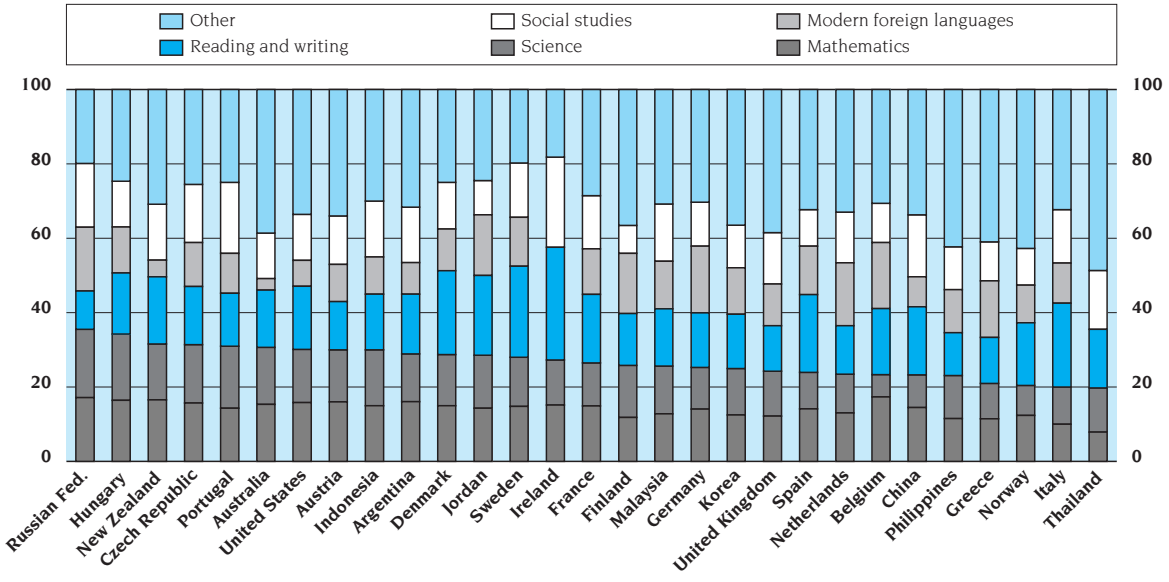
On average across OECD countries, reading and writing in the mother tongue, mathematics, and science comprise about 40 per cent of the total intended instruction time.

On average across OECD countries, about 40 per cent of instruction time is dedicated to three basic subject areas: reading and writing in the mother tongue (16 per cent), mathematics (13 per cent) and science (11 per cent). Next to this the biggest percentages of instruction time are devoted to the modern foreign languages (11 per cent) and social studies (12 per cent). The least instruction time is devoted to vocational skills (1 per cent), religion (3 per cent) and technology (4 per cent). Arts and physical education receive 9 per cent each, other subjects 4 per cent.

Countries vary in the proportion of the curriculum they dedicate to reading and writing in the mother tongue and to studying modern foreign languages.

In some subject areas there is a considerable amount of variability in the proportion of intended instruction time dedicated to them in different countries (Chart E4.2). In Ireland, Italy and Sweden more than 20 per cent of intended instruction time is devoted to reading and writing in the mother tongue (in Ireland time devoted to teaching Irish and English is included) whereas in the Netherlands 10 per cent of the curriculum is devoted to this subject. In Finland, Germany and Greece, modern foreign languages receive 15 per cent or more. In Australia, New

Chart E4.2. **Distribution of intended instruction time for major subject areas in lower secondary education (1996)**



Countries are ranked in descending order of the proportion of intended instruction time devoted to mathematics and science.

Source: OECD.

Zealand and the United States the percentage of time dedicated to modern foreign languages is less (2, 4 and 7 per cent, respectively).

Although the amount of time that students spend studying different subjects in lower secondary education is prescribed in most countries, some have a sizable degree of flexibility.

In 15 out of 21 OECD countries for which comparable data are available, less than 10 per cent of the total intended instruction time is regarded as flexible. In general the time to be spent on the intended curriculum in lower secondary education is to a large extent prescribed (the mean is 91 per cent). There are nonetheless considerable differences. In Austria, Greece, Italy, Norway, Portugal and the United States, the entire curriculum is prescribed (100 per cent). In other countries a substantial part is flexible: Belgium (26 per cent flexible), Australia, Ireland (both 23 per cent flexible), Hungary (22 per cent flexible) and the Netherlands (20 per cent flexible). This flexible part is devoted in large measure to optional subjects (the notes to Annex 3 give details). In some countries, curricula vary across different territorial units or across school types.

■ DEFINITIONS

Data on instruction time are from the 1998 OECD-INES survey and WEI Project on Teachers and Curriculum and refer to the school year 1995/96.

Intended instruction time refers to the number of hours per year pupils are instructed according to the compulsory and the flexible part of the curriculum. Compulsory subjects are to be taught by each school and to be attended by each student. Optional subjects form the flexible part of the curriculum. Annex 3 gives more information on the country-specific situation for instruction time and curriculum.

The total number of intended instruction hours per year was calculated by multiplying the total number of classroom sessions per year by the duration time of one session.

Data on instruction time are reported in accordance with formal policies for public institutions.

The intended curriculum is the subject-matter content as defined by the government or the education system. The intended curriculum is embodied in textbooks, in curriculum guides, in the content of examinations, and in policies, regulations, and other official statements generated to direct the education system. Data for the United Kingdom and the United States, however, are based on sample survey data and reflect more the implemented curriculum than the curriculum required of all students.

The classification of subject areas into the categories used for this indicator is explained in Annex 3.

Table E4.1*a*. **Total intended instruction time in hours per year for students 12 to 14 years of age (1996)**

	12 years	13 years	14 years	Average 12 to 14 years
Australia (New South Wales)	1 067	1 067	1 067	1 067
Austria	1 105	1 073	1 073	1 083
Belgium	m	1 069	1 069	m
Czech Republic	745	773	828	782
Denmark	840	900	930	890
Finland	832	950	950	911
France	779	986	986	917
Germany	874	921	921	905
Greece	1 064	1 064	1 064	1 064
Hungary	755	852	852	820
Ireland	957	957	957	957
Italy	1 105	1 105	1 105	1 105
Korea	867	867	867	867
Netherlands	1 067	1 067	1 067	1 067
New Zealand	985	792	792	856
Norway	805	833	833	823
Portugal	840	840	840	840
Spain	900	900	900	900
Sweden	741	741	741	741
United Kingdom	945	945	945	945
United States	m	m	980	m
Country mean	**907**	**934**	**941**	**929**
WEI Participants				
Argentina	805	913	913	877
Brazil	667	667	667	667
Chile	900	990	990	960
China	748	918	944	870
Indonesia	1 120	1 120	1 120	1 120
Jordan	975	947	975	966
Malaysia	1 230	1 230	1 230	1 230
Paraguay	1 080	1 080	1 080	1 080
Philippines	1 067	1 467	1 200	1 244
Russian Federation	816	893	893	867
Thailand	1 167	1 167	1 167	1 167
Uruguay	863	863	1 011	913

Source: OECD Education Database. See Annex 3 for notes.

Table E4.1*b*. **Intended instruction time for mathematics and science in hours per year for students 12 to 14 years of age (1996)**

	12 years	13 years	14 years	Average 12 to 14 years
Australia (New South Wales)	251	251	251	251
Austria	260	325	390	325
Belgium	m	184	195	m
Czech Republic	m	m	m	m
Denmark	210	240	240	230
Finland	200	228	228	219
France	156	259	259	225
Germany	197	212	226	212
Greece	182	213	274	223
Hungary	184	236	236	219
Ireland	200	200	200	200
Italy	221	221	221	221
Korea	204	204	204	204
Netherlands	200	200	200	200
New Zealand	280	200	267	249
Norway	171	167	167	168
Portugal	240	330	210	260
Spain	211	207	207	208
Sweden	189	189	189	189
United Kingdom	215	219	228	221
United States	m	m	295	m
Country mean	**209**	**225**	**234**	**219**
WEI Participants				
Argentina	250	222	222	231
Brazil	m	m	m	m
Chile	m	m	m	m
China	159	204	230	197
Indonesia	336	336	336	336
Jordan	250	250	278	259
Malaysia	273	273	273	273
Paraguay	270	270	297	279
Philippines	267	267	267	267
Russian Federation	230	281	281	264
Thailand	200	200	100	167
Uruguay	271	271	321	288

Source: OECD Education Database. See Annex 3 for notes.

Table E4.2. **Intended instruction time per subject as a percentage of total intended instruction time for students 12 to 14 years of age (1996)**

	Reading and writing	Mathe-matics	Science	Social studies	Modern foreign languages	Techno-logy	Arts	Physical education	Religion	Vocational skills	Other	Total compul-sory part	Flexible part
Australia (New South Wales)	12	12	12	9	2	5	5	7	4	n	9	77	23
Austria	13	16	14	13	10	6	11	11	6	n	n	100	n
Belgium	13	13	4	8	13	5	3	7	6	n	2	74	26
Czech Republic	15	15	15	15	11	n	9	7	n	4	4	94	6
Denmark	20	13	12	11	10	n	9	7	3	n	3	90	10
Finland	13	11	13	7	15	x	14	10	4	n	6	93	7
France	17	14	11	13	11	8	8	11	n	n	n	92	8
Germany	14	13	10	11	17	2	8	9	6	2	n	92	8
Greece	12	11	10	10	15	5	6	8	6	1	16	100	n
Hungary	13	13	14	10	10	n	6	6	n	3	3	78	22
Ireland	23	12	9	19	m	m	m	5	7	m	2	77	23
Italy	23	10	10	14	11	9	13	7	3	n	n	100	n
Korea	14	12	12	11	12	9	8	9	n	3	6	94	6
Netherlands	10	10	8	11	14	5	7	9	n	n	5	80	20
New Zealand	17	15	14	14	4	7	4	11	n	6	n	92	8
Norway	17	12	8	10	10	n	13	9	7	n	13	100	n
Portugal	14	14	17	19	11	n	11	11	4	n	n	100	n
Spain	20	14	9	9	13	4	11	10	x	n	6	97	3
Sweden	22	14	12	13	12	x	7	7	x	4	n	93	7
United Kingdom	12	12	12	14	11	11	11	7	4	n	3	98	2
United States	17	16	14	12	7	3	7	12	1	5	7	100	n
Country mean	**16**	**13**	**11**	**12**	**11**	**4**	**9**	**9**	**3**	**1**	**4**	**91**	**9**
WEI Participants													
Argentina	15	15	12	14	8	8	10	8	n	n	4	91	9
China	18	14	9	16	8	n	7	8	n	5	12	97	3
Indonesia	15	15	15	15	10	5	x	5	5	x	15	100	n
Jordan	20	13	13	9	15	n	6	3	9	6	n	94	6
Malaysia	13	11	11	13	11	4	4	4	9	4	n	87	13
Paraguay	22	13	13	13	m	12	m	10	m	5	13	100	n
Philippines	11	11	11	11	11	14	7	4	a	4	11	93	7
Russian Fed.	9	15	16	15	15	8	3	6	n	n	1	86	14
Thailand	11	6	9	11	n	n	3	9	6	6	12	72	28
Uruguay	13	13	19	18	8	n	5	5	n	n	n	81	19

Source: OECD Education Database. See Annex 3 for notes.

LOCUS OF DECISION-MAKING IN LOWER SECONDARY EDUCATION

POLICY CONTEXT

This indicator shows where decisions are made in the education system at the lower secondary level, by decision-making domain and degree of autonomy.

An important factor in educational policy is the division of responsibilities between national, regional and local authorities as well as schools. Placing more decision-making authority at lower levels of the educational system has been a key aim in the restructuring and systemic reform in many countries since the early 1980s. Yet, simultaneously, there have been frequent examples of strengthening the influence of the central authorities in some areas. For example, a freeing of "process" and financial regulations may be accompanied by an increase in the control of output from the centre, and by national curriculum frameworks.

It also provides insight into the relative importance of administrative levels in education systems.

The motives for the changes in patterns of centralisation are manifold, and they vary from country to country. The most common ones are increased efficiency and improved financial control, a reduction of bureaucracy, increased responsiveness to local communities, creative management of human resources, improving the potential for innovation and creating conditions that provide more incentives for improving the quality of schooling. Among the policy-related themes that have been more hotly contested are a heightened interest in measures of accountability and equity. These last two themes sometimes provide the background for measures that are more "centralised", such as national assessment programmes and centrally-established frameworks.

School autonomy can be seen as the focal point of decentralisation policies.

Various motives are attributed to the desire to increase the autonomy of schools, such as enhancing the quality, effectiveness and responsiveness of schooling. As far as equity is concerned, increased autonomy is more controversial. School autonomy is seen as stimulating responsiveness to local requirements but is sometimes seen as involving mechanisms for choice that favour groups in society which already have more resources. Setting centrally-determined frameworks in which individual schools make decisions is a possible counterbalance against complete school autonomy.

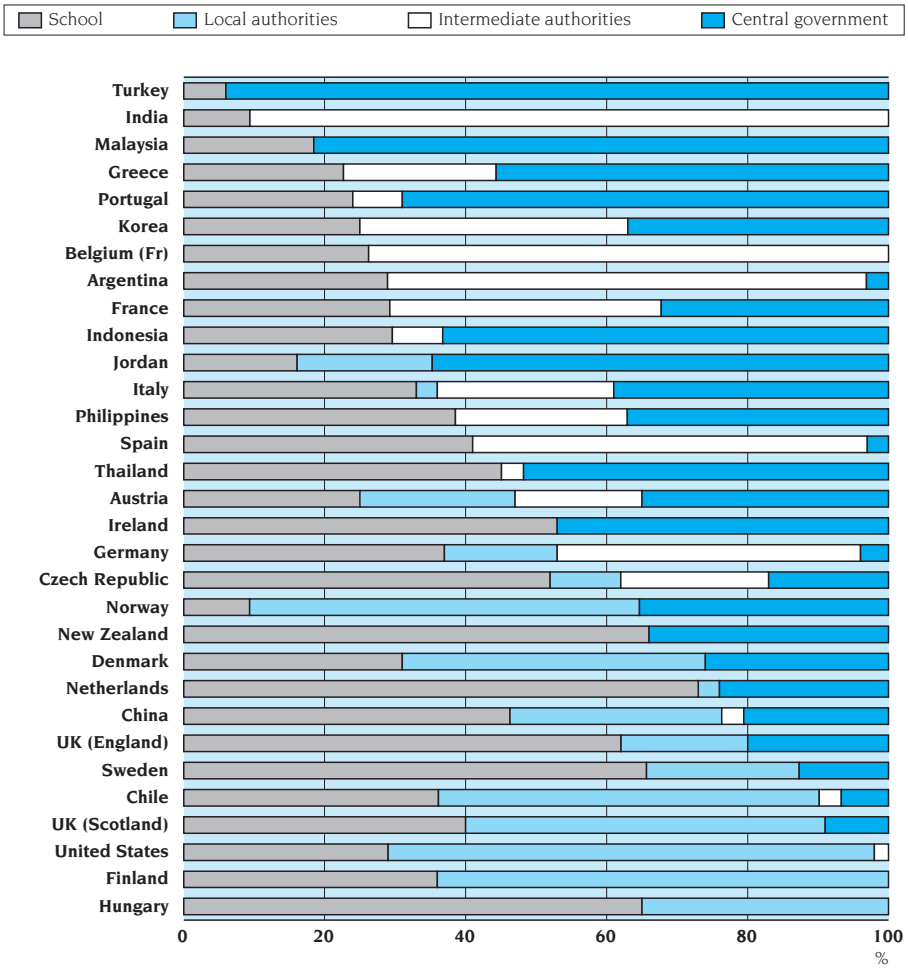
EVIDENCE AND EXPLANATIONS

In 13 out of 22 OECD countries, most types of decisions are taken locally or by the school itself.

Concentrating decision-making close to the actual process of schooling is a strong indication of decentralisation. In 13 out of 22 OECD countries a majority of types of decisions that bear on lower secondary education are taken locally or by the school itself. The school itself is by far the most important decision-making forum in England, Hungary, the Netherlands, New Zealand and Sweden, with 62 per cent or more of decisions taken here (Table E5.1). Local decision-making is particularly important in Finland, Norway, Scotland and the United States. Sub-regional decision-making (through "educational networks") is predominant in the French Community of Belgium.

In WEI participants, only in Chile and China are a majority of decisions taken by local government or by the school.

Chart E5.1. **Distribution of decisions taken at each level of government in public lower secondary education (1998)**



Countries are ranked in descending order by the percentage of decisions taken by central government and intermediate authorities.

Source: OECD.

The central government remains the primary decision-maker in Greece, Portugal and Turkey…

Central government is dominant in Greece, Portugal and Turkey. In Turkey all decisions are taken by central government except for those on teaching methods, which are taken by schools after consultation with the central government, and on the assessment of pupils' regular work, which are taken by schools with complete autonomy (Chart E5.3).

In Indonesia, Jordan, Malaysia and Thailand central decision-making is predominant, whereas in India most types of decisions are taken by provincial or regional government. In Argentina more than half of decisions are taken by state governments and the rest are taken by the schools.

… while in other countries, the role of central government in decision-making is limited.

In the French Community of Belgium, Finland, Hungary and the United States, central government has no role in educational decision-making. In Germany, Scotland, Spain and Sweden the role of the central authorities is fairly limited. In

federal countries, as well as countries with largely autonomous provinces, where the central, federal government takes relatively few decisions, states or autonomous provinces can be considered to some extent as replacing national government as the most important centralised decision-making authority.

In federal or similarly organised countries such as Germany and Spain the *Länder* and provinces take a sizable amount of decisions, as do the schools. In Austria and the French Community of Belgium intermediate, subnational levels also participate in educational decision-making. In Ireland decision-making is equally distributed between the central level and the schools. In Denmark, France, Italy and Korea decisions are evenly distributed between the centre, intermediate tiers of authority and the school.

Domains of decision-making

Decision-making responsibility in the organisation of instruction, personnel management, planning and structures, and resources can lie with different administrative units.

The assessment of the importance of a particular point in the decision-making process reflects an average across decisions made in different domains. This aggregate measure can hide differences in the degree of centralisation of different types of decisions. For example, a country may centralise almost all decisions on the curriculum, whereas the schools may have nearly complete control over decisions about teaching methods. The distribution of decisions taken in each administrative level across four domains of decision-making (the organisation of instruction, personnel management, planning and structures, and resources) is an indicator of "functional decentralisation", taking into account that countries may be decentralised in certain activities and centralised in others.

Schools predominate in taking decisions about the organisation of instruction…

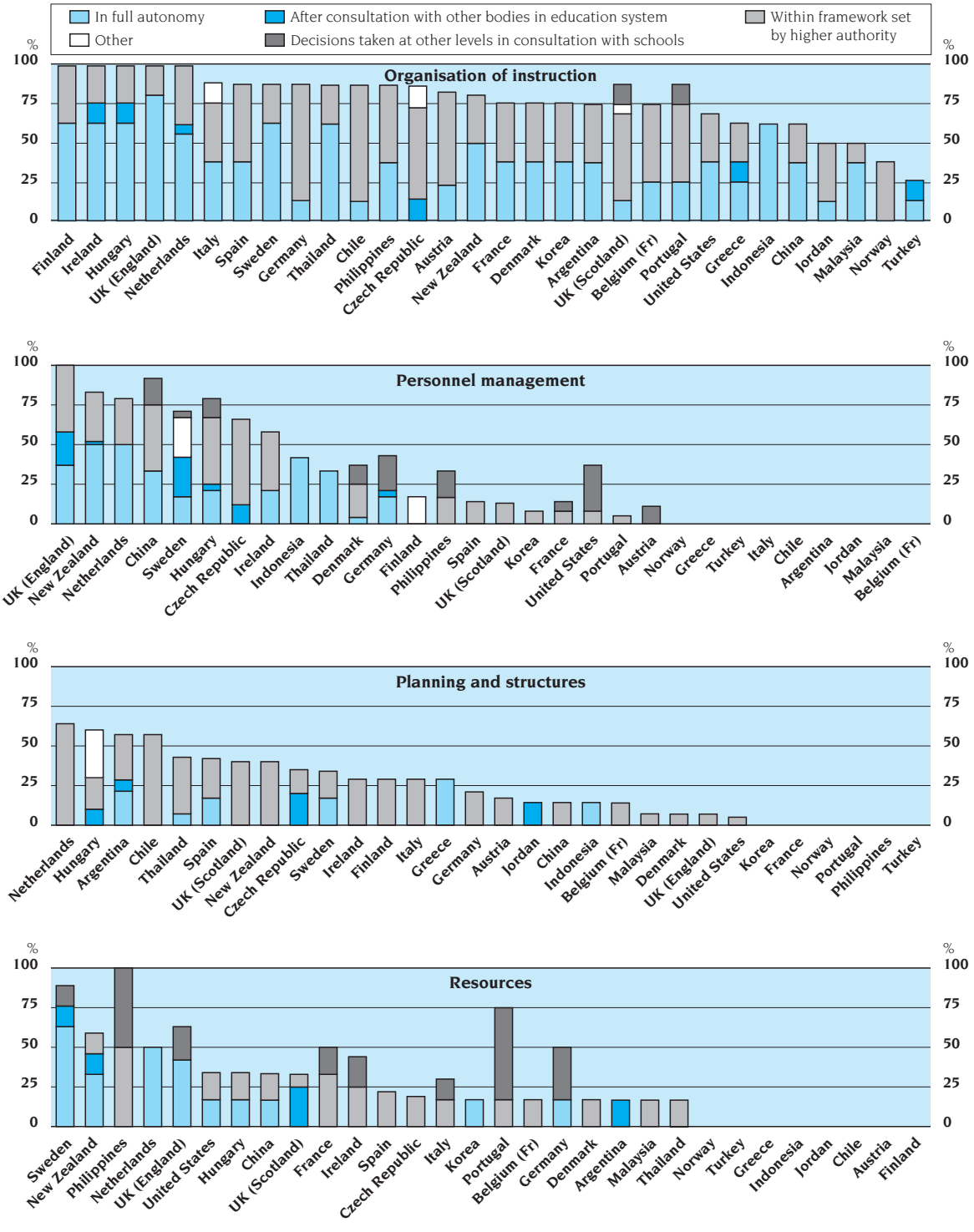
When decisions are differentiated according to domain, the data show that the school is predominant in taking decisions about the organisation of instruction in all OECD countries, except Norway and Turkey (Table E5.2*a*). For example, in almost all OECD countries the choice of teaching methods, textbooks, criteria for grouping students within schools and day to day methods of student assessment are made by the school. In most of these countries, however, schools make these decisions within a framework established by a higher level of government. In 13 out of 22 OECD countries, even decisions regarding which school a child should attend are made by the school, including cases where students and parents are free to choose the school to attend. Even in rather "centralised" countries such as Greece and Portugal, a high percentage (63 and 75 per cent, respectively) of decisions in this domain are taken by schools. The tendency is similar among WEI participants, although India, Jordan and Malaysia are countries where 50 per cent or fewer decisions on the organisation of instruction are taken by the school.

Instruction time (*e.g.*, the number of periods of instruction to be provided) is one of the few items in this domain where decisions are not taken by the school in most OECD countries, but either by the state or central authorities (in 12 out of 22 countries) or by local administrations (in two countries) (Chart E5.3).

… while in other domains of decision-making patterns are more mixed.

In the three other domains (personnel management, planning and structures, and resources) the number of decisions taken by schools is in general considerably less and the patterns are more mixed. The domain of personnel management includes decisions on the hiring and dismissal of staff, setting salary schedules and conditions of work. In personnel management, more than 80 per cent of decisions are taken centrally in most southern European countries (Greece, Italy, Portugal and Turkey) as well as in Malaysia, by state or provincial government in Argentina, Spain and India, by local

Chart E5.2. **Percentage of decisions taken at the school level in public lower secondary education, by mode of decision-making and domain (1998)**



Countries are ranked in descending order of the percentage of decisions taken at the school level.

Source: OECD.

administrations in Chile, Finland and the United States, and by schools in England and New Zealand. The hiring of individual teachers is decided by schools in the Czech Republic, Hungary, Ireland, the Netherlands, New Zealand, Sweden and the United Kingdom, by local administrations in Finland and the United States, and by higher levels of government in the other 10 OECD countries for which data are available.

In planning and structures, more than 80 per cent of decisions are taken centrally in Korea, Portugal and Turkey; they are taken locally in the French Community of Belgium and in the United States. Policy-decisions on the setting of qualifying examinations for certificates or diplomas are made centrally in almost all countries, although these decisions are made at the state level in Germany, at the sub-regional level in the French Community of Belgium, by local administrations in the United States and by the schools themselves in Greece.

Of decisions on resources, specifically on the total amount of resources made available to schools for expenditures in different areas of their activities, more than 80 per cent are taken centrally in Turkey, at the provincial/regional level in Korea, and at the local level in Denmark, Finland and Norway. In most countries, decisions on how to spend the operating and staff budgets are made by the school, although the size of that budget is typically determined by a higher level of government. The amount of resources that schools receive (or allocate) for their operating budget (*e.g.*, teaching material and supplies, maintenance of school buildings, preparation of student meals and rent of school facilities) is determined by the school in Sweden, and at the local level in England, Finland, Germany, Hungary, Italy, Scotland and the United States. Decisions on the allocation of resources for operating expenditure are made centrally in Ireland, the Netherlands and Turkey.

School autonomy

Dutch, English and Swedish schools can take the largest number of decisions in full autonomy.

Table E5.3 shows the percentage of decisions taken by the school by mode or degree of autonomy of the decisions taken. When examining only those decisions taken in full autonomy by the school, Dutch, Swedish and English schools enjoy the most autonomy (around 40 per cent of all decisions). By this criterion, Czech and Norwegian schools are the least autonomous.

In Germany, Portugal and the United States, schools can make fewer decisions in full autonomy but they are consulted frequently by other levels of administration.

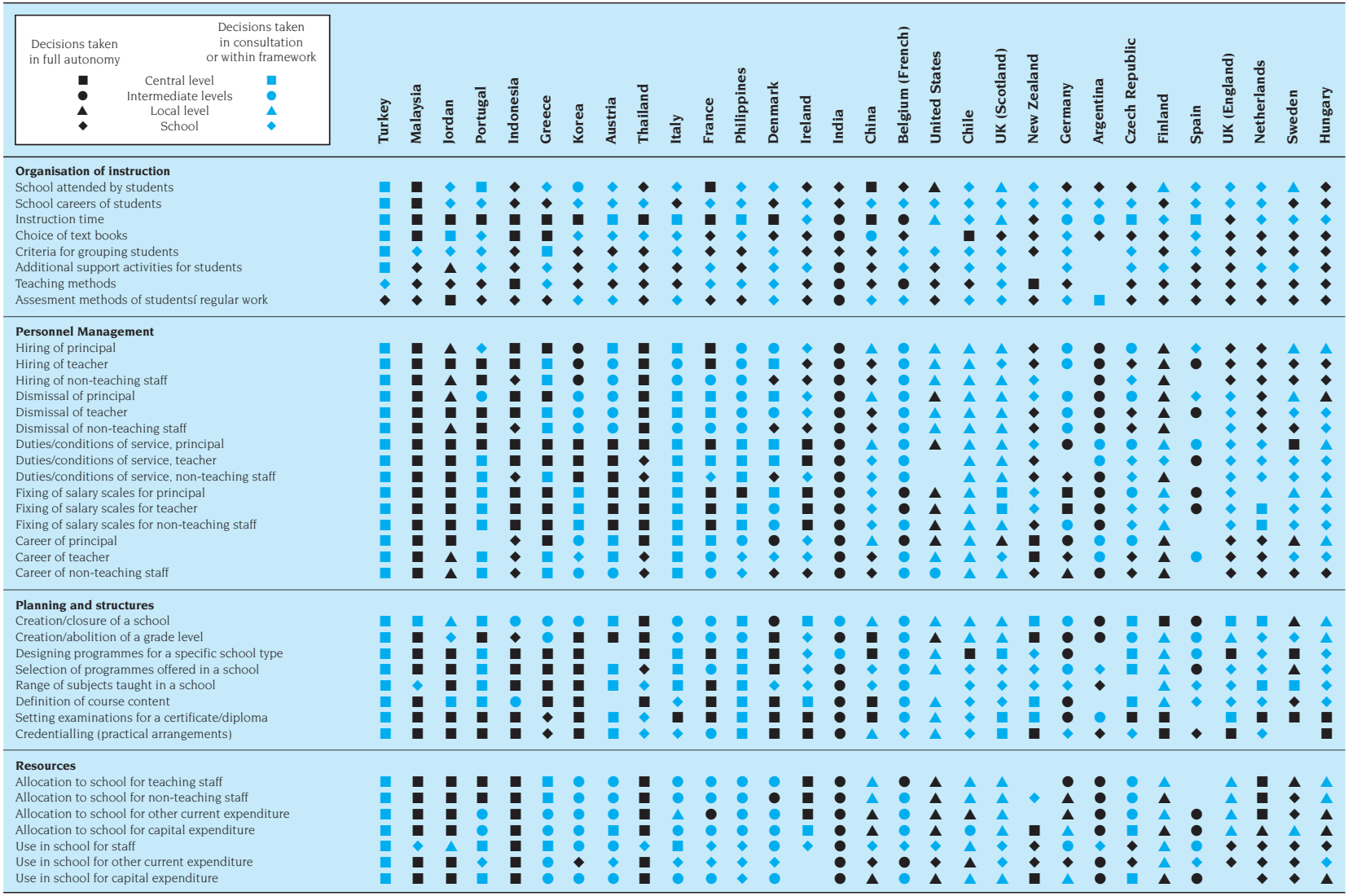
In Portugal, where the amount of decisions taken by the school is relatively modest, this is in a way compensated by the fact that the school is consulted for 28 per cent of all decisions taken by other administrative levels. Also in England (12 per cent), Germany (17 per cent) and the United States (12 per cent) the schools are consulted relatively frequently by other levels.

Generalised over countries, roughly as many decisions taken by the schools take place in full autonomy as within a framework established by a higher level. Differentiated according to domain (Table E5.4), decisions based on a framework are most important in planning and structures, personnel management and resources, whereas autonomous decisions have the upper hand in the domain of organisation of instruction.

Correspondences/differences between levels of education

The OECD-INES survey on which the data for OECD countries are based investigated decision-making patterns in primary and lower and upper secondary education. Since differences in decision-making patterns between the levels of education were signifi-

Chart E5.3. **Level of government at which different types of decision are taken in lower secondary education (1998)**



Countries are ranked in descending order of percentage of decisions taken at the central level less the percentage of decisions taken at the school level.
Source: OECD.

E5

cant in only a few countries, lower secondary is considered as broadly representative for decision-making in initial education and therefore forms the basis for the presentation of this indicator.

In Austria, the Czech Republic, France and the Netherlands there is nonetheless a tendency for higher administrative levels to take more decisions affecting upper secondary education than they do for primary and lower secondary. In Finland and Ireland (only general programmes) the opposite pattern occurs, with relatively more decisions taken by the school in upper secondary education.

DEFINITIONS

Data are from the 1998 OECD-INES survey and WEI Project on the Locus of Decision-making in Education and refer to 1998.

This indicator shows the percentage of educational decisions taken at specific levels in public lower secondary education.

It is based on decisions in the following four domains:

- **Organisation of instruction**: bodies determining the school attendance, decisions affecting school careers (promote, repeat, transfer), instruction time, choice of textbooks, criteria for grouping pupils, assistance to pupils with learning difficulties (additional support activities), teaching methods, assessment methods of pupils' regular work.
- **Personnel management** (principals, teachers, non-teaching posts): hiring and dismissal of staff, duties and conditions of service of staff, fixing of salary scales for staff, influence over the careers of staff.
- **Planning and structures**: creation or closure of school, creation or abolition of a grade, designing programmes of study for a particular type of school, selection of programmes of study offered and subjects taught in a particular school, definition of course content, setting of qualifying examinations for a certificate or diploma, "credentialling" (practical arrangements for holding exams and awarding credentials).
- **Resources** (for teaching staff, non-teaching staff, other current expenditure, capital expenditure): allocation of resources to the school, use of resources in the school.

Taking the somewhat simplifying assumption that all types of decisions in a particular domain are about equally important, the percentage of decisions taken at a particular administrative level can be interpreted as a measure of the importance of that particular level for decision-making in education.

The six levels of decision-making accounted for and the weights used to calculate the percentages are described in Annex 3.

Because of differences in the procedure for collecting data and the instruments used, results cannot be compared to the Indicator P18 included in the 1992 edition of *Education at a Glance*. Data refer to actual decision-making practice and do not describe formal regulations.

Tables E5.3, E5.4*a* and E5.4*b* are based on data highlighting three different aspects of school autonomy: *i*) the percentage of decisions taken by the school as compared to higher administrative levels; *ii*) the degree of autonomy with which the decisions are taken by the school; and *iii*) the percentage of decisions taken by other levels where the school is consulted.

Table E5.1. **Percentage of decisions taken at each level of government in public lower secondary education (1998)**

	Central	State	Provincial/ regional	Sub-regional	Local	School
Austria	35	18			22	25
Belgium (French Community)		10	2	61		26
Czech Republic	17			21	10	52
Denmark	26				43	31
Finland					64	36
France	32		11	27		29
Germany	4	28	15		16	37
Greece	56		22			23
Hungary					35	65
Ireland	47					53
Italy	39		25		3	33
Korea	37		31	7		25
Netherlands	24				3	73
New Zealand	34					66
Norway	35				55	9
Portugal	69		7			24
Spain	3	46	10			41
Sweden	13				22	66
Turkey	94					6
UK (England)	20				18	62
UK (Scotland)	9				51	40
United States				2	69	29
WEI Participants						
Argentina	3	68				29
Chile	7		3		54	36
China	21		3		30	46
India			91			9
Indonesia	63		7			30
Jordan	65				19	16
Malaysia	82					18
Paraguay	67					33
Philippines	37		24			39
Thailand	55					45
Uruguay	100					

Blanks indicate that the level of government does not have primary responsibility for the types of decisions covered in this domain.
Source: OECD Education Database. See Annex 3 for notes.

Table E5.2*a*. **Percentage of decisions taken at each level of government in public lower secondary education, by domain (1998)**

	Organisation of instruction						Personnel management					
	Central	State	Provincial/ regional	Sub-regional	Local	School	Central	State	Provincial/ regional	Sub-regional	Local	School
Austria	17					83	58	25			17	
Belgium (Fr. Community)		13		13		75		15	8	77		
Czech Republic	14					86	4			29		67
Denmark					25	75	42				33	25
Finland						100					83	17
France	13			13		75	67		25			8
Germany		13				88	17	37	15		10	21
Greece	38					63	100					
Hungary						100					33	67
Ireland						100	42					58
Italy	13					88	83		17			
Korea	13			13		75	50		42			8
Netherlands						100	21					79
New Zealand	19					81	17					83
Norway	25				38	38	44				56	
Portugal	25					75	91		5			5
Spain	13					88		86				14
Sweden					13	88	8				25	67
Turkey	75					25	100					
UK (England)						100						100
UK (Scotland)					25	75	17				71	13
United States					31	69				8	83	8
WEI Participants												
Argentina	13	31				56		100				
Chile	13					88					100	
China	25		13			63					25	75
India			63			38			100			
Indonesia	38					63	58					42
Jordan	38				13	50	67				33	
Malaysia	50					50	100					
Paraguay	50					50	100					
Philippines	13					88	50		33			17
Thailand	13					88	67					33
Uruguay	100						100					

Blanks indicate that the level of government does not have primary responsibility for the types of decisions covered in this domain.
Source: OECD Education Database. See Annex 3 for notes.

Table E5.2*b*. **Percentage of decisions taken at each level of government in public lower secondary education, by domain (1998)**

	Planning and structures						Resources					
	Central	State	Provincial/ regional	Sub-regional	Local	School	Central	State	Provincial/ regional	Sub-regional	Local	School
Austria	67	17				17		29			71	
Belgium (Fr. Community)				86		14		13		71		17
Czech Republic	45				20	35	4			55	22	19
Denmark	64				29	7					83	17
Finland					71	29					100	
France	50		7	43					13	54		33
Germany		50	29			21		13	17		54	17
Greece	43		29			29	42		58			
Hungary					40	60					67	33
Ireland	71					29	75					25
Italy	43		29			29	17		54		13	17
Korea	86			14					83			17
Netherlands	36					64	38				13	50
New Zealand	60					40	42					58
Norway	71				29						100	
Portugal	100						58		25			17
Spain		42	17			42		56	22			22
Sweden	42				25	33					25	75
Turkey	100						100					
UK (England)	79				14	7					58	42
UK (Scotland)	20				40	40					67	33
United States					95	5					67	33
WEI Participants												
Argentina		57				43		83				17
Chile	14				29	57			13		88	
China	57				29	14					67	33
India			100						100			
Indonesia	57		29			14	100					
Jordan	71				14	14	83				17	
Malaysia	93					7	83					17
Paraguay	50					50	67					33
Philippines	86		14						50			50
Thailand	57					43	83					17
Uruguay	100						100					

Blanks indicate that the level of government does not have primary responsibility for the types of decisions covered in this domain.
Source: OECD Education Database. See Annex 3 for notes.

Table E5.3. **Percentage of decisions taken at the school level in public lower secondary education, by mode of decision-making (1998)**

	In full autonomy	After consultation with other bodies in the education system	Within framework set by a higher authority	Other	Total	Decisions taken at other levels in consultation with schools
Austria	6		19		25	3
Belgium (French Community)	6		20		26	
Czech Republic		12	37	3	52	
Denmark	10		21		31	7
Finland	16		17	4	36	
France	9		20		29	7
Germany	11	1	24		37	17
Greece	13	3	6		23	
Hungary	25	7	26	8	65	3
Ireland	21	3	29		53	8
Italy	9		21	3	33	3
Korea	14		11		25	
Netherlands	39	2	33		73	
New Zealand	33	4	29		66	3
Norway			9		9	
Portugal	6		18		24	28
Spain	14		28		41	
Sweden	40	9	10	6	66	4
Turkey	3	3			6	
UK (England)	40	5	17		62	12
UK (Scotland)	3	6	29	2	40	6
United States	14		15		29	12
WEI Participants						
Argentina	15	6	13		34	
Chile	3		33		36	
China	22		24		46	4
India	9				9	
Indonesia	30				30	4
Jordan	3	4	9		16	
Malaysia	9		9		18	
Paraguay	24	10			33	10
Philippines	9		29		39	17
Thailand	26		19		45	
Uruguay					n	

Blanks indicate that the level of government does not have primary responsibility for the types of decisions covered in this domain.
Source: OECD Education Database. See Annex 3 for notes.

Table E5.4*a*. **Percentage of decisions taken at the school level in public lower secondary education, by mode of decision-making and domain (1998)**

	Organisation of instruction						Personnel management					
	In full autonomy	After consultation with other bodies in the education system	Within framework set by a higher autohrity	Other	Total	Decisions taken at other levels in consultation with schools	In full autonomy	After consultation with other bodies in the education system	Within framework set by a higher autohrity	Other	Total	Decisions taken at other level in consultation with schools
Austria	23		60		83						n	11
Belgium (Fr. Community)	25		50		75						n	
Czech Republic		14	59	14	86			12	54		67	
Denmark	38		38		75		4		21		25	12
Finland	63		38		100					17	17	
France	38		38		75				8		8	6
Germany	13		75		88		17	4			21	22
Greece	25	13	25		63						n	
Hungary	63	13	25		100		21	4	42		67	12
Ireland	63	13	25		100		21		37		58	
Italy	38		38	13	88						n	
Korea	38		38		75				8		8	
Netherlands	56	6	38		100		50		29		79	
New Zealand	50		31		81		50	2	31		83	
Norway			38		38						n	
Portugal	25		50		75	13			5		5	
Spain	38		50		88				14		14	
Sweden	63		25		88		17	25		25	67	4
Turkey	13	13			25						n	
UK (England)	81		19		100		37	21	42		100	
UK (Scotland)	13		56	6	75	13			13		13	
United States	38		31		69				8		8	29
WEI Participants												
Argentina	38		38		75						n	
Chile	13		75		88						n	
China	38		25		63		33		42		75	17
India	38				38						n	
Indonesia	63				63		42				42	
Jordan	13		38		50						n	
Malaysia	38		13		50						n	
Paraguay	50				50	25					n	
Philippines	38		50		88				17		17	17
Thailand	63		25		88		33				33	
Uruguay					n						n	

Blanks indicate that the level of government does not have primary responsibility for the types of decisions covered in this domain.
Source: OECD Education Database. See Annex 3 for notes.

Table E5.4*b*. **Percentage of decisions taken at the school level in public lower secondary education, by mode of decision-making and domain (1998)**

	Planning and structures						Resources					
	In full autonomy	After consultation with other bodies in the education system	Within framework set by a higher autohrity	Other	Total	Decisions taken at other levels in consultation with schools	In full autonomy	After consultation with other bodies in the education system	Within framework set by a higher autohrity	Other	Total	Decisions taken at other levels in consultation with schools
Austria			17		17						n	
Belgium (Fr. Community)			14		14				17		17	
Czech Republic		20	15		35				19		19	
Denmark			7		7	14			17		17	
Finland			29		29						n	
France					n	5			33		33	17
Germany			21		21	11	17				17	33
Greece	29				29						n	
Hungary		10	20	30	60		17		17		33	
Ireland			29		29	14			25		25	19
Italy			29		29				17		17	13
Korea					n		17				17	
Netherlands			64		64		50				50	
New Zealand			40		40	10	33	13	13		58	
Norway					n						n	
Portugal					n	43			17		17	58
Spain	17		25		42				22		22	
Sweden	17		17		33		63	13			75	13
Turkey					n						n	
UK (England)			7		7	29	42				42	21
UK (Scotland)			40		40	10		25	8		33	
United States			5		5	20	17		17		33	
WEI Participants												
Argentina	21	7	14		43			17			17	
Chile			57		57						n	
China			14		14		17		17		33	
India					n						n	
Indonesia	14				14	14					n	
Jordan		14			14						n	
Malaysia			7		7				17		17	
Paraguay	29	21			50	14	17	17			33	
Philippines					n				50		50	50
Thailand	7		36		43				17		17	
Uruguay					n						n	

Blanks indicate that the level of government does not have primary responsibility for the types of decisions covered in this domain.
Source: OECD Education Database. See Annex 3 for notes.

COMPUTERS IN SCHOOLS AND THEIR USE

POLICY CONTEXT

OECD economies are increasingly dependent on technological knowledge and skills in the labour force. Students with little or no exposure to information technology in school may face difficulties in making a smooth transition into the modern labour market. Although the issue of how computers should be used by students and teachers so as to maximise students' learning is a matter of debate, measures of student access to information technology can be an indicator of how well schools are responding to technological change.

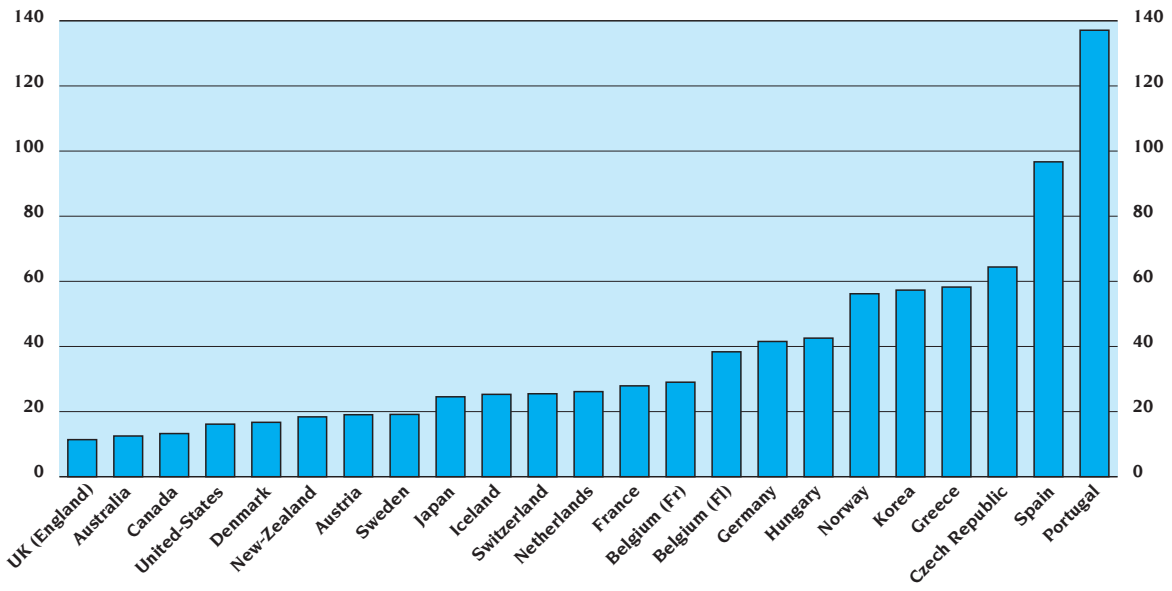
This indicator shows the number of students per computer as well as students' reports on how often they use a computer during the final year of secondary school.

EVIDENCE AND EXPLANATIONS

Chart E6.1 provides comparative insight into the availability of computers for students' and teachers' use in schools, as reported by principals in schools in which 8th-grade students are normally enrolled. In Australia, England and Canada more than one computer is accessible to students and teachers for every 13 students or fewer (in those schools in which 8th-graders are enrolled); in the Czech Republic, Portugal and Spain on average more than 60 students share one computer.

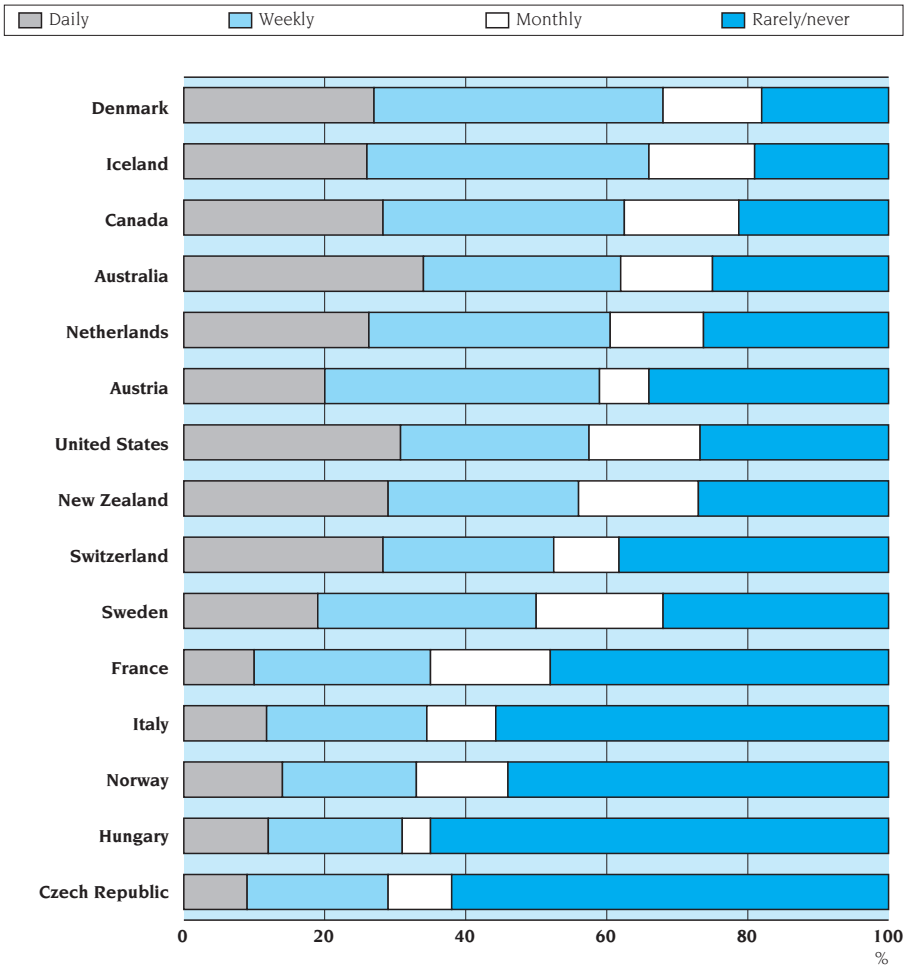
Accessibility of computers to students and teachers varies widely among OECD countries.

Chart E6.1. **Average number of students per computer in schools where 8th-grade students are enrolled (1995)**



Source: International Association for the Evaluation of Educational Achievement (IEA)/TIMSS.

Chart E6.2. **Distribution of frequency of computer use at home, school or anywhere else by students in their final year of secondary school (1995)**



Countries are ranked in descending order of the percentage of students using computers at least weekly.

Source: International Association for the Evaluation of Educational Achievement (IEA)/TIMSS.

In interpreting these results, it should be noted that this indicator covers different grades in different countries. The 8th grade is typically to be found in lower secondary schools. But in the Czech Republic, Denmark, Hungary and Spain, for example, schools have in general classes both at the primary and lower secondary level. In Australia, Belgium, New Zealand and England, by contrast, schools have in general classes both at the lower and upper secondary level.

Hardly surprisingly, the availability of computers in schools has risen considerably in many countries since the early 1980s. Detailed surveys in the United States show that children's access to computers at schools rose from 28 per cent in 1984 to 61 per cent in 1993 (US Bureau of the Census). The effort to connect all US public schools to the Information Superhighway is paying off. In only three years, the percentage of US public schools with Internet access increased from 35 per cent in 1994 to 78 per cent in 1997. Several OECD countries have esti-

mated the number of personal computers per student in schools in 1992 and 1996. In the two countries where data for the same levels of education are available for both years, the number of students per computer has decreased over a four-year period by about half in Denmark and one-third in Finland.

The actual use of computers by students also varies widely.

Although accessibility of computers to students is a prerequisite, how they use them is even more important. In the Third International Mathematics and Science Study, students in their final year of secondary school were asked how often they used computers at school, at home or elsewhere. These data are reported in Chart E6.2. In the Czech Republic, Hungary, Italy and Norway, the majority of final-year students reported that they rarely or never used a computer. By contrast, more than one in four students in their final year in Australia, Canada, Denmark, Iceland, the Netherlands, New Zealand, Switzerland and the United States reported using a computer daily.

DEFINITIONS

Data are based on questionnaires administered as part of the Third International Mathematics and Science Study (IEA/TIMSS), undertaken by the International Association for the Evaluation of Educational Achievement (IEA) during the school year 1994/95.

Data in Table E6.1 are based on the following question from the TIMSS school questionnaire, where the target population was students at the higher of the two grade levels in which most 13 year-olds are enrolled (conventionally referred to as the 8th grade): "In your school, how many computers are available for use by teachers or students?" The questionnaire was addressed to school principals and department heads.

Data in Table E6.2 are based on the TIMSS student background questionnaire where the target population was students in the final year of secondary school. Students were asked how often they used a computer (desktop unit or mainframe terminal) at school, home, or anywhere else. It is to be noted that there are variations both across and within countries with respect to the grades and types of programmes representing the final year of schooling.

Table E6.1. **Distribution of the number of students per computer in schools where 8th-grade students are enrolled (1995)**

	Mean	10th percentile[1]	25th percentile[1]	Median	75th percentile[1]	90th percentile[1]	Percentage of schools without computers
Australia*	12	7	9	12	16	21	n
Austria*	19	12	16	21	28	37	n
Belgium (Flemish Community)**	38	10	15	35	58	181	7
Belgium (French Community)*	29	14	19	34	58	80	2
Canada	13	7	9	13	18	27	n
Czech Republic	64	24	35	58	132	306	19
Denmark*	17	10	13	17	22	26	n
France	28	12	17	31	50	93	n
Germany*	41	19	27	39	57	75	17
Greece*	58	18	27	38	51	71	29
Hungary	43	24	30	41	62	91	6
Iceland	25	8	13	21	34	63	2
Japan	25	10	15	22	33	45	5
Korea	57	16	32	52	66	314	14
Netherlands*	26	12	17	26	37	57	n
New Zealand	18	11	14	21	27	35	n
Norway	56	16	28	62	133	224	17
Portugal	137	50	84	140	393	745	13
Spain	97	28	49	76	168	346	32
Sweden	19	12	15	22	31	51	n
Switzerland**	25	10	15	23	40	97	2
UK (England)**	11	7	9	12	15	19	n
United States**	16	7	9	13	21	42	1

* Countries did not meet TIMSS sampling requirements.
** Countries met TIMSS sampling requirements only partially.
1. 10 (or 25 or 75 or 90) per cent of schools have fewer students per computer.
Source: International Association for the Evaluation of Educational Achievement (IEA)/TIMSS. See Annex 3 for notes.

Table E6.2. **Students' reports on how often they use a computer at school, home or anywhere else, final year of secondary school (1995)**

	Rarely or never	Monthly	Weekly	Daily
Australia*	25 (3.5)	13 (1.0)	28 (1.4)	34 (2.9)
Austria*	34 (3.4)	7 (0.7)	39 (2.7)	20 (2.6)
Canada*	21 (1.7)	16 (0.9)	34 (1.3)	28 (1.4)
Czech Republic	62 (3.9)	9 (1.1)	20 (3.5)	9 (1.1)
Denmark*	18 (1.2)	14 (1.3)	41 (1.6)	27 (1.5)
France*	48 (2.2)	17 (1.7)	25 (1.4)	10 (1.3)
Hungary	65 (1.9)	4 (0.3)	19 (1.3)	12 (1.1)
Iceland*	19 (0.9)	15 (0.7)	40 (1.0)	26 (1.0)
Italy*	56 (2.2)	10 (0.8)	23 (1.8)	12 (1.3)
Netherlands*	26 (1.4)	13 (1.0)	34 (1.3)	26 (1.6)
New Zealand	27 (1.8)	17 (1.6)	27 (1.5)	29 (1.7)
Norway*	54 (1.9)	13 (1.1)	19 (1.1)	14 (1.1)
Sweden	32 (1.4)	18 (1.1)	31 (1.2)	19 (2.2)
Switzerland	38 (2.2)	9 (0.6)	24 (1.6)	28 (1.9)
United States*	27 (1.1)	16 (1.1)	27 (1.2)	31 (1.1)

Hungary: 70-84% student response rate.
( ) Standard errors appear in parentheses.
* Countries did not satisfy one or more guidelines for sample participation rates or student sampling.
Source: International Association for the Evaluation of Educational Achievement (IEA)/TIMSS. See Annex 3 for notes.

STUDENT ACHIEVEMENT AND THE SOCIAL AND LABOUR-MARKET OUTCOMES OF EDUCATION

Student achievement

International comparisons of student achievement have become an essential tool for assessing the performance of education systems. They can serve as measures of accountability that inform key stakeholders in education – such as taxpayers, employers, educators, parents and students – on the effects of their investment in education. The indicators on student achievement in this chapter draw on the Third International Mathematics and Science Study (TIMSS), an international comparison of performance in mathematics and science tests that was conducted during the school year 1994/95 by the International Association for the Evaluation of Educational Achievement (IEA).

In a world increasingly dominated by technology, knowledge of and skills in mathematics are central to the ability to compete in the global marketplace. Early success in mathematics is important, both because a firm foundation in basic principles is necessary before more complex materials can be mastered and because early success can keep young people interested in this and related fields of study. It is equally important to ensure that students continue to make progress as they advance from primary to secondary education. **Indicator F1** shows the relative standing of countries in mathematics achievement in both 4th and 8th grades. It also compares the progress that students in different countries make between 4th and 8th grades, highlighting cases where countries with poorer performance in 4th grade are catching up, as well as those where the achievement gap is widening.

Countries aim not only to encourage high performance, but also to minimise achievement variation within the country. Indicator F1 should be examined jointly with **Indicator F2**, which provides a comparison of the distribution of student achievement in 4th and 8th grades and which sheds light on the extent to which education systems and societies moderate or reinforce early educational disparities between the two grades.

How do the policies and historical patterns that shape each country's school system affect the general variation in student achievement and academic performance as a whole? What are the main factors associated with this variation? **Indicator F3** is a developmental indicator which examines what percentage of the overall variation between students lies between the groups that were tested – classes and schools – and what percentage originates from students themselves.

Children come from a variety of family, socio-economic and cultural backgrounds. As a result, schools are faced with a range of individual challenges in providing equal opportunities to all students. Indicators of the characteristics of students who are most likely to perform poorly can help educators and policy-makers identify crucial risk factors that impede effective learning. The same indicators, by showing that in some countries these tendencies are less marked than in others, can also give support to policy incentives designed to foster equity. **Indicator F4** shows the mathematical achievement of 4th-grade students according to educational aids in the home, frequency in which they speak the language of the test at home, and whether or not their parents or themselves were born in the country.

Social and labour-market outcomes of education

Education and work are intimately connected, with education having two obvious effects on economic productivity. First, education can contribute to the development of knowledge, which translates into technological improvements and aggregate productivity gains. Second, education can increase the skills and

knowledge of individual workers, allowing them to better accomplish particular tasks and more easily adapt to changing job requirements. In a free labour market, the success of an education system manifests itself among other things through the success of the individual in finding and holding a job, as well as in the level of wages that employers are willing to pay for the skills the individual holds.

Indicator F5 examines the relationship between educational attainment and labour-force activity, examining first rates of participation in the labour force and then rates of unemployment. The adequacy of worker skills and the capacity of the labour market to supply jobs that match those skills are important issues for policy-makers.

The transition from school to work is a critical period for young people – when the knowledge and skills learned in formal education come up against the skill-requirements of the labour market. The extent to which learning in school or university translates into work-place skills and performance, and the work habits acquired at this stage, have a considerable effect on social integration and future labour-force activity and earnings. **Indicator F6** examines the unemployment rates of persons both one year and five years after completion of various levels of education.

One way in which markets supply incentives for workers to develop and maintain appropriate levels of skills is through wage differentials, in particular through the enhanced earnings accorded to persons completing additional education. The economic benefit of completing tertiary education can be seen by comparing the ratio of the mean annual earnings of those who attended and graduated from tertiary education with the mean annual earnings of upper secondary graduates. **Indicator F7** shows the earnings of workers of differing educational attainment relative to those of individuals with upper secondary attainment, as well as age-earnings profiles for these groups.

Describing examples of benefits of investment in human capital does not in itself demonstrate that the investment is worthwhile. A cost-benefit analysis can help assess whether the potential benefits individuals receive from attending a particular type of educational programme are worth the costs. Similarly, society must ask whether the benefits it will receive from allocating public funds for education are worth as much as benefits that would be derived from alternative uses of these funds. In **Indicator F8**, private, fiscal and social returns for completing university-level education are calculated for seven OECD countries. These estimates give an indication of the extent to which returns are shared between public and private interests.

MATHEMATICS ACHIEVEMENT OF STUDENTS IN 4TH AND 8TH GRADES

Policy context

This indicator shows the average mathematics achievement of students in 4th and 8th grades.

International comparisons of student achievement have become an essential tool for assessing the performance of education systems. They can serve as measures of accountability that inform key stakeholders in education – such as taxpayers, employers, educators, parents and students – on the effects of their investment in education.

In a world increasingly dominated by technology, knowledge of and skills in mathematics are central to the ability to compete in the global marketplace. Early success in mathematics is important, both because a firm foundation in basic principles is necessary before more complex materials can be mastered and because early success can keep young people interested in this and related fields of study. It is equally important to ensure that students continue to make progress as they advance from primary to secondary education. Indicator F1 shows the relative standing of countries in mathematics achievement in both 4th and 8th grades.

It also reflects the relative progress that students make between both grades in different countries.

The indicator also compares the progress that students in different countries make between 4th and 8th grades, highlighting cases where countries with poorer performance in 4th grade are catching up, as well as those where the achievement gap is widening.

Indicator F1 should be examined jointly with Indicator F2, which provides a comparison of the distribution of student achievement in 4th and 8th grades and which sheds light on the extent to which education systems and societies moderate or reinforce early educational disparities between the two grades.

Evidence and explanations

F1

Mean performance of countries in 4th grade

Variation in mathematics achievement between countries is substantial…

Chart F1.1 shows the mean performance of each country at both 4th and 8th grades. The upper part of the chart lists those countries which perform significantly better than the OECD average and the lower part those performing significantly below the OECD average (further details on the relative standing of countries are shown in the 1997 edition of *Education at a Glance*).

… with the average Japanese and Korean 4th-grader outperforming even the average 8th-grader in the lowest-performing country.

In mathematics, Japanese and Korean 4th-grade students score significantly higher than those in all other participating countries (457 and 471 score points respectively). In fact, the average mathematics achievement of 4th-grade students in Japan and Korea is higher than the average achievement of students in Portugal in 8th grade and higher than the 25 per cent of 8th-grade students with the lowest performances in almost half of the OECD countries (Indicator F2).

The remaining countries can be classified into five groups: the Czech Republic and the Netherlands, with means of 428 and 438; Australia, Austria,

Hungary, Ireland and the United States, with scores somewhat above the OECD average; Canada and Scotland, with scores a little below the OECD average; England, Greece, New Zealand and Norway, with scores around 365; and Iceland and Portugal, with scores of 338 and 340.

Differences in achievement remain substantial when compared with the average gap between children a year apart in age.

One way to gauge the magnitude of the observed differences between countries at the primary level is to compare them with the typical difference in achievement between the 3rd and 4th grades – an average difference of 63 points for mathematics for the OECD countries tested. The observed differences in scores between some countries are bigger than the average difference between 3rd and 4th grades, which suggests that between-country variation in mathematics achievement is of considerable educational and practical importance.

Chart F1.1. **Mathematics achievement of students in 4th and 8th grades compared with the OECD mean (1995)**

Significantly higher than the OECD mean | Not significantly different from the OECD mean | Significantly lower than the OECD mean

Fourth grade

Country	Mean score	Standard error
Korea	471	(8.1)
Japan	457	(8.1)
Netherlands*	438	(8.5)
Czech Republic	428	(8.5)
Austria*	421	(8.4)
Ireland	412	(8.6)
Hungary*	410	(8.7)
Australia*	408	(8.4)
United States	407	(8.4)
Canada	395	(8.5)
United Kingdom (Scotland)	383	(8.7)
United Kingdom (England)**	376	(8.5)
Norway	365	(8.4)
New Zealand	362	(8.9)
Greece	356	(8.9)
Portugal	340	(8.6)
Iceland	338	(8.3)

OECD mean = 399

Eighth grade

Country	Mean score	Standard error
Korea	607	(2.4)
Japan	605	(1.9)
Belgium (Flemish Community)*	565	(6.7)
Czech Republic	564	(4.9)
Switzerland*	545	(2.8)
Netherlands*	541	(6.7)
Austria*	539	(3.0)
France	538	(2.9)
Hungary	537	(3.2)
Australia*	530	(4.0)
Ireland	527	(5.1)
Canada	527	(2.4)
Belgium (French Community)**	526	(3.4)
Sweden	519	(3.0)
Germany**	509	(4.5)
New Zealand	508	(4.5)
United Kingdom (England)**	506	(2.6)
Norway	503	(2.2)
Denmark**	502	(2.8)
United States**	500	(4.6)
United Kingdom (Scotland)*	498	(5.5)
Spain	487	(2.0)
Iceland	487	(4.5)
Greece*	484	(3.1)
Portugal	454	(2.5)

OECD mean = 526

* Countries did not meet TIMSS sampling requirements.
** Countries met TIMSS sampling requirements only partially.
The tests on whether the 4th-grade country means are significantly different from the OECD mean are based on the standard errors that are not adjusted for the linkage between 4th and 8th grades.
The standard errors shown for the 4th grade incorporate an added component to account for the uncertainty of the linkage between 4th and 8th grades.
Source: International Association for the Evaluation of Educational Achievement (IEA)/TIMSS.

Mean performance of countries in 8th grade

Japan and Korea maintain their high standing in 8th grade.

Japan and Korea maintain their high rankings in 8th grade. The difference between mathematics achievement between Japan and Korea on the one hand and the OECD average on the other exceeds more than twice the typical difference in achievement between students in 7th and 8th grades in OECD countries (33 scale points). High achievement, moreover, is not a characteristic only of a small elite in those countries: over 75 per cent of the students in Japan and Korea score above the OECD average (Indicator F2). High achievement in mathematics is shown also by students in the Flemish Community of Belgium and the Czech Republic, whereas students in Portugal lag behind. The average mathematics achievement score for most OECD countries is between 480 and 550 points on a scale that has an overall mean of 524 points and a standard deviation of somewhat less than 100 points.

Knowing what determines successful student performance enables policy-makers to make informed choices about priorities.

Examining relative national performance leads to the more pertinent question of what influences student performance. What factors explain the patterns of performance in different countries, and are they amenable to policy intervention? Knowledge of the determinants of successful performance will enable policy-makers to make informed choices about priorities. Success may be associated with, for example, student attitudes and perceptions, with teaching methods or with curricular emphases.

International variation in mathematics and science achievement cannot be explained in terms of financial or staff resources alone.

There seems to be neither a strong nor a consistent relationship between the volume of resources invested nationally (Indicators B1, B2 and B7) and student outcomes. This suggests that international variation cannot be explained only in terms of financial or staff resources and that the search for improvement in school performance must extend to factors that lie beyond material inputs.

Growth in mathematics achievement between 4th and 8th grades

Most countries which perform well in mathematics in 4th grade do so also in 8th grade, which underlines the importance of early success.

Does achievement in lower grades allow one to predict achievement later in school? Chart F1.2 suggests that in mathematics most countries maintain nearly the same relative standing between 4th and 8th grades (Chart F1.1), which can be an indication both of the importance of success in early school years and of the fact that similar determinants of student success may operate at both grades.

These comparisons are nonetheless based on a synthetic cohort and do not show the progress of a specific group of students; rather, they show the difference in achievement between two different groups of students at the same point in time. Some of the differences observed could be caused by other factors, such as changes in curricular emphases and instruction that have occurred at different grades.

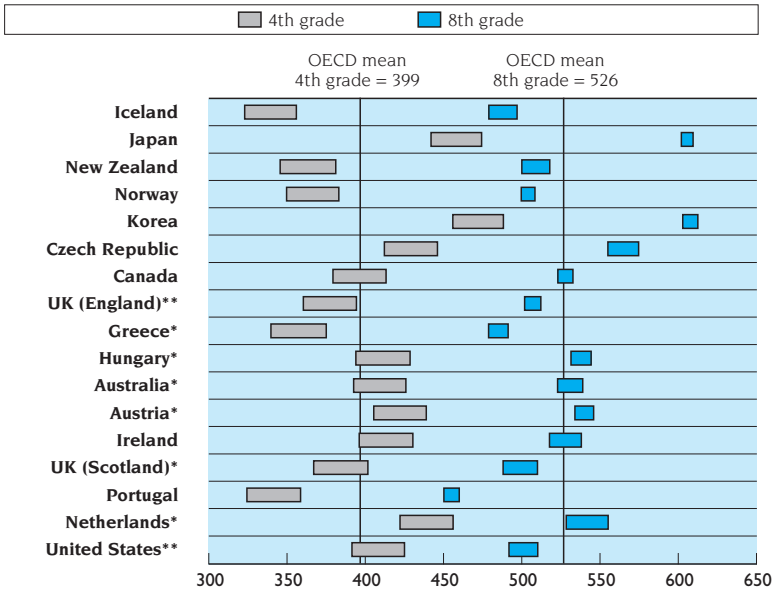
Some of the countries with a comparatively low performance in the 4th grade catch up by the 8th grade…

Iceland, New Zealand and Norway, whose 4th-grade students perform particularly poorly in mathematics, are among the countries with the highest gains over those four years. There are also countries with high performance in 4th-grade mathematics which succeed in extending their advantage through high gains over the four years – Japan and Korea in particular.

… and some countries have good 4th-grade results but fall behind by the 8th grade.

At the other end of the spectrum are countries, such as Ireland and the United States, which perform well at the 4th grade but which fall behind by the 8th grade. Some of the differences among countries may be explained by differences in curricular emphases at the respective grades.

Chart F1.2. **Mean mathematics achievement of students in 4th and 8th grades (1995)**



Only the countries that tested both 4th and 8th-grade students are shown.
The width of the symbols indicates the confidence interval for the mean (95 per cent).
* Countries did not meet TIMSS sampling requirements.
** Countries met TIMSS sampling requirements only partially.

Countries are ranked in descending order of difference in means between 4th and 8th grades.

Source: International Association for the Evaluation of Educational Achievement (IEA)/TIMSS.

The achievement scores are based on tests administered as part of the Third International Mathematics and Science Study (IEA/TIMSS), undertaken by the International Association for the Evaluation of Educational Achievement (IEA) during the school year 1994/95.

DEFINITIONS

The target populations studied in this indicator refer to students in the upper grades of the two grades in which most nine and 13 year-olds are enrolled. Conventionally, these grades are referred to as the "4th" and "8th" grades, since in most countries they refer to the fourth and eighth year of formal schooling. Countries marked with an asterisk (*) met the IEA/TIMSS sampling standards only partially, those marked with two asterisks (**) did not meet the IEA/TIMSS sampling standards. Annex 3 in the 1997 edition of *Education at a Glance* gives further details.

Fourth-grade average achievement scores and their standard errors (with the exception of those used for the significance tests in 4th grade) are adjusted for each country to fit the 8th-grade achievement scale (Table F1.1 and Chart F1.1). They therefore differ from corresponding indicators in earlier editions of *Education at a Glance*. Fifteen of the items in mathematics (15 per cent) were included in the tests for both Population 1 (nine year-olds in grades 3 and 4) and Population 2 (13 year-olds in grades 7 and 8). The difference in performance between the populations on these items was used to estimate the change between the 4th and 8th grades. The country means for the 4th grade transformed to the 8th-grade scale are shown in Tables F1.1. Since there were relatively few items in common, the size

of the link is approximate and the achievement increases between 4th and 8th grades must therefore be interpreted with caution. The standard errors for the 4th grade incorporate an added component to account for the uncertainty of this approximation. The tests for Chart F1.1 on whether the 4th-grade country means are significantly different from the OECD mean are based on the standard errors that are not adjusted for the linkage between 4th and 8th grades.

The data are subject to sampling error, which sets a lower limit on the size of observed differences that can be considered statistically significant. The statistical tests used to compare country means were conducted using the Bonferroni adjustment for multiple comparisons at the 5 per cent significance level.

The reporting of sub-national data for Belgium and the United Kingdom is based on data availability from the IEA and does not represent a policy decision by the OECD.

Table F1.1. **Mean mathematics achievement for students in 4th and 8th grades (1995)**

	Fourth grade			Eighth grade			Difference in means	Standard error of the difference
	Mean	Standard error	Years of formal schooling	Mean	Standard error	Years of formal schooling		
Australia[a, b]	408	(8.4)	4 or 5	530	(4.0)	8 or 9	121	(9.3)
Austria[a, b]	421	(8.4)	4	539	(3.0)	8	119	(9.0)
Belgium (Fl. Community)[c]	m	m	m	565	(5.7)	8	m	m
Belgium (Fr. Community)[b]	m	m	m	526	(3.4)	8	m	m
Canada	395	(8.5)	4	527	(2.4)	8	133	(8.8)
Czech Republic	428	(8.5)	4	564	(4.9)	8	135	(9.8)
Denmark[b]	m	m	m	502	(2.8)	7	m	m
France	m	m	m	538	(2.9)	8	m	m
Germany[b]	m	m	m	509	(4.5)	8	m	m
Greece[b]	356	(8.9)	4	484	(3.1)	8	128	(9.4)
Hungary[a]	410	(8.7)	4	537	(3.2)	8	127	(9.2)
Iceland	338	(8.3)	4	487	(4.5)	8	149	(9.5)
Ireland	412	(8.6)	4	527	(5.1)	8	116	(10.0)
Japan	457	(8.1)	4	605	(1.9)	8	148	(8.3)
Korea	471	(8.1)	4	607	(2.4)	8	137	(8.5)
Netherlands[a, b]	438	(8.5)	4	541	(6.7)	8	103	(10.8)
New Zealand	362	(8.9)	4.5-5.5	508	(4.5)	8.5-9.5	146	(10.0)
Norway	365	(8.4)	3	503	(2.2)	7	138	(8.7)
Portugal	340	(8.6)	4	454	(2.5)	8	115	(8.9)
Spain	m	m	m	487	(2.0)	8	m	m
Sweden	m	m	m	519	(3.0)	7	m	m
Switzerland[c]	m	m	m	545	(2.8)	7 or 8	m	m
UK (England)[c, d]	376	(8.5)	5	506	(2.6)	9	130	(8.9)
UK (Scotland)[b]	383	(8.7)	5	498	(5.5)	9	115	(10.3)
United States[c]	407	(8.4)	4	500	(4.6)	8	93	(9.6)
Country mean	**399**			**526**			**127**	

The country mean includes only those countries for which data are available at both levels of education.
a) Countries did not meet TIMSS sampling requirements, 4th grade.
b) Countries did not meet TIMSS sampling requirements, 8th grade.
c) Countries met TIMSS sampling requirements only partially, 8th grade.
d) Countries met TIMSS sampling requirements only partially, 4th grade.
Source: International Association for the Evaluation of Educational Achievement (IEA)/TIMSS. See Annex 3 for notes.

CHANGE IN VARIATION IN MATHEMATICS ACHIEVEMENT AS STUDENTS PROGRESS FROM THE 4TH TO THE 8TH GRADE

POLICY CONTEXT

This indicator measures changes in the extent of within-country variation in mathematics achievement as students progress from 4th to 8th grade.

Countries aim not only to encourage high performance, but also to minimise internal disparities. Both parents and the public at large have become aware of the gravity of low achievement and the fact that school-leavers who lack basic skills face poor prospects of employment. Moreover, the performance of a country's best students in mathematics and science may have implications for the part that country will play in the pool of tomorrow's mathematicians and scientists. Similarly, a high proportion of students at the lower end of the scale may give rise to concern that a large number of tomorrow's taxpayers and voters will lack basic skills required for the informed judgements which they will be called upon to make.

The comparisons are based on a synthetic cohort and do not show the change of a specific group of students.

Indicator F2, by comparing the distribution of student achievement between the 4th and 8th grades, shows how disparities in student achievement evolve as students progress through the education system. In doing so, the indicator sheds light on the extent to which education systems and societies moderate or reinforce early educational disparities. As OECD countries differ in the approaches used to divide students for instruction and to structure the curriculum, it is important to examine whether such differences contribute to differences in the dispersion of student outcomes within countries.

EVIDENCE AND EXPLANATIONS

Variation in performance in 4th grade

Countries vary considerably in the achievement of their low-performing students.

In many countries, a sizable number of students fall behind in performance and may face difficulties in following the programmes of study set out in the curriculum. Table F2.1 shows that there is a large variation in achievement of the low and top-performing 4th-grade students across countries. Less than 5 per cent of 4th-graders in Iceland and Portugal reach the average mathematics performance of their Korean counterparts; and more than a quarter of Japanese and Korean students score higher than nearly all students in Greece, Iceland, New Zealand, Norway and Portugal.

There is also substantial variation within each country.

The interquartile range of 4th-grade student performance in mathematics – the difference between scores at the 75th and 25th percentiles – varies substantially between countries. In half of the countries it is about twice the average progress in achievement that students at that grade accomplish over a school year – a genuine challenge for schools and teachers. In mathematics, the interquartile range is narrowest in Iceland, at 92 scale points, and widest in Scotland, at 117 points – nearly twice the typical progress in achievement that students accomplish between 3rd and 4th grades.

Chart F2.1. **Distribution of mathematics achievement scores, 4th and 8th grades (1995)**

* Countries did not meet TIMSS sampling requirements.
** Countries met TIMSS sampling requirements only partially.

Countries are ranked in ascending order of interquartile range of mathematics achievement scores in 8th grade.

Source: International Association for the Evaluation of Educational Achievement (IEA)/TIMSS.

Some countries with similar average performance show a different extent of disparities in achievement.

It is noteworthy that countries with similar average performance show a considerable variation in disparities of student achievement. New Zealand and Norway, for example, show the same average performance in mathematics, but the 25th percentile in New Zealand is 14 score points below the 25th percentile in Norway, indicating that the weaker performers in New Zealand have markedly lower scores than their counterparts in Norway. At the other end of the scale, the stronger performers in New Zealand score more highly than the stronger performers in Norway. Comparing the range of achievement within a country with its average performance thus shows that a wide range of achievement is not a necessary condition for a system to attain a high overall performance.

Variation in performance in 8th grade

In six countries, the interquartile range of the achievement of 8th-graders is four times wider than the typical progress students in the OECD make over a school year.

Table F2.2 provides information on the within-country variation in 8th-grade mathematics achievement. The difference between the 25th and 75th percentiles of student performance in Australia, Austria, the Czech Republic, Ireland, Japan and Korea is more than four times the average progress in mathematics achievement made by students in OECD countries (33 points) between 7th and 8th grades. Two countries (Portugal and Spain) have interquartile ranges of 100 score points or below (that is, about three grade-year equivalents).

To the extent that achievement gaps at age 13 can be regarded as predictive of disparities at later stages, deficiencies observed at this stage can have substantial implications both for education systems and for the skill-intensive information society.

Growth in mathematics achievement between the 4th and 8th grades

Some countries with comparatively low disparities in mathematics achievement in 4th grade show large disparities in 8th grade.

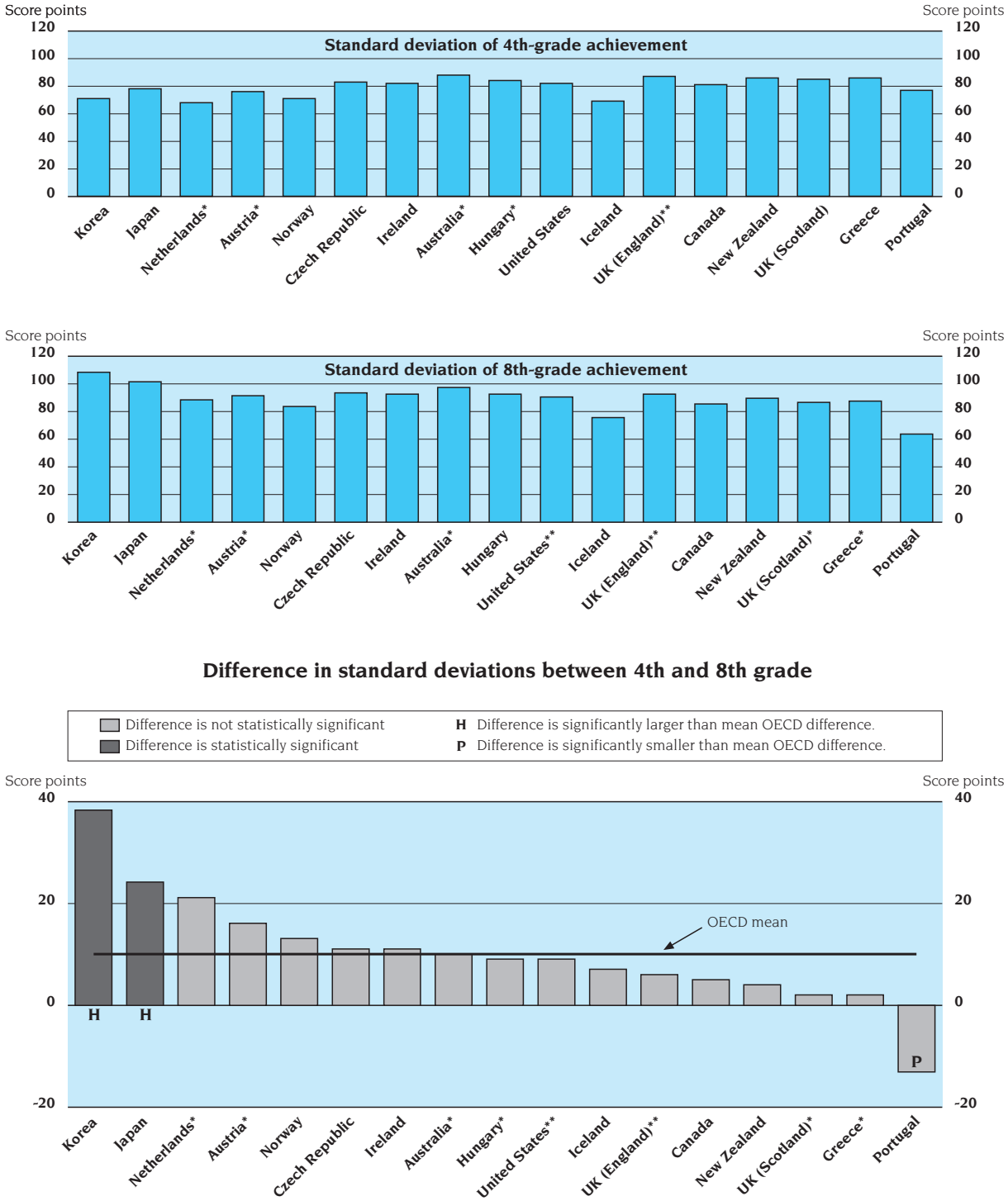
How do education systems and societies moderate or reinforce variation in student achievement? Can policy intervention be successful or are these inequalities in student performance unavoidable features of particular societies? One way of answering these questions is by comparing within-country variation in achievement in 4th grade, when school has not had much of a chance to have an effect, with the variation a few years later on.

To display the dispersion among students in each country, Chart F2.2 shows the differences between the 4th-grade standard deviations in mathematics achievement and those of the 8th grade. The standard deviation is presented rather than the interquartile range (used elsewhere) because the standard deviation can be estimated more reliably than the interquartile range and thus provides more precise information about differences in variation across grades. The standard deviation is a measure of the degree to which students are spread around the mean for each country. It is defined in such a way that, in a normal distribution, about two-thirds of students score within one standard deviation of the mean, and all but about 5 per cent fall within two standard deviations.

Across OECD countries, variation in student performance rises from the 4th to the 8th grade.

Across OECD countries the student-level standard deviation rises over the four grades tested. From the 4th grade, where it is 79 points, the standard deviation increases by 10 points by the 8th grade. This trend indicates that, on average, the spread or dispersion among students in mathematics achievement is larger as students enter secondary school than it is in the early elementary-school years.

Chart F2.2. **Variation of mathematics achievement scores in 4th and 8th grades (expressed by the standard deviation) (1995)**



* Countries did not meet TIMSS sampling requirements.
** Countries met TIMSS sampling requirements only partially.

Source: International Association for the Evaluation of Educational Achievement (IEA)/TIMSS.

Early mastery may influence the rate at which new material is learned, thus widening the gap between students as they progress through school.

As students progress through the grades of early and late elementary school, they are confronted with more complex materials that build upon earlier knowledge and skills. Early mastery thus may influence the rate at which new material is learned, widening the gap between students as they progress. In addition, the curriculum in some countries is becoming increasingly differentiated, further increasing the variation among students.

Differences between countries show that the growth in disparities in not an inevitable outcome of education systems.

There are considerable differences in the growth of disparities across countries. Although some countries with a relatively large variation in mathematics achievement in the 4th grade also exhibit relatively large variation in the 8th grade, some countries with low variation in the 4th grade have high variation (relative to other countries) in the 8th grade.

Some countries with comparatively low disparities in mathematics achievement at the 4th grade show large disparities at the 8th grade…

Korea, which has one of the smallest standard deviations in 4th grade, shows the largest disparity in 8th grade – a growth in the standard deviation of 38 points. Similarly, Japan and the Netherlands show a growth of over 20 points, twice the average growth in OECD countries. The Netherlands moves from the position with the least variation at the 4th grade to an average position by the 8th grade and Japan moves from the fourth position in 4th grade to the second-last by the 8th grade (based on the 17 countries who took part in TIMSS at both grades).

… although some countries contain the growth in disparities better than others.

In Greece and Scotland, on the other hand, the difference between the standard deviations at the 4th and 8th grades is not statistically significant, so that variation in student performance does not seem to have increased. Iceland and Norway show some of the lowest standard deviations at both grades.

DEFINITIONS

The achievement scores are based on tests administered as part of the Third International Mathematics and Science Study (IEA/TIMSS), undertaken by the International Association for the Evaluation of Educational Achievement (IEA) during the school year 1994/95.

The target populations studied in this indicator refer to students in the upper grades of the two in which most nine and 13 year-olds are enrolled – conventionally referred to as the "4th" and "8th" grades. Countries marked with an asterisk (*) met the IEA/TIMSS sampling standards only partially, and those marked with two asterisks (**) did not meet the IEA/TIMSS sampling standards. Further details are given in Annex 3 in the 1997 edition of *Education at a Glance*.

Tables F2.1 and F2.2 show the achievement scores of students at the 5th, 25th, 75th and 95th percentiles of the *national* mathematics score distributions. The 5th percentile, for example, refers to the achievement score below which 5 per cent of the population scored. The tables also show the standard deviations of scores together with their standard errors. The standard deviation is calculated as the square root of the average of the squared deviations of individual student mathematics scores from the country mean.

Fourth-grade average achievement scores and their standard errors (with the exception of those used for the significance tests at 4th grade) for each country are adjusted to fit the 8th-grade achievement-scale. They therefore differ from corresponding indicators in earlier editions of *Education at a Glance*. Indicator F1 gives details on methods used for linking the results for the 4th and 8th grades. Because the linkage is based on only 15 items, comparisons of the standard deviation across the two grades should be made with care. The magnitude of the potential linking error appears in the tables in the standard error used to compare results in the 4th and 8th grades.

The typical progress in achievement that students accomplish between the 3rd and 4th and between the 7th and 8th grade is discussed in earlier editions of *Education at a Glance*.

Table F2.1. **Distribution of mathematics achievement scores, 4th grade (1995)**

	Mean	5th percentile[1]	25th percentile[1]	75th percentile[1]	95th percentile[1]	Standard deviation
Australia*	408	261	350	468	553	88
Austria*	421	286	371	473	544	76
Canada	395	261	341	449	528	81
Czech Republic	428	293	372	485	568	83
Greece	356	210	301	415	496	86
Hungary*	410	271	352	467	552	84
Iceland	338	227	290	382	455	69
Ireland	412	268	359	470	544	82
Japan	457	323	407	512	582	78
Korea	471	353	426	519	583	71
Netherlands*	438	327	391	484	547	68
New Zealand	362	218	305	422	500	86
Norway	365	244	319	412	482	71
Portugal	340	209	290	394	465	77
UK (England)**	376	234	317	430	530	87
UK (Scotland)	383	241	325	442	525	85
United States	407	265	352	463	540	82
Country mean	**399**	**266**	**347**	**453**	**529**	**79**

Table F2.2. **Distribution of mathematics achievement scores, 8th grade (1995)**

	Mean	5th percentile[1]	25th percentile[1]	75th percentile[1]	95th percentile[1]	Standard deviation	Difference between 4th and 8th grade standard deviations
Australia*	530	372	460	600	690	98	10
Austria*	539	394	474	608	693	92	16
Belgium (Fl. Community)**	565	416	502	631	710	92	m
Belgium (Fr. Community)*	526	385	467	587	658	86	m
Canada	527	389	468	587	670	86	5
Czech Republic	564	423	496	633	725	94	11
Denmark*	502	369	443	561	641	84	m
France	538	415	484	591	666	76	m
Germany*	509	368	448	572	661	90	m
Greece*	484	347	422	546	633	88	2
Hungary	537	391	471	602	693	93	9
Iceland	487	365	435	540	615	76	7
Ireland	527	381	462	594	681	93	11
Japan	605	435	536	676	771	102	24
Korea	607	418	540	682	786	109	38
Netherlands*	541	397	477	604	688	89	21
New Zealand	508	366	443	570	663	90	4
Norway	503	372	445	560	649	84	13
Portugal	454	357	411	495	569	64	–13
Spain	487	376	436	536	616	73	m
Sweden	519	384	460	579	661	85	m
Switzerland**	545	401	485	607	685	88	m
UK (England)**	506	361	443	570	665	93	6
UK (Scotland)*	499	364	436	559	649	87	2
United States**	500	356	435	563	653	91	9
Country mean	**524**	**384**	**463**	**586**	**672**	**88**	**10**

* Countries did not meet TIMSS sampling requirements.
** Countries met TIMSS sampling requirements only partially.
1. 5 (or 25 or 75 or 95) per cent of students score below this point.
Source: International Association for the Evaluation of Educational Achievement (IEA)/TIMSS. See Annex 3 for notes.

Developmental indicator

VARIATION OF STUDENT ACHIEVEMENT ASSOCIATED WITH STUDENT AND SCHOOL LEVELS IN 8TH GRADE

POLICY CONTEXT

This developmental indicator sheds light on the relative shares of the overall variation in student achievement that results from differences among classes/schools and differences between students.

Teachers, schools and education systems must address the variation in achievement that exists within classes, schools and countries as a whole. These variations can result from the socio-economic background of students and schools, from the human and financial resources available to schools, and from curricular differences and the way in which teaching is organised and delivered. Some countries have non-selective school systems which aim to provide all students with the same opportunities for learning and may leave every school to cater for the full range of student achievement. Other deal with diversity explicitly by forming groups of students of similar achievement through selection either within or between classes and schools, with the aim of serving students best according to their specific requirements.

It also reflects on important background factors that contribute to variation.

How do the policies and historical patterns that shape each country's school system affect the general variation in student achievement and academic performance as a whole? What are the main factors associated with this variation?

EVIDENCE AND EXPLANATIONS

Variation in student achievement is often large: even in the middle half of the population, the lowest-performing students would have to study several additional years to catch up with the best.

Indicator F2 sheds light on the variation of mathematics achievement in 8th grade in OECD countries, with three conclusions emerging: first, the variation within one grade of children in their early teens is large – students scoring at the 25th percentile would have to study several additional years to catch up with students scoring at the 75th percentile. Second, this difference varies enormously from country to country. In some countries, the difference in performance between students at the 25th and 75th percentiles corresponds to the average progress made over four years of school; in other countries, it corresponds to the progress made in 2.5 years.

A wide range in performance is not a necessary condition for countries to attain high overall performance.

Third, there is no clear relationship between the distribution of achievement and overall performance – France manages to get most students above the OECD mean of 8th-grade mathematics achievement within a relatively narrow range of performance, whereas Japan gets high scores over a wide range of performance.

Indicator F3 is a developmental indicator which takes this approach further and examines what percentage of the overall variation between students lies between the groups that were tested – classes and schools (indicated by the light sector in Chart F3.1) – and what percentage originates from students themselves (indicated by the dark sector). In other words, Indicator F3 gives an indication of

whether differences in mathematics achievement occur largely between students or between the classes and schools in which they are enrolled.

The size of the pies in Chart F3.1 reflects the overall variation in mathematics achievement of 8th-grade students. Countries with large variation in student performance, such as Japan and Korea, show large pies; countries with comparatively little variation among students, such as Portugal and Spain, show small pies. As shown, some countries with similar average performance show very different ranges of disparity in achievement.

The symbol in the middle of each pie chart in Chart F3.1 indicates whether the overall performance in the country is significantly above (+), around (=), or below (–) the OECD average.

It should be noted that the variation indicated by the light-blue sector can originate either from schools or from classes within schools (the latter component may be of importance for countries that track or stream 8th-graders within schools). This indicator does not separate these two components.

The first two columns in Table F3.1 present the data underlying Chart F3.1. The values can vary from 0 to 100. If the variation common to students in the same class and school in a particular country is close to zero, there are virtually no differences across schools and no differences between classes within schools in mathematics achievement. A value of 50 means that 50 per cent of the variation is between groups – classes and schools – and 50 per cent is between students within classes and their schools tested.

In OECD countries, school environments usually vary much less than students' home environments…

Chart F3.1 reveals that in most countries differences in achievement are mainly associated with students rather than with the schools, partly because, in the countries under review, there is much less variability in schools than in the students' home environments.

… but some countries show relatively large differences in achievement between classes and schools.

The countries with relatively large differences between classes and schools – more than 30 per cent of the overall variation in student performance – are Austria, the Flemish Community of Belgium, Germany, Ireland, Netherlands, New Zealand, Switzerland and the United States. In contrast, Denmark, Iceland, Japan, Korea, Norway and Sweden display relatively small proportions of variance associated with schools and classes. Here, the overwhelming proportion of differences in student achievement – more than 90 per cent – occurs between students' home environment, their attitudes to mathematics and expected further education.

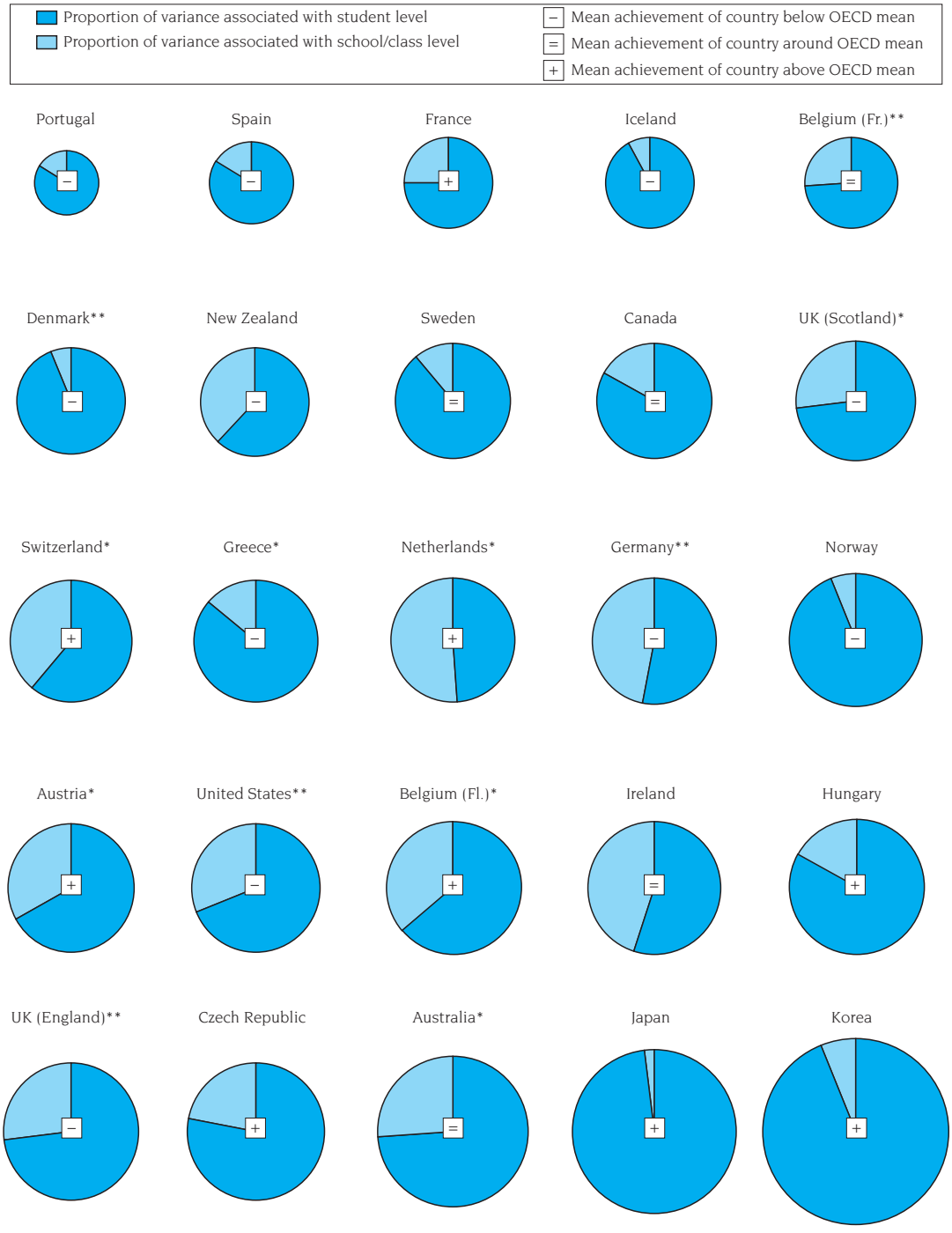
Some countries respond to variation in achievement with a differentiated education system that aims to respond to students' differing requirements…

The variation between schools and classes as shown in Chart F3.1 stems from different sources. Some countries – such as Austria, Belgium, Germany, Ireland, the Netherlands and Switzerland – deal with the variation in student achievement explicitly by forming selective student groups within a differentiated school system with the aim of serving 8th-graders according to their specific requirements. The comparatively large variation in achievement between schools and classes in these countries may be mainly a result of these policies.

… although other countries pursue non-selective policies

Yet even countries such as Australia, New Zealand and the United States, which do not explicitly track different school types for varying student achieve-

Chart F3.1. **Proportion of variance in 8th-grade mathematics achievement associated with student and school/class levels (1995)**



The larger the circle, the greater the differences between high and low achieving students in that country.
* Countries did not meet TIMSS sampling requirements.
** Countries met TIMSS sampling requirements only partially.

Countries are ranked in ascending order of the total amount of variance in the mathematics score of 8th-grade students.

Source : International Association for the Evaluation of Educational Achievement (IEA)/TIMSS.

ment, show considerable variation between the classes and schools tested. In these countries, this variation may stem from regional variation in school systems and their curricula, from a differentiation of students across classes based on their ability, from a segregation of the student intake by socio-economic factors (for example, some schools may perform poorly because their students largely come from a poor neighbourhood), from different educational and material resources available to schools, or from the tracking within schools according to student ability.

with the aim of providing all students with the same learning opportunities.

Some countries – Denmark, Japan, Norway and Sweden among them – devote major efforts to providing all students with a similar learning environment, irrespective of their achievement. Chart F3.1 shows that such policies have been successfully implemented in these countries, with around 10 per cent or less of the variation left between either schools or classes within schools.

Some countries have devoted major efforts to provide all students with a similar learning environment.

How do the policies and historical patterns that shape each country's school system play a role in and relate to the overall variation in student achievement? Do countries with explicit tracking and streaming policies show a higher degree of overall disparities in student achievement than countries which have non-selective education systems in place?

Chart F3.1 shows no clear relationship between the size of the relative variance components and the overall variation in student achievement. There is also no uniform relationship between the size of differences among schools and classes and overall achievement in countries.

The relationship between the variance components and the variation in or overall student achievement is mixed.

In Japan and Korea, the countries with both the highest performances by 8th-grade students in mathematics as well as the highest variation in achievement, only a very small percentage of this variation (less than 6 per cent) results from differences among schools or from differences between classes within schools.

Japan and Korea show high average performance but, at the same time, large variation among 8th-graders in mathematics performance.

France is an example of a relatively high-performing country in which overall variation in achievement is small, and of which a large part results either from differences between schools or from differentiation among classes within schools. In part, though, the low variation in France may be attributable to a comparatively high incidence of repetition of classes.

France reaches high average performance with low variation, which can largely be explained by differences between classes and schools.

The Netherlands and Switzerland are countries with a highly differentiated school system for 13 year-olds. Both countries perform very well and, at the same time, show only a moderate degree of total variation in achievement – of which 40 per cent or more lies between schools and their classes. The situation is similar for Austria, although the overall variation among students is slightly higher than in the Netherlands and Switzerland.

The Netherlands and Switzerland perform well with only moderate variation, much of which is explained by differences between schools and classes resulting from a highly differentiated school system.

Germany, Ireland and the Netherlands all have a relatively large proportion of variance associated with the school level. In addition, all of these countries show similar variation between high and low-performing students. Germany nonetheless performs below and Ireland at around the OECD average, whereas Dutch students perform above it.

Germany and the United States perform below the OECD average, with similar variation but different differentiation policies.

Germany and the United States both perform below the OECD average and show similar degrees of overall variation in student performance. But Germany has a differentiated school system, while the relatively high variation between schools in the United States stems from other factors.

What are the main determinants of such variation?

What are the key determinants of these variance components? Chart F3.2 shows the proportion of student-level and school/class-level variation that can be explained by a number of background factors that were shown to be associated with student performance in at least a third of the countries. At the student level, these factors include: *i*) the number of books in the student's home, *ii*) the attitudes of students towards mathematics, and *iii*) the level of education of the parents and the student's educational aspirations. At the school/class level, the factors include: *i*) the frequency of homework assignments by mathematics teachers, *ii*) the average time scheduled for homework and the consideration of homework by teachers in the evaluation of student performance, *iii*) the type of community in which the school is located, and *iv*) total school enrolments.

The outer ring in the chart repeats the amounts of variance associated with these student and school/class levels, while the inner circle represents the amounts of variance explained by the student and school-level variables. In Scotland, for example, the outer ring shows that three-quarters of the variance in mathematics achievement is associated with students while one quarter is associated with schools and classes. The inner circle illustrates that student-level variables (5 per cent) and school-level variables (12 per cent) explain a total of 17 per cent of differences in achievement.

In most countries, variables at the student level explain more variance than school-level variables.

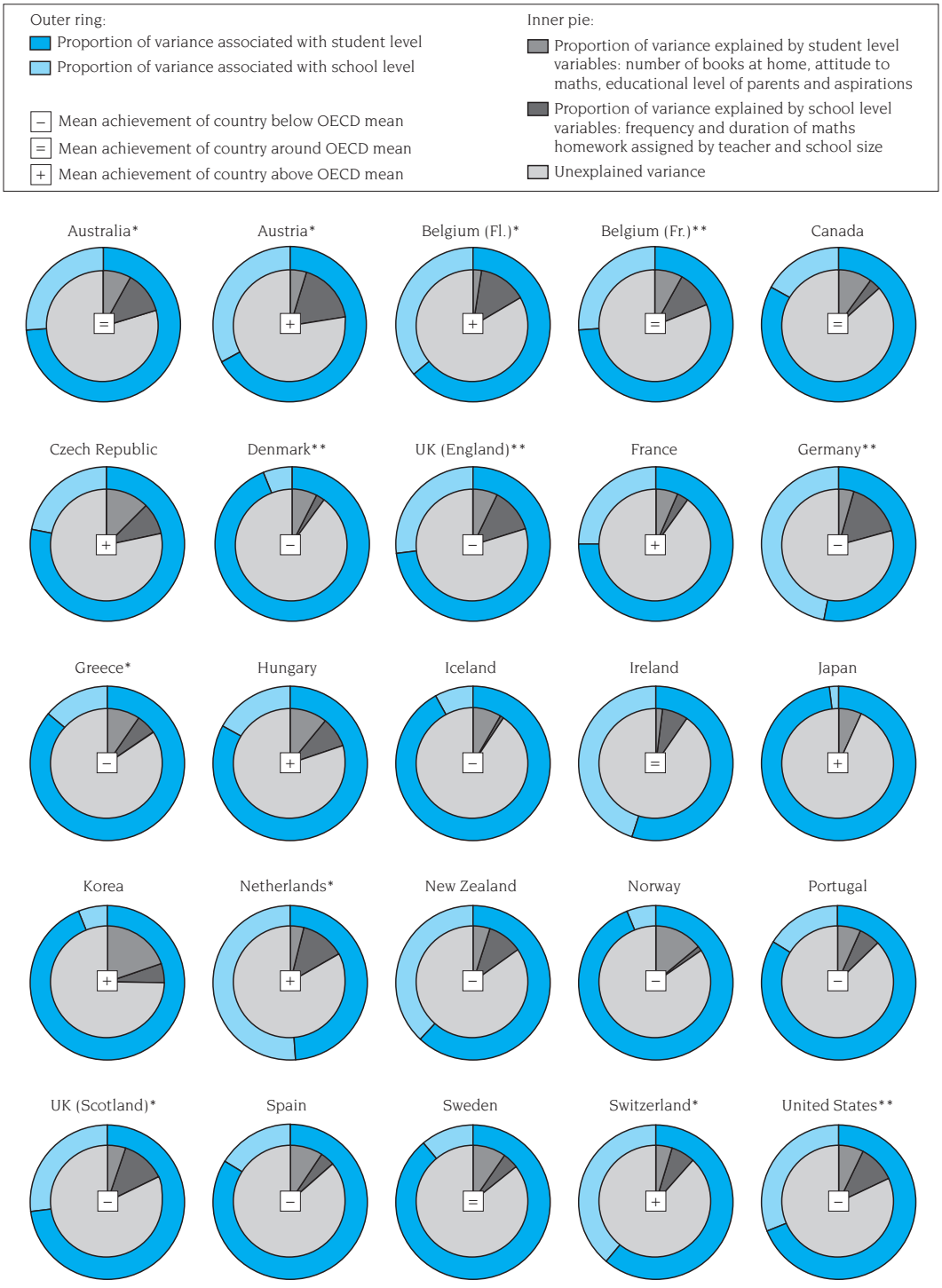
In most countries, variables at the student level explain more variance than school-level variables. In other words, higher educational attainment of parents and higher educational aspirations of the student, coupled with a larger number of books in the home and a more favourable attitude towards mathematics, contribute more to higher achievement than frequency and duration of homework given by the teacher and the size of the school.

Countries in which school variables do have a bigger impact on achievement include Austria, the Flemish Community of Belgium, England, Germany, Ireland and Scotland. Students in larger schools, whose teachers assign homework more frequently, of longer duration and who consider written homework in the evaluation of student performance, are therefore predicted to perform better in these countries.

Much of the variation remains unexplained.

It should be noted that in all countries the proportion of variance explained is relatively small – never more than 25 per cent. There are thus important variables affecting student achievement which have not been considered. This is partly a result of the fact that the analysis includes only those variables that have been shown to be important across countries. Taken together, these variables explained only between 7 per cent of variance in Japan and 27 per cent in Korea. In other words, models could be developed from the data to explain a larger proportion of variance in each country. But since these models would be country-specific, they would not be useful as cross-country indicators of education.

Chart F3.2. **Proportion of variance in 8th-grade mathematics achievement explained by student and school-level variables (1995)**



* Countries did not meet TIMSS sampling requirements.
** Countries met TIMSS sampling requirements only partially.
Source: International Association for the Evaluation of Educational Achievement (IEA)/TIMSS.

The achievement scores are based on tests administered as part of the Third International Mathematics and Science Study (IEA/TIMSS), undertaken by the International Association for the Evaluation of Educational Achievement (IEA) during the school year 1994/95.

DEFINITIONS

The target populations studied in this indicator refer to students in the upper grade of the two grades in which most 13 year-olds are enrolled – conventionally referred to as the "8th" grade, since in most countries it refers to the eighth year of formal schooling. Countries marked with an asterisk (*) met the IEA/TIMSS sampling standards only partially, and countries marked with two asterisks (**) did not meet the IEA/TIMSS sampling standards. Annex 3 in the 1997 edition of *Education at a Glance* gives further details.

The symbol in the middle of each pie in Chart F3.1 indicates whether the overall performance in the country is significantly above (+), around (=), or below (–) the OECD average.

Column 1 in Table F3.1 provides the percentage of the overall variance in the mathematics achievement of 8th-graders that is associated with the student level. Column 2 provides the residual proportion of variance resulting from differences among schools or among classes within schools. The overall variance in mathematics achievement is calculated as the average of the squared deviations of individual student mathematics scores from the country mean. The student and school-level variance components were determined on the basis of a hierarchical linear model.

Column 3 estimates the percentage of student-level variance explained by the report of students on: *i*) the number of books at home, *ii*) the attitudes of students towards mathematics, and *iii*) the educational attainment of the parents and the student's educational aspirations. The amount of explained variance at the student level is relative to the proportion of variance associated with the student level for a particular country. Hence, for example, in Scotland, 7 per cent of the 73 per cent of variance associated with the student level is explained by the student-level predictors. As a consequence, these predictors explain 5 per cent (0.07*0.73)*100 of the total variance.

Column 4 estimates the percentage of aggregate variance between schools and between classes within schools that is explained by the report of teachers and school principals on: *i*) the frequency of homework assignments by mathematics teachers, *ii*) the average time scheduled for homework and the consideration of homework by teachers in the evaluation of student performance, *iii*) the type of community in which the school is located, and *iv*) school enrolments. The amount of variance explained at the school level is relative to the proportion of variance associated with the school level for a particular country. Hence, for example, in Scotland again, 47 per cent of the 27 per cent of variance associated with the school level is explained by the school/class-level predictors. As a result, these predictors explain twelve per cent (0.47*0.27)*100 of the total variance.

Student, school and classroom variables were chosen as predictors if they correlated in excess of ± 0.20 with the mathematics achievement score in more than one-third of countries.

Table F3.1. **Decomposition of variance components in mathematics achievement of 8th-graders (1995)**

	Variance associated with student level (× 100)	Variance associated with school level (× 100)	Variance explained at student level (× 100)	Variance explained at school level (× 100)	Total variance explained (× 100)
Australia*	74	26	11	48	21
Austria*	67	33	7	54	23
Belgium (Fl. Community)**	64	36	4	39	17
Belgium (Fr. Community)*	74	26	11	41	19
Canada	83	17	12	20	14
Czech Republic	78	22	16	42	22
Denmark*	94	6	8	41	10
France	75	25	9	13	10
Germany*	53	47	9	34	21
Greece*	86	14	11	41	15
Hungary	83	17	13	52	20
Iceland	92	8	9	13	10
Ireland	55	45	4	17	10
Japan	98	2	7	9	7
Korea	94	6	21	90	25
Netherlands*	49	51	8	25	16
New Zealand	62	38	8	27	15
Norway	94	6	15	25	15
Portugal	84	16	8	38	12
Spain	84	16	11	26	14
Sweden	89	11	11	43	14
Switzerland**	61	39	8	18	12
UK (England)**	73	27	10	48	20
UK (Scotland)*	73	27	7	47	17
United States**	69	31	11	35	19

* Countries did not meet TIMSS sampling requirements.
** Countries met TIMSS sampling requirements only partially.
Source: International Association for the Evaluation of Educational Achievement (IEA)/TIMSS. See Annex 3 for notes.

SOCIO-ECONOMIC BACKGROUND AND STUDENT ACHIEVEMENT IN 4TH GRADE

POLICY CONTEXT

This indicator examines the achievement of 4th-grade students with differing backgrounds and differing material, social and cultural resources.

Children come from a variety of family, socio-economic and cultural backgrounds. As a result, schools are faced with a range of individual challenges in providing equal opportunities to all students. The learning environment of schools can be enhanced by what students with a variety of backgrounds and interests bring with them – although the heterogeneity of students' achievement levels and differences in their preparedness for school also increase the difficulties schools face in catering for the requirements of students from diverse social backgrounds.

Indicators of the characteristics of students who are most likely to perform poorly can help educators and policy-makers identify crucial risk factors that impede effective learning. The same indicators, by showing that in some countries these tendencies are less marked than in others, can also give support to policy incentives designed to foster equity.

EVIDENCE AND EXPLANATIONS

The presence of educational resources in the home is a powerful predictor of student achievement…

The presence of educational resources in the home, taken as a proxy for the socio-economic background of students, is closely related to disparities in student achievement. Across the OECD countries, the average gap in mathematics achievement among students who reported having a dictionary, a study desk and a computer for their own use at home and those who reported having none, one or two of these resources amounts to 26 score points, about half of the progress 4th-grade students typically make over a school year. This difference is significant in all OECD countries, with the exception of Austria and Greece (Chart F4.1).

… although the relationship is not equally strong in all countries.

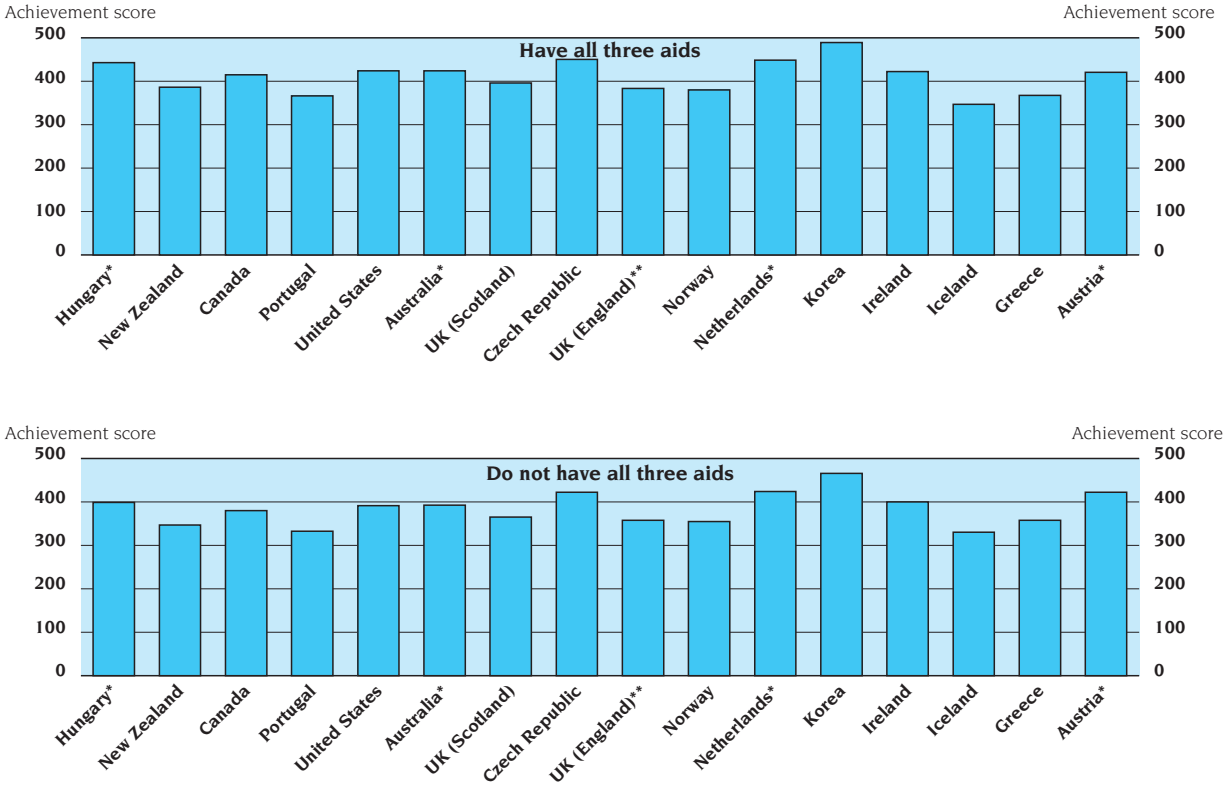
But this relationship does not hold with the same force in all countries. In Hungary and New Zealand, the difference in mathematics achievement related to having all three educational resources at home is significantly larger than in the majority of countries. By contrast, in Austria and Greece, this relation is significantly smaller than the average effect in the OECD countries.

Similar observations can be made about the relationship between student achievement and the number of books at home, another powerful indicator of the socio-economic background of students (although the relevant data are not shown in this indicator). Across OECD countries, students reporting that they have about one shelf of books at home score, on average, 28 scale points higher in mathematics than those students who had no books or very few. The difference in average mathematics scores between students with one shelf and those with one bookcase full of books is related to an additional average increase of 31 score points.

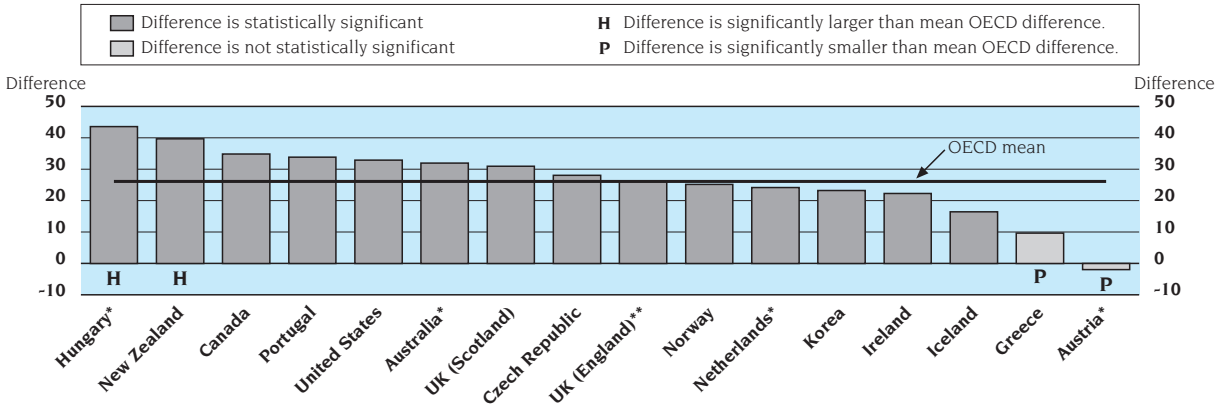
A similar relationship can be observed between achievement and linguistic background.

Education systems in many countries are confronted with the specific problem of students whose mother-tongue is different from the language of instruction. The linguistic handicap experienced by these countries is often compounded by other socio-economic handicaps.

Chart F4.1. **Mean mathematics achievement scores of 4th-grade students who report to have a dictionary, a study desk, and a computer at home and of students who do not have all three of these aids (1995)**



Difference in mean mathematics achievement scores between 4th-grade students who report to have a dictionary, a study desk, and a computer at home and students who do not have all of these three aids



* Countries did not meet TIMSS sampling requirements.
** Countries met TIMSS sampling requirements only partially.

Countries are ranked in descending order of the difference in mean mathematics achievement scores.

Source: International Association for the Evaluation of Educational Achievement (IEA)/TIMSS.

F4

Students who usually speak the language of the test at home score higher, on average, than their counterparts who do so only occasionally.

Students who always or almost always speak the language of the test at home score, on average, 35 points (half a grade) higher in mathematics than those who speak it at home only sometimes. This effect is significant in all countries except Iceland, Korea and Portugal (Chart F4.2).

In Iceland, Korea and Portugal, however, the language disparity is significantly lower than the average effect in the OECD; in Austria and New Zealand, by contrast, is significantly higher.

Students with at least one parent born in the country score, on average, 20 points higher than their counterparts whose parents are both immigrants.

On average, students with one parent born in the country where they were tested scored 20 points higher in mathematics than students whose parents were both born abroad (Table F4.3). This effect was significant in six out of ten countries. In Australia, Canada and New Zealand the difference is small or even negligible. These countries were also the ones with the highest proportion of students who had only one parent born in the country. There is also a small difference in achievement between students with both parents born in the country of the test and those with one parent born abroad, but the average difference is only 11 score points and significant in only a few countries.

Similarly, students born in the country of testing scored, on average, 25 points higher in mathematics than their foreign-born counterparts.

Students born in the country where they were tested score an average of 25 points higher in mathematics than their foreign-born counterparts (Table F4.4). There is considerable cross-country variation in the effect of country of birth on achievement, with the effect being significantly stronger than the OECD average in the United States, but significantly smaller in Australia, Iceland, Ireland and New Zealand.

Much may be learned by investigating the strategies used by countries which show little disparity among students of heterogeneous backgrounds.

These results indicate that lower achievement in mathematics is often associated with a lack of educational aids, a lack of books in the home, limited use of the language of the test at home, one or more foreign-born parents, and being born abroad. Teachers, administrators and policy-makers should understand what causes such factors to have a stronger influence in some countries than in others. Much may be learned by investigating the strategies used by countries which show little disparity among students of heterogeneous backgrounds.

■ DEFINITIONS

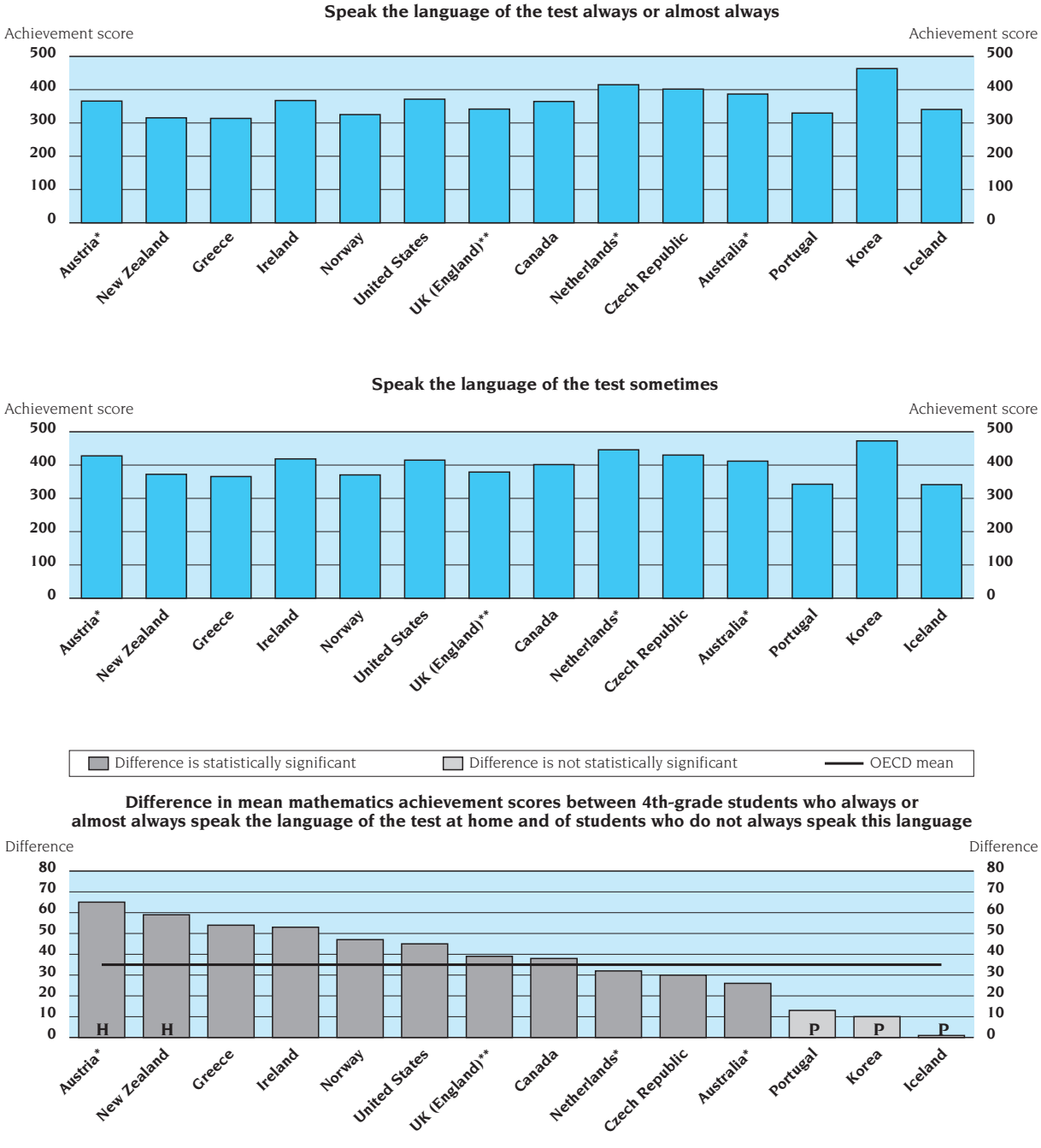
The achievement scores are based on tests administered as part of the Third International Mathematics and Science Study (IEA/TIMSS), undertaken by the International Association for the Evaluation of Educational Achievement (IEA) during the school year 1994/95.

The target populations studied in this indicator refer to students in the upper grade of the two grades in which most nine year-olds are enrolled – referred to as the "4th" grade. Countries marked with an asterisk (*) met the IEA/TIMSS sampling standards only partially, those marked with two asterisks (**) did not meet the IEA/TIMSS sampling standards. Annex 3 in the 1997 edition of *Education at a Glance* gives details.

Achievement scores have been linearly transformed to fit the scale of 8th-grade students.

Information on educational aids in the home was gathered by asking 4th-grade students to indicate whether they had *i*) a dictionary, *ii*) a study desk or table for their own use, and *iii*) a computer. Achievement scores are presented for two categories: those who responded they had all three, and those who had fewer than three.

Chart F4.2. **Mean mathematics achievement scores of 4th-grade students who report always or almost always speaking the language of the test at home and of students who do not always speak this language (1995)**



H Difference is significantly larger than mean OECD difference.
P Difference is significantly smaller than mean OECD difference.

* Countries did not meet TIMSS sampling requirements.
** Countries met TIMSS sampling requirements only partially.

Countries are ranked in descending order of the difference in mean mathematics achievement scores.

Source: International Association for the Evaluation of Educational Achievement (IEA)/TIMSS.

Frequency of speaking the language of the test at home was obtained from students in three categories: *i*) never, *ii*) sometimes, and *iii*) always or almost always. The categories "sometimes" or "always or almost always" were combined for the purpose of this indicator.

Students were asked to indicate whether or not their parents were born in the country of the test by choosing one of three categories: *i*) neither parent born in country, *ii*) one parent born in country, and *iii*) both parents born in country. Students were also asked to indicate whether themselves were born in the country of the test.

The effect of the risk factors were estimated by computing the difference in mean achievement for students classified at different levels of the risk factor (*e.g.*, students with all three educational aids and students with fewer than three). For ease of interpretation, the mean effect for the various levels of each risk factor was calculated based on only those countries which have data on mean achievement for all levels of the risk factor. Thus, the countries on which the mean effect is based differ for the five risk factors.

Table F4.1. **Fourth-grade students' reports on educational aids in the home – dictionary, study desk, and computer – and mathematics achievement (1995)**

	Have all 3 aids				Do not have all 3 aids			
	Percentage of students	Standard error	Mean achievement	Standard error	Percentage of students	Standard error	Mean achievement	Standard error
Australia*	50	(1.0)	424	(3.1)	50	(1.0)	393	(3.7)
Austria*	50	(1.4)	421	(3.2)	50	(1.4)	423	(3.9)
Canada	41	(1.2)	415	(3.8)	59	(1.2)	380	(3.8)
Czech Republic	25	(1.2)	451	(5.0)	75	(1.2)	423	(3.0)
Greece	20	(1.0)	367	(4.7)	80	(1.0)	358	(4.0)
Hungary*	28	(1.4)	443	(5.5)	72	(1.4)	399	(3.2)
Iceland	60	(1.6)	347	(3.4)	40	(1.6)	331	(2.8)
Ireland	58	(1.2)	423	(3.5)	42	(1.2)	400	(3.9)
Korea	22	(1.0)	489	(4.3)	78	(1.1)	466	(2.0)
Netherlands*	69	(1.3)	449	(3.6)	31	(1.3)	424	(3.8)
New Zealand	43	(1.3)	387	(3.8)	57	(1.3)	347	(4.7)
Norway	44	(1.4)	380	(3.0)	56	(1.4)	355	(3.3)
Portugal	26	(1.4)	366	(4.0)	74	(1.4)	333	(3.8)
UK (England)**	68	(1.3)	384	(3.7)	32	(1.3)	358	(3.9)
UK (Scotland)	64	(1.1)	396	(3.7)	36	(1.1)	365	(4.3)
United States	49	(1.5)	424	(3.1)	51	(1.5)	392	(3.0)
Country mean	**45**		**412**		**55**		**386**	

Table F4.2. **Fourth-grade students' reports on frequency with which they speak the language of the test at home and mathematics achievement (1995)**

	Sometimes				Always or almost always			
	Percentage of students	Standard error	Mean achievement	Standard error	Percentage of students	Standard error	Mean achievement	Standard error
Australia*	9	(0.9)	387	(10.5)	89	(1.0)	412	(2.7)
Austria*	14	(1.2)	365	(6.0)	83	(1.5)	427	(3.8)
Canada	13	(1.2)	364	(5.0)	86	(1.2)	401	(3.3)
Czech Republic	3	(0.5)	401	(9.4)	96	(0.5)	430	(3.2)
Greece	7	(0.7)	313	(9.3)	90	(0.9)	365	(3.7)
Iceland	10	(0.9)	340	(5.8)	89	(1.0)	341	(2.8)
Ireland	5	(0.6)	367	(9.4)	92	(0.8)	419	(3.2)
Korea	10	(0.7)	463	(4.4)	89	(0.7)	473	(2.2)
Netherlands*	11	(1.4)	415	(7.1)	84	(1.7)	446	(3.5)
New Zealand	11	(1.0)	315	(7.7)	87	(1.1)	372	(4.2)
Norway	8	(0.9)	325	(8.0)	90	(1.0)	370	(2.9)
Portugal	4	(0.5)	330	(9.1)	94	(0.5)	342	(3.6)
UK (England)**	6	(0.8)	341	(8.7)	93	(0.8)	379	(3.3)
United States	13	(1.1)	371	(4.4)	85	(1.1)	415	(3.0)
Country mean	**9**		**364**		**89**		**399**	

* Countries did not meet TIMSS sampling requirements.
** Countries met TIMSS sampling requirements only partially.
Source: International Association for the Evaluation of Educational Achievement (IEA)/TIMSS. See Annex 3 for notes.

Table F4.3. **Fourth-grade students' reports on whether or not their parents were born in the country and mathematics achievement (1995)**

	Neither parent was born in the country				One parent was born in the country				Both parents were born in the country			
	Percentage of students	Standard error	Mean achievement	Standard error	Percentage of students	Standard error	Mean achievement	Standard error	Percentage of students	Standard error	Mean achievement	Standard error
Australia*	19	(1.2)	407	(7.4)	20	(0.9)	410	(4.1)	61	(1.1)	411	(3.2)
Austria*	11	(0.9)	377	(7.9)	9	(0.7)	419	(6.8)	80	(1.2)	427	(2.6)
Canada	17	(1.5)	378	(4.5)	14	(0.5)	383	(5.7)	69	(1.6)	404	(3.4)
Czech Republic	2	(0.3)	~	~	8	(0.6)	408	(5.9)	89	(0.7)	432	(3.2)
Greece	5	(0.6)	315	(7.9)	10	(0.9)	342	(6.5)	85	(1.0)	364	(3.7)
Hungary*	2	(0.3)	~	~	3	(0.3)	391	(12.0)	95	(0.4)	412	(3.6)
Iceland	1	(0.2)	~	~	6	(0.6)	341	(9.9)	93	(0.7)	340	(2.7)
Ireland	2	(0.3)	~	~	10	(0.7)	405	(5.9)	88	(0.8)	414	(3.3)
Korea	0	(0.1)	~	~	1	(0.2)	~	~	99	(0.2)	471	(2.0)
Netherlands*	8	(1.7)	400	(9.2)	6	(0.6)	426	(8.0)	86	(1.6)	446	(3.1)
New Zealand	11	(0.9)	354	(6.2)	21	(1.0)	365	(5.3)	68	(1.4)	365	(4.7)
Norway	4	(0.7)	321	(7.6)	7	(0.5)	358	(7.4)	89	(1.0)	368	(2.8)
Portugal	5	(0.6)	310	(7.9)	8	(0.6)	342	(6.1)	86	(0.9)	342	(3.5)
UK (England)**	9	(1.2)	359	(11.8)	15	(0.9)	373	(6.2)	76	(1.8)	381	(3.6)
UK (Scotland)	9	(0.9)	402	(7.7)	19	(0.9)	387	(4.7)	72	(1.4)	383	(4.1)
United States	12	(1.2)	371	(5.7)	10	(0.7)	394	(4.4)	78	(1.3)	415	(3.2)
Country mean	**7**		**362**		**10**		**382**		**82**		**393**	

England, Netherlands: 70-84% student response rate.

Table F4.4. **Fourth-grade students' reports on whether or not they were born in the country and mathematics achievement (1995)**

	Students who were born in the country				Students who were not born in the country			
	Percentage of students	Standard error	Mean achievement	Standard error	Percentage of students	Standard error	Mean achievement	Standard error
Australia*	91	(0.9)	409	(3.0)	9	(0.9)	405	(8.6)
Austria*	91	(1.3)	424	(2.8)	9	(1.3)	390	(15.9)
Canada	93	(0.7)	398	(3.0)	7	(0.7)	364	(7.7)
Czech Republic	98	(0.2)	429	(3.1)	2	(0.2)	~	~
Greece	92	(0.6)	362	(3.7)	8	(0.6)	328	(7.8)
Hungary*	98	(0.3)	413	(3.7)	2	(0.3)	~	~
Iceland	87	(2.3)	339	(2.4)	13	(2.3)	340	(8.8)
Ireland	96	(0.5)	413	(3.4)	4	(0.5)	407	(8.8)
Korea	99	(0.2)	471	(2.0)	1	(0.2)	~	~
Netherlands*	89	(0.9)	445	(3.3)	11	(0.9)	412	(7.6)
New Zealand	90	(0.7)	364	(4.3)	10	(0.7)	360	(8.8)
Norway	96	(0.5)	367	(2.8)	4	(0.5)	329	(8.9)
Portugal	94	(0.6)	343	(3.3)	6	(0.6)	305	(9.3)
UK (England)**	93	(0.7)	379	(3.3)	7	(0.7)	328	(6.0)
UK (Scotland)	90	(0.8)	384	(3.9)	10	(0.8)	386	(8.4)
United States	93	(0.5)	412	(2.9)	7	(0.5)	358	(4.5)
Country mean			**388**				**363**	

A tilde (~) indicates insufficient data to report achievement.
* Countries did not meet TIMSS sampling requirements.
** Countries met TIMSS sampling requirements only partially.
Source: International Association for the Evaluation of Educational Achievement (IEA)/TIMSS. See Annex 3 for notes.

LABOUR-FORCE ACTIVITY BY LEVEL OF EDUCATIONAL ATTAINMENT

Policy context

OECD economies and labour markets are becoming increasingly dependent on a stable supply of well-educated workers to further their economic development and to maintain their competitiveness. As skill intensity tends to rise with educational attainment (Table A3.3), the costs of not working also rise; and as populations in OECD countries age, higher participation in the labour force can lower dependency ratios and help to alleviate the burden of financing public pensions.

This indicator examines the relationship between educational attainment and labour-market status.

This indicator examines the relationship between educational attainment and labour-force activity, examining first rates of participation in the labour force and then rates of unemployment. The adequacy of worker skills and the capacity of the labour market to supply jobs that match those skills are important issues for policy-makers.

Evidence and explanations

Labour-force participation

Variability in the participation of women between countries is a primary factor in the variability in overall participation rates in OECD countries. The degree of labour-force participation among women varies more across countries than among men, with rates of under 50 per cent in Greece, Italy, Luxembourg, Spain and Turkey, and rates of 75 per cent or more in the Czech Republic and the Nordic countries. In comparison, overall labour-force participation rates for men aged 25-64 range from below 80 per cent in Hungary and Italy to above 90 per cent in Korea and Switzerland. Among WEI participants, the gap between the participation rates of men and women range from about 30 to 40 per cent, although the gap in Thailand is less.

Labour-force participation rates of men vary less between countries than those of women.

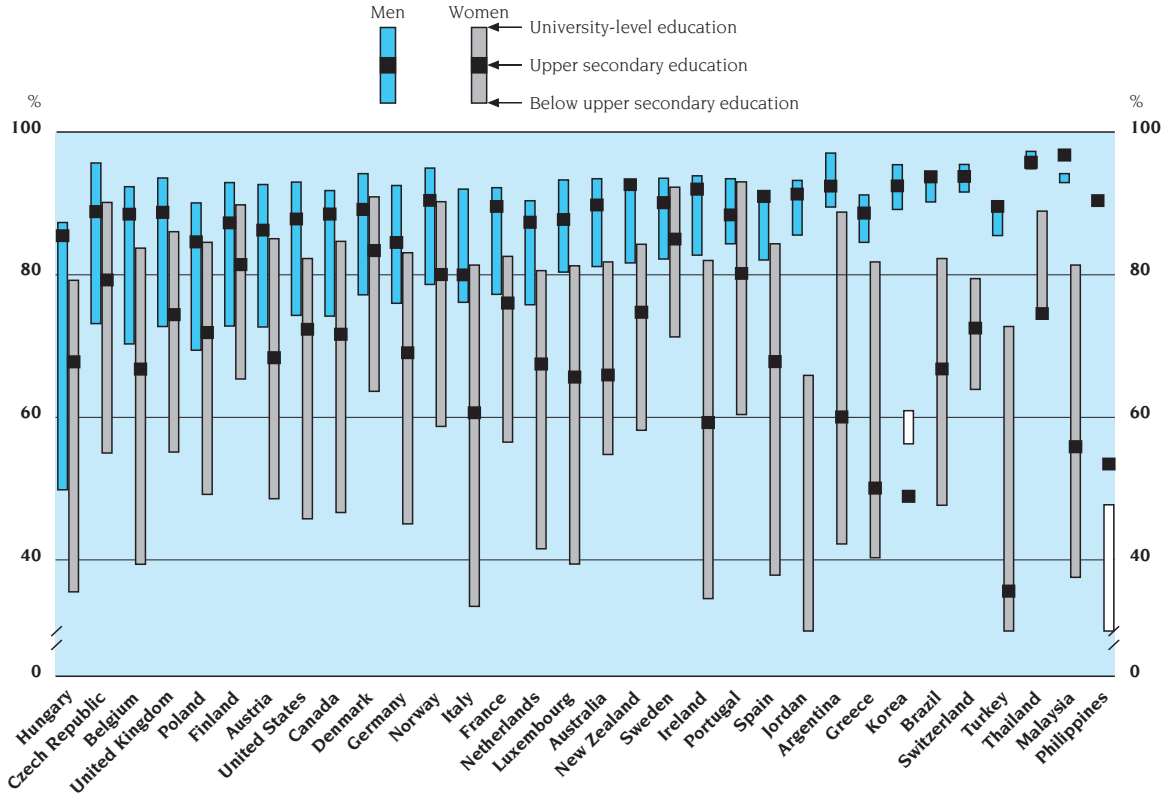
The labour-force participation rates of men are generally higher for those with higher educational qualifications. In OECD countries, the difference in participation rates between male university graduates and those whose highest attainment is upper secondary ranges from around 2 percentage points or below in Hungary, Ireland, New Zealand, Spain and Switzerland to around 7 percentage points or above in the Czech Republic, Germany and Italy.

The labour-force participation rates of men rise with educational attainment in most OECD countries.

The gap in participation rates is generally much wider between upper secondary graduates and those who have not completed an upper secondary qualification. In 14 out of 26 OECD countries, the difference in the rates of participation between upper secondary graduates and those without such a qualification exceed 10 percentage points. Only half of Hungarian men with less than upper secondary attainment are participating in the labour force. Yet the gap in participation rates between men with low and high educational attainment is small in Greece, Korea, Switzerland (where participation is generally high at all levels of educational attainment) as well as in many WEI participants.

The gap in male participation rates is particularly wide between upper secondary graduates and those without an upper secondary qualification.

Chart F5.1. **Labour force participation rates for the population 25 to 64 years of age, by level of educational attainment and gender (1996)**



For Korea and the Philippines, the labour force participation rate is higher for individuals with less than upper secondary education than for those with university-level education. This is indicated by white bars.

Countries are ranked in descending order of the difference in labour force participation rates between men with university-level attainment and men with less than upper secondary attainment.

Source: OECD.

Among women, the difference in labour-force participation by level of educational attainment is even wider.

In contrast, the labour-force participation rates of women show marked differences, not only as one moves from below upper secondary to upper secondary (around 20 percentage points or more in 17 out of 26 OECD countries) but also from upper secondary to university (around 10 percentage points or more in 20 countries), with the exceptions of Denmark, Finland, France, Korea, Sweden and Switzerland, where participation rates of women with upper secondary qualifications approach those of women with a university degree (around a 7 to 8 percentage point difference).

The labour-force participation of women with qualifications below upper secondary is particularly low.

The participation rates of women with less than upper secondary attainment are particularly low, averaging about half over all OECD countries and one-third or below in Hungary, Ireland, Italy and Turkey. Rates for women with university attainment approach or exceed 80 per cent everywhere except in Korea and Turkey, but remain for all countries below those for men.

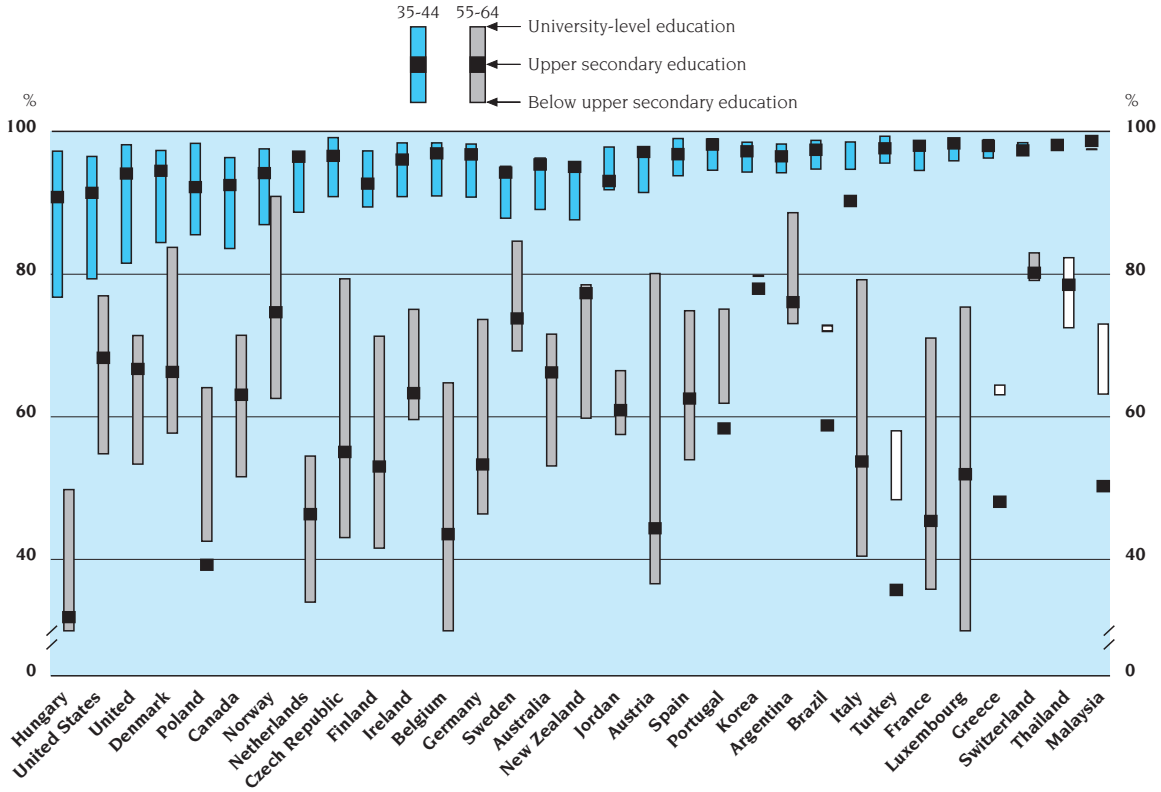
The gender gap in labour-force participation decreases with increasing educational attainment.

Although a gender gap in labour-force participation remains among those with the highest educational attainment, the gap is much narrower than among those with lower qualifications. On average across OECD countries, with each additional level attained, the difference between the participation of men and women decreases by 10 percentage points: from about 30 percentage points at below upper secondary level, to 20 at upper secondary and 10 at the tertiary level.

The education gap in male participation in the labour force is strongly influenced by differences among the older population.

Much of the gap between the labour-force participation rates of men with differing educational attainment is driven by differences in the older populations, particularly men between the ages of 55 and 64. Although more than 70 per cent of 55-64 year-olds with a university-level qualification are active in the labour force in 20 out of 26 countries, only Korea and Switzerland have participation rates as high among those who have not completed an upper secondary qualification. By contrast, the education gap in female labour-force participation is relatively wide for all age-groups.

Chart F5.2. **Labour force participation rates of men, by level of educational attainment and age (35 to 44 year-olds and 55 to 64 year-olds) (1996)**



For Brazil, Greece, Malaysia, Thailand and Turkey, the labour force participation rate for 55-64 year-olds is higher for individuals with less than upper secondary than for those with university-level education. This is indicated by white bars.

Countries are ranked in descending order of the difference in labour force participation rates between 35-44 year-olds with university-level attainment and 35-44 year-olds with below upper secondary attainment.

Source: OECD.

The patterns observed here reflect a number of underlying causes. As earnings tend to increase with educational attainment (Indicator F7), the monetary incentive to participate is bigger for individuals with higher qualifications. In addition, industrial restructuring in many countries has reduced job opportunities for unskilled workers, a sizable number of whom have left the labour market either through early-retirement schemes or because there are only limited job opportunities. The educational attainment of women and their participation rates in the labour market have historically been lower than those of men, and in spite of considerable advances over the last few decades, current participation rates continue to show the impact of these historical factors.

Unemployment rates by level of educational attainment

Those with low educational attainment are both less likely to be labour-force participants and more likely to be without a job if they are actively seeking one.

The unemployment rate is a measure of a particular economy's ability to supply a job to everyone who wants one. To the extent that educational attainment is recognised as an indicator of skill, it can signal to employers the potential knowledge, capacities and workplace performance of candidates for employment. Employment prospects of individuals of varying educational attainment will depend both on the requirements of labour markets and on the supply of workers of differing skills. Those with low educational qualifications are therefore at particular risk of economic marginalisation since they are both less likely to be labour-force participants and more likely to be without a job if they are actively seeking one.

Male upper secondary graduates have lower unemployment rates than men without an upper secondary qualification.

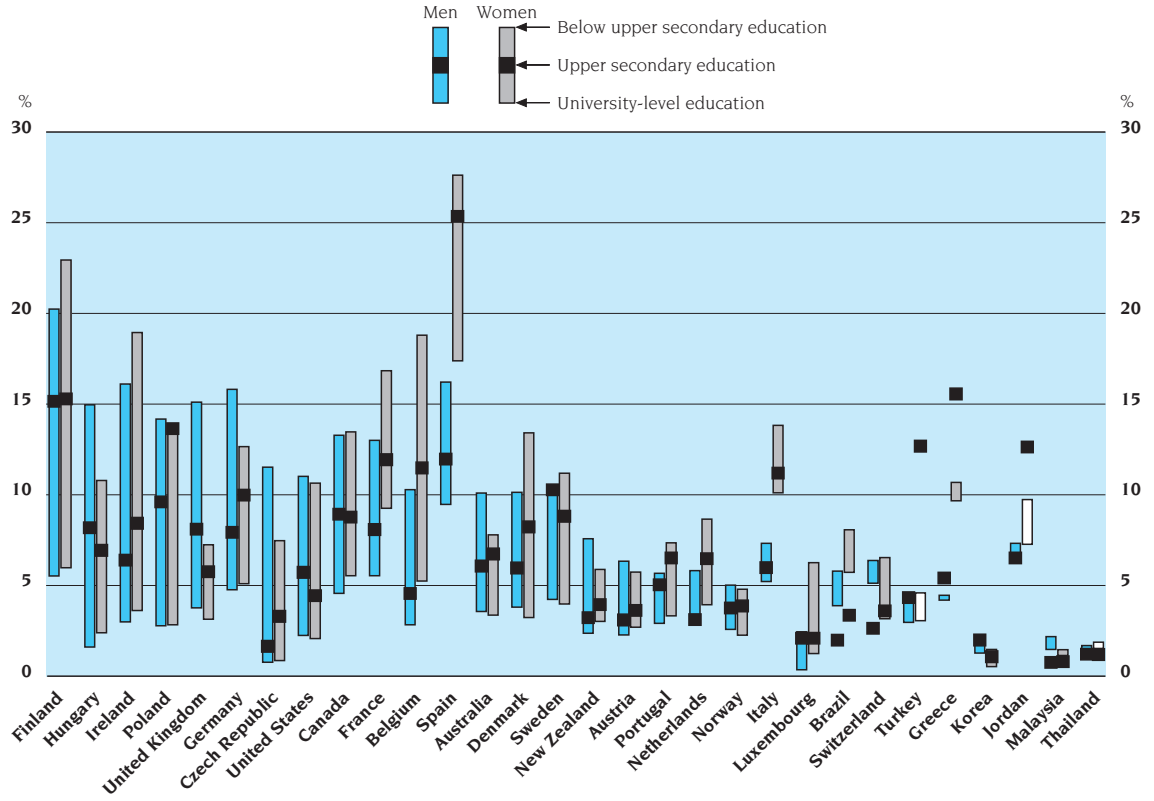
In 14 out of 26 OECD countries, male labour-force participants aged 25-64 without an upper secondary qualification are more than 1.5 times as likely to be unemployed as their counterparts who have completed upper secondary – with the largest difference in the Czech Republic. In a similar proportion of countries, the unemployment rate for male upper secondary graduates is at least 1.5 times higher that the unemployment rate of university graduates. In the Philippines the relationship between the unemployment rate and educational attainment is inversed: the unemployment rate is higher among male labour-market participants with university-level education than for those with upper secondary education which, again, is higher than for those with less than upper secondary education. In most countries, the disparity in unemployment rates across the levels of educational attainment is even wider for men 30-44 years of age.

The association between unemployment rates and educational attainment is similar for women, although the gap between upper secondary and university is even wider in many countries.

A number of factors contribute to variation between countries in the association between unemployment rates and educational attainment.

The large variation between countries in unemployment rates observed among those with low educational attainment is the consequence of a number of factors. In some countries (especially Finland and Spain), the high unemployment rates of the poorly educated reflect generally difficult labour-market conditions that affect these individuals in particular. Unemployment rates among those without an upper secondary qualification are also relatively high in some countries where labour markets are less regulated (Canada, the United Kingdom and the United States), although not in others (Australia and New Zealand). On the other hand, in countries where agriculture is still an important sector in terms of employment (Greece, Korea, Portugal and Turkey), unemployment rates tend to be low. Finally, where overall labour-market conditions are particularly favourable (Austria, the Czech Republic, Luxembourg, Norway and Switzerland), jobs appear to be available for workers with low as well as high educational attainment.

Chart F5.3. **Unemployment rates of 25-64 year-olds, by level of educational attainment and gender (1996)**



For Greece, Jordan, Korea, Thailand and Turkey, the unemployment rate is higher for individuals with university-level education than for those with less than upper secondary education. This is indicated by white bars.

Countries are ranked in descending order of the difference in unemployment rates between men with less than upper secondary attainment and men with university-level attainment.

Source: OECD.

F 5

Literacy and weeks worked

Although employment and unemployment are strongly related to literacy, the association with employment intensity is weaker.

Parallel to the results for educational attainment, data from the International Adult Literacy Survey (IALS) suggest that labour-force participation increases and the incidence of unemployment decreases as literacy proficiency increases. Intensity of employment patterns can also be examined using the IALS data by examining the average number of weeks worked by employed adults. On average across countries participating in IALS, workers with the lowest literacy skills (level 1) worked about two weeks less than those with higher literacy skills (level 2 and above). (The 1997 edition of E*ducation at a Glance* offers a discussion of each "literacy level"). The gap is as wide as three weeks or more in Australia (3.3 weeks), Canada (6.9 weeks) and New Zealand (three weeks).

DEFINITIONS

Data are derived from national labour-force surveys (for details see Annex 3).

The labour-force participation rate for a particular age-group is equal to the percentage of individuals in the population of the same age-group who are either employed or unemployed, where these terms are defined according to the guidelines of the International Labour Office (ILO).

The unemployed are defined as individuals who are without work, actively seeking employment and currently available to start work. The employed are defined as those who during the survey reference week: *i*) work for pay (employees) or profit (self-employed and unpaid family workers) for at least one hour, or *ii*) have a job but are temporarily not at work (through injury, illness, holiday or vacation, strike or lock-out, educational or training leave, maternity or parental leave, etc.) and have a formal attachment to their job.

The unemployment rate is the number of unemployed divided by the number of labour-force participants (times 100). Individuals below 25 years of age have been excluded from the statistics, so as to base the analysis as much as possible on people who have completed their initial education.

Table F5.1. **Labour force participation rates by level of educational attainment and gender for the population 25 to 64 and 25 to 34 years of age (1996)**

		Age 25-64					Age 25-34				
		Below upper secondary education	Upper secondary education	Non-university tertiary education	University-level education	All levels of education	Below upper secondary education	Upper secondary education	Non-university tertiary education	University-level education	All levels of education
Australia	Men	81	90	91	93	88	91	95	95	96	94
	Women	55	66	75	82	63	59	71	77	85	68
Austria	Men	73	86	89	93	84	89	92	90	91	91
	Women	49	68	84	85	62	66	79	92	90	78
Belgium	Men	70	88	91	92	81	92	95	97	94	94
	Women	39	67	81	84	57	65	83	93	91	81
Canada	Men	74	89	90	92	86	83	92	95	93	91
	Women	47	72	79	85	70	53	74	84	88	78
Czech Republic	Men	73	89	x	96	88	85	98	x	98	97
	Women	55	79	x	90	75	68	83	x	90	83
Denmark	Men	77	89	93	94	87	85	94	96	94	92
	Women	64	83	91	91	78	73	88	93	92	85
Finland	Men	73	87	88	93	83	88	91	95	94	91
	Women	65	81	85	90	77	69	78	83	87	78
France	Men	77	90	94	92	86	94	96	95	89	95
	Women	56	76	84	83	69	66	81	89	80	78
Germany	Men	76	85	89	93	85	88	90	98	94	91
	Women	45	69	82	83	65	53	77	89	84	75
Greece	Men	85	89	90	91	87	97	95	98	94	96
	Women	40	50	77	82	49	49	63	85	90	66
Hungary	Men	50	85	x	87	75	81	93	x	96	91
	Women	35	68	x	79	56	48	63	x	74	62
Ireland	Men	83	92	94	94	88	93	95	96	94	94
	Women	35	59	75	82	52	50	75	86	88	72
Italy	Men	76	80	x	92	79	90	76	x	86	84
	Women	33	61	x	81	45	50	64	x	81	59
Korea	Men	89	92	x	95	92	93	91	x	95	93
	Women	61	49	x	56	56	53	46	x	59	50
Luxembourg	Men	80	88	x	93	84	97	89	x	90	94
	Women	39	66	x	81	47	57	79	x	81	64
Netherlands	Men	76	87	x	90	84	90	96	x	94	94
	Women	42	67	x	81	59	56	79	x	90	75
New Zealand	Men	82	93	90	93	89	87	95	91	95	92
	Women	58	75	78	84	69	56	73	73	85	68
Norway	Men	79	90	91	95	89	90	93	83	92	91
	Women	59	80	85	90	78	61	80	78	88	80
Poland	Men	69	85	91	90	82	89	95	93	98	95
	Women	49	72	85	85	67	60	74	88	92	76
Portugal	Men	84	88	92	93	86	93	85	94	95	92
	Women	60	80	82	93	65	78	80	95	94	81
Spain	Men	82	91	94	91	85	93	91	96	84	91
	Women	38	68	76	84	49	57	74	82	84	69
Sweden	Men	82	90	90	94	88	88	92	86	93	90
	Women	71	85	89	92	83	73	84	85	89	83
Switzerland	Men	92	94	97	95	94	93	96	98	96	96
	Women	64	72	83	79	71	67	77	88	78	76
Turkey	Men	85	90	x	89	86	97	96	x	96	97
	Women	26	36	x	73	29	25	41	x	84	30
United Kingdom	Men	73	89	91	94	87	84	94	96	96	93
	Women	55	74	81	86	71	47	72	86	89	72
United States	Men	74	88	93	93	88	87	93	95	95	93
	Women	46	72	81	82	72	49	74	82	85	75
WEI Participants											
Argentina	Men	89	92	94	97	90	94	93	98	97	94
	Women	42	60	83	89	50	45	64	90	93	56
Brazil	Men	90	94	x	94	91	95	97	x	96	95
	Women	48	67	x	82	54	51	70	x	87	60
Indonesia	Men	x	x	x	x	96	x	x	x	x	97
	Women	x	x	x	x	51	x	x	x	x	50
Jordan	Men	86	91	96	93	89	96	95	99	95	96
	Women	6	17	46	66	16	7	17	46	75	22
Malaysia	Men	93	97	x	94	94	98	99	x	95	98
	Women	38	56	x	81	44	44	58	x	86	53
Paraguay	Men	96	97	93	96	96	98	98	m	95	98
	Women	58	71	85	87	64	56	72	m	83	66
Philippines	Men	m	90	88	79	m	m	m	m	m	m
	Women	48	53	26	27	48	m	m	m	m	m
Thailand	Men	95	96	96	97	95	97	96	96	98	97
	Women	74	75	86	89	75	77	77	85	92	79
Uruguay	Men	88	95	90	95	89	94	97	97	95	94
	Women	52	73	80	85	60	56	76	90	87	66

Poland: Year of reference 1995.
Turkey: Year of reference 1997.
Source: OECD Database. See Annex 3 for notes.

Table F5.2. **Labour force participation rates by level of educational attainment and gender for the population 35 to 44 and 55 to 64 years of age (1996)**

		Age 35-44					Age 55-64				
		Below upper secondary education	Upper secondary education	Non-university tertiary education	University-level education	All levels of education	Below upper secondary education	Upper secondary education	Non-university tertiary education	University-level education	All levels of education
Australia	Men	89	95	95	96	94	53	66	71	72	62
	Women	66	73	81	82	72	27	33	38	58	31
Austria	Men	91	97	98	97	96	37	44	60	80	44
	Women	68	78	88	88	76	16	19	35	49	18
Belgium	Men	91	97	99	98	95	26	44	43	65	34
	Women	60	76	89	85	72	9	19	22	32	13
Canada	Men	84	93	95	96	92	52	63	62	71	59
	Women	61	78	84	87	79	26	41	47	55	37
Czech Republic	Men	91	97	x	99	96	43	55	x	79	56
	Women	84	93	x	94	91	15	29	x	59	25
Denmark	Men	84	94	97	97	92	58	66	75	84	65
	Women	80	91	94	96	89	37	54	66	69	46
Finland	Men	89	93	96	97	93	42	53	59	71	49
	Women	82	89	92	93	89	39	51	50	71	44
France	Men	95	98	99	98	97	36	45	55	71	42
	Women	71	84	88	88	79	28	35	42	63	31
Germany	Men	91	97	99	98	97	46	53	65	74	56
	Women	62	78	89	87	77	25	38	51	62	34
Greece	Men	96	98	98	99	97	64	48	41	63	61
	Women	53	58	80	90	61	26	13	23	27	25
Hungary	Men	77	91	x	97	89	21	32	x	50	26
	Women	64	84	x	90	79	7	14	x	36	10
Ireland	Men	91	96	98	98	94	60	63	67	75	62
	Women	42	59	76	83	56	16	25	39	53	21
Italy	Men	95	90	x	99	94	40	54	x	79	45
	Women	46	66	x	90	57	12	30	x	46	15
Korea	Men	94	97	x	99	97	80	78	x	80	79
	Women	70	57	x	54	63	52	30	x	34	50
Luxembourg	Men	96	98	x	99	97	26	52	x	75	36
	Women	51	66	x	84	57	8	21	x	48	10
Netherlands	Men	89	96	x	97	94	34	46	x	54	43
	Women	55	71	x	84	68	15	26	x	36	20
New Zealand	Men	88	95	95	95	93	60	77	75	79	70
	Women	67	79	85	83	76	35	51	58	71	44
Norway	Men	87	94	97	98	94	63	75	82	91	73
	Women	71	85	86	92	84	44	66	83	87	59
Poland	Men	86	92	98	98	92	43	39	44	64	43
	Women	74	84	91	94	83	25	24	37	35	25
Portugal	Men	95	98	97	99	95	62	58	67	75	63
	Women	75	88	94	96	79	36	34	39	71	37
Spain	Men	94	97	98	99	95	54	63	66	75	56
	Women	49	69	73	90	59	18	34	31	59	20
Sweden	Men	88	94	95	95	93	69	74	80	85	73
	Women	78	91	93	94	89	58	68	79	83	66
Switzerland	Men	97	97	99	98	98	79	80	88	83	82
	Women	72	75	78	81	75	45	53	71	65	51
Turkey	Men	96	98	x	99	96	58	36	x	48	56
	Women	26	39	x	78	30	25	4	x	33	24
United Kingdom	Men	82	94	97	98	93	53	67	66	71	63
	Women	61	79	87	86	76	47	61	60	67	54
United States	Men	79	91	96	97	92	55	68	71	77	68
	Women	53	78	85	83	77	32	53	61	62	50
WEI Participants											
Argentina	Men	94	97	95	98	95	73	76	75	89	74
	Women	48	64	86	90	55	28	33	43	64	29
Brazil	Men	95	97	x	99	96	73	59	x	72	72
	Women	56	71	x	87	62	28	28	x	40	28
Indonesia	Men	x	x	x	x	98	x	x	x	x	84
	Women	x	x	x	x	55	x	x	x	x	44
Jordan	Men	92	93	97	98	94	58	61	62	66	59
	Women	6	18	51	56	15	3	14	13	24	3
Malaysia	Men	97	99	x	98	98	73	50	x	63	71
	Women	31	51	x	77	37	28	17	x	29	27
Paraguay	Men	97	99	m	98	98	86	88	57	83	86
	Women	66	77	m	91	71	41	52	73	77	45
Thailand	Men	98	98	99	99	98	82	79	76	72	82
	Women	82	75	90	87	83	52	22	50	76	52
Uruguay	Men	94	97	97	98	95	71	78	61	85	72
	Women	61	77	93	90	68	33	44	40	59	35

Poland: Year of reference 1995.
Turkey: Year of reference 1997.
Source: OECD Database. See Annex 3 for notes.

Table F5.3. **Unemployment rates by level of educational attainment and gender for the population 25 to 64 and 30 to 44 years of age(1996)**

		Age 25-64					Age 30-44				
		Below upper secondary education	Upper secondary education	Non-university tertiary education	University-level education	All levels of education	Below upper secondary education	Upper secondary education	Non-university tertiary education	University-level education	All levels of education
Australia	Men	10	6	5	4	7	11	5	4	4	6
	Women	8	7	4	3	6	8	7	4	3	6
Austria	Men	6	3	2	2	4	6	3	2	2	3
	Women	6	4	2	3	4	6	3	1	2	4
Belgium	Men	10	5	3	3	6	11	5	4	3	7
	Women	19	11	4	5	11	21	11	3	5	12
Canada	Men	13	9	8	5	9	15	9	8	5	9
	Women	13	9	8	6	8	16	9	8	6	9
Czech Republic	Men	12	2	x	1	2	14	1	x	1	2
	Women	7	3	x	1	4	8	3	x	1	4
Denmark	Men	10	6	5	4	7	10	5	4	3	6
	Women	13	8	5	3	9	12	7	4	3	7
Finland	Men	20	15	10	6	15	18	14	9	4	13
	Women	23	15	8	6	16	23	14	8	6	14
France	Men	13	8	6	6	9	14	7	5	4	9
	Women	17	12	6	9	13	20	12	6	9	13
Germany	Men	16	8	5	5	8	15	7	3	4	7
	Women	13	10	8	5	10	m	9	6	5	9
Greece	Men	4	5	7	4	5	5	4	4	3	4
	Women	11	16	16	10	12	14	14	12	6	12
Hungary	Men	15	8	x	2	9	20	8	x	1	9
	Women	11	7	x	2	7	12	6	x	2	7
Ireland	Men	16	6	5	3	11	18	6	4	3	11
	Women	19	8	6	4	10	22	9	6	3	11
Italy	Men	7	6	x	5	7	8	4	x	5	6
	Women	14	11	x	10	12	17	10	x	8	12
Korea	Men	1	2	x	2	2	2	2	x	1	2
	Women	1	1	x	1	1	1	1	x	1	1
Luxembourg	Men	2	2	x	n	2	2	2	x	n	2
	Women	6	2	x	1	5	7	3	x	2	5
Netherlands	Men	6	3	x	3	4	6	3	x	3	4
	Women	9	6	x	4	6	10	7	x	3	7
New Zealand	Men	8	3	4	2	5	m	4	x	m	4
	Women	6	4	2	3	4	m	4	x	m	5
Norway	Men	5	4	2	3	4	7	4	3	3	4
	Women	5	4	3	2	4	7	5	3	2	4
Poland	Men	14	10	9	3	10	19	10	8	2	10
	Women	14	14	6	3	12	20	14	6	2	13
Portugal	Men	6	5	3	3	5	5	4	1	2	4
	Women	7	7	3	3	7	9	6	4	3	7
Spain	Men	16	12	12	9	14	17	10	9	7	14
	Women	28	25	27	17	25	32	26	26	14	26
Sweden	Men	11	10	7	4	9	11	11	6	5	9
	Women	11	9	4	4	8	14	10	5	5	9
Switzerland	Men	6	3	1	5	3	m	(3)	m	m	3
	Women	7	4	2	3	4	(7)	3	m	(4)	4
Turkey	Men	4	4	x	3	4	4	3	x	1	4
	Women	3	13	x	5	4	4	9	x	2	4
United Kingdom	Men	15	8	5	4	8	18	8	4	3	8
	Women	7	6	3	3	5	9	6	3	3	6
United States	Men	11	6	4	2	5	11	6	4	2	5
	Women	11	4	2	2	4	12	5	3	2	4
WEI Participants											
Brazil	Men	4	4	x	2	4	4	4	x	2	4
	Women	6	7	x	3	6	6	7	x	3	6
Jordan	Men	7	7	8	6	7	7	5	5	4	6
	Women	7	13	22	10	14	5	9	13	5	9
Malaysia	Men	1	1	x	1	1	1	1	x	1	1
	Women	1	1	x	1	1	1	1	x	n	1
Paraguay	Men	5	3	4	2	4	4	2	m	1	3
	Women	4	10	1	2	5	4	10	m	2	5
Philippines	Men	5	11	m	19	7	m	m	m	m	m
	Women	7	9	m	37	9	m	m	m	m	m
Thailand	Men	1	1	1	1	1	1	1	1	1	1
	Women	2	1	1	1	1	1	1	1	1	1
Uruguay	Men	8	6	3	3	7	7	5	2	3	6
	Women	13	10	3	6	10	14	9	3	5	10

Poland: Year of reference 1995.
Turkey: Year of reference 1997.
( ) Figures in brackets are subject to high sampling variability.
Source: OECD Database. See Annex 3 for notes.

LABOUR-FORCE ACTIVITY OF PERSONS LEAVING EDUCATION

Policy context

This indicator shows the labour-force participation rates and the unemployment rates of individuals one and five years after completing a particular level of education.

The transition from school to work is a critical period for young people – when the knowledge and skills learned in formal education come up against the skill-requirements of the labour market. The extent to which learning in school or university translates into work-place skills and performance, and the work habits acquired at this stage, have a considerable effect on social integration and future labour-force activity and earnings.

Some economists argue that high youth-unemployment rates are related to high rates of early school leavers and that unemployment rates should therefore fall as school-leavers age and settle into the labour market. This indicator examines the unemployment rates of persons both one year and five years after completion of various levels of education. If the "churning" effect described above is operating, one should expect employment to rise and unemployment rates to fall as the time since the completion of a particular level of education grows.

Evidence and explanations

In seven out of eleven OECD countries, labour-force participation rates are lower for lower secondary leavers than for upper secondary leavers.

In many OECD countries about 90 per cent of the typical age-cohort enters upper secondary education; those who leave school after completing only lower secondary education can constitute thus a highly vulnerable group. After one year, in Australia, Denmark, France, Poland, Portugal and the United States lower secondary leavers have lower rates of participation in the labour force than those who leave from upper secondary education. In the Czech Republic, Finland and the United Kingdom, labour-force participation rates for both groups are relatively high (85 per cent or above).

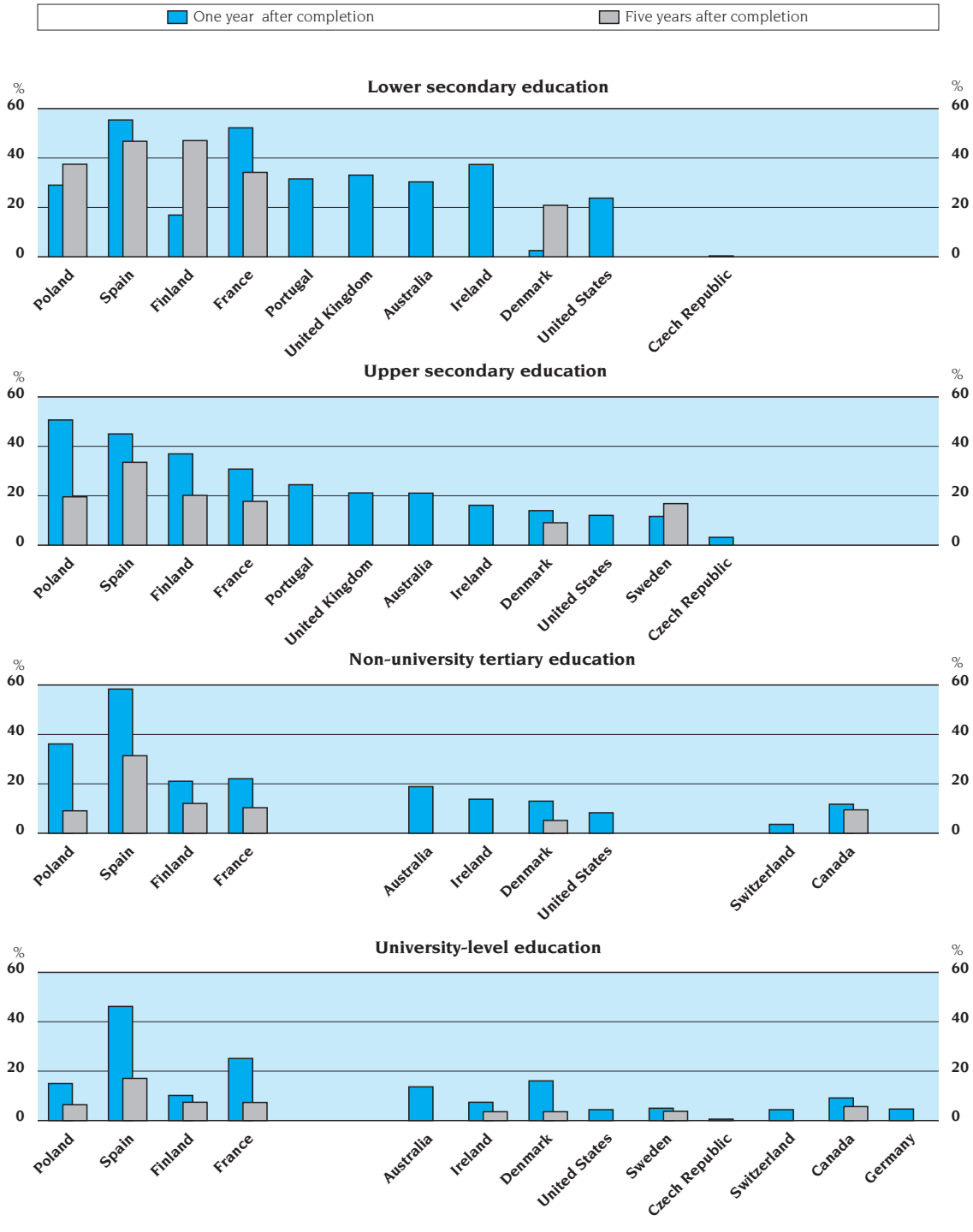
Unemployment rates are higher for lower secondary than for upper secondary school-leavers in most OECD countries for which data are available.

In seven out of 11 countries for which data are available, the unemployment rates of lower secondary school-leavers are higher than for those who leave after completing upper secondary education. The exceptions to this pattern are the Czech Republic, where there is a relatively high labour-force participation and low unemployment among school-leavers at all levels, and Denmark, Finland and Poland, where lower secondary leavers have lower rates of unemployment than upper secondary leavers. In Denmark and Poland, however, the percentage of lower secondary leavers outside of the labour force is around 40 per cent, about 30 percentage points higher than for those who complete upper secondary education.

After five years, lower secondary leavers still have relatively high unemployment rates.

As labour-force participation and participation in continuing education and training are strongly linked to the level of formal education attained, there are fewer opportunities for those with low levels of education to overcome their educational deficiencies through on-the-job training or the accumulation of work experience. Even after five years, individuals leaving after lower secondary education have relatively high unemployment rates, although the rates in France and Spain are better than for those only one year after leaving school.

Chart F6.1. **Unemployment rates of individuals who have completed their education at various levels of attainment (various years between 1994 and 1997)**



Countries are ranked in descending order of the unemployment rates of upper secondary leavers one year after completion.

Source: OECD.

Labour-market prospects are better for upper secondary leavers, although unemployment rates remain relatively high.

This situation generally improves as one moves up the ladder of attainment. In nine out of 11 countries for which data are available, the labour-force participation rate of upper secondary leavers after one year is 85 per cent or above. In some countries, nonetheless, a large proportion of upper secondary leavers are not actively involved in the labour force. In Spain and Sweden their participation rates are below 60 per cent. In three countries where the proportion of upper secondary leavers participating in the labour force is relatively high (above 85 per cent in France, Finland and Poland), more than 30 per cent of these graduates are unemployed. In Spain, the proportion participating in the labour force is low (19 per cent), and of these, nearly half are unemployed. Five years after completion of upper secondary education the labour-force situations of Spanish school-leavers is much improved (almost half are participating in the labour force), although a third of them remain unemployed.

Tertiary leavers generally have higher labour-force participation rates and lower unemployment rates than upper secondary leavers.

Highly educated young people are in general more fully integrated into the labour force one year after leaving school. In many countries – the Czech Republic, Germany, Sweden, Switzerland and the United States – university graduates rapidly move into jobs and show relatively low unemployment rates one year after completion of education. In fact, in the Czech Republic, Germany, Sweden and Switzerland the unemployment rates of university graduates one year after completion are similar to the unemployment rates of all people with a university degree (Indicator F5).

Unemployment rates are particularly high for university leavers in France and Spain, although five years after graduation unemployment rates are greatly reduced.

In France and Spain, by contrast, between a quarter and a half of university graduates in the labour force have still not found work a year after leaving university. Labour demand in these countries is simply not able to absorb quickly the number of university graduates leaving the education system each year. Five years after leaving university, however, the unemployment rates of university graduates in France and Spain are much reduced.

The difficult transition from school to work may be viewed as a "frictional" phenomenon.

To a certain extent, the difficult transition from school to work may be viewed as a "frictional" phenomenon that reflects inefficiencies in the matching of youth qualifications and job requirements, and a lack of correspondence between the knowledge and skills imparted by education systems and the demands of labour markets. The persistent labour-market difficulties encountered by those who leave school with relatively low attainment, however, may result in social marginalisation that persists throughout life.

■ DEFINITIONS

Data are derived from national labour-force surveys, surveys of school leavers, longitudinal studies, and national registers (for details see Annex 3).

This indicator shows the unemployment and labour-force participation rates of people who at the beginning of a given year were not enrolled in full-time education or training and who in the course of the preceding year had completed education at a particular level of the education system.

"Leavers" from a particular level of the education system are defined here as individuals who: *i*) at the beginning of a given year (either school or calendar year) were not enrolled in full-time education or training; and *ii*) in the course of the preceding year had completed education at a particular level of the education system.

For some countries (Denmark, Ireland, and the United States), the data include individuals who may not have actually completed their education in the

preceding year ("drop-outs"). Sources for the data may be administrative (Denmark and Finland) or sample surveys (all other countries); sample surveys include labour-force surveys (France and the United States), special graduate or school-leavers' surveys (Australia, Canada, Ireland, Sweden, Switzerland and the United Kingdom) and general-purpose panel surveys (Spain).

Table F6.1. **Unemployment rates and labour force participation rates of persons having completed their education at various levels of attainment, by gender**

	Year of survey	Gender	Unemployment rates				Labour force participation rates			
			Lower secondary education	Upper secondary education	Non-university tertiary education	University-level education	Lower secondary education	Upper secondary education	Non-university tertiary education	University-level education
One year after completion										
Australia	1996	M + W	30	21	19	14	83	91	93	95
	1996	Men	25	20	29	18	90	90	93	97
	1996	Women	34	23	14	9	79	92	94	93
Canada	1997	M + W	m	m	12	9	m	m	94	91
	1997	Men	m	m	11	9	m	m	95	91
	1997	Women	m	m	12	9	m	m	92	90
Czech Republic	1996	M + W	n	3	x	1	100	100	x	100
Denmark	1995	M + W	3	14	13	16	59	91	95	96
	1995	Men	2	11	14	18	68	94	95	97
	1995	Women	4	17	13	14	47	88	95	96
Finland	1996	M + W	17	37	21	10	87	85	93	95
	1996	Men	17	45	20	9	85	80	96	96
	1996	Women	17	29	22	11	89	91	92	93
France	1996	M + W	52	31	22	25	75	90	96	95
	1996	Men	45	20	12	13	77	92	97	96
	1996	Women	66	44	31	37	71	87	96	94
Germany	1994	M + W	m	m	m	5	m	m	m	89
	1994	Men	m	m	m	5	m	m	m	90
	1994	Women	m	m	m	4	m	m	m	87
Ireland	1996	M + W	37	16	14	7	m	m	m	m
	1996	Men	35	15	13	7	m	m	m	m
	1996	Women	42	17	15	8	m	m	m	m
Poland	1994	M + W	29	51	36	15	60	90	94	96
	1994	Men	23	46	50	14	63	92	100	97
	1994	Women	44	55	32	16	53	89	93	94
Portugal	1994	M + W	32	25	m	m	79	90	m	m
	1994	Men	23	19	m	m	76	89	m	m
	1994	Women	40	28	m	m	82	90	m	m
Spain	1994	M + W	55	45	58	46	47	19	70	61
	1994	Men	34	40	64	51	50	21	67	58
	1994	Women	79	51	51	43	43	18	75	64
Sweden	1994	M + W	m	m	m	5	m	m	m	89
	1997		m	12	m	m	m	58	m	m
	1994	Men	m	m	m	7	m	m	m	91
	1997		m	16	m	m	m	39	m	m
	1994	Women	m	m	m	4	m	m	m	88
	1997		m	9	m	m	m	82	m	m
Switzerland	1995	M + W	m	m	4	4	m	m	96	95
	1995	Men	m	m	4	4	m	m	96	95
	1995	Women	m	m	3	4	m	m	96	95
United Kingdom	1994	M + W	m	21	m	m	m	89	m	m
	1996		33	m	m	m	85	m	m	m
United States	1996	M + W	24	12	8	4	63	86	90	92
	1996	Men	25	13	8	6	76	91	94	93
	1996	Women	21	12	9	3	48	82	88	91
Five years after completion										
Canada	1995	M + W	m	m	9	6	m	m	94	95
	1995	Men	m	m	11	6	m	m	97	96
	1995	Women	m	m	9	6	m	m	92	93
Denmark	1996	M + W	21	9	5	4	74	93	95	97
	1996	Men	19	7	5	3	80	96	97	98
	1996	Women	24	11	6	4	68	90	93	96
Finland	1996	M + W	47	20	12	7	81	90	92	94
	1996	Men	48	20	12	6	87	95	97	96
	1996	Women	46	20	12	9	71	86	90	91
France	1996	M + W	34	18	10	7	82	92	94	94
	1996	Men	33	16	11	5	94	95	99	98
	1996	Women	36	20	10	10	69	88	90	90
Poland	1994	M + W	38	20	9	6	72	84	83	100
	1994	Men	32	17	m	9	79	97	100	100
	1994	Women	44	22	11	4	64	72	79	100
Spain	1994	M + W	47	34	31	17	63	47	92	95
	1994	Men	39	21	13	29	65	51	97	93
	1994	Women	56	49	56	10	60	44	85	96
Sweden	1996	M + W	m	17	m	4	m	93	m	89
	1996	Men	m	16	m	3	m	97	m	97
	1996	Women	m	18	m	4	m	86	m	85

Source: OECD Database. See Annex 3 for notes.

EARNINGS AND EDUCATIONAL ATTAINMENT

POLICY CONTEXT

This indicator shows the earnings of workers (men and women) of differing educational attainment relative to those of individuals with upper secondary attainment, as well as age-earnings profiles for these groups.

One way in which markets supply incentives for workers to develop and maintain appropriate levels of skills is through wage differentials, in particular through the enhanced earnings accorded to persons completing additional education. The pursuit of higher levels of education can also be viewed as an investment in human capital. Human capital is the stock of skills that individuals maintain or develop, typically through education or training, and then offer in return for earnings in the labour market. The higher earnings that result from increases in human capital are the return on that investment and the premium paid to enhanced skills and/or to higher productivity. Earnings differentials are a measure of the current financial incentives in a particular country for an individual to invest in further education. Earnings differentials according to educational attainment may also reflect differences in the supply of educational programmes at different levels or the barriers in access to those programmes.

EVIDENCE AND EXPLANATIONS

Education and earnings for men and women

Education and earnings are positively linked, whatever the type of socio-economic system or the degree of economic development.

A substantial body of empirical research has shown the statistical connections between educational attainment and earnings. In many of these studies, educational attainment is considered not only as a qualification that offers access to particular kinds of jobs and careers but also – in the absence of variables that measure skills directly – as an indicator of individuals' knowledge and skills.

The economic benefit of completing tertiary education can be seen by comparing the ratio of the mean annual earnings of those who attended and graduated from tertiary education with the mean annual earnings of upper secondary graduates. The earnings disadvantage from not completing upper secondary education is apparent from a similar comparison. Variations in relative earnings (before taxes) between countries reflect a number of factors, including skill demands in the workforce, minimum-wage legislation, the strength of unions, the coverage of collective-bargaining agreements, the supply of workers at the various levels of educational attainment, the range of work experience of workers with high and low educational attainment, the distribution of employment across occupations and the relative incidence of part-time and part-year work among workers with varying levels of educational attainment.

Upper secondary education is a break-point for many countries beyond which additional education attracts a particularly high premium.

The data in Tables F7.1 and F7.2 show a strong positive relationship between educational attainment and earnings. In all countries university-level graduates earn substantially more than upper secondary graduates. Earnings differentials between university tertiary and upper secondary education are generally more pronounced than those between upper secondary and below, suggesting that upper secondary education is a break-point for many countries beyond which additional education attracts a particularly high premium. Among those coun-

Chart F7.1*a*. **Mean annual earnings of persons 25 to 64 years of age at different levels of educational attainment as a percentage of mean annual earnings at the upper secondary level, by gender (1996)**

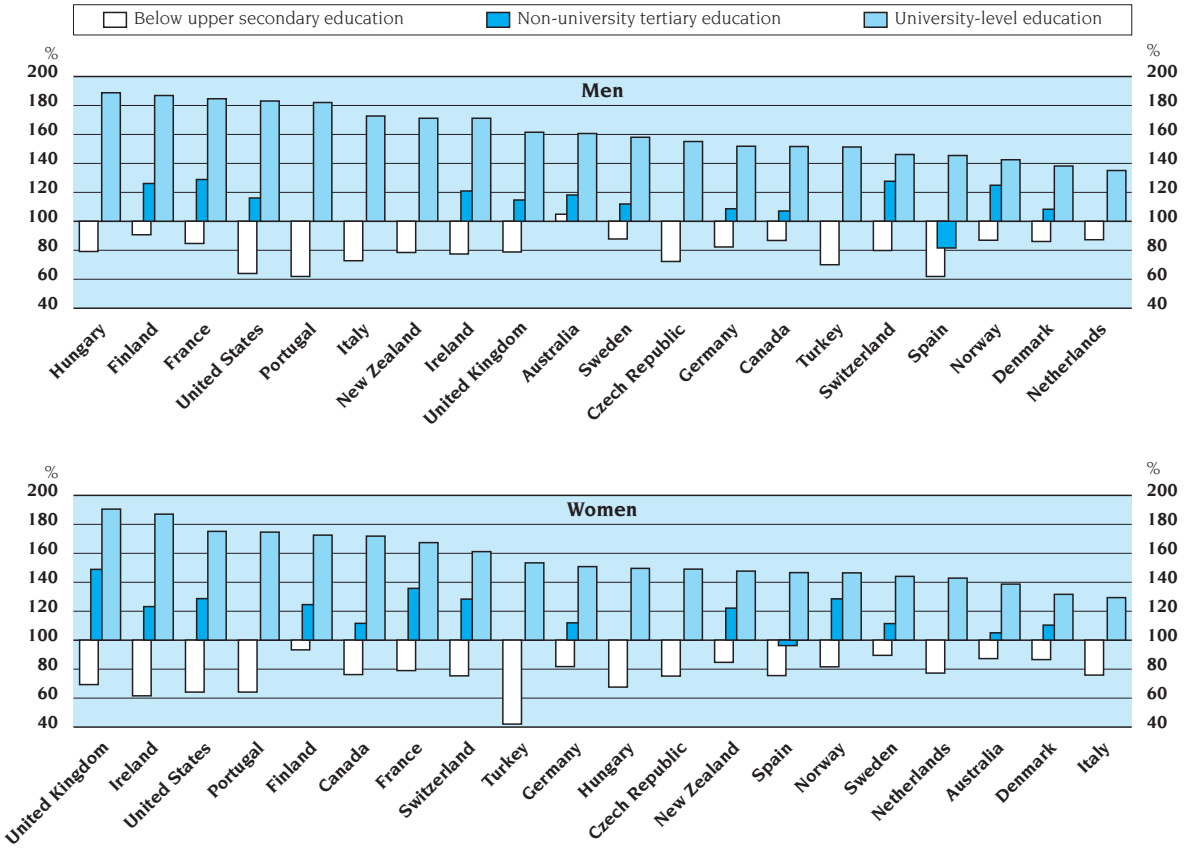
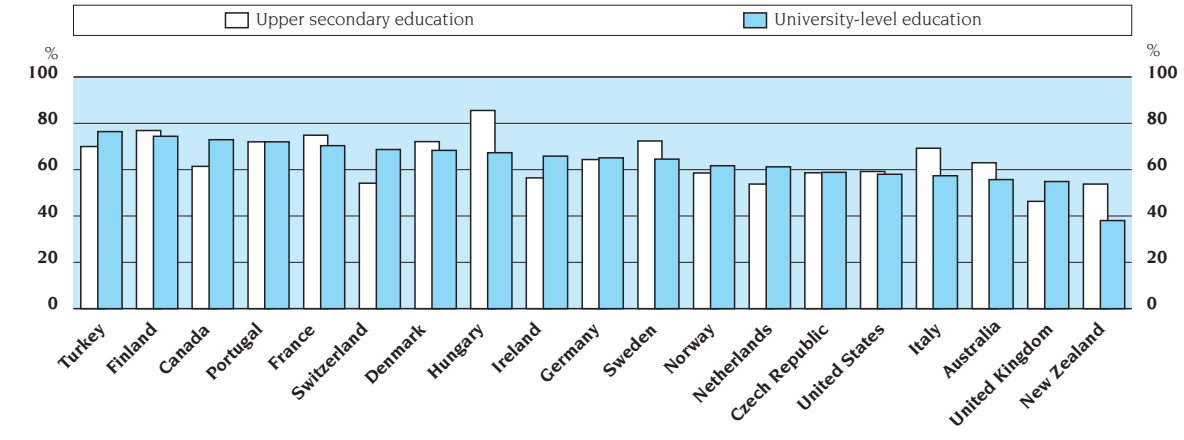


Chart F7.1*b*. **Mean annual earnings of women 30 to 44 years of age as a percentage of mean annual earnings of men at the same age, by level of educational attainment (1996)**



Source: OECD.

tries which report gross earnings, the earnings premium for university-level education ranges from less than 40 per cent for men aged 25-64 in Denmark and the Netherlands to 80 per cent or more in Finland, France, Hungary, Portugal and the United States.

For women, the variability in the premium on university-level education is even wider, ranging from 30 to 90 per cent across countries.

For women in the same age-range, the premium ranges from around 30 per cent in Denmark and Italy to about 90 per cent in Ireland and the United Kingdom. University education enhances earnings relative to upper secondary education more for women than for men in Canada, Ireland, Netherlands, Norway, Spain, Switzerland, Turkey and the United Kingdom, whereas the reverse is true for the remaining countries.

Earnings of people with education below upper secondary tend to be 60-90 per cent of those of upper secondary graduates.

Earnings of men and women with less than upper secondary attainment tend to be between 60 and 90 per cent of those of individuals who have completed upper secondary education. In 10 out of 20 OECD countries, men with lower levels of education fare slightly better than women relative to individuals of the same gender who have completed upper secondary education.

The earnings data shown in this indicator differ between countries in a number of ways that may render some country-to-country comparisons of relative earnings unreliable. Caution should therefore be exercised in interpreting the results. In particular, for countries reporting annual earnings, differences in the incidence of part-year work among individuals with different levels of educational attainment will have an effect on relative earnings that is not reflected in the data for countries reporting weekly or monthly earnings (see Definitions, below).

Education and gender disparity in earnings

Women still earn less than men with similar levels of educational attainment.

Although both men and women with upper secondary or tertiary attainment have substantial earnings advantages compared with those of the same gender who do not complete upper secondary education, earnings differentials between men and women with the same educational attainment remain substantial.

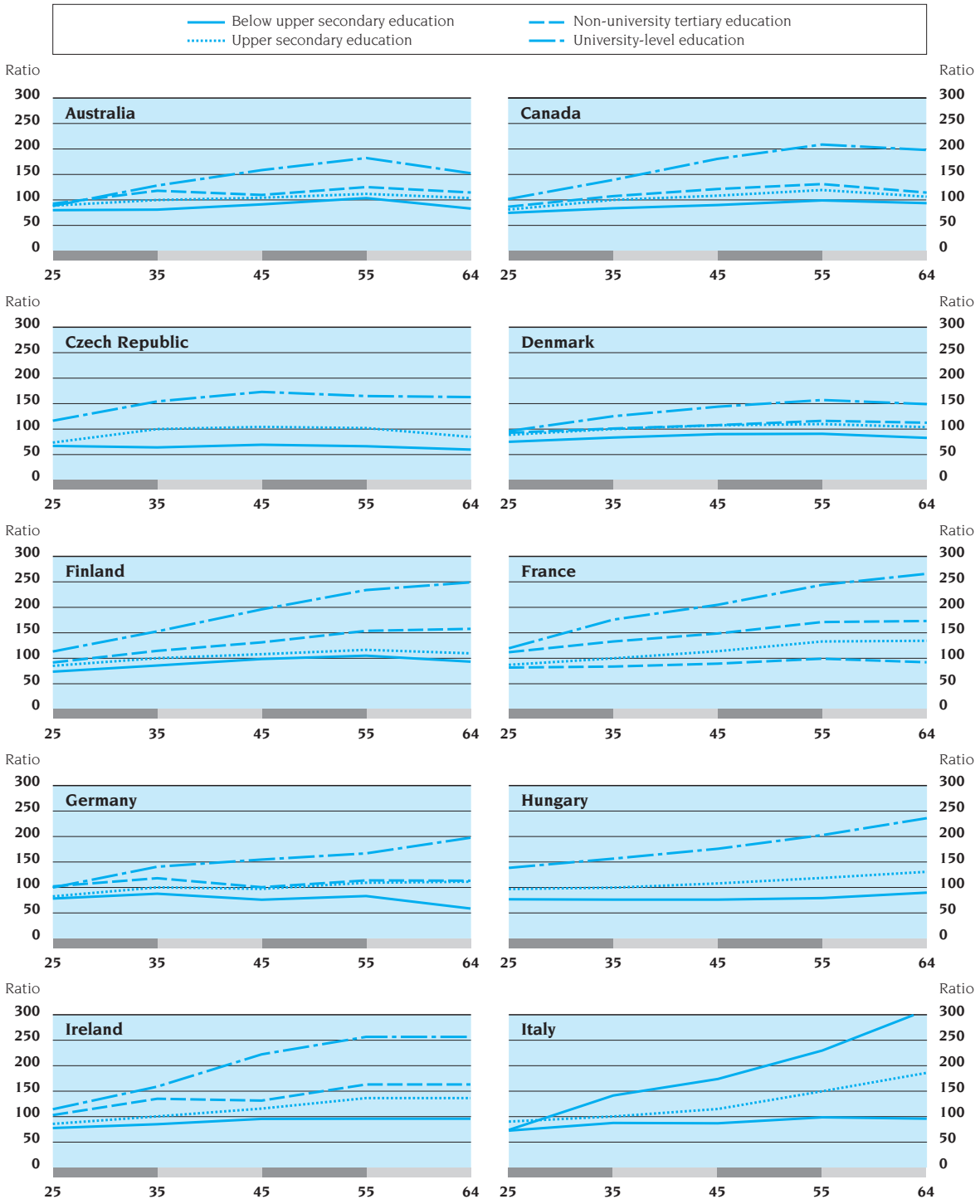
In some countries the gender-gap in earnings narrows with increasing educational attainment; in others it widens.

When all levels of education are taken together, women's earnings at age 30 to 44 range from about one-half of those of men in New Zealand, Switzerland and the United Kingdom to around 77 per cent of those of men in Finland and Hungary (Table F7.3). In a number of countries, but especially in Canada, Ireland, the Netherlands, Switzerland, Turkey and the United Kingdom, earnings differentials between men and women narrow with increasing educational attainment. In a number of other countries, by contrast, including the Czech Republic and Italy, the reverse relationship tends to be true: earnings differences between men and women tend to increase with educational attainment. Thus, although higher educational attainment is generally associated with higher earnings for both men and women, it does not seem to contribute systematically to reductions in gender-inequality in earnings.

Occupational choices, time spent out of the labour market and the higher incidence of part-time work may explain some of the gender differences in salaries.

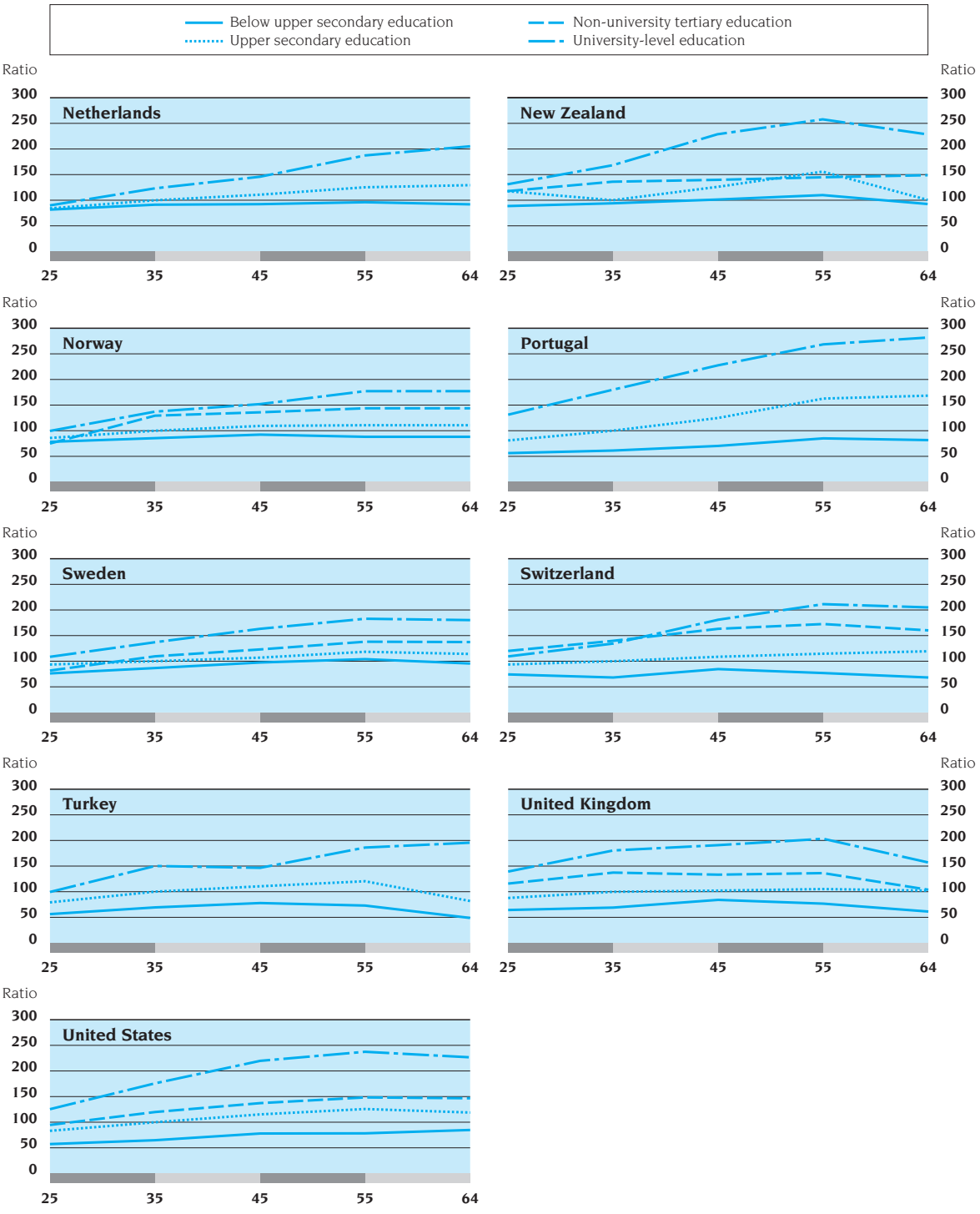
Some of the differences in earnings between men and women may be explained by differences in career and occupational choices between men and women, differences in the amount of time men and women spend in the labour market (Indicator A5) and the relatively higher incidence of part-time work among women. Variations in these effects between countries are reflected in the Tables.

Chart F7.2. **Relative age/earnings profiles of people with income from employment (upper secondary level, 30 to 34 years of age = 100), by level of educational attainment (1996)**



Earnings profiles have been smoothed over ages.
Source: OECD.

Chart F7.2. (*cont.*) **Relative age/earnings profiles of people with income from employment (upper secondary level, 30 to 34 years of age = 100), by level of educational attainment (1996)**



Earnings profiles have been smoothed over ages.
Source: OECD.

There may be movement in some countries towards more equality of earnings between younger men and women.

Earnings data by age suggest that there may be movement in some countries towards more equality of earnings between men and women of comparable educational attainment. In France, Italy and Switzerland the ratio of female to male earnings at the university level is more than 10 percentage points higher for 30-44 year-olds than for 55-64 year-olds (Table F7.3). In Australia, Hungary, New Zealand and the United Kingdom, however, the gender gap in earnings is wider for younger than for older workers.

Age/earnings profiles

Age is a third important variable in the relationship between education and earnings.

Age is a third important variable in the relationship between education and earnings. Chart F7.2 shows how the structure of earnings is distributed across levels of education for different age-groups. The chart is constructed from cross-sectional rather than longitudinal data and therefore does *not* represent the true patterns of earnings of any real cohort of individuals over their lifetime. The patterns shown here for this "fictive cohort" are nonetheless fairly robust to changes over time in the level of educational development, the institutional setting and the cyclical situation of the respective economies.

Relative earnings are higher for people with higher educational attainment in each age-group.

Relative earnings are typically higher for people with higher educational attainment in each age-group. In Switzerland the age-earnings profiles for the non-university and university levels start to diverge only after the age of 35. These patterns reflect the high standing of non-university tertiary-level qualifications in these countries. In Italy relative earnings of university graduates in the 25-29 age group are below those of upper secondary graduates of the same age. Young university graduates in Italy have particularly high unemployment rates (Indicator F5) and their involvement in the labour market is still limited.

Earnings increase with age at a decreasing rate up to a maximum.

In most countries, earnings increase with age at a decreasing rate up to a maximum (usually between the ages of 45 and 55) and then flatten or even decline. This pattern holds most visibly at the higher levels of education (Chart F7.2).

Human capital, unless renewed, can lose market value over time which will, in turn, be reflected in lower earnings.

Earnings tend to increase with age because age is a proxy for the work-experience and knowledge acquired beyond the period of initial education and training. This additional human capital can be acquired through formal training, incidental learning or training on the job. Other factors, such as seniority, collective bargaining and other institutional arrangements, of course, also influence salaries. Over time, human capital tends to depreciate, very much as does physical capital: for example, some skills and knowledge can become obsolete as a result of technological change. Human capital, unless renewed, can lose market value over time which, in turn, will be reflected in lower earnings.

The increase in earnings with age is steeper for people with higher educational attainment.

In most countries, the slope of the profile is steeper for higher educational attainment. Before the earnings peak is reached, the mean earnings of individuals with higher levels of education increase faster than those of people with lower levels. Thus, although average earnings vary substantially by educational attainment for all age-groups, the relationship is stronger for older groups. There are some notable exceptions to this pattern.

Earnings tend to peak at a later age for people with a higher level of education.

Maximum earnings also tend to be reached at a later age for people with higher educational attainment, for several reasons. First, the knowledge-based skills associated with higher education may be subject to less depreciation over time. Second, continuing education and training tend to be more common among the highly educated (Indicators C5). Third, the employment career of more educated people also tends to start later. Finally, the relativly high earnings of older people with a university education may also be related to the small size of the relevant group in many countries.

The earnings differences among persons with different levels of educational attainment cannot all be attributed to education.

The relationship between educational attainment and earnings should be interpreted with caution. Earnings differences among individuals of differing levels of educational attainment cannot always be attributed to education. The observation that, on average, university graduates earn more than upper secondary graduates should not lead to the conclusion that going to university necessarily yields higher income for any one person. Other factors – innate ability, social background, gender and occupation, for example – can also affect earnings. Why educated workers are more likely to get good jobs, and how much they produce when they get them, are also influenced by a host of other factors that arise from how labour markets operate and how work is organised. These factors may be as important in the determination of the earnings of individual workers, the profitability of firms and economy-wide productivity as is the educational attainment of the workforce.

DEFINITIONS

Data are derived from national labour-force surveys (for details see Annex 3).

Relative earnings from employment are defined as the mean earnings (income from work before taxes) of persons at a given level of educational attainment divided by the mean earnings of persons with upper secondary school attainment. This ratio is then multiplied by 100. The estimates are restricted to individuals with income from employment during the reference period.

Earnings data in Tables F7.1 and F7.2 are annual for most countries; for France, Spain and Switzerland they are monthly. In France data cover the earnings of employees only. The Spanish data exclude people who work less than fifteen hours a week.

The observed differences in relative earnings across countries therefore reflect variations not only in wage rates but also in coverage, in the number of weeks worked per year and in hours worked per week. To the extent that lower educational attainment is associated with fewer hours of work (in particular with part-time work) and with less stable employment (more likelihood of temporary employment or more susceptibility to unemployment over the course of a year), the relative earnings figures shown for higher educational attainment in the tables and charts will be magnified over and above what would be observed from an examination of relative rates of pay. The observed differences in relative earnings of men and women within a country can likewise be affected by some of these factors.

The age-earnings profiles have been constructed by dividing mean earnings for people in different age-groups and at different levels of educational attainment by mean earnings of those 30-34 year-olds who completed no more than upper secondary education.

Table F7.1. **Relative earnings of persons aged 25-64 with income from employment (upper secondary education = 100) by level of educational attainment and gender (1996)**

		Below upper secondary education			Non-university tertiary education			University education		
		M + W	Men	Women	M + W	Men	Women	M + W	Men	Women
Australia	1995	89	105	87	111	118	105	142	161	139
Canada	1996	87	87	76	110	107	112	161	152	172
Czech Republic	1996	67	72	75	x	x	x	161	155	149
Denmark	1996	84	86	87	104	108	110	134	138	132
Finland	1995	93	91	93	125	126	125	185	187	173
France	1996	82	85	79	127	129	136	178	185	167
Germany	1996	76	82	82	110	109	112	158	152	151
Hungary	1996	72	79	68	x	x	x	169	189	150
Ireland	1994	85	77	62	123	121	123	183	171	187
Italy	1995	76	73	76	x	x	x	156	173	129
Netherlands	1995	86	87	77	x	x	x	137	135	143
New Zealand	1996	82	78	85	114	101	122	176	171	148
Norway	1996	85	87	81	124	125	128	142	143	146
Portugal	1996	64	62	64	x	x	x	184	182	175
Spain	1995	78	62	76	97	82	96	153	145	147
Sweden	1996	90	88	89	110	112	111	153	158	144
Switzerland	1996	71	80	75	146	128	128	161	146	161
Turkey	1994	69	70	42	x	x	x	147	151	153
United Kingdom	1996	74	79	69	130	115	149	181	161	190
United States	1996	67	64	64	118	116	129	183	183	175

Table F7.2. **Relative earnings of persons aged 30-44 with income from employment (upper secondary education = 100) by level of educational attainment and gender (1996)**

		Below upper secondary education			Non-university tertiary education			University education		
		M + W	Men	Women	M + W	Men	Women	M + W	Men	Women
Australia	1995	86	101	86	109	118	102	145	163	144
Canada	1996	83	83	71	110	107	112	158	146	174
Czech Republic	1996	66	71	77	x	x	x	162	154	154
Denmark	1996	84	87	87	101	107	108	132	138	131
Finland	1995	91	88	91	120	120	122	173	172	167
France	1996	81	84	76	131	137	137	178	184	173
Germany	1996	81	86	82	109	111	108	153	147	149
Hungary	1996	72	80	70	x	x	x	162	184	145
Ireland	1994	84	78	61	122	122	123	183	169	197
Italy	1995	80	77	77	x	x	x	148	161	133
Netherlands	1995	86	87	77	x	x	x	129	126	144
New Zealand	1996	86	83	87	120	110	121	182	183	129
Norway	1996	85	85	85	127	126	137	138	141	148
Portugal	1996	59	58	59	x	x	x	183	179	179
Sweden	1996	91	89	88	113	120	111	149	155	138
Switzerland	1996	76	81	78	146	127	130	154	136	172
Turkey	1994	71	71	45	x	x	x	139	141	154
United Kingdom	1996	80	88	71	133	117	151	185	166	197
United States	1996	66	63	63	119	118	130	186	187	184

Source: OECD Database. See Annex 3 for notes.

Table F7.3. **Mean annual earnings of women as a percentage of mean annual earnings of men 30 to 44 and 55 to 64 years of age, by level of educational attainment (1996)**

		Below upper secondary education		Upper secondary education		Non-university tertiary education		University-level education		All levels of education	
		Age 30-44	Age 55-64	Age 30-44	Age 55-64	Age 30-44	Age 55-64	Age 30-44	Age 55-64	Age 30-44	Age 55-64
Australia	1995	53	55	63	88	54	63	56	68	57	61
Canada	1996	52	52	61	56	64	61	73	71	65	58
Czech Republic	1996	64	47	59	65	x	x	59	60	56	56
Denmark	1996	72	70	72	68	72	71	68	64	72	66
Finland	1995	80	79	77	76	78	83	74	71	77	72
France	1996	68	67	75	69	75	80	70	61	74	63
Germany	1996	61	47	64	59	62	78	65	65	62	49
Hungary	1996	75	73	85	113	x	x	67	81	77	88
Ireland	1994	44	m	56	m	57	m	66	m	60	m
Italy	1995	69	72	69	49	x	x	57	37	70	56
Netherlands	1995	48	44	54	44	x	x	61	54	56	44
New Zealand	1996	56	50	54	37	59	61	38	78	50	53
Norway	1996	59	m	59	m	64	m	62	m	61	m
Portugal	1996	74	73	72	64	x	x	72	64	74	70
Sweden	1996	72	72	72	68	67	69	65	66	70	69
Switzerland	1996	52	50	54	49	55	57	69	46	52	44
Turkey	1994	44	46	70	99	x	x	76	76	73	45
United Kingdom	1996	38	46	46	44	60	74	55	74	47	47
United States	1996	59	54	59	52	65	61	58	52	60	50

Source: OECD Database. See Annex 3 for notes.

PRIVATE, FISCAL AND SOCIAL RATES OF RETURN TO EDUCATION AT THE UNIVERSITY LEVEL

POLICY CONTEXT

This indicator shows the internal rates of return for completing university-level education.

Describing examples of benefits of investment in human capital does not in itself demonstrate that the investment is worthwhile. A cost-benefit analysis can help assess whether the potential benefits individuals receive from attending a particular type of educational programme are worth the costs. Similarly, society must ask whether the benefits it will receive from allocating public funds for education are worth as much as benefits that would be derived from alternative uses of these funds.

From the individual's point of view, costs correspond to direct costs of tuition fees, educational materials, student living costs and forgone earnings during the time of study. Social costs include all of these private costs as well as those direct costs incurred by public authorities in providing the education.

Rates of return can be separated into private, social and fiscal returns.

A rate of return can be calculated on the basis of the cost of investment and the value of subsequent benefits, discounted to take account of their postponement. Returns to education can be separated into private, social and fiscal returns. The private rate of return influences whether individuals decide to undertake education. The social rate of return influences whether societies collectively decide to finance education, by voting for taxes and making private contributions. The fiscal rate of return potentially shows governments the extent to which the public expenditure devoted to education will be recouped in long-run benefits to the public purse.

Calculating such a rate requires consistent data on both cost and benefit streams. Although some general estimates can be made of the rate of return on education to society, the main evidence derives from the higher earnings that accrue to individuals from formal education, relative to its cost.

EVIDENCE AND EXPLANATIONS

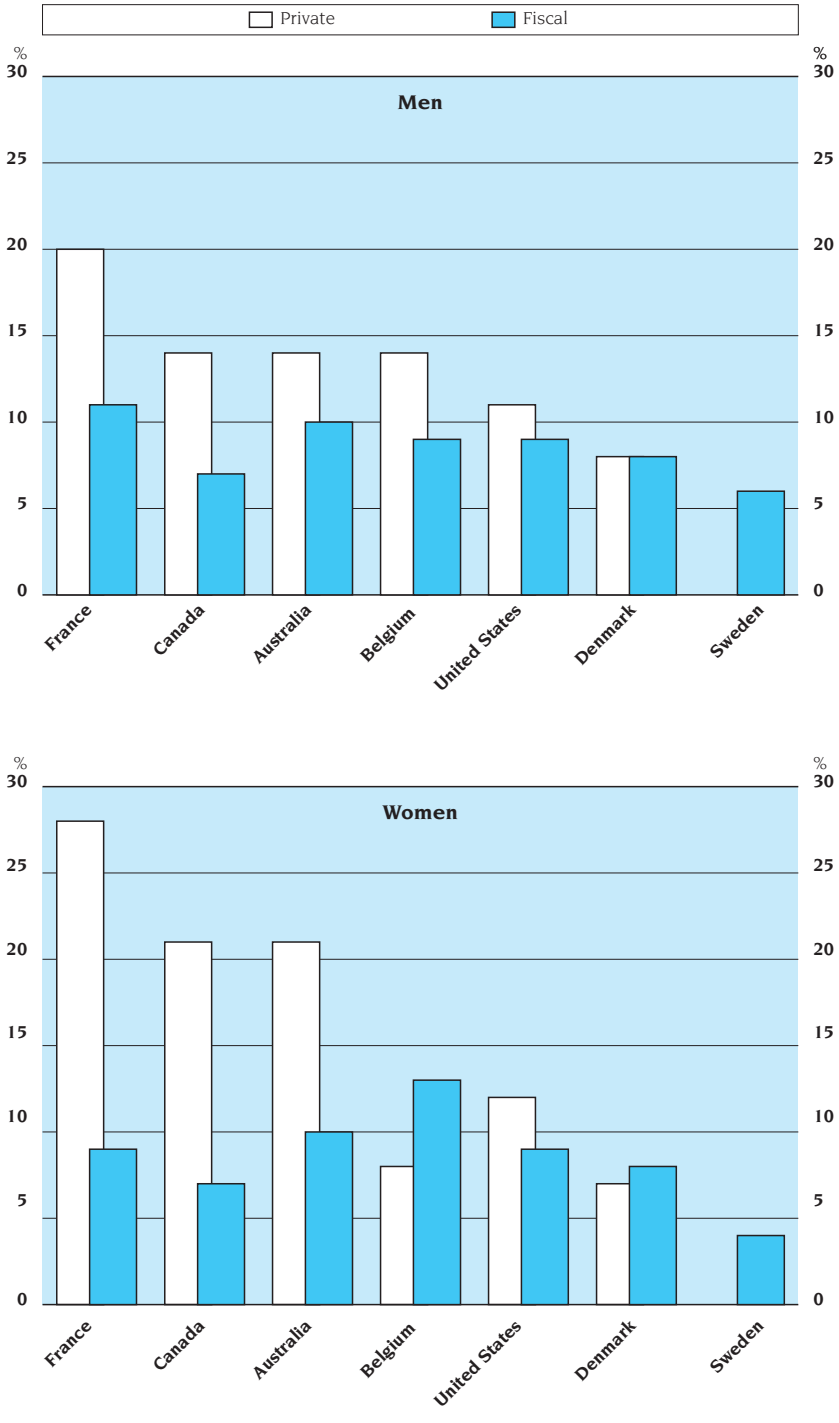
Private, fiscal and social returns for completing university-level education are calculated for seven OECD countries.

In this indicator, private, fiscal and social returns for completing university-level education are calculated for seven OECD countries. These estimates give an indication of the extent to which returns are shared between public and private interests. They take account of all types of income – including social transfers occuring at the various levels of education – as well as the benefits relating to all individuals in the population and not only those in employment. The results thus begin to measure the impact of unemployment or exclusion from the labour market in estimating lifetime benefits, assuming that income will grow over time by a constant 1 per cent per annum for all groups in the population.

There are positive fiscal and private returns to investing in university-level education.

The results of these experimental calculations are presented in the Table F8.1. They indicate that, in the countries examined, there are positive fiscal and private returns to investing in university-level education. A rate of return of 10 per

Chart F8.1. **Estimates of private and fiscal rates of return to education at the university level, by gender (1995)**



Countries are ranked in descending order of the private rates of return to education at the university level for men.
Source: OECD.

cent on an investment may be treated as a "threshold" rate above which rates of return may be viewed as "socially profitable" compared with alternative investments in physical or financial capital. Across seven OECD countries for which data are available, the private returns tend to be higher than the fiscal ones.

Relatively high private rates of return indicate that there are strong economic incentives for people to attend university-level education.

The private rate of return exceeds 10 per cent for men in all six countries except Denmark, and reaches 20 per cent in France. Among women, the private rate of return to education at the university-level exceeds 20 per cent in Australia, Canada and France and is less than 10 per cent in Belgium and Denmark. These figures indicate the strong (though variable) economic incentive for both men and women to attend university-level education in these countries.

Fiscal returns to attending university-level education range from 4 to 13 per cent.

The fiscal rate of return is a measure of the financial incentive for societies to support public spending on university education. As noted above, fiscal returns balance the estimated value of additional income-tax receipts and employee social-security contributions (less social transfers) generated over a life-time by university graduates compared with the public costs of tuition and the lost tax revenue on earnings forgone. The fiscal rate of return is 9 per cent or above for both men and women in Australia, Belgium, France and the United States. In Canada and Denmark, the returns are 7 and 8 per cent respectively. These figures indicate the relatively strong financial return for public funds invested in university education in these countries.

By contrast, the fiscal rate of return in Sweden is lower: it measures 6 per cent for men and 4 per cent for women – resulting from relatively high public expenditure on university-level education (there are no tuition charges and students' living costs are supported) and a compressed wage-structure. Yet this is not necessarily an indication that Sweden is spending too much public funding on university education, since these fiscal returns omit several other socially desirable "spill-over" effects that can also result from increasing the aggregate level of education in a society (for instance, increases in productivity, reduction in inequality, lower crime rates, etc.).

DEFINITIONS

Data are derived from the OECD-INES Pilot Survey of private, fiscal and social returns to education.

The data presented in this indicator are based on a model of simulated private and fiscal benefits at the university-level of education. Since they illustrate developmental work that is still underway, they should be treated with caution.

Private returns are estimated on the basis of additional income of individuals for a given level of education over a working life-time (to the age 64), including social transfers and non-labour income, and after deduction of income taxes and employee social-security contributions, compared with additional private costs of tuition and earnings forgone for a given level of education.

Fiscal returns were based on the estimated life-time value of additional income-tax receipts and employee social-security contributions less social transfers, for those who complete university education, compared with the public costs of educating a university student and the taxes lost on earnings forgone during the time of study.

Social rates of returns are a combination (or weighted average) of private and fiscal returns, but they exclude externalities or "spill-over" effects.

Table F8.1. **Estimates of private, fiscal and social rates of return to education at the university tertiary level, by gender (1995)**

	Men			Women		
	Private	Fiscal	Social	Private	Fiscal	Social
Australia	14	10	11	21	10	13
Belgium	14	9	9	8	13	9
Canada	14	7	9	21	7	11
Denmark	8	8	8	7	8	8
France	20	11	13	28	9	13
Sweden	m	6	9	m	4	7
United States	11	9	10	12	9	11

Source: OECD Database. See Annex 3 for details.

Annex 1

AVERAGE DURATION AND TYPICAL AGES

The following table shows the average cumulative typical duration of formal schooling from primary education of 25-64 year-olds. This is obtained by converting the attainment levels into years of schooling on the basis of the theoretical cumulative duration of the respective levels of education, weighting the typical duration of programmes at each level by the number of 25-64 year-olds who have completed each type of programme. The estimates are based on the highest completed levels of education. In respect of individuals who have not completed the full typical duration for a given ISCED level, a certain length of time has been ascribed in relation to time spent at that level. Note that figures do not refer to the theoretical duration of present programmes.

Table X1.1. **Average cumulative typical duration of formal schooling by level of education of 25-64 year-olds**

	Primary education	Lower secondary education	Upper secondary education	Non-university tertiary education	University-level education
Australia	8.0	9.7	14.1	15.0	17.2
Austria	4.0	9.0	12.1	15.0	17.0
Belgium	8.5	10.7	12.9	17.5	18.2
Canada	8.0	9.5	12.2	13.8	17.0
Czech Republic	5.0	9.0	12.5	15.0	18.0
Denmark	6.0	9.6	12.9	14.5	16.5
Finland	6.0	9.0	12.0	14.0	17.0
France	5.0	9.4	11.6	15.0	17.8
Germany	4.0	10.0	13.0	15.0	18.3
Greece	5.3	6.2	12.0	14.7	16.3
Hungary	5.0	9.0	12.0	14.0	16.0
Ireland	7.0	10.0	12.5	15.0	16.0
Italy	5.0	6.7	12.7	m	17.1
Korea	7.0	10.0	13.0	15.1	17.2
Netherlands	6.0	8.6	12.9	m	16.3
New Zealand	6.0	9.6	13.6	15.0	16.6
Norway	6.0	9.0	12.0	14.0	17.0
Portugal	6.0	8.0	12.0	14.0	16.0
Spain	6.0	8.5	12.0	13.1	17.0
Sweden	7.0	9.0	12.0	14.0	16.2
Switzerland	6.0	9.2	12.1	14.3	20.0
Turkey	6.0	9.0	12.0	14.0	16.5
United Kingdom	6.0	10.0	12.1	15.0	16.3
United States	5.7	8.9	12.7	14.0	16.9

Typical starting ages in upper secondary education

The typical starting age is the typical age at the beginning of the first school/academic year of the corresponding level and programme.

Typical starting ages for upper secondary education in WEI countries are included in Table C2.2.

Table X1.2*a*. **Typical starting ages in upper secondary education**

	All programmes	General programmes	Vocational and technical programmes	School-based vocational and technical programmes	Combined school and work-based vocational and technical programmes
Australia	16	16	16	16	16
Austria	14-15	14	14-15	14	15
Belgium (Flemish Community)	14-16	14	14	14	15-16
Canada	15	15	15	15	15
Czech Republic	14-16	14-16	14-16	14-16	14-16
Denmark	16-17	16-17	16-17	16-17	16-17
Finland	16	16	16	16	16
France	15	15	15	15	15-16
Germany	16	16	16	16	16
Greece	15	15	15	15	a
Hungary	14	14	14	14	14
Iceland	16	16	16	16	16
Ireland	15-16	15-16	15-16	15-16	15-16
Italy	14	14	14	14	a
Japan	15	15	15	15	a
Korea	15	15	15	15	15
Luxembourg	15	15	15	15	15
Mexico	15	15	15	15	a
Netherlands	15	15	15	15	16
New Zealand	15-16	15	16	16	a
Norway	16	16	16	16	16
Poland	15	15	15	15	15
Portugal	15	15	15	15	15
Spain	14-16	14	14-16	14	16
Sweden	16	16	16	16	a
Switzerland	15-16	15-16	15-16	15-16	15-16
Turkey	13-16	13-16	14	14	14
United Kingdom	14	14	16	16	16
United States	15	15	15	15	15

■ Typical graduation ages

The typical graduation age is the age at the end of the last school/academic year of the corresponding level and programme when the degree is obtained. The typical age is based on the assumption of full-time attendance in the regular education system without grade repetition. (Note that at some levels of education the term "graduation age" may not translate literally and is used here purely as a convention.)

Only countries which report second or further educational programmes at the upper secondary level are listed.

Table X1.2*b*. **Typical graduation ages, upper secondary level, first educational programmes**

	All programmes	General programmes	Vocational and technical programmes	School-based vocational and technical programmes	Combined school and work-based vocational and technical programmes
Australia	19	18	20	20	20
Austria	17-19	18	17-19	17-19	18-19
Belgium	18-20	18	18-20	18-20	18-20
Canada	18	m	m	m	m
Czech Republic	18-19	18-19	18-19	18-19	17-19
Denmark	19-22	19-20	19-22	19-22	19-22
Finland	19	19	18-19	18-19	18-19
France	18-20	18	18-20	18-20	18-20
Germany	19	19	19	19	19
Greece	18-19	18-19	18-19	18-19	a
Hungary	17-18	18	17-18	18	17
Iceland	20	20	20	20	20
Ireland	17-18	17-18	17-18	17-18	17-18
Italy	17-19	19	17-19	17-19	a
Japan	18	18	18	18	a
Korea	18	18	18	18	18
Luxembourg	18-19	19	18-19	18-19	18-19
Mexico	18	18	18	18	a
Netherlands	18-19	18-19	19-20	19	18-21
New Zealand	18	18	18	18	a
Norway	19	19	19	19	19
Poland	18-20	19	18-20	18-20	18-20
Portugal	18	17	18	18	18
Spain	16-18	17-18	16-18	16-18	18
Sweden	19	19	19	19	a
Switzerland	18-20	18-20	18-20	18-20	18-20
Turkey	17	17	17-19	17-19	17-18
United Kingdom	16-18	16-18	18	18	18
United States	18	m	m	m	m
WEI Participants					
Argentina	17	17	17	17	a
Brazil	17	17	17-18	m	m
Chile	17-18	17-18	17-18	17-18	a
China	17-19	17-19	17-19	17-19	a
India	m	17	17	17	17
Indonesia	18-19	18	18-19	18-19	18-19
Jordan	17-18	17-18	17-18	17-18	17-18
Malaysia	16-17	16-17	16-17	16-17	a
Paraguay	17	17	17	17	m
Philippines	16-17	16-17	a	a	a
Russian Federation	17-18	17	17-18	17-18	a
Thailand	17	17	17	17	17
Uruguay	17-18	17-18	17-18	17-18	a

Table X1.2c. **Typical graduation ages, upper secondary level, second educational programmes**

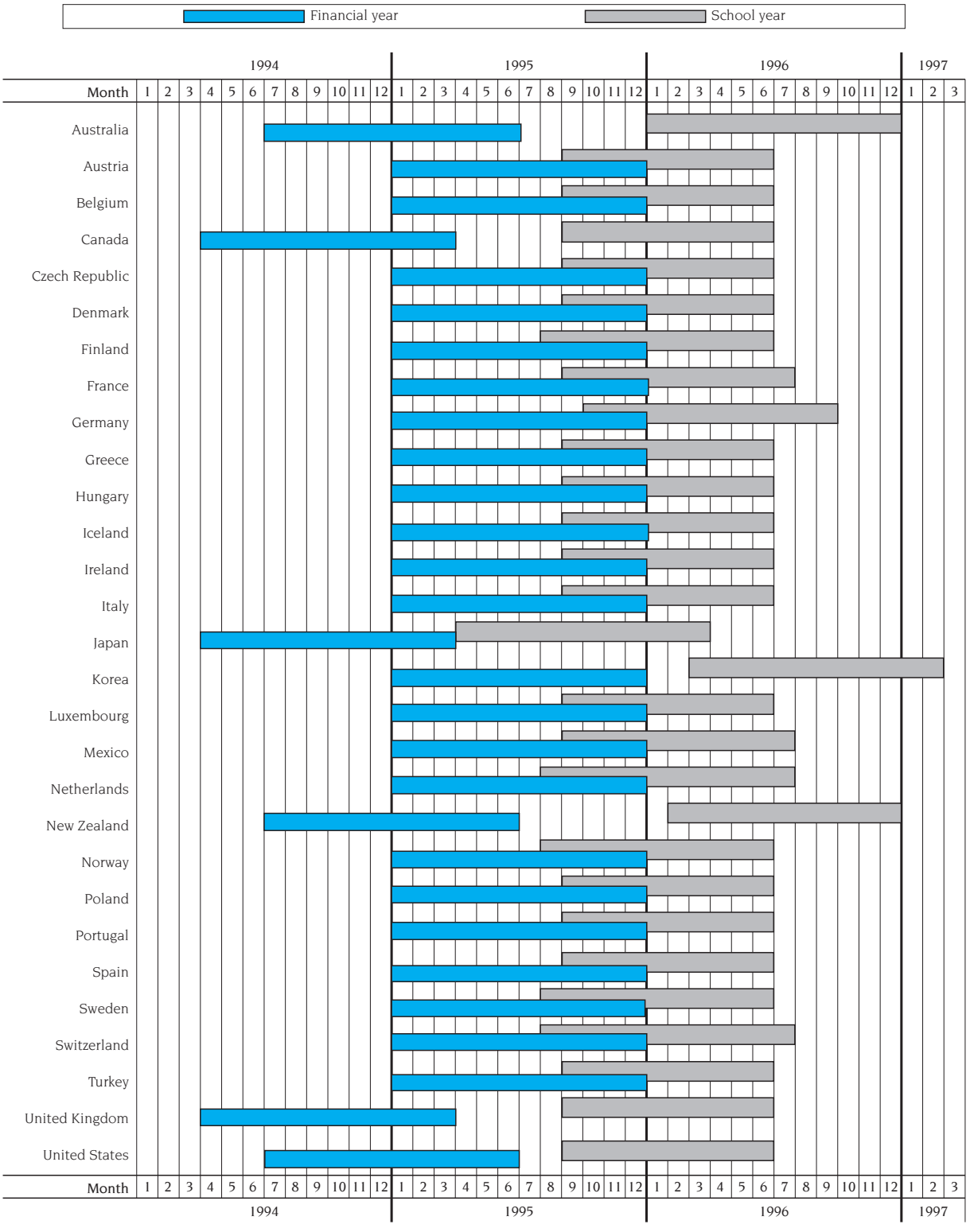
	All programmes	General programmes	Vocational and technical programmes	School-based vocational and technical programmes	Combined school and work-based vocational and technical programmes
Austria	18-20	a	18-20	18-20	a
Czech Republic	21-23	a	21-23	21-23	21-23
Denmark	22-23	22-23	22-23	22-23	22-23
Finland	20-21	21	20-21	20-21	20-21
France	19-20	a	19-20	19-20	19-20
Germany	22	25	22	22	22
Hungary	19-21	20	20	21	19
Iceland	20	20	20	20	20
Ireland	18-19	a	18-19	18-19	18-19
Italy	19	a	19	19	a
Netherlands	19-20	19	20	20	20
Portugal	18	18	18	18	18
Spain	19	a	19	19	a
WEI Participants					
Malaysia	m	19	m	m	m

Table X1.2*d*. **Typical graduation ages, tertiary levels of education**

	Non-university tertiary education (ISCED 5)	University-level education, first stage (ISCED 6)		University-level education, second stage (ISCED 7)	
	All programmes	Short programmes	Long programmes	Second programmes (*e.g.* US Master's)	Ph.D. or equivalent
Australia	20	21	x	24	25
Austria	20-22	a	22-25	a	24-27
Belgium (Flemish Community)	21-23	a	22-24	23-26	26-30
Canada	21	22	22	24	27
Czech Republic	21-24	21-23	23-25	a	26-28
Denmark	23-24	25-27	25-27	26-27	29-35
Finland	21-25	22-24	25-26	25-26	29-31
France	20-21	a	21	a	26
Germany	21	a	26	a	28
Greece	20-22	a	22-24	24-27	26-30
Hungary	a	21-22	23-24	26-28	26
Iceland	23	23	25	25-28	29-35
Ireland	19-21	20-22	22-24	21-24	24-27
Italy	21	22	23	25	25
Japan	20	22	22	24	27
Korea	20	22	0	24	29
Luxembourg	21-22	a*	a*	a*	a*
Mexico	23	23	23	26	28
Netherlands	a	23	25	25	28
New Zealand	21	21	23	24	27
Norway	20-21	23	24	24-28	25-29
Poland	20-22	22-23	23-26	24-26	27-29
Portugal	21-22	21-22	22-24	25-27	26-27
Spain	20	21	23	x	26-28
Sweden	20-22	22	23-24	24-27	26-29
Switzerland	22-23	a	26	a	31
Turkey	19	25-27	a	25-27	25-27
United Kingdom	20	21	x	22	26
United States	20	22	a	24	27
WEI Participants					
Argentina	21	24	24	m	m
Brazil	m	22	22	25	29
Chile	21-22	21-22	22-23	24-25	25-26
China	20-22	22-24	23-24	25-27	29-30
India	18	21	22	m	m
Indonesia	20-21	22-24	22-23	24-26	26-28
Jordan	19-20	21-22	23-24	26-27	26-27
Malaysia	19-20	23	24	23-24	26-27
Paraguay	21	21-22	23-24	m	m
Philippines	20	20-24	24	m	m
Russian Federation	18-20	19-23	21-25	25	25-27
Thailand	1 920	2 122	23a	2 324	2 627
Uruguay	20-21	21-22	23-24	23-24	25-26

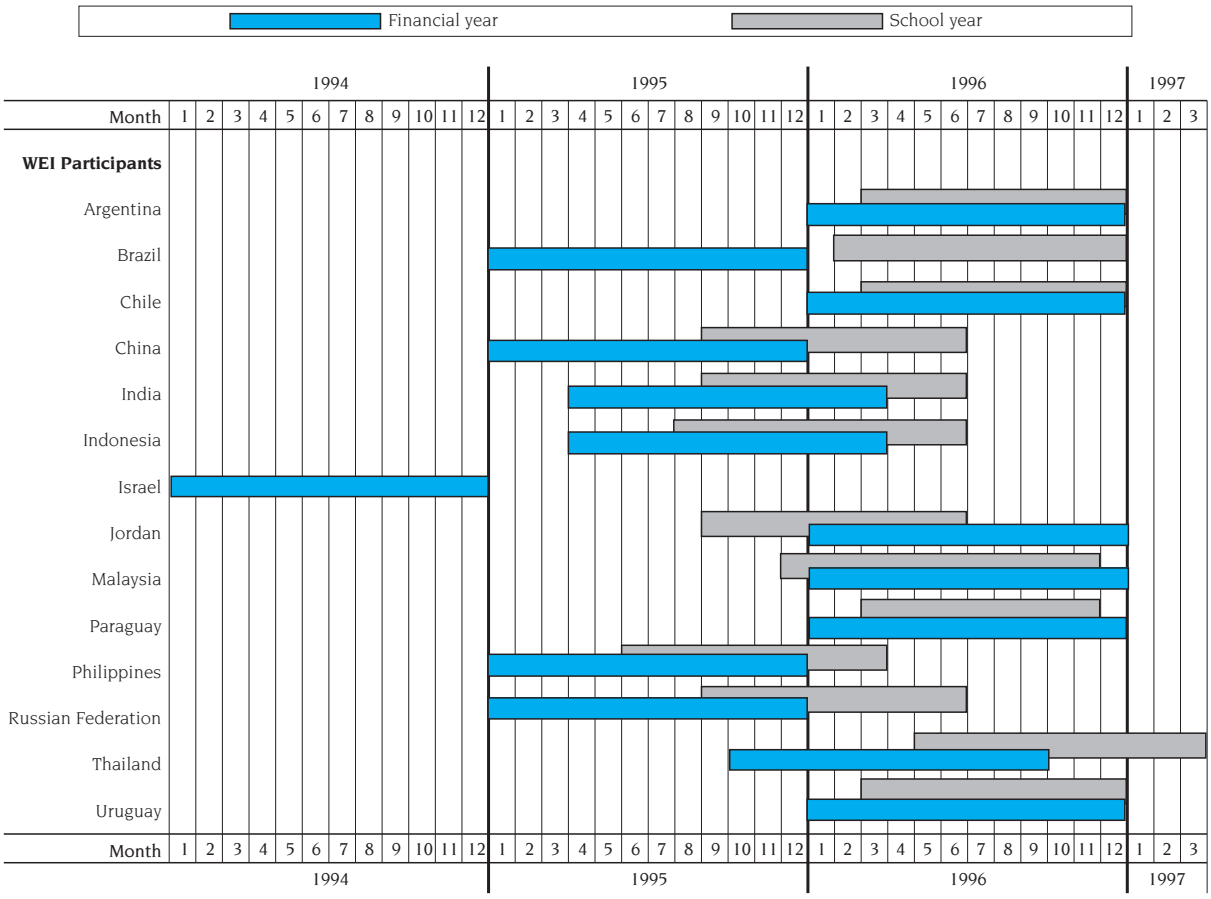
* In Luxembourg, only the first year of university studies can be taken. Afterwards, students have to continue their university studies in foreign countries.

Table X1.3. **School years and financial years as used for the calculation of the indicators**



Source: OECD.

Table X1.3. (*cont.*) **School years and financial years as used for the calculation of the indicators**



Source: OECD.

Annex 2

BASIC REFERENCE STATISTICS

Table X2.1. **Basic reference statistics**
(reference period: calendar year 1995, 1995 current prices)

	Gross domestic product (in millions of local money)	Purchasing power parity exchange rate	Total public expenditure (in millions of local money)	Adjustment factor	GDP per capita (in equivalent US dollars converted using PPPs)	Total population (31.12.1995)
Australia	472 459	1.348241	184 750	1.012584	19 519	18 311 486
Austria	2 326 337	14.07738	1 236 987	1	20 612	8 054 802
Belgium	8 055 565	37.66401	4 360 029	1	21 104	10 143 047
Belgium (Flemish Community)	4 801 300	37.66401	m	1	21 024	6 069 982
Canada	768 580	1.236309	371 197	1.011428	20 991	30 537 117
Czech Republic	1 338 900	11.7519	531 702	1	10 313	10 308 876
Denmark	969 079	8.627714	591 497	1	21 454	5 251 027
Finland	549 863	6.008442	326 783	1	17 921	5 116 826
France	7 662 391	6.622158	4 166 020	1	19 908	58 255 880
Germany	3 457 400	2.066177	1 733 180	1	20 509	81 817 499
Greece	21 122 664	208.1753	9 497 628	1	12 173	10 465 059
Hungary	5 561 900	81.16329	2 994 200	1	6 845	10 212 300
Iceland	451 638	77.77438	178 997	1	21 755	267 958
Ireland	40 136	0.650598	15 567	1	17 201	3 615 600
Italy	1 770 000 000	1 589.185	923 000 000	1	19 460	57 332 996
Japan	483 000 000	176.7561	176 000 000	0.995493	21 916	125 570 246
Korea	352 000 000	623.8734	73 373 000	1	12 518	45 545 282
Luxembourg	511 244	39.847	m	1	31 209	412 800
Mexico	1 837 776	2.632902	371 122	1	7 366	92 399 515
Netherlands	635 010	2.078285	381 230	1	19 874	15 493 889
New Zealand	90 448.5	1.509867	m	1.002353	16 962	3 618 039
Norway	929 006	9.373459	443 139	1	22 743	4 369 957
Poland	286 026	1.3313	m	1	5 619	38 609 399
Portugal	15 073 187	122.0606	m	1	12 457	9 920 760
Spain	69 778 900	125.1383	26 607 200	1	14 317	39 241 933
Sweden	1 644 983	9.97203	1 104 748	1	18 749	8 837 496
Switzerland	364 561	2.061301	139 442	1	24 983	7 062 354
Turkey	7 760 000 000	22 162.06	m	1	5 681	61 797 000
United Kingdom	701 496	0.670309	m	1.002445	17 862	57 176 818
United States	7 029 600	1	2 512 000	1.002287	26 711	264 038 000
WEI Participants						
Argentina	294 599	0.84811	80 301	1	9 445	35 219 614
Brazil	631 662	0.64858	210 669	1	5 858	157 079 573
Chile	30 628 380	173.05141	6 137 987	1	11 756	14 418 864
China	5 826 050	1.68	m	1	3 006	1 223 890 000
India	12 635 405	8.43	m	1	m	838 567 879
Indonesia	452 381 000	706.64961	82 352 500	1	3 160	194 301 082
Jordan	5 147	0.32013	986	1	3 571	4 291 003
Malaysia	249 610	1.08925	81 046	1	10 672	21 296 049
Paraguay	19 953 340	1 119.68641	4 186 942	1	m	4 955 237
Philippines	1 906 328	8.11996	213 874	1	3 199	68 616 536
Russian Federation	1 630 079 087	3,621.92	m	1	m	147 879 300
Thailand	4 689 600	11.51	843 200	1	6 726	60 004 000
Uruguay	144 930	5.64785	32 162	1	m	3 163 763

Table X2.2. **Basic reference statistics**
(reference period: calendar year 1990, 1990 current prices)

	Gross domestic product (in millions of local money)	Purchasing power parity exchange rate (PPP)	Total public expenditure (in millions of local money)	Private consumption price index, deflator (PCP)	GDP per capita (in equivalent US dollars converted using PPPs)	Total population (31.12.1990)
Australia	379 288	1.387	142 682	1.115237	15 941	m
Austria	1 813 482	14	893 696	1.158722	16 711	7 689 529
Belgium		39.45	m	1.143163	16 668	9 947 782
Canada	662 809	1.303	316 765	1.108367	18 303	m
Denmark	799 109	9.393	468 586	1.091446	16 551	5 135 409
Finland	515 430	6.38	241 170	1.16499	16 192	4 974 383
France	6 509 488	6.614	3 245 137	1.120058	17 347	56 577 000
Germany		2.088	m	1.184058	15 990	79 112 831
Greece	13 143 050	140.8	m	1.906961	9 186	10 120 892
Hungary	2 265 530	31.12	m	3.0659	m	10 374 823
Iceland	364 391	82.63	145 289	1.211446	17 293	253 785
Ireland	27 525	0.69	11 261	1.128023	11 374	3 506 970
Italy	1 310 659 000	1 421	704 716 000	1.3115	16 256	56 694 360
Japan	430 039 800	195.300	m	1.058307	17 823	m
Korea	179 539 000	528.289	m	1.346509	7 927	m
Mexico	738 897	1.585	143 207	2.191514	5 410	82 665 285
Netherlands	516 550	2.165	m	1.133778	15 962	14 892 574
New Zealand	72 248	1.609	m	1.106849	13 351	m
Norway	722 705	9.73	370 666	1.131835	17 511	4 233 116
Portugal	9 621 111	103.7	m	1.4283	9 372	9 919 680
Spain	50 436 200	110	21 565 007	1.31242	11 855	38 804 758
Sweden	1 359 879	9.34	826 307	1.259742	17 004	8 527 036
Switzerland	317 303	2.2	138 845	1.176379	21 241	6 673 850
Turkey	393 060 000	1 491	m	17.60521	4 690	m
United Kingdom	549 386	0.602	232 205	1.225501	15 846	57 455 778
United States	5 554 100	1.00	m	1.161155	22 224	m

EXPLANATIONS

Gross Domestic Product (GDP) refers to the producers' value of the gross outputs of resident producers, including distributive trades and transport, less the value of purchasers' intermediate consumption plus import duties. GDP is expressed in local money (in millions). For countries which provide this information for a reference year different from the calendar year (such as Australia and New Zealand) adjustments are made by linearly weighting their GDP between two adjacent national reference years to match the calendar year.

Purchasing Power Parity exchange rates (PPP) are the currency exchange rates that equalise the purchasing power of different currencies. This means that a given sum of money when converted into different currencies at the PPP rates, will buy the same basket of goods and services in all countries. In other words, PPPs are the rates of currency conversion which eliminate the differences in price levels among countries. Thus, when expenditure on GDP for different countries is converted into a common currency by means of PPPs, it is, in effect, expressed at the same set of international prices so that comparisons between countries reflect only differences in the volume of goods and services purchased.

Total public expenditure as used for the calculation of the education indicators corresponds to the sum of the following items (for details refer to "Accounts for General Government": Table 6, *National Accounts – Detailed Tables, Volume* II, OECD, Paris, 1995): Total public expenditure = Total current disbursements and net saving + (Capital: gross accumulation) Increase in stocks + (Capital: gross accumulation) Gross fixed capital formation + (Capital: gross accumulation) Purchases of land net + (Capital: gross accumulation) Purchases of intangible assets net + (Capital: gross accumulation) Capital transfers – (Capital: finance of gross accumulation) Net saving – (Capital: finance of gross accumulation) Capital transfers. Total public expenditure is expressed in local money (in millions).

The **adjustment factor** is used to shift the reference period for expenditure data from the national financial year to the calendar year 1995.

The **GDP per capita** is the Gross Domestic Product (in equivalent US dollars converted using PPPs) divided by the population.

The **Private Consumption Price Index (PCP)** measures the price changes of the vast number of goods and services purchased by households. The broad concept underlying the PCP is that it measures the purchasing power of money with respect to a fixed market basket of consumer goods and services. In this edition the base year of the PCP is 1990 and the time period to which the index refers is the calendar year 1995. The PCP is used as a price deflator to adjust the expenditure of 1990 to the price level of 1995 wherever expenditure of 1990 is used, except in table X2.2.

SOURCES

OECD countries (unless otherwise specified below)

- OECD *National Accounts*, June 1998.
- OECD Analytical Data Base, June 1998.

WEI Participants

- International Bank for Reconstruction and Development/The World Bank, The World Development Indicators 1998.

Czech Republic

- Total public expenditure: Statistical Yearbook of the Czech Republic.
- Population: CESTAT Statistical Bulletin, 1996-2.

Hungary

- Total public expenditure: CESTAT Statistical Bulletin, 1996-2.

Ireland

- Total Public Expenditure: Department of Education, Statistics Section.

Korea

- PPP: Estimated figures provided by the World Bank.

Mexico

- Total public expenditure: National Institute of Geographical and Computerised Statistics, Mexico.

Norway

- Total public expenditure: The Royal Norwegian Ministry of Education, Research and Church Affairs, Oslo.

Annex 3

SOURCES, METHODS AND TECHNICAL NOTES

This annex provides notes on the coverage of the indicators as well as on methods, sources and the interpretation of the indicators. It is organised by indicator. Only indicators requiring additional comment appear in this annex.

INDICATOR A1: EDUCATIONAL ATTAINMENT OF THE ADULT POPULATION

■ Notes on specific countries

Coverage

Australia: Some people who have gained upper secondary qualifications were previously coded at ISCED level 2. Through an improved coding system they are now coded at ISCED level 3.

Canada: ISCED 3 includes secondary school graduates and individuals with some post-secondary education who have not received a certificate/diploma.

France: The ISCED allocation was revised in 1996. The effect is a reduction of the number of people with upper secondary level qualifications and an increase of the number with lower secondary level qualification.

Germany: People who have not completed lower secondary education have now been classified to ISCED level 1. Most of these people are students in lower secondary education in the age-group 15 to 19 years, who have not yet completed compulsory full-time education (ISCED 2). In previous data collections most of these people have been classified as "Unknown".

Greece: Graduates with certificate of SELETE (teachers training school for vocational-technical education) have been reclassified from ISCED level 6 in 1995 to ISCED level 5 in 1996.

Hungary: Women on maternity leave are not included in the labour force. The retirement age for women is 55 years of age.

Italy: Upper secondary courses of at least 1 year duration are classified as ISCED level 3.

Spain: Conscripts are included in the total population but not in the labour force (which means that all conscripts are classified as "not in the labour force").

Sweden: The majority of those with "unknown" level of educational attainment are 16 years old, which means that in most cases they have educational qualifications at ISCED level 2. From 1996 onwards Sweden has included people in institutions (hospitals, prisons *etc.*) in the reported data. The change gives lower labour force participation rates, especially among people in the age-group 55-64 years of age with low or unknown educational qualifications.

Turkey: The armed forces are not included.

Sources

Argentina: Data on total population and labour force classified by age, sex and level of education from the 1991 Population Census was used and applied to the 1996 projections of both populations. INDEC, 1991 Population Census; INDEC, Population projections by sex and age: rural-urban and labour force (1990-2025); CELADE, Latin America Population by Calendar Years and Single Ages, Boletín Demográfico, No. 60.

Brazil: 1996 Population Collect IBGE – Instituto Brasileiro de Geografia e Estatística (National Bureau of Statistics), PNAD – Pesquisa Nacional por Amostra de Domicílio (Household Survey, 1995), Household Survey, excludes rural areas of Northern States, namely: Rondônia, Acre, Amazonas, Roraima, Pará and Amapá.

Indonesia: Survey of Intercenal Census, 1995.

Jordan: Department of Statistics, Census of Population & Housing 1994.

Malaysia: Labour Force Survey, 1996. Department of Statistics.

Sources

	Source	Reference year	Reference period for reported data	Frequency of data collections	Size of the sample	Primary sampling unit	Overall rate of non-reponse
Australia	Transition from Education to Work	1996	May 1996	Once per year	33 000 households	H	3.4%
Austria	Microcensus	1996	. .	Quarterly	60 000 persons	H	. .
Belgium	LFS	1996	May 1996	Once per year	32 400 households 80 300 individuals (65 700 25-64)	H	8%
Canada	LFS	1996	. .	Monthly	About 58 000 households	H	About 5%
Czech Republic	Labour Force Sample Survey	1996	September-November	Quarterly	28 000 households	H	Unknown
Denmark	*a)* Register of educational attainment of the population *b)* Register of labour force and unemployment	*a)* 1996 (Oct. 1995) *b)* 1996 (Nov. 1995)	. .	. .	. .	. .	. .
Finland	The Monthly Labour Force Survey	1996	. .	Monthly	About 12 000 persons per month	Individual	About 10%
France	LFS	1996	March 1996	Once per year	75 000 dwellings	H	0.07%
Germany	LFS	1996	22-28 April 1996	Once per year	0.45% of households	H	5% for questions on educational attainment
Greece	LFS (by the national statistical service)	1996	One week in the second quarter of the year	Once per year	A stratified method was used in a sample 1.5-3.55% of the total population	H	Nearly 2-3%
Hungary	LFS	1996	. .	Quarterly	50 288	Individual	. .
Ireland	LFS	1996	. .	One per year	45 877 households (all individuals in them)	H	0.06%
Italy	LFS	April 1996	. .	Quarterly	18 000	Municipalities and H	5%
Korea	Annual report on the economically active population survey	1996	. .	Monthly	34 000 households	H	. .
Luxembourg	LFS	1996	25-31 March 1997	Once per year	18 600 persons	H	20%
Netherlands	Labour Force Sample Survey	1996	. .	Monthly	About 1%	Address	About 40%
New Zealand	Household LFS	1996	September 1996 quarter	Monthly	32 000 people (16 000 private households)	H	0.1%
Norway	Labour Force Sample Survey	. .	. .	Monthly (published every quarter)	24 000 per quarter	Individual	About 10%
Poland	LFS	Nov. 1995	Week: 13-19 November	Quarterly	22 000	H	10.03%
Portugal	LFS	1996	. .	Quarterly	22 000 dwelling	Dwelling	About 20%
Spain	LFS						
Sweden	LFS	1996	. .	Monthly	About 18 000 each month (206 000 for the whole year)	Individual	13%
Switzerland	LFS	1996	2nd quarter	Once per year	19 317	H	15.8%
Turkey	Household LFS	1997	. .	2 or 3 per year	About 15 000 households in each period	H	About 10% = 1 500 households in each period
United Kingdom	LFS	1996	Spring quarter	Quarterly	Approximately 60 000 households	H	About 6% (16% for 1st contacts, 4% for the 4 follow-ups)
United States	Current Population Survey	1996	. .	Once per year	49 682 housing units which include about 130 467 people	H	. .

LFS = Labour Force Survey; H = Household.

Paraguay: Presidencia de la República. Secretaria Técnica de Planificación. Dirección General de Estadística, Encuestas y Censos. Encuesta de Hogares. 1996. Asunción, Paraguay, 1997. The survey of households 1996.

Philippines: National Statistics Office, 1995 Labour Force Survey.

Thailand: Labour Force Survey, average of trimesters February, May, August 1996.

Uruguay: Departamento de Estadística del Ministerio de Educación y Cultura y Oficinas Productoras del Sistema Method: Censo.

INDICATOR A2: INTERGENERATIONAL CHANGE IN COMPLETION OF TERTIARY EDUCATION

■ General notes

The analysis was undertaken by de Broucker, P. and Underwood, K. (1997), "An indicator of equity: The probability of attaining a post-secondary credential by the level of parents' education", Working Paper for Network B of the OECD INES project, Centre for Education Statistics, Statistics Canada, Ottawa.

■ Notes on specific countries

Germany: Data for Germany are based on the Socio-economic panel, a panel survey started in 1984, representative of persons older than 16.

INDICATOR A5: EXPECTED NUMBER OF YEARS IN EMPLOYMENT, UNEMPLOYMENT AND TIME OUTSIDE THE LABOUR MARKET

See also notes on Indicator A1.

■ General notes

Notes on methodology

The labour force survey estimate for a particular characteristic (employment, unemployment and outside the labour market), expressed as a proportion of the total population, can be interpreted in two ways. The employment/population ratio can serve as an example. One interpretation of this ratio is the standard one, namely the proportion of persons employed in the total population. A second interpretation is that it represents the proportion of time for which an average person is employed over the reference period. Thus if the employment/population ratio for the population 25-64 is 0.70 for a given year, one can say that a typical person is employed on average for 70 per cent of the weeks during a year. The age interval 25-64 covers 40 years. If one assumes that current labour market conditions remain unchanged, an average person aged 25 can then expect to work 40 times 0.70 or 28 years between his/her 25th and 65th years.

This is of course not an actual observed phenomenon, but nonetheless provides a useful indicator of possible time spent in employment over the life cycle under current labour market conditions. In practice, if the sizes of age cohorts differ significantly, the indicator will be distorted, with more weight being applied to the employment situation of larger cohorts. It is thus preferable to carry out the calculation by individual age and to sum over all ages. For example, in a particular year, if the employment/population ratio of persons aged 40 was 50 per cent, then, on average, 40 year-olds would be employed for six months in that year. The total expected years in employment is simply the sum of these calculations for persons of all ages. For this indicator, given data availability, the calculation has been done using age groups. Employment for each five-year age band is multiplied by five. Thus the estimate for five-year age groups is as follows: expected time in employment = Sum($5*(E_i/P_i)$), where E_i and P_i are the estimates of the number of persons employed and the number of persons in the population of age group i, and the sum is over all five-year age groups in the interval 25-64.

INDICATOR B1: EDUCATIONAL EXPENDITURE RELATIVE TO GROSS DOMESTIC PRODUCT

■ General notes

Notes on methodology

• *Reference period*

Statistics on educational expenditure relate to the calendar year 1995. GDP consumer price deflators from the OECD National Accounts database are used to adjust the data on expenditure where the national financial year does not coincide with the calendar year. In order to make this adjustment, the data on educational finance are multiplied by the ratio of GDP price levels between the calendar year for which data are published and those of the preceding calendar year, in proportion to the fraction of the national financial year that overlaps with the previous calendar year. The following two limitations of the use of such deflators should be recognised: *i*) The adjustments relate to changes in the general (GDP) price level but not to the price level for educational services. The assumption is made that educational costs are measured in terms of national income forgone so that a GDP price index is justified (the alternative would be to express costs in terms of volume of resources spent on education by means of a price index that is specific to the education sector). *ii*) No allowance has been made for real growth in educational expenditure (increases in excess of inflation or smaller increases) that might have taken place during the corresponding period of adjustment. It would only

be possible to take real growth into account retrospectively. Nevertheless, the adjustment for inflation does eliminate one significant source of non-comparability of expenditure figures.

For countries for which GDP is not reported for the calendar year, GDP is estimated as: w_{t-1} (GDP_{t-1}) + w_t (GDP_t) with w_t and w_{t-1} being the weights for the respective portions of the two calendar years.

• *Calculation of estimates in Charts* B1.4(B), (C) *and* (D)

Chart B1.4(B), (C) and (D) show shifts in educational expenditure that would be expected if participation by children in a country's education were at the OECD average level. The expected enrolment for a given country; is calculated as follows: let POP(*i*, *k*) be the population in country *i* at age *k* and AER(*k*, *l*) the OECD average enrolment rate at age *k* at level of education *l*. The expected enrolment is then calculated as $EE(i) = \sum_{k=5}^{29} POP(i, k) * AER(k, l)$. The expected difference in expenditure for country I at level *l*, as shown in Charts B1.4(B), (C) and (D), is calculated as A(*i*, *l*)*(EE(*i*, *l*)/RE(*i*, *l*)) – A(*i*, *l*), with RE(*i*, *l*) representing the observed enrolment at level *l* at country *i*. The OECD average enrolment rate is calculated using data from countries for which enrolment data by single year of age are available.

• *Calculation of index in Chart* B1.2, *Table* B1.2

Chart B1.2 and Table B1.2 show the change in expenditure for educational services between 1990 and 1995. All expenditure reported for 1990 was expressed in 1995 constant dollars, adjusted to the price level of 1995 using the private consumer price index (see Annex 2).

■ Notes on specific countries

Coverage

Australia: Educational expenditure excludes payments to private vocational education and training institutions; open learning courses; and payments to two private universities. Private expenditure for pre-primary institutions is not included.

Austria: Local government expenditure on private schools is excluded. Private payments other than to educational institutions and payments of private entities other than households are excluded. Some expenditure such as on conservatories, out-of-school educational activities for young persons, seminars for administrators, instruction of civil servants, further education of teachers, and libraries and adult education, is no longer taken into account. Expenditure classified as "not allocated by level" includes the main non-tertiary level scholarships, schoolbooks and free travel arrangements for students, and expenditure on adult and special education. Thirty per cent of private expenditure is not allocated by level. Over 25 per cent of the expenditure of government-dependent private institutions is "not allocated by level".

Belgium (Flemish): Research expenditure is included only if covered by funds provided by the Community authorities responsible for education. Research funds from other public and private sources are excluded. Transfers and payments to the private sector at the central government level include only scholarships and grants.

Canada: At the pre-primary, primary and secondary levels, central government transfers to the private sector are included in direct expenditure for public institutions. International payments direct to public educational institutions include only ISCED 6.

Czech Republic: Public expenditure on upper secondary and tertiary education includes estimates of child allowances, meals, accommodation, and transport subsidies. In some cases, the allocation of expenditure by level of education is estimated on the basis of enrolments. Data from the Ministry of Defence and the Ministry of Internal Affairs are not included.

Denmark: Expenditure on adult education programmes that are similar in content to programmes in the normal school system has been allocated to the corresponding level of education. Expenditure on other adult education programmes has been allocated to the upper secondary and tertiary levels of education. The allocation of expenditure on early childhood, primary and lower secondary education is estimated on the basis of the corresponding enrolments. Private payments to government-dependent institutions are excluded. Expenditure on early childhood education is slightly overestimated.

Finland: Government transfers and payments to private entities, except financial aid to students, are excluded. Ancillary services are *included* as current expenditure other than compensation of staff. Funds from foreign sources are not included. Local government expenditure also contains private expenditure.

At the upper secondary level, vocational institutes in the Åland Islands and combined school and work-based programmes are excluded. The distribution of expenditures in vocational and technical education is estimated at ISCED levels 3, 5 and 6. The estimation is based on the enrolment at these levels. The estimation method is programme-weighted, because there are significant differences between expenditures in different programmes. At pre-primary level a partial data on unit costs at this level have been used in estimation, and total expenditures have been classified according to the cost distribution of primary education.

At ISCED levels 6 and 7, the expenditures for universities (a major part of ISCED 67) refer to "expenditures of educational institutions" and not necessarily to "expenditures for education". Only expenditures in state's budget are included. In scholarships and other grants of central government for vocational education, the distribution between ISCED levels is estimated according to the enrolment at these levels. It does not include special subsidies such as reduced-price transportation. Private payments to public and government-dependent private institutions are included with local government expenditures. For scholarships and other grants at the local government level, at ISCED levels 0-2 there might be some education related local support for poor families. There is no data available on these benefits, but they are not significant. Payments to educational institutions are not included in household expenditure. Private scholarships and other grants are not included. Sixty-six per cent of all private expenditure is not allocated by level.

France: Expenditure "not allocated by level" includes expenditure on arts education. All separately identifiable R&D expenditure is excluded; however, compensation of university teaching staff (and other regular university staff) is included, a portion of which is attributable to research.

Germany: Expenditure on the following types of programmes/institutions is not included in total expenditure: colleges of nursing; agricultural training and research centres; training of trainee civil servants in public service; support payments for dependent children made to persons undergoing education/training; scholarships granted by private institutions; purchases of commodities and educational services by households. Payments by private households and other private entities to government-dependent institutions are *excluded*. Almost all expenditure on research performed by the higher education sector is included.

Greece: Private payments to independent private institutions are excluded. These institutions are completely privately funded and account for approx. 4 per cent of total enrolment in Greece. Payments to private entities are excluded. International payments to independent private institutions are excluded.

Hungary: Expenditure "not allocated by level" includes educational services provided by independent institutions in the fields of educational and psychological counselling, methodology and administration. Financial data for non-tertiary level education only include expenditure reported under educational budget categories, whereas data for tertiary-level education include all expenditure by tertiary institutions, whatever the budget category, *except* in the case of medical institutions of higher education. In addition, expenditure on early childhood education includes meals, expenditure on primary and lower secondary education includes student hostels and day-care in schools and meals, and expenditure on upper secondary education includes meals, hostels, and expenditure on work places for apprentices. Expenditure on government-dependent institutions is excluded.

Iceland: Expenditure by private entities other than households and all capital expenditure by or on private institutions are excluded. Funds from foreign sources are also excluded. Central payments to private institutions are not included for primary and secondary education. These payments are included in the total. Scholarships and loans to households and transfer to other private entities are not included. Household payments other than to educational institutions are excluded.

Ireland: Educational expenditure includes mainstream higher education research. Only household expenditure on the running costs of schools is included. Household expenditure on school transport, schoolbooks and other educational materials is excluded. Expenditure by private entities other than households is only included for tertiary education. As scholarships and other grants at upper secondary level, data in this category now include for the first time child benefit expenditure of £29.1m. in respect of students aged 16 and over who are in full-time education. Payments of other private entities are not included.

Italy: Expenditure not attributable by level, apart from expenses of the Ministry of Education and other ministries, includes: *i*) an estimation of expenditure of local bodies for school assistance; *ii*) an estimation of regional expenditure for the "right to study" at levels below tertiary; *iii*) international expenditure. Expenditure on private institutions at all levels of education except university only includes expenditure by public sources. Private expenditure on pre-primary education and on vocational training in higher education is not negligible. In upper secondary and non-university tertiary education, regional government transfers to other private entities are included as direct expenditure. Local transfers to the private sector in primary and secondary education are not included. Private payments other than to institutions are underestimated.

Japan: Expenditure for special training college, "Miscellaneous schools" and educational administration is not allocated by level. Expenditures for special education (ISCED 0, 1, 2, 3), textbooks (ISCED 1, 2), and student loans (ISCED 3, 5, 6, 7) are allocated to each level of education according to the number of students enrolled.

Expenditure for students loans is included in direct expenditure for educational institutions. Expenditure not related to school education, such as expenditure for culture, sports and social education is excluded where possible. Loan charges are not included. Expenditure for teachers and other personnel includes only full-time employees. Expenditure for part-time employees is included in current expenditure other than compensation of personnel.

Research expenditure includes expenditure for research institutes attached to universities, inter-university research institutes and grants-in-aid for Scientific Research (funded by Ministry of Education, Science, Sport and Culture) as well as higher education institutions. As to academic staff of hospitals attached to universities, their salary is included as educational expenditure rather than research. This is because they are highly involved in teaching not only at hospitals but also in medical courses of university.

About 5 per cent of total public expenditure on primary-secondary education and about 10 per cent of total expenditure on tertiary education cannot be divided between regional and local governments (prefectures and municipalities). They are included in regional governmental funds.

Korea: Expenditure "not allocated by level" includes expenditure by research institutes, non-educational organisations supporting educational activities, teacher training institutions and libraries, *but not* expenditure by central government or household expenditure on independent private institutions. For primary and lower secondary education, expenditure by the central government is excluded. Central government expenditure on primary and secondary schools affiliated to universities is included in tertiary-level expenditure. Compensation of "other educational, administrative, and professional staff" in public institutions of early childhood education is not included. Expenditure at the regional level of government on university-level education is excluded. Air & Correspondence University expenditure is excluded (the Open University which is a part-time public institution).

Luxembourg: Government transfers to the private sector are not included at ISCED levels 1, 3 and 5.

Mexico: Payments to independent private institutions only include tuition fees.

Netherlands: Allocation to the levels is estimated and often based on 1994 data. Expenditure for regional and local government are estimated based on expenditure for 1994. The distinction between expenditure for public institutions and government-dependent private institutions is often based on the number of pupils/students enrolled in the two categories.

New Zealand: Expenditure "not allocated by level" includes policy advice, management of contracts/administration of payments, provision and support of the curriculum, ministerial servicing, payment of salaries and allowances, provision of information, provision of housing for teachers and caretakers.

Norway: Expenditure on early childhood education in government-dependent institutions is included in expenditure on primary education.

Portugal: Regional transfers to the private sector are not included. Local and regional direct expenditure for educational institutions are not included. Transfers to the private sector in pre-primary education are not included.

Spain: Public expenditure on education is underestimated because contributions paid by employers for non-teaching staff are not included. Expenditure on research has been partially included. Some tertiary institutions have all R&D expenditure in their budgets; others have only general university funds and certain types of contracts. Expenditure by private entities other than households is only included for public tertiary education.

Payments to independent private institutions for tertiary education are underestimated because only payments by private entities to universities for R&D are included. Expenditure by private entities other than households on private institutions and scholarships is underestimated.

Sweden: Early childhood education at pre-schools and day-care centres from the age of three is included. Expenditure on the educational element *is* estimated. Expenditure on Folk High Schools and education run by the Labour Authority is excluded. Expenditure on all research performed in higher education institutions is included. Loans and grants at ISCED 0, 1 and 2 are not included in government expenditure. Household payments other than to educational institutions at ISCED 0, 1 and 2 are not included.

Switzerland: Funds from foreign sources for public institutions are not included.

Turkey: Foreign funds are not included for primary and secondary education. These payments are included in the total. Funds from international sources exclude tertiary level expenditure. Central government transfers and payments to other private entities are not included. Household payments to public and independent private institutions are not included.

United Kingdom: Expenditure on research and development is included. Funds originating in the public sector spent by households on tuition fees are included, *but not* amounts spent by households from their own resources. Expenditure in independent private institutions is excluded.

United States: All research expenditure is included, except funds for major federal R&D centres administered by universities. Government expenditure include transfers to the private sector that are channelled through institutions. Government transfers and payments to the private sector refer only to the tertiary level.

Argentina: Total expenditure for private educational institutions excludes expenditure of other private entities.

Brazil: Primary and lower secondary levels were drawn from the "fundamental" level of education (grades 1 to 8; primary 1-6 and lower secondary 7-8). Expenditure for each of these levels was estimated based on number of classrooms and/or teaching staff statutory salaries, according to the nature of the expenditure. Data not available by level of education were distributed among levels, for each level of government, by its prorate expenditure on pre-primary, "fundamental", upper secondary and tertiary education.

India: Total public subsidies to households and other private entities excludes payments from the local government. Total expenditure from both public and private sources for educational institutions excludes expenditure by other private entities.

Malaysia: Total public subsidies to households and other private entities excluding public subsidies for student living costs and total expenditure from both public and private sources for educational institutions excludes transfers and payments to other private entities. Private payments to educational institutions excluding public subsidies to households and other private entities exclude transfers and payments to other private entities and payments to public institutions by other private entities. Total expenditure from both public and private sources for educational institutions including funds from international sources and public subsidies to households excludes payments to public institutions by other private entities and funds from international agencies and other foreign sources.

Paraguay: Primary education includes pre-primary education expenditure.

Uruguay: Direct public expenditure to educational institutions includes only Central Government expenditure. Total expenditure from both public and private sources for educational institutions excludes private payments to independent private institutions and covers only central government expenditure.

Notes on methodology

Australia, New Zealand and **the United States** report educational expenditure and national account data for the period July to June. For these countries, the "calculated" ratio of national GDP price levels adjusts the expenditure data to the calendar year. GDP figures are adjusted by creating a weighted average for the two adjacent reference years.

Austria, **Belgium**, the **Czech Republic**, **Denmark**, **Finland**, **France**, **Germany**, **Hungary**, **Ireland**, **Italy**, **Korea**, **Mexico**, the **Netherlands**, **Norway**, **Poland**, the **Russian Federation**, **Spain**, **Sweden**, **Switzerland** and **Turkey** report both educational expenditure and national account data by calendar year. No adjustment is therefore needed.

Canada, **Japan** and the **United Kingdom** report educational expenditure for the period April to March.

Australia: Figures on expenditure by source are based on financial year data (July to June) provided by the Australian Bureau of Statistics. These data are supplemented with averaged calendar year data (provided by major educational organisations) to apportion total expenditure across ISCED levels and expenditure categories. The ISCED level data for the Technical and Further Education (TAFE) institutions are apportioned by expenditure item based on data supplied by the New South Wales TAFE and across ISCED levels according to student hours.

Finland: The distribution of expenditure by level of education in vocational and technical education institutions (ISCED levels 3, 5 and 6) is estimated on the basis of enrolments at these levels.

Hungary: Government expenditure on public institutions is estimated by subtracting the income from the expenditure of public institutions. Private payments to public institutions are taken as income of public institutions.

Italy: The expenditure of regional vocational education is distributed between upper secondary and non-university tertiary levels on the basis of students enrolled.

Mexico: The proportion of public financial aid to students that is attributable to household payments to educational institutions applies to federal public expenditure only. Private expenditure on independent private institutions is estimated. Expenditure by regional and local Government on public institutions by level of education is estimated.

Chile: The primary level in Chile extends from grades 1 to 8. To distribute educational expenditure between primary (1 to 6) and lower secondary (7 and 8) enrolment distribution data were used. The expenditure at the tertiary level of education does not include expenditure on research performed within tertiary-level institutions financed by public (other than the Ministry of Education) and private sponsors. Public subsidies to households that are not attributable to educational institutions does not include subsidies provided to students in kind such as a reduced price travel on public transport. Some of the data used for the calculation of finance indicators are estimated and preliminary.

Sources

1997 UNESCO/OECD/EUROSTAT (UOE) data collection on education statistics. National sources are:

Australia: Department of Employment, Education, Training and Youth Affairs, Higher Education Division, Canberra; Australian Bureau of Statistics, "Expenditure on Education Finance" collection; in the case of regional government expenditure, state government data (for public institutions) and school data (for private institutions) were used; "Collection of National Financial Data on Vocational Education and Training"; New South Wales Technical and Further Education, unpublished data.

Austria: Austrian Central Statistical Office, Vienna.

Belgium: Flemish Community: Ministry of the Flemish Community, Education Department, Brussels; French Community: Ministry of the French Community, Education, Research and Training Department, Brussels; German Community: Ministry of the German-speaking Community, Eupen.

Canada: Statistics Canada, Ottawa.

Czech Republic: Unpublished information from Ministry of Agriculture, Ministry of Health, Ministry of Economic Affairs and Ministry of Education.

Denmark: Ministry of Education, Department of Economic Affairs, Copenhagen.

Finland: Statistics Finland, Helsinki.

France: Ministry of National Education, Higher Education and Research, Directorate of Evaluation and Planning, Paris.

Germany: Federal Office of Statistics, Wiesbaden.

Greece: Ministry of National Education and Religious Affairs, Directorate of Investment Planning and Operational Research, Athens.

Hungary: Ministry of Culture and Education, Ministry of Finance, Central Statistical Office, Budapest.

Iceland: National Economics Institute, Reykjavik.

Ireland: Department of Education, Statistics Section, Dublin.

Italy: National Institute of Statistics (ISTAT), Rome; Ministry of Public Education, Statistical Service, Rome.

Japan: Ministry of Education, Science, Sports and Culture, Research and Statistics Planning Division, Tokyo.

Korea: Korean Educational Development Institute, Educational Information Research Centre, Seoul.

Mexico: Secretariat of Public Education.

Netherlands: Central Bureau for Statistics, Department for Statistics of Education, Voorburg; Ministry of Education and Science, Zoetermeer.

New Zealand: Ministry of Education, Wellington.

Norway: Statistical Central Office, Division for Population, Education and Regional Conditions, Kongsvinger; The Royal Norwegian Ministry of Education, Research and Church Affairs, Oslo.

Poland: Central Statistical Office, Republic of Poland, Warsaw.

Portugal: Ministry of Education, Office of Research and Planning, Department of Programming, Lisbon.

Spain: National Institute of Statistics, Sub-directorate General of Social Research and Statistics, Madrid; Ministry of Education, Planning and Statistical Office, Madrid; Ministry of Labour, Madrid.

Sweden: Swedish National Agency for Education (*Skolverket*), Stockholm; Swedish National Agency for Higher Education (*Hogskoleverket*); Statistics Sweden, Örebro.

Switzerland: Federal Statistical Office, Berne.

Turkey: State Institute of Statistics, Ankara.

United Kingdom: Department for Education and Employment, Darlington.

United States: Department of Education, Office of Educational Research and Improvement, National Centre for Education Statistics, Washington, D.C.

Argentina: Ministerio de Cultura y Educación de la Nación.

Brazil: MPO – Ministério do Planejamento e Orçamento – Ministry of Planning – IPEA/DIPOS – Instituto de Pesquisa Econômica Aplicada/Social Policy Bureau. Data were collected from Database of Management of Federal Finance & Budgetary Information Systems – SIAFI (Sistema de Administração Financeira do Governo Federal) & SIDOR (Sistema Integrado de Dados Orçamentários). Data for States and Municipalities were taken from Departamento de Contas Nacionais – DECNA (Office of National Accounting), Instituto Brasileiro de Geografia e Estatística – IBGE (National Bureau of Statistics). These data included only 39.94% of the total of Municipalities expenditure. Remaining data were not available by expenditure category. Total expenditure for Municipalities was gathered from STN – Secretaria do Tesouro Nacional – Federal Government Treasury Office. The expenditure categories for the remaining data were estimated from those. Expenditure for retirement/pensions for Regional (State) and Local (Municipalities) Government were estimated as a rate of the total of the personnel salaries. No separate data were available for compensation of teaching staff .

Chile: Government Expenditure: Ministry of Education, Chile. Private Expenditure: Central Bank, National Accounts.

China: Department of Planning and Construction and China National Institute for Educational Research.

India: Department of Education.

Indonesia: Ministry of Education and Culture.

Malaysia: Finance Division, Teacher Education Division, School Division, Scholarship Division, Higher Education Department, Royal Military College, Manpower Department, The Council of Trust for the Indigenous People (MARA) and KEMAS.

Paraguay: Ministerio de Educacion y Culto.

Philippines: General Appropriation Act, except for total household expenses which is from 1994 Family Income and Expenditure Survey, Data was adjusted for 1995.

Russian Federation: Centre for Science Research and Statistics, Moscow.

Thailand: Office of the National Education Commission.

Uruguay: ANEP y UNIVERSIDAD DE LA REPUBLICA.

INDICATOR B2: GOVERNMENT SUPPORT FOR EDUCATION AS A SHARE OF TOTAL PUBLIC EXPENDITURE

See also notes on Indicator B1.

■ General notes

Notes on methodology

• *Calculation of estimates in Chart* B2.1 (*bottom graph*)

The estimates in Chart B2.1 (bottom graph) are calculated as follows: let B(*i*) be the percentage of persons 5 to 29 years of age in the total population of country *i*, divided by the average percentage of 5 to 29 year-olds in all OECD countries for which data are available. Let A(*i*) be the expenditure on educational institutions as a percentage of total public expenditure in country *i*. The expected difference for country *i* shown in Chart B2.1 (bottom graph) is then calculated as A(*i*)/B(*i*) – A(*i*).

■ Notes on specific countries

Coverage

Belgium: Public subsidies to the private sector include scholarships only.

Mexico: Public subsidies to the private sector from regional governments are included as part of the direct expenditure on educational services.

Malaysia: Public subsidies to the private sector exclude transfers and payments to other private entities. Public and private sources of initial funds for educational institutions exclude transfers and payments to other private entities from regional governments and payments to public institutions by other private entities..

Paraguay: Primary education includes pre-primary education expenditure.

Thailand: Public expenditure on education as a percentage of total public expenditure by level of education for direct public expenditure for educational services includes only public institutions.

Uruguay: Direct public expenditure for educational services on education as a percentage of total public expenditure by level of education includes only central government expenditure. Public and private sources of initial and final funds for educational institutions exclude private payments to independent private institutions and include only central government expenditure. The proportion of public expenditure on public and private educational institutions includes only Central Government expenditure.

Sources

See Indicator B1.

INDICATOR B3: RELATIVE SHARES OF PUBLIC AND PRIVATE INVESTMENTS

■ General notes

Notes on methodology

Initial public spending includes both direct public expenditure on educational institutions and transfers to the private sector. Initial private spending includes tuition fees and other student or household payments to educational institutions, less the portion of such payments offset by public subsidies. The final public and private portions are the percentages of education funds spent directly by public and private purchasers of educational services. Final public spending includes direct public purchases of educational resources and payments to educational institutions, but excludes transfers to households and other private entities. Final private spending includes tuition fees and other private payments to educational institutions (whether or not offset by public subsidies). Direct household purchases of educational goods and services are excluded from the main calculations of initial and final portions of expenditure.

■ Notes on specific countries

See notes on Indicators B1 *and* B2.

INDICATOR B4: EDUCATIONAL EXPENDITURE PER STUDENT

See also notes on Indicator B1.

■ General notes

Notes on methodology

• *Reference period*

Indicator B4 refers to the calendar year 1995. For countries for which the financial year and/or the school year does not match the calendar year, corresponding adjustments are made. The size of the overall adjustment is minimised by adjusting either the enrolment or the financial data, as appropriate, to accord with the calendar year. For countries in which the financial year closely matches the calendar year but for which the school year is different from the calendar year, the enrolment data are weighted to match the calendar year. For countries in which the school year closely matches the calendar year but in which the financial year is different from the calendar year, the enrolment data remain unchanged but the GDP price deflators mentioned under B1 are used to match the financial data to the calendar year. For countries in which neither the school year nor the financial year matches the calendar year, the enrolment data are weighted to match the financial year and afterwards the above-mentioned GDP price deflators are used to adjust the financial year data to accord with the calendar year.

• *Influence of* R&D *expenditure on tertiary education expenditure*

Comparisons of expenditure on tertiary education, especially per tertiary student, can be misleading because the figures for universities and other tertiary institutions include substantial expenditure on research. The research share of total tertiary spending varies between countries, partly because of differences in the proportion of total national research and development (R&D) performed by the higher education sector.

Another reason why research spending distorts comparison of expenditure per tertiary student is that research outlays have not been included to the same extent in the tertiary expenditure figures of all countries. For example, while some countries have excluded separately funded or separately budgeted research, others, such as Hungary and Sweden, have essentially included all research outlays by institutions of higher education in their tertiary expenditure statistics.

A comparison of expenditure per student including and excluding R&D for selected countries is shown in Annex 3 of the 1995 edition of *Education at a Glance*. The results shown there indicate that research spending accounts for a significant portion of total expenditure on tertiary education. They also show that there is wide variation in the estimated research share of total tertiary expenditure. For the handful of countries that were covered by this comparison, the subtraction of R&D expenditure from tertiary education expenditure reduced the estimated expenditure per student by amounts ranging from 14 to 37 per cent.

It follows that international differences in spending per tertiary student shown in this indicator, and in spending on tertiary education as a percentage of GDP shown in Indicator B1, partly reflect differences between countries in the research roles of institutions of higher education. The spending differences do not necessarily reflect differences in the amounts spent per student to support the teaching functions of tertiary institutions.

• *Estimation of unit costs using the approximation formula*

The estimates of cumulative expenditure on education over the average duration of tertiary studies were obtained by multiplying annual expenditure per student by an estimate of the average duration of tertiary studies. Using the approximation formula, the latter estimate was approximated by the rate of turnover of the existing stock of enrolments, obtained through the ratio of flow data (entrants and leavers) to the corresponding numbers of students enrolled. The formula $D = (S_{t-1} + S_t)/(Z_t + A_t)$ was used for this calculation, where S_t is the number of students enrolled at the end of year t, S_{t-1} is the number of students at the beginning of year t (approximated by the number of students enrolled at the end of the preceding school year), Z_t is the number of students who are in their first year of study in year t, and A_t is the number of leavers in the school year t (approximated by $S_{t-1} + Z_t - S_t$). Full-time equivalents have been used to estimate enrolments. The number of entrants to full-time programmes has been used to estimate the inflow. All participants are included, even those who will eventually not obtain a degree.

The estimate is based on a number of simplifying assumptions: first, it is assumed that transition ratios are constant over time. Secondly, expenditure for the current reference year is assumed to be representative for the total duration of studies. OECD trend data indicate that real expenditure per student is fairly constant.

• *Estimation of unit costs using the chain method*

The estimates of cumulative expenditure on education over the average duration of tertiary studies are obtained by multiplying annual expenditure per student by an estimate of the average duration of tertiary studies. Using the chain method, the duration of study is defined as the sum of the probabilities, for each year of study, that a student who has entered tertiary education will still be enrolled in that year of study. So the duration is defined as $D = \sum_{i=1}^{n} q_i$, where q_i is the probability that a student will reach the *i*-th year of study, *i.e.*, the proportion of individuals in the *i*-th year of study relative to those studying in the first year *i*-1 years before. With the chain method all conditional probabilities are derived from data of two adjacent years, the reference year and the preceding year. Given the number of students *s* in the year *i* of study for the year *t* and the number of students in the year *i*-1 of study for the year *t*-1 the transition rates can be calculated for each year of study as $a_{i,t} = s_{i,t}/s_{i-1,t-1}$. The transition rates give, for each year of study, the probability that a student from year *i*-1 will continue studying in year *i*. The product of all transition rates 1 to *i* gives the probability, for year *i* of study, that a student who started *i*-1 years before will still be enrolled in year *i* of study. Finally, the sum of all conditional probabilities gives an estimate of the average duration of tertiary education. Expenditure for the current reference year is assumed to be representative of the total duration of studies.

■ Notes on specific countries

Coverage

Finland: Figures for the pre-primary level include day care and pre-school education as well as meals provided for 3-6 year-olds in day-care centres, generally 8 to 10 hours a day, five days a week. All funds outside the budget of central government are excluded from the figures for the expenditure on universities at ISCED level 6.

Spain: For financial data, students in open universities have been considered part-time students. Financial data for private institutions at ISCED level 6 only include university institutions.

Malaysia: All tertiary and university level tertiary excludes current expenditure other than compensation of personnel for university level tertiary.

Paraguay: Primary education includes pre-primary education expenditure.

• *Estimation of the duration of tertiary education calculated using the chain method*

Canada: The 6th year of study includes the 7th, 8th, 9th and 10th year of study.

Germany: The model for the calculation of the average duration of tertiary studies is nationally modified. Students beyond the 10th year of study were not taken fully into consideration. Students in the 10th year of study or beyond amounted to around 10 per cent of the total enrolment in the academic year 1994/95. The reported duration in the case of Germany is a lower boundary of the total duration and most likely underestimated. In general, non-university tertiary education has a duration of 2 years, but part-time courses take up to 4 years. No distinction is made between part-time and full-time studies at the university level.

Greece: The 5th year of study includes the 6th year and beyond.

Italy: For non-university education the maximum duration of study is only 4 years. Part-time is not applicable.

Korea: The maximum duration of non-university education is 3 years. The 6th and 8th years and beyond are included in the 7th year of study.

Russian Federation: Data on part-time enrolments are not included.

United Kingdom: The chain method has been amended slightly in order to be able to use the available UK data. Average durations have been calculated separately using the chain method described above, for each of the main types of course at tertiary level. To take account of the fact that many students go on to take a further course after their initial courses, these figures have then been combined according to the numbers of students following each of the main pathways at tertiary level. The total average durations shown for university and all tertiary levels are therefore weighted averages of the individual average duration for each type of course. Coverage excludes those studying in further education institutions, though these account for less than 10 per cent of all students at the tertiary level.

Notes on interpretation

Denmark: Expenditure on early childhood education is slightly overestimated.

Germany: The coverage of the financial data has changed between 1990 and 1995. Applying the same coverage as used in 1990 would change expenditure per student in 1995 to: US$3 505 for pre-primary education, US$6 543 for secondary education and US$8 108 for university-level education.

Spain: Differently from earlier editions of *Education at a Glance*, data on enrolment at the tertiary level are adjusted to full-time equivalents. This is also done for data for the academic year 1990.

Switzerland: Expenditure per student is very high at the university level. This is mainly due to the structure of the university system: a high number of universities in relation to the size of the country (due also to the coverage of three language regions), the small size of some universities, a wide range of provision at each university, and relatively low student/teaching staff ratios. Furthermore, teachers' salaries at university level are comparatively high, and university expenditure also includes expenditure on research and development.

Notes on methodology

Denmark: Kindergartens, all receiving substantial public subsidies, are classified as public institutions.

Hungary: The separation of financial statistics for primary and lower secondary education is estimated from the numbers of students enrolled.

Sweden: Only children 3 years and older in early childhood education institutions are included. Expenditure on primary and lower secondary education (*grundskola*) is not available separately. The breakdown between these levels is estimated from teachers' salaries and the numbers of teaching periods. The breakdown of expenditure on special education at primary, lower and upper secondary levels, and on municipal adult education, is also estimated. Students in municipal adult education have been converted to full-time equivalents at primary, lower and upper secondary education according to the type of course they attend. Full-time equivalents for students in tertiary education have been calculated according to the registered course load (as a percentage of a full-time course load). In the last edition of *Education at a Glance*, data for this calculation were not available and all students were counted as full-time.

Sources

See Indicator B1.

INDICATOR B5: EDUCATIONAL EXPENDITURE BY RESOURCE CATEGORY

See also notes on Indicator B1.

■ Notes on specific countries

Coverage

Canada: Current expenditure in independent private institutions at ISCED 5 includes capital expenditure.

Finland: Capital expenditure of public vocational schools is mostly estimated. Capital expenditure of government-dependent private institutions is estimated.

Ireland, Korea, Sweden: Data on expenditure by resource category refer to expenditure on public institutions *only*, but the figures on average staff and teacher compensation per student have been estimated on the basis of expenditure per student in both public and private institutions.

Germany: Average compensation per student is underestimated in this indicator. Some payments which are included in the calculation of Indicator B4 cannot be broken down by resource category.

Malaysia: Current expenditure as a percentage of total expenditure and capital expenditure as a percentage of total expenditure includes only public institutions. Compensation of teachers, other staff and all staff as a percentage of total current expenditure excludes university-level expenditure in independent private institutions.

Paraguay: Primary education includes pre-primary education expenditure. Educational expenditure by resource category excludes independent private institutions.

Uruguay: Educational expenditure for independent private institutions is excluded.

Sources

See Indicator B1.

INDICATOR B6: PUBLIC FUNDS BY LEVEL OF GOVERNMENT

See also notes on Indicator B1.

■ General notes

Notes on methodology

See also notes on Indicator B5.

Table B6.2 shows the distribution of public expenditure across public and private educational institutions. Since this shows only the proportion of public funds spent on private institutions and does not include private funds, this table gives no indication of the total distribution of private and public educational expenditure. This can be found in Indicator B3.

■ Notes on specific countries

Coverage

Japan: Expenditure by prefectures and municipalities (regional and local funds) cannot be reported separately.

United States: Transfers from regional to local governments for tertiary education are excluded.

Notes on methodology

Hungary: Regional governments (counties) and municipalities have been regarded as local government agencies because regional governments have no significant redistribute role: they provide services which are not provided by municipalities in the region.

Greece: Regional transfers are excluded.

Sources

See Indicator B1.

INDICATOR B7: RATIO OF STUDENTS TO TEACHING STAFF

■ Notes on specific countries

Coverage

Australia: Teaching staff includes some principals, deputy principals and senior teachers who are mainly involved in administration. Teachers in tertiary non-university education are excluded.

Austria: Teaching staff includes head teachers without teaching duties. The share of part-time teachers used for the calculation of full-time equivalents is partly estimated. One part-time teacher is assumed to correspond to 0.5 full-time equivalents.

Czech Republic: Full-time equivalents were estimated according to data from 1996 (ratio estimators).

Denmark: Teaching staff includes principals and deputy principals. Adult education is excluded.

Finland: The full-time/part-time division is not available for educational personnel in the private sector. All staff in the private sector is coded to be full-time. Teachers at ISCED 1 are included with teachers in general programmes at ISCED 2. Teachers of vocational and technical programmes at ISCED 3 include teachers in all vocational and technical programmes, also teachers at ISCED levels 5 and 6.

Germany: Data on teachers of the work-based component of combined school and work-based programmes (dual system) are not available.

Greece: Figures are underestimated because part-time teachers in early childhood and primary institutions are not included. Secondary part-time teachers in private institutions are also excluded.

Japan: Teaching staff includes principals and deputy principals.

Iceland: Part-time students are excluded from the calculation. The number of part-time students is negligible (less than 100).

Ireland: Teaching staff are allocated to ISCED levels 0 and 1 according to student numbers in these levels. Teachers in special schools are allocated to ISCED levels 0, 1, and 9 according to the allocation of pupil numbers in these schools by ISCED level. For the most part data on the head count of part-time teachers is estimated on the basis of data for the full-time equivalent of part-time teachers. This is likely to underestimate the number of female part-time teachers.

Italy: Data on teachers in private vocational programmes at ISCED 5 are missing.

Netherlands: Teaching staff includes principals and deputy principals.

Norway: Teaching staff includes principals and head teachers. Full time equivalents for students in tertiary education are calculated based on the assumption that the average study load for part-time students is 50 per cent of a full-time study load. In the 1996 edition of *Education at a Glance* all students were counted as full-time students.

Spain: Teachers in adult education programmes at primary and secondary levels are excluded. The breakdown between primary teachers and lower secondary teachers is estimated.

Sweden: For primary, lower and upper secondary education, not only teachers in ordinary comprehensive schools are included (*grundskola* and *gymnasieskola*), but also teachers in municipal adult education and in special education for severely handicapped and mentally retarded students. Figures for teachers broken down by level of education are estimates.

Switzerland: For university-level education, only teachers paid from the regular budget are included, while those paid from external sources are excluded (200-300 persons, 100-150 in full-time equivalents). Primary and lower secondary teaching staff includes only public institutions.

United Kingdom: Teachers in independent upper secondary vocational education are excluded.

Brazil: All personnel were considered full-time.

Chile: Teachers are pro-rated between the different types of institutions in which they work, according to the number of contract hours. A full-time contract is 30 hours per week. Staff who worked less than 27 hours per week were counted as part-time.

India: Data for teachers in lower secondary education relates to middle schools only.

Thailand: In pre-primary, primary, secondary and non-university education, most schools cover more than one level of education, so that exact numbers of teachers at each level are not known. These have been estimated according to the numbers of students under

the care of relevant authorities. Some full-time teachers also teach part-time. Teaching staff in Open universities are not allocated by level. These staff are part-time teachers and the conversion factor for the estimation of full-time-equivalents was 0.9.

Uruguay: Data on teaching staff in private institutions are available for tertiary education only.

Notes on interpretation

Germany: Data on full-time-equivalent teachers in tertiary education are not available at the moment. In view of the large number of staff in colleges of health at ISCED 5 who are not included, as well as temporary lecturers at universities, calculation using a provisional full-time equivalent coefficient for part-time teachers would lead to significant distortions.

Iceland: Many full-time teachers work extra hours, a common practice in Iceland to increase the salary. Consequently the number of full-time equivalents can exceed the head counts.

Turkey: Open distance education is included in non-university education.

Switzerland: Teachers at the university level are not only involved in teaching, but also in research activities and services, in the following estimated proportions: teaching: 40-45 per cent; research and development: 35-40 per cent; services and other activities: 15-25 per cent.

United Kingdom: Teachers and pupils in independent upper secondary vocational education and nursing and paramedical establishments are excluded.

Notes on methodology

Denmark: Most figures are estimates. Not all teachers in non-university education and not all teachers doing research at the university level are included.

France: The number of teachers in private tertiary institutions and in independent private secondary institutions are estimates.

Germany: Since data on teachers of the work-based component of combined school and work-based programmes are not available, full-time students in combined school and work-based programmes are counted as part-time students (with a conversion factor of 0.4) for the calculation of the student/teacher ratio.

New Zealand: In primary and secondary education, most schools cover more than one level of education, so that exact numbers of teachers at each level are not known. These have been estimated according to the number of students.

Spain: The distribution by educational level of teachers who teach more than one level of education is estimated.

Argentina: Data were provided as an adjustment of 1994 data to year 1996: The number of students in 1994 at each level of education was divided by the number of full-time equivalent teachers in 1994 at the same level to establish a student/teacher ratio for each level. The same ratios were assumed for 1996. The number of students in 1996 at each level divided by the respective student/teacher ratio of 1994 establishes the number of full-time equivalent teachers in 1996 at that particular level.

Brazil: No data on part-time teachers are available; they were all considered as full-time. Distribution of teachers for the "fundamental" level of education between primary and lower secondary was estimated according to the number of classrooms. FTE teachers from pre-primary to upper secondary were estimated from the number of classrooms for each of these levels.

India: All teachers were counted as full-time. School principals and headmasters are included in counts of teachers.

Sources

See Indicator B1.

Argentina: Ministerio de Cultura y Educación de la Nación, Dirección Red Federal de Información Educativa, 1994 School Census and 1996 School Census.

Brazil: MEC – Ministério da Educação e do Desporto (Ministry of Education and Sports), INEP – Instituto Nacional de Estudos e Pesquisas Educacionais (National Institute for Educational Studies and Research) – SEEC – Diretoria de Informações e Estatísticas Educacionais (Office for Educational Information and Statistics) – 1996 School Census/Tertiary Education Census. CAPES – Fundação Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (Coordination for the Improvement of Higher Education Personnel) for Master's and Ph.D. programmes.

Chile: Teacher's database of the Ministry of Education.

China: Educational Statistical Yearbook of China, 1996.

Indonesia: School Statistics, 1995.

Jordan: MOE and MOHE statistical data and data from private institutions. Survey of academic year 1995/96.

Malaysia: Educational Planning and Research Division, Teacher Education Division, Polytechnic Administrative Division, Private Education Division, School Division, Scholarship Division, Higher Education Department, Royal Military College, Manpower Department, The Council of Trust for the Indigenous People (MARA), and KEMAS.

Paraguay: Statistical database 1996, Estadística Educativa Anuario 1996. Dirección de Planificación, Estadística e Información Educativa. Annual Census.

Philippines: DECS Statistical Bulletin Method: Census Enumeration.

Uruguay: Departamento de Estadística del Ministerio de Educación y Cultura y Oficinas Productoras del Sistema.

INDICATOR C1: OVERALL PARTICIPATION IN FORMAL EDUCATION

■ General notes

Notes on methodology

Statistics which relate participation data to population data are published for the reference date that was used by national authorities for these statistics. The assumption is made that age references in the enrolment data refer to 1 January of the reference year. Population data are, where necessary, linearly interpolated to 1 January as the reference date (which for most countries is a good proxy for the mid-point of the school year) except for **Australia** and **Korea**, where 1 July is used as the reference date for both enrolments and population data.

The dates or periods at which students, educational staff and educational institutions were counted have not been provided to the Secretariat by all countries. Some countries collect these statistics through surveys or administrative records at the beginning of the school year while others collect them during the school year, and yet others at the end of the school year or at multiple points during the school year. It should be noted that differences in the reference dates between, for example, enrolment data and population data can lead to errors in the calculation (*e.g.* net enrolment rates exceeding 100 per cent) in cases where there is a significant decrease or increase over time in any of the variables involved. If the reference date for students' ages used in the enrolment data differs from the reference date for the population data (usually 1 January of the reference year), this can be a further source of error in enrolment rates.

Participation rates are based on head counts of enrolments and do not differentiate between full-time and part-time enrolments.

Participation rates shown in Table C1.1*a* are measured as the number of students aged 5 and over enrolled in public and private education per 100 persons in the population aged 5 to 29. The numerator of this rate includes students aged 5 years and older (even older than 29 years), but excludes students aged 4 and younger.

■ Notes on specific countries

Coverage

Australia: Private vocational education and some government-funded "Industry Training Institutions" for vocational education are not included. Students participating in Open Learning Courses and two private universities are excluded. The vocational education and training sector recording system does not separately identify apprentices so that apprentices are counted as part-time students rather than full-time. Pre-primary enrolment is not included when males and females are reported separately. It is assumed that the overwhelming majority at the pre-primary level would meet the full-time criteria.

Austria: Non-university level students aged 30 and older are counted as aged 25-29. They represent less than 5 per cent of students aged 30-39.

Austria, **Germany**, **Norway**, **Spain:** Figures for government-dependent private institutions also include some independent private institutions.

Belgium: Data concerning entrepreneurship training courses are not included for the Flemish Community. Data for independent private institutions are not available. Since institutions of this type are not very numerous, data for all types of institution are only slightly underestimated.

Denmark: Kindergartens and "age-integrated" institutions are classified as public institutions. Although one-third of these are nationally referred to as private institutions, they are mainly publicly controlled and managed, and the fees paid by parents are the same. Adult education is excluded.

Finland: Students are not classified into full-time and part-time students on the basis of their study activities.

France: Work-based programmes at the non-university tertiary level are not included.

Germany: Students pursuing doctoral studies are not obliged to register at university and it is not possible to estimate their number.

Hungary: Disabled students have been included in the figures for the primary and lower secondary level of education. The number of girls in each year cohort at ISCED level 0 is estimated from the total number of girls in ISCED level 0 and the number of ISCED level 0 pupils by age.

At the university level, students by age-group are estimated. The distribution of students aged 26-29 by single year is estimated. At ISCED 7 level, data by age are available only for Ph.D. students. For students in post-graduate second cycle non-Ph.D. courses no data are available by age, therefore these are reported as 30 years and over.

Iceland: Part-time students are excluded except at the pre-primary level.

Ireland: Nursing students who follow a type of dual training with education and training taking place in hospital only are excluded. Most but not all adult education is excluded. Adult education includes part-time studies at ISCED 3, 5, and 6, undertaken by persons returning to education after an interruption of some years. Not all pre-primary enrolments are included because data are not collected from many privately-owned pre-schools. Persons aged 13 or more in special schools are not allocated by level. Coverage of part-time enrolment data is uneven. Omitted are many part-time students in indepently private colleges at ISCED levels 3, 5, and 6. Only full-session part-time students (doing courses lasting approximately the full year) have been included in the data.

Italy: ISCED 5 level data for private institutions is missing.

Japan: Estimate figures are provided for enrolment by age in primary and secondary education on the assumption that all students at the same grade are the same age. Part-time enrolment at the upper secondary level includes students of correspondence courses of upper secondary schools. A part-time student equals one full-time equivalent at this level. Part-time students at the tertiary level include students of correspondence courses of universities (including the University of the Air) and auditors of any type of colleges. A part-time student equals 0.5 full-time equivalents. Special Training Colleges (general course) and Miscellaneous Schools (there is no entrance requirement for these schools/courses) are not allocated by level.

Mexico: The enrolment corresponding to programs for adult education (2 752 175 students); special needs education (312 325 students); childhood education (436 803 children) and some other programs, cannot be divided according to the UOE requirements (*e.g.* by age, sex, *etc.*). For this reason, those students were not included.

Netherlands: Only educational programmes with a theoretical duration of more than 12 months are included.

New Zealand: Two-year-olds in child care centres are included.

Portugal: Enrolments for Madeira and Azores are not included.

Spain: Students in adult education programmes at primary and secondary level are excluded.

Sweden: At the primary and secondary levels, adult students are not specified by age, and at the secondary level adult students are not specified by type of programme (general *vs.* vocational).

Switzerland: Students aged 40 and older are included in the age group 30-39.

United Kingdom: Data on vocational programmes at upper secondary level in independent private institutions are *not available*. Their number is quite small but not negligible.

Brazil: No data are available for part-time students. These data are relevant mainly for tertiary education. All students were considered as full-time.

Chile: Data include special and adult education as well as pre-primary education that depends on JUNJI and INTEGRA, two institutions that are independent from the Ministry of Education. Enrolments by grade for primary and lower secondary level include only regular education. Upper secondary enrolment includes regular and adult education in general programmes. Special education is excluded. No age distributions are available for enrolment at tertiary levels.

India: Includes students in formal schooling only. No age distributions of student enrolment are available.

Indonesia: Students and personnel in Islamic schools are excluded. Adult education is an evening activity and individuals study on part-time basis: this data were not included. No data are available for university second stage programmes.

Jordan: Special education is included, adult education is not included. Adult education similar to basic education is negligible. Enrolments in schools administered by ministries other than of education are included; however, no financial information for these schools was provided. Higher education enrolment statistics do not include a classification of students by age. The principal entry age is 18.

Malaysia: Data on new entrants, graduates and personnel are for public and government-dependent institutions only. Malaysia does not have provision for compulsory education, but it provides for 11 years of universal education.

Paraguay: Data at the primary level include special education and basic education for adults. Pre-primary education in private institutions includes special education, though no age distribution is available. Enrolments at university level are reported for two public universities. There are private universities with negligible enrolment.

Russian Federation: Data refer to public institutions only. Adult education is all part-time evening education and it is not included in the data.

Thailand: Data from the Department of Non-Formal Education are included though no age distribution was available.

Notes on interpretation

Japan, Mexico: Net enrolment rates exceed 100 for some ages because there are different reference dates for school enrolment and demographic data.

New Zealand: The 5-14 year-old participation rate is over 100 because of a census undercount. Education in New Zealand is compulsory from 6 to 16 years of age, and all 5 year-olds attend school or pre-school. There is a significant decrease in the number reported for upper secondary students aged 19 and 20. For 1995 all students studying through Industry Training Organisations (ITOs) were included in the statistics; however, in 1996 only those ITO students that were attending educational institutions were included.

Spain: From this school year onwards the length of primary school is six years instead of five years. The length of lower secondary education has been considered two years, but it will be four when the new system has been implemented in this level. Students in adult education programmes are excluded. Net enrolment rates exceed 100 in some cases. The reason lies partly in the nature of the population forecasts by the National Institute of Statistics, and partly in a possible over-reporting of enrolments by schools.

Malaysia: Enrolments in government-dependent private institutions are included in public institutions.

Russian Federation: All students at tertiary level were considered full-time although some might take less study load than required for full-time enrolment.

Notes on methodology

Czech Republic: All data on enrolments by age are estimates. The so-called "extraordinary students" (studying only some courses) are classified as part-time students. Adult students are classified as full-time students, since they follow the same curriculum and take the same examinations as other students.

Denmark: All ordinary formal education is classified as full-time education.

Mexico: Figures broken down by age are estimates for tertiary education.

Norway: Figures broken down by age are estimates for primary and lower secondary education.

United States: No distinction is made between full-time and part-time students in upper secondary education.

Argentina: The age distribution for ISCED 0, 1, 2, 3 was estimated from the 1997 School Census, for ISCED 5 from the 1991 Population Census and for ISCED 6 in public institutions from the 1994 University Census. Data from ISCED 6 private institutions were obtained from the 1996 Yearbook.

Brazil: Enrolment data were distributed by age and sex according to the 1996 IBGE collection.

China: For the pre-primary, upper secondary and tertiary levels of education the age distribution was estimated. In lower secondary education a large proportion of students were part-time vocational students for which the age distribution was also estimated.

India: Provisional enrolment data for 1995-96 were used to provide total enrolments for primary and secondary education, broken down by grade and sex. The distribution of enrolments in general and vocational upper secondary programmes and enrolments in public and private institutions were estimated based on 1992-93 data. No enrolment data were available for the tertiary level. No age distributions by single year of age were available. Conversion factor for part-time students in primary programmes was assumed 0.25. No data for part-time tertiary students were available.

Thailand: Data were available by sex and by age in schools under the authority of ONPEC, which is the majority of students in pre-primary and primary education. For other schools operated by the Bureau of Local Authorities and the Bangkok Metropolitan Authority, enrolments by age were estimated. For students at all other schools, it was assumed that they are at the theoretical age for the grade. All students were counted as full-time.

Sources

For OECD *countries see Indicator* B1.

Argentina: Ministerio de Cultura y Educación de la Nación-MCE, Dirección Red Federal de Información Educativa, 1996 and 1997 School Censuses; MCE, Sistema de Información Universitario, 1994 University Census and 1996 Yearbook; INDEC, 1991 Population Census.

Brazil: 1996 School Census/University Census. Ministério da Educação e do Desporto (Ministry of Education and Sports), Instituto Nacional de Estudos e Pesquisas Educacionais (National Institute for Educational Studies and Research) Diretoria de Informações e Estatísticas Educacionais (Office for Educational Information and Statistics) – 1996 School Census/Tertiary Education Census. Fundação Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (Co-ordination for the Improvement of Higher Education Personnel) for Master's and Ph.D. programmes.

Chile: Enrolment database, Ministry of Education.

China: Educational Statistics Yearbook of China, 1996 People's Education Press.

India: Ministry of Human Resource Development, Department of Education.

Indonesia: School Statistics, 1995, Ministry of Education and Culture.

Jordan: Survey of academic year 1995/96. Ministry of Education and Ministry of Higher Education statistical data and data from private institutions.

Malaysia: Educational Planning and Research Division, Teacher Education Division, Polytechnic Administrative Division, Private Education Division, School Division, Higher Education Department, Royal Military College, Manpower Department, The Council of Trust for the Indigenous People (MARA), and KEMAS.

Paraguay: Statistical database 1996, Estadística Educativa Anuario 1996. Dirección de Planificación, Estadística e Información Educativa. Database year 1996. División de Planificación de la Universidad Nacional de Asunción. Statistical database 1996 Universidad Católica de Asunción.

Philippines: DECS Statistical Bulletin, Census Enumeration.

Russian Federation: Institute of Higher Education.

Thailand: Ministry of Education, Department of Non-formal Education, Vocational Training Center and Vocational Training Schools (Short-course Training) under the department of Community Development of Bangkok Metropolitan Administration, the Department of Vocational Education (Short-course training), office of Private Education Commission (Non-formal Education), Rajabhat Institutes (Evening Class), the Open Universities (Sukhothai Thammathirat and Ramkhamhaeng Open Universities under the Ministry of University Affairs), Religious Affairs Department (the Dharma and Pali Teachings).

Uruguay: Departamento de Estadística del Ministerio de Educación y Cultura y Oficinas Productoras del Sistema.

INDICATOR C2: PARTICIPATION IN AND COMPLETION OF SECONDARY EDUCATION

■ General notes

Notes on methodology

Graduation rates from general and vocational programmes do not always exactly add up to the total, largely because of differences in the underlying typical ages of graduation.

Typical graduation ages are shown in Annex 1.

See also notes on Indicator C1.

■ Notes on specific countries

Coverage

Australia, Chile, Czech Republic, **Denmark**, **Hungary**, **Ireland, Japan, Norway, Spain:** *See notes on Indicator C1.*

Czech Republic: Upper secondary graduates: data refer to full-time students only.

Hungary: The number of upper secondary graduates includes all those enrolled in the last year of study. As a consequence, the number of graduates is overestimated because of double counting of repeaters and inclusion of those students who fail.

Ireland: Persons aged 13 and over enrolled in special schools are classified as "not allocated by level". Upper secondary graduates *exclude* repeaters of the Leaving Certificate. Also excluded are apprentices who completed programmes in publicly aided schools, graduates from publicly aided agricultural colleges (less than 1 000), farm apprentices, apprentices in certain public sector companies, and completers of secretarial and commercial courses in independent private schools.

Spain: Students in adult education programmes at the secondary level are excluded. The distribution by age does not include 323 551 students in upper secondary education and 21 074 students in tertiary education.

Sweden: National schools for adults and students in schools for the mentally retarded are not separated into general or vocational. Thus, general and vocational do not add up to the total number of students. For graduates from vocational programmes, only the *gymnasium* is included; adult education is excluded.

United Kingdom: In the UK it is not the case that general and vocational streams begin at the same age or are of the same length. Therefore, in order to make the UK figures more comparable with those of other countries, vocational programmes have been regarded as 4-year programmes beginning at age 14 (the first two years of which are general education). Enrolments in private institutions for vocational programmes in upper secondary education are excluded.

Argentina: For the lower and upper secondary levels of education the number of new entrants were calculated as the number of students enrolled minus the number of repeaters in grades 7 and 10, respectively. Similarly, graduates at these levels were considered students progressing to the next grade.

Brazil: The available data were total numbers of graduates at specific levels of education. Age and sex distribution was taken from the final grade distribution for the corresponding level of education and applied to the total data. Graduates refer to 1995 calendar year. Separate data for government-dependent private institutions and independent private institutions are not available.

Chile: There are two types of graduates, the ones who have completed the required courses in their programmes and the ones who in addition successfully pass a final exam. Reported data is in general for the former, but when it doesn't exist, the latter are reported.

India: Entrants at lower secondary and upper secondary level were calculated as students in grades 7 and 10, respectively, with estimates on repeaters excluded. Graduates at lower secondary education were provided based on 1995-96 enrolment data in grade 10 and repeaters in grade 10. No data on graduates were provided for upper secondary education.

Philippines: New entrants in vocational programmes were assumed first-year students as the number of returning students is insignificant. ISCED 2 graduates were calculated subtracting drop-outs from the third year of secondary school from the enrolment in the third year.

Thailand: Graduates include students in both formal and non-formal programmes. The numbers of students enrolled in grades 7 and 10, respectively, were used as a proxy for the numbers of new entrants at ISCED 2 and 3, respectively.

Notes on interpretation

Belgium (Flemish Community): Graduation rates are subject to bias for three reasons: *i*) presence of double counting, particularly for part-time programmes; *ii*) diplomas in part-time programmes are awarded to students whose age is much higher than the typical age; and *iii*) many diplomas are awarded to students aged over 18 or 19 years.

Japan, New Zealand, Spain: *See notes on Indicator C1.*

Germany: Most private institutions are government-dependent.

Ireland: Students graduating from some vocational programmes receive only a certificate of participation, not a formal qualification; however, there are changes underway in this regard. Students of first educational programmes at this level have usually completed 12 years of education, and students in second educational programmes have usually completed 14-15 years of education.

Luxembourg: Net enrolment rates by single year of age are underestimated since they only include those students who attend a public or publicly funded school in Luxembourg. Students who are residents of Luxembourg but attend either a not publicly funded school in Luxembourg or a school in a neighbouring country are excluded.

Sweden: Graduates have increased compared to last year in upper secondary programmes: it is the first cohort to come out after vocational tracks have been changed from 2 to 3 years duration.

United Kingdom: Enrolment in vocational courses is inflated by large numbers of adults taking one or two courses at the upper secondary level who are much older than the typical age. Participation rates are slightly under-reported because of the lack of reliable estimates of the number of enrolments in independent private institutions at upper secondary level (vocational and technical programmes).

Notes on methodology

Austria: The reference period for graduates is partly the school year 1994/95 and partly the calendar year 1995. Data refer only to graduates from first programmes. Figures are partly estimated.

Austria, Czech Republic, **Finland**, **Greece**, **Ireland:** Figures broken down by single age are estimates.

Denmark, Japan, **Mexico**, **United Kingdom:** *See notes on Indicator* C1.

Finland: For graduates from combined school and work-based programmes, the age distribution is estimated. Graduates from second educational programmes are included in first educational programmes. Their number is insignificant.

Switzerland: Figures for graduates from final programmes are estimated.

Sources

For OECD *countries see Indicator* B1.

For WEI *participants see Indicator* C1.

INDICATOR C3: ACCESS TO AND PARTICIPATION IN TERTIARY EDUCATION

■ General notes

See also notes on Indicator C1.

Calculation of net entry rates

The net entry rates given in Table C3.1 represent the proportion of persons of a synthetic age cohort who enter university-level tertiary education. The net entry rates are defined as the sum of net entry rates for single ages. The total net entry rate is therefore the sum of the proportions of new entrants to the university level aged *i* to the total population aged *i*, at all ages. Since data by single year are only available for ages 15 to 29, the net entry rates for older students are estimated from data for 5-year age bands.

Calculation of age at the 25th, 50th and 75th percentiles

The ages given for the 25th, 50th and 75th percentiles are linear approximations from data by single year of age. The *i*-th percentile is calculated as follows: let age *k* be the age for which less than *i* per cent of new entrants are younger than *k* years of age and more than *i* per cent are younger than *k* + 1. Let P(<*k*) be the percentage of new entrants aged less than *k* and P(*k*) the percentage of new entrants aged *k*, then the age at the *i*-th percentile is $k + (i - P(< k) / (P(k) - P(< k)))$.

■ Notes on specific countries

Coverage

Austria: Data refer to all first year students. At the tertiary level, the age distribution of enrolments per ISCED level (*i.e.* ISCED 5, 6 and 7 separately) is partly based on estimates. Except at the university level, students aged 25 and over are included as 24 year-olds.

Canada, France: New entrants who have had previous education at the non-university tertiary level are not included.

Czech Republic: Data refer to full-time students only.

Finland: Data refer to all entrants.

Germany: Part-time education is not applicable in university education. In university-level education, only data on students at ISCED level 6 are available. Nevertheless, enrolment at ISCED 7 is quite small and does not have much influence on the results.

Greece: Age distribution of entrants is estimated based on the 1994/95 age distribution of new entrants.

Iceland: Data on new entrants refer to full-time students only.

Ireland: Data relate to full-time students only. Age and ISCED breakdowns are estimated using survey data.

Mexico: Figures broken down by single age for first-stage university-level education are estimates.

Sweden: Data refer to new entrants both at non-university and university levels. All registration in each term is done for each single course, and therefore when the students start it is not possible to know whether they will continue to a full degree or just take one or more single subject courses.

Brazil: No data were available for part-time students. They were all considered full-time. Age and sex distribution was based on 1996 IBGE Collection.

Chile: All students are enrolled full-time, even though in higher education some students take fewer credits and take longer than the theoretical time to complete programmes of study. Data on new entrants at the tertiary level might include students who entered the system before already and than dropped out, but this kind of double counting is not significant.

China: No data for part-time tertiary students is available.

Indonesia: For new entrants to tertiary education all first year enrolments were used as a proxy. No data for part-time tertiary students is available.

Paraguay: Students from private universities with negligible enrolment are *excluded*. No age distribution is available.

Notes on interpretation

Japan: *See notes on Indicator* C1.

Mexico: Teacher training programmes are reclassified as programmes at the university tertiary level.

Notes on methodology

Czech Republic, **Hungary**, **Finland:** *See notes on Indicator* C1.

Sources

See Indicator B1.

INDICATOR C4: COMPLETION OF AND DROP-OUT FROM TERTIARY EDUCATION

■ General notes – University survival rates

Notes on methodology

In the absence of a standard methodology for the calculation of university survival rates that fits all educational systems, statistics from both sources, national and international, are presented in this indicator. Results based on the OECD standard methodology are presented for all countries for which this calculation is seen as appropriate to the educational system. For the remaining countries more appropriate national methodologies are presented in order to reflect the national degree structures correctly. In general three different methods were applied.

• *Cross-section cohort method*

The cross-section cohort method relates the number of graduates of the year of reference to the number of new entrants *n* years before, where *n* is the typical length of a degree course. This method was applied as the OECD standard. The results presented for **Australia, Belgium, the Czech Republic, France, Germany, Ireland, Italy, Japan, the Netherlands, New Zealand, Portugal, Spain** and **Switzerland** follow this method and are based on data from the OECD Database.

National calculations on drop-out and survival rates for countries for which international calculations were presented in indicator C4

	Year	Survival rate	Drop-out rate	Methodology/Source
Germany	1994	70	30	Cross section cohort (Hochschul Informations System, HIS)
Ireland	1994 (1985)	80	m	True cohort university student register (The Higher Education Authority)
Japan	1996 (1988)	92	9	True cohort school basic survey (Ministry of Education, Science, Sports and Culture)
New Zealand	1995 (1993)	79	21	Cross section cohort regular census from tertiary providers (Ministry of Education)
Switzerland	1995 (1992)	73	27	

Germany, Ireland, Japan, New Zealand and **Switzerland** provided additional national statistics on drop-out and survival rates**.** These confirm the international standard calculations based on the OECD database. The table above shows the additional national statistics.

Austria, Greece and **Mexico** provided national estimates according to the *cross-section cohort* method, using national data sources.

• *True Cohort method*

The true cohort method takes a single year's entrants and follows them through until all have either dropped out or graduated. This method requires at least *n* years of data where *n* has to be chosen large enough that only a minority of entrants is still enrolled in the system. Typically *n* is between 8 and 10 years. The survival rate gives the proportion of entrants who graduated within *n* years. The results presented in this indicator for **Finland** and the **United States** and the national results for **Ireland, Japan** and **Switzerland** as presented in the table above follow the true cohort method. Different from the other countries are the results for the **United States** obtained by a sample survey and not based on student registers.

• *Synthetic cohort method*

The synthetic cohort method takes observations of the probability to graduate, to drop out or continue studying for the different years of study in two subsequent academic years in order to estimate the total development of a fictive cohort. Results according to calculations based on synthetic cohort methods are presented for **Denmark** and **Hungary**.

■ Notes on specific countries – University survival rates

Coverage

Austria: Only regular national students are included.

Denmark: Adult education and open education are not included.

Finland: Only universities are included. This amounts to 71 per cent of all university-level students. Students without a personal register code for the student register are not included.

France: Only universities (1 350 000 students out of 2 130 000) are included, excluded are I*nstituts universitaires de technologie* (IUT). I*nstituts de formation des maîtres*, S*ections de techniciens supérieurs*, C*lasses préparatoires aux grandes écoles* and some other institutions are excluded. The concept of survival is not applicable to these programmes.

Ireland: Included are the total number of graduates, that is, also those who graduated a second time at the same ISCED level. Excluded are accountancy students who receive qualifications from the professional associations, although some of these students are in full-time attendance at publicly aided colleges. Also excluded are a significant number of part-time students at ISCED 5 who receive professional qualifications from various professional bodies (accountancy, marketing, and secretarial). Excluded too are around 1 950 student nurses who obtain a nursing qualification after completing 3-4 years of on-the-job training in hospitals. Graduates from independent private colleges are not included.

Italy: At the non-university tertiary level, graduates from independent private institutions are not included.

Hungary: Part-time students and students in postgraduate specialisation programmes at ISCED 6 are excluded. The students included account for 71 per cent of all enrolled students (head count) or 83 per cent of the full-time equivalent students.

Sweden: Some nurse programmes are now longer than before and graduates from these programmes are now included at ISCED 6 instead of ISCED 5 level.

Switzerland: The number of graduates includes some final exams at ISCED 5. Persons who were resident in a foreign country before starting their studies have not been included.

United Kingdom: Part-time students (17%) and non-HEI students (1%) are excluded.

Notes on interpretation

Finland: The calculations are based on the cohort of new entrants from 1985. In 1996, 72 per cent graduated already, 15 per cent were not enrolled any more and 13 per cent of the entrants from 1985 were still enrolled. From the number of graduates of the 1985 cohort of entrants in 1996, it is assumed that another 3 per cent of the cohort from 1985 will graduate in the next years, so that the survival rates amounts to 75 per cent.

France: This indicator relates only to the access to the second cycle. The rates of access indicate the probability for a general or technological graduate entering the first year of university to reach the second university cycle, at the end of at least a five-year course, the average duration being 3 years.

Hungary: The calculations for Hungary are based on a synthetic cohort, which means that observations from the most recent year were taken across cohorts to make a description of the total development of a fictive cohort. Since the Hungarian tertiary system is rapidly changing at the moment, these results are to be taken with caution. The estimate given reflects several cohorts of students at one point in time while the characteristics in question may change over time. Constantly growing numbers of entrants, changes in the financing of the tertiary institutions and subsidising of students are the main factors of change of the Hungarian tertiary system. Also universities begin to change their programmes from rather strict time and subject schedules into a unit credit system.

United States: Students who were still enrolled after 5 years were included in the survival rate, that means they were counted as being successful. This leads to an overestimation of the survival rate and an underestimation of the drop-out rate.

■ General notes – Graduates at the tertiary level

Notes on methodology

• *Calculation of the country mean for short and long university-level programmes*

Countries which included the graduates of short university-level programmes together with the graduates of long university-level programmes (*x*-code for short programmes) are counted as zero for the calculation of the country mean for short programmes. In a similar manner, the countries using an *x*-code for long programmes, caused by inclusion of long programmes in the category for short programmes, are counted as zero for the country average for long programmes. This is necessary to ensure that the country averages for short programmes and long programmes add up to the correct country average for all first stage university programmes.

• *Calculation of age at the 25th, 50th and 75th percentiles*

The ages given for the 25th, 50th and 75th percentiles are linear approximations from data by single year of age. The *i*-th percentile is calculated as follows: let age *k* be the age for which less than *i* per cent of new entrants are younger than *k* years of age and more than *i* per cent are younger than *k* + 1. Let P(< *k*) be the percentage of new entrants aged less than *k* and P(*k*) the percentage of new entrants aged *k*, then the age at the *i*-th percentile is k + (i – P(< k) / (P(k) – P(< k))). Typical graduation ages are shown in Annex 1.

• *Tertiary qualifications by field of study*

In accordance with ISCED the following classification of subject categories has been used:

"**Medical science**" includes "Medical science and health-related" (ISCED 50).

"**Natural science**" includes "Natural science" (ISCED 42), "Agriculture, forestry and fishery" (ISCED 62) and "Home economics (domestic science)" (ISCED 66).

"**Mathematics and Computer Science**" is defined in accordance with ISCED 46.

"**Humanities**" includes "Education, science and teacher training" (ISCED 14), "Fine and applied arts" (ISCED 18), "Humanities, religion and theology" (ISCED 20), "Social and behavioural science" (ISCED 30) and "Other fields of study" (ISCED 89).

"**Law and business**" includes "Commercial and business administration" (ISCED 34), "Law" (ISCED 38), "Trade, craft and industrial programmes" (ISCED 52), "Transport and communications" (ISCED 70), "Service trades" (ISCED 78), and "Mass communication and documentation" (ISCED 84).

"**Engineering and architecture**" includes "Engineering" (ISCED 54) and "Architecture and town planning" (ISCED 58).

■ Notes on specific countries – Graduates at the tertiary level

Coverage

Belgium (Flemish Community): Data on the age of graduates of non-university tertiary education only refer to school-based non-university higher education.

Canada, United Kingdom: At ISCED 6, graduates from long programmes are included in short programmes.

Denmark: Adult education is excluded.

France: "Mathematics and computer science" includes "Natural science". "Engineering and architecture" includes "Trade, craft and industrial programmes" and "Transport and communications". "Humanities" includes "Agriculture, forestry and fishery", "Home economics", "Service trades" and "Mass communication and documentation".

Ireland: The following are excluded: full-time accountancy students who receive qualifications from professional associations; a significant number of part-time students in non-university tertiary education who receive professional qualifications from professional bodies (accountancy, marketing, secretarial); about 1 500 student nurses, who obtain a nursing qualification after completing 3-4 years of on-the-job training in hospitals; and graduates from independent private colleges. Only first-time graduates are included (unduplicated counts).

Japan: "Natural science" and "Engineering and architecture" include "Mathematics and computer science". "Law and business" includes "Social and behavioural science". "Engineering and architecture" includes "Trade, craft and industrial programmes".

Korea: "Natural science" includes "Mathematics and computer science", "Humanities" includes "Law and business".

Portugal: Doctorates are not included: the graduation rate at ISCED 7 is therefore underestimated.

Spain: Master's or equivalent degrees at ISCED 7 are included in long programmes at ISCED 6. "Engineering and architecture" includes "Trade, craft and industrial programmes".

Sweden: Second degrees awarded at ISCED 6 are included in ISCED 7 as Master's or equivalent (programmes of 3 to 5.5 years' duration).

Argentina: Data on graduates of first university programmes exclude private institutions.

Notes on interpretation

Czech Republic: A Bachelor's degree has been introduced. In some universities it is awarded after 3 years of study, which can be followed by a Master's degree (after an additional 2 or 3 years). In others, the first degree is the Master's degree, typically awarded after

5 years of study. Both types of Master's degrees are classified as a first degree for the purpose of this indicator (there is no distinction between the two types: neither in the length of study, nor in the amount of knowledge attained). The number of degrees in "Law and business" has increased significantly in recent years.

Denmark: There are no Bachelor's degrees in some fields of study (*e.g.* medicine and law), so that the first university degree obtainable is the Master's degree. The new classifications of university graduates vary therefore according to subjects.

Greece: First-degree programmes in medicine last 6 years. Engineering studies last 5 years and lead to a diploma which is a first degree but equivalent to a Master's. Post-graduate studies do not set limits to starting or ending ages and their minimum duration is 2 years for the equivalent of a Master's and 3 years for the equivalent of a Ph.D.

Ireland: Figures on full-time and part-time graduates are estimates, based on data from the first destination survey of full-time students only.

Japan: The sum of all fields of studies does not equal 100 because the category "field of study unknown" (ISCED 99) is not taken into account in the calculations and is not negligible.

Netherlands: Short first university degree programmes refer to Higher Professional Education (HBO). Long first university degree programmes refer to the normal first university programmes leading to titles such as Drs., Mr. or Ir. (WO).

Norway: Some programmes at the non-university tertiary level of education last one year, while others last two years.

Argentina: The graduation rate for the non-university tertiary education includes private institutions whereas the graduation rate for the university level excludes private institutions.

Sources – University survival rates

International statistics are based on graduate data from the 1996 UNESCO/OECD/EUROSTAT (UOE) data collection on education statistics (for details see indicator B1) and data on new entrants from the OECD Database, that contains data obtained by earlier UOE or UOC data collections.

Sources for national statistics on survival rates are listed below:

Denmark: Individualised statistical register of education (Ministry of Education).

Finland: Student registers (Statistics Finland).

France: Système d'information sur l'enseignement supérieur, ministère de l'Éducation nationale, de la Recherche et de la Technologie.

Hungary: Ministry of Culture and Education, Department of Statistics.

Mexico: Secretaria de Educatión Publica.

United States: Beginning Postsecondary Student Longitudinal Survey (NCES).

Sources – Graduates at the tertiary level

See Indicator B1.

INDICATOR C5: PARTICIPATION IN CONTINUING EDUCATION AND TRAINING BY ADULTS

■ General notes

Standard Errors for Table C5.1: Percentage of 25 to 64 year-olds participating in education and training and average number of hours of participation in the previous year, by type of training, gender and age.

■ Notes on specific countries

Belgium: Table C5.5: Categories used in the background questionnaire for collecting earnings data do not allow the respondents to be classified in groups of equal size.

Sweden: was not asked the questions on job-related training, duration of training, location of courses, media used, reasons for non-participation.

Switzerland: German and French combined (95 per cent of the population).

INDICATOR C6: STUDENTS WITH SPECIAL EDUCATIONAL NEEDS

Finland: For special classes in regular schools, cross-national category B, the number of classes is used as proxy for number of teachers. Data refer to school year 1994/95.

Switzerland: Data refer to school year 1996/97.

All education and training

		Standard errors for the participation rate					Standard errors for the mean number of hours per participant				
		25-34	35-44	45-54	55-64	All	25-34	35-44	45-54	55-64	All
Belgium (Flanders)	M + W	2.0	1.6	2.4	2.1	1.0	26.6	25.5	25.4	37.7	16.0
	Men	3.3	2.3	3.9	3.5	1.6	40.7	18.4	39.2	22.3	22.3
	Women	2.6	2.7	2.4	2.2	1.3	37.9	54.2	19.4	58.8	21.5
Canada	M + W	3.3	2.4	6.8	3.8	1.6	48.2	21.7	183.3	26.5	48.2
	Men	4.1	4.4	8.9	7.7	1.8	52.6	49.9	108.9	63.5	32.9
	Women	4.4	4.7	13.1	6.5	3.6	62.2	19.3	269.8	83.8	71.9
Ireland	M + W	2.9	3.5	4.3	1.7	2.6	40.7	35.4	44.2	107.7	18.9
	Men	3.9	4.8	4.4	2.7	3.2	59.8	58.3	89.2	155.2	40.2
	Women	3.0	3.4	4.9	2.0	2.5	65.1	43.4	26.3	67.5	29.6
Netherlands	M + W	1.6	2.0	1.9	2.1	0.9	34.6	17.9	10.8	13.8	15.6
	Men	2.6	2.3	3.5	2.7	1.5	56.9	23.3	18.7	13.7	24.6
	Women	2.1	2.7	2.4	3.1	1.1	32.2	32.4	16.0	22.2	16.9
New Zealand	M + W	2.2	1.8	2.8	3.6	1.3	36.1	20.5	17.4	29.1	16.4
	Men	4.0	2.4	5.1	5.4	1.8	49.2	35.2	30.3	52.1	22.9
	Women	2.6	2.2	3.3	3.6	1.5	44.9	24.2	15.9	28.5	17.9
Poland	M + W	1.1	1.8	1.8	0.8	0.8	39.4	30.5	18.4	33.6	21.3
	Men	3.0	2.3	2.8	0.8	1.2	48.6	60.8	35.3	23.6	33.5
	Women	2.4	2.1	1.9	1.2	1.1	57.0	20.9	24.1	56.8	19.7
Sweden	M + W	2.5	2.3	1.7	2.1	1.0	a	a	a	a	a
	Men	3.7	3.0	2.7	3.1	1.4	a	a	a	a	a
	Women	3.7	3.1	2.9	2.2	1.1	a	a	a	a	a
Switzerland	M + W	2.3	3.0	2.3	3.4	1.0	16.9	6.6	22.2	8.5	7.2
	Men	2.9	3.2	3.6	4.2	1.7	23.4	10.8	23.4	9.8	10.6
	Women	3.7	4.0	3.9	3.8	1.8	23.8	10.3	36.8	13.6	14.1
United Kingdom	M + W	1.5	2.0	2.1	1.7	0.9	17.0	15.4	13.9	7.4	8.8
	Men	2.7	3.1	3.5	2.4	1.5	31.7	20.9	7.3	12.2	12.3
	Women	2.0	2.3	2.7	3.2	1.2	13.8	22.8	24.6	7.5	11.9
United States	M + W	3.1	2.3	2.3	3.0	1.4	12.1	18.8	6.3	9.7	7.1
	Men	5.0	3.4	3.1	3.6	2.0	32.5	37.9	8.3	8.9	13.9
	Women	3.9	3.3	2.7	4.5	1.6	23.4	15.0	7.4	15.0	7.9

Job-related education and training

		Standard errors for the participation rate					Standard errors for the mean number of hours per participant				
		25-34	35-44	45-54	55-64	All	25-34	35-44	45-54	55-64	All
Belgium (Flanders)	M + W	1.9	1.3	1.9	1.2	1.0	26.6	36.2	34.5	89.2	21.2
	Men	3.0	1.8	3.3	2.8	1.4	47.9	22.3	50.8	5.4	28.6
	Women	2.5	1.9	1.4	1.3	1.0	25.7	87.3	25.6	259.9	29.8
Canada	M + W	3.4	2.5	5.0	3.8	1.2	33.3	26.7	214.3	41.2	54.2
	Men	4.4	3.7	9.0	7.5	1.8	48.1	40.2	112.5	72.1	32.5
	Women	4.4	3.8	8.7	3.5	2.0	50.5	31.6	356.0	152.1	94.1
Ireland	M + W	2.1	3.1	2.8	1.1	1.9	45.6	41.2	60.6	174.0	23.6
	Men	3.6	3.9	4.2	2.0	2.7	42.5	67.6	96.4	197.4	45.3
	Women	2.0	3.4	2.3	1.2	1.6	84.6	51.6	55.7	149.4	41.7
Netherlands	M + W	1.9	1.8	1.8	1.4	1.0	45.1	25.0	14.3	14.2	22.9
	Men	2.6	2.4	3.4	2.0	1.6	68.0	23.2	17.5	18.7	29.9
	Women	2.0	2.4	1.7	1.6	1.0	44.7	59.2	34.9	25.8	31.2
New Zealand	M + W	2.2	1.8	2.7	2.8	1.1	41.5	22.2	18.7	42.7	19.2
	Men	4.2	2.5	5.1	4.6	1.7	53.5	33.1	32.0	65.5	25.1
	Women	2.3	2.3	3.0	2.2	1.3	56.2	33.2	16.8	25.7	22.0
Poland	M + W	1.4	1.6	1.4	0.7	0.7	43.6	16.4	13.4	26.0	15.3
	Men	2.9	1.9	2.1	1.0	1.0	59.4	29.8	24.3	40.8	23.1
	Women	2.2	2.2	1.7	1.0	0.8	79.7	17.6	23.8	36.6	25.0
Switzerland	M + W	2.4	2.3	2.0	2.3	1.0	28.6	12.6	30.1	10.8	12.4
	Men	3.4	2.6	2.5	3.3	1.6	31.3	15.8	28.4	10.2	15.0
	Women	3.4	3.4	3.5	2.4	1.6	49.4	23.5	60.0	22.2	26.4
United Kingdom	M + W	1.7	2.0	1.9	1.3	0.9	18.6	17.0	16.8	9.1	9.6
	Men	2.8	3.2	3.2	2.3	1.6	32.5	21.3	7.8	13.9	12.3
	Women	2.0	2.7	2.4	1.7	1.2	15.7	26.0	31.7	5.5	14.7
United States	M + W	3.0	2.1	2.0	2.7	1.4	13.6	21.8	6.8	10.1	8.1
	Men	4.4	2.8	2.9	3.7	1.9	34.9	43.5	9.1	9.1	16.2
	Women	3.9	3.2	2.4	4.0	1.7	25.1	17.9	7.9	17.4	9.3

INDICATOR E1: STATUTORY SALARIES OF TEACHERS IN PUBLIC PRIMARY AND SECONDARY SCHOOLS

■ Notes on specific countries

Coverage

Australia: New South Wales school system only.

Finland: For upper secondary vocational programmes, the statutory salaries cover 54 per cent of vocational teachers.

Greece: Bonuses refer only to overtime compensation. Further occasional benefits such as marriage and children are not included.

Ireland: At all levels, bonuses refer to allowances for responsibility posts; in primary schools bonuses also include extra compensation for vice-principals.

New Zealand: Salaries do not include the additional remuneration teachers are entitled to when they take on senior positions or management responsibilities in addition to teaching duties. Bonuses refer to staffing incentive allowance (hard to staff schools), isolation allowance, and normal school allowance (where trainee teachers are provided under the supervision of a qualified teacher). Additional remuneration a teacher may be entitled to for extra/special duties performed or any additional bonuses available due to the nature of the school or position/tasks the teacher may be fulfilling is not included.

Portugal: Bonuses refer to allowances for teachers of children with special needs and principals.

Spain: Bonuses, such as for teachers in grouped rural schools or assistant teachers, are not included because they only exist in some Autonomous Communities.

Switzerland: Data on salaries "after 15 years' experience" refer to salaries after 11 years' experience.

United Kingdom: Refers to England and Scotland, combined using weights based on population numbers. England: Starting salary excludes London weighting allowance.

Brazil: Data on teachers' compensation are based on State Schools covering 59 per cent of all basic education (ISCED 0, 1, 2 and 3). For all levels of education a teacher teaching 20 hours per week was considered full-time. Years from minimum to maximum salary was based on the 1998 Constitution of Brazil article 40, fixing a minimum of 25 years for retirement.

Notes on interpretation

Australia: Bonuses: Seniority accounts for 12 yearly salary increments for primary, lower secondary and upper secondary (general) teachers. Seniority accounts for 3 yearly salary increments for upper secondary (vocational) teachers. Performance criteria account for all other salary increments (associated with promotions positions).

Czech Republic: Bonuses: If a teacher attains further educational qualifications in addition to the minimum qualification required, adjustments to salary increments depend on the decision of the headteacher. There are no official regulations for this.

Germany: Data refer to all Länder of the Federal Republic of Germany. Teachers in the old Länder are usually civil servants, teachers in the new Länder are salaried employees (with lower salaries).

Starting salaries of qualified teachers depend on the age and family status of the teacher. Data refer to teachers that enter their job rather early and are unmarried. In upper secondary vocational programmes the majority of teachers are university graduates ("higher service"). But there are also different kinds of teachers for "practical instruction" who are paid less ("upper service"). Data only refer to the salaries of the "higher service". Teachers with special tasks and functions can be promoted to the next salary group. Then their gross salary is higher but they do not obtain a bonus in addition to the gross salaries.

Ireland: The reason for the difference between primary and lower secondary in regard to percentage additional bonus is that at ISCED 0 and 1 a full-time classroom teacher can be a vice-principal of a school. At ISCED 2, vice-principals are rarely, if ever, full-time classroom teachers.

New Zealand: Provision is made for performance based pay for teachers. This means that the salary level indicated at the top of the teaching scale is not necessarily the level at which the pay for a teacher with 15 years experience and minimum qualifications stops. It is not uncommon for a teacher at this level to get 3 or 4 performance units in addition to the basic salary. Performance units are worth $NZ 2 350 each. There is no upper limit on the number of performance units that may be awarded. Performance units are awarded at the discretion of the school. In total performance/management units account for about 20 per cent of the total cost of teachers' remuneration.

Spain: A small salary supplement is added after each period of three years (trienio). In public schools another supplement is added after each period of six years (sexenio), if teachers have completed 100 hours of in-service training in this period. Typically, all teachers fulfil the in-service requirements to be awarded with a sexenio. A maximum of 5 sexenios is added. At the top of the salary scale, a maximum experience of 44 years is assumed in primary and lower secondary school. Due to longer initial training requirements, a maximum experience of 41 years is assumed in upper secondary school.

Brazil: For public institutions, the salary increments criteria and the qualifications requirement are defined by the States' Legislation. The salary refers to teaching time of 20 hours per week. The calculation was based on monthly wages and multiplied by 13 (corresponding to 12 months and one extra monthly wage according to Labour Legislation).

Indonesia: The top of the salary scale is theoretical, including an increment for earning a Ph.D. There are almost no Ph.D. graduates teaching in primary schools.

Notes on methodology

Spain: Each Autonomous Community has the right to determine the salary of its teachers (respecting the general guidelines for teachers' salaries in the National General Budget) since they pay them from their own budgets. Teachers' salaries reported were obtained by calculating the weighted average – according to the proportion of teachers in every Autonomous Community – of the salaries of teachers at different education levels and at different points of their professional careers in all the Autonomous Communities. The variation between them was, in many cases, quite substantial.

Sweden: Statistics on wages were collected on 1 November 1995 for all municipal civil servants. Figures broken down by level of education and years of experience are estimates.

Argentina: At the secondary level, the salary was estimated based on 15 hours teaching per week. Figures are national averages of provincial figures.

Brazil: Figures are weighed averages of States Salaries by the number of teaching staff duties.

Chile: Salaries refer to a working period of 30 hours per week. Additional bonuses refer to bonuses for geographic area, difficult working conditions and excellent performance. The value reported is the average bonus for teachers that receive at least one of the mentioned bonuses.

Sources

Data on teacher salaries are from the 1998 OECD-INES survey on Teachers and the curriculum. Data on gross average earnings of full-time employees are from the OECD Employment database. For data on earnings of university graduates see Indicator F7.

Australia: Department of Education and Training documents: "Teacher Salary Rates" (1996), "Promotion and Transfer Procedures for Teachers" (1997), "Merit Selection Procedures Manual" (1997).

Austria: National statistics and salary act.

Belgium: Ministerie van de Vlaamse Gemeenschap – Departement Onderwijs; Statut Pecuniaire.

Czech Republic: Collective agreements.

Finland: Teachers' wage and salary agreements of municipalities and wage statistics.

France: Regulations on careers and wages.

Germany: Salary tables, laws, decrees.

Greece: Ministry of National Education and Religious Affairs.

Ireland: Department of Education and Science: Regulations and Circulars.

Italy: Law, DPR 399/88 - DPR 13/86 art. 16 – D.L. 384/92 art. 7 (converted L. 438/92) CCNL 21.7.95.

Korea: Presidential decree of Public Servant compensation and allowance, and the reference for compilation of the national budget.

Hungary: National data on individual salaries and earnings in governmental institutions, collected by the Ministry of Labour and the National Centre of Labour.

Netherlands: Financiële Arbeidsvoorwaarden sector Onderwijs en Wetenschappen (national statistics).

Norway: Agreements between the Ministry of Education and the Teachers' Unions on working hours and working conditions.

Portugal: Statute of the Teaching Career.

Sweden: Former national agreements. National Statistics on municipal wages.

Switzerland: Lehrkräfte 1995/96, Bundesamt für Statistik, Besoldungsstatistik 1.1.95, LCH Dachverband Schweizer Lehrerinnen und Lehrer.

Turkey: Ministry of Education Board of Research, Planning and Co-ordination Council.

United Kingdom: England: database of teacher records (DTR). Scotland: Scottish Joint Negotiating Committee – Scheme of Salaries and Conditions of Service.

United States: Schools and staffing surveys.

Argentina: Ministerio de Cultura y Educación de la Nación.

Brazil: SEF/MEC – Secretaria de Educação Fundamental/Ministério da Educação e do Desporto (Elementary Schools' Office/Ministry of Education and Sports).

Chile: Ministry of Education, Teaching Statute (Law that rules teachers' labour market for public schools), 1996.

China: Ministry of Education and China National Institute for Educational Research.

India: Department of Education.

Indonesia: Starting teacher: Government Regulation no. 6/1997, main salary for civil servants. Teacher with 15 years' experience: Presidential Decree no. 9/1997.

Jordan: Ministry of Education.

Malaysia: Organisational Development and Service Division, Ministry of Education.

Paraguay: Ministerio de Educación y Culto.

Philippines: Department for Education, Culture and Sports.

Russian Federation: Research Institute for Higher Education.

Thailand: Office of the National Education Commission.

Uruguay: Statistics Department – Education and Culture Ministry.

INDICATOR E2: AGE AND GENDER DISTRIBUTION OF TEACHERS

■ Notes on specific countries

Coverage

Austria: Head teachers are included.

Germany: Distribution between educational levels is partly estimated.

Ireland: Distribution of teachers by age-group for lower secondary education includes teachers in upper secondary education.

Netherlands: Teachers that teach at more than one school are counted twice or more, depending on the number of appointments. These are more frequently young and female teachers. Teachers in upper secondary vocational education include adult education teachers.

New Zealand: The age distribution for primary teachers contains some teachers at the lower secondary level, while the distribution at lower secondary level includes teachers at the upper secondary level.

Sweden: Breakdowns between primary and lower secondary education are estimates.

Switzerland: Teachers teaching both at the primary and lower secondary level are excluded (mainly specialist teachers such as for manual work or domestic sciences).

United Kingdom: Refers to England and Scotland, combined using weights based on population numbers.

• *Table* E2.2: *Percentage of women among teaching staff*
Canada, Czech Republic, Hungary, Japan: Data from the UOE questionnaire is used.

Belgium, France, Netherlands, United Kingdom: Primary education includes teachers in early childhood education.

Belgium, France, Ireland, Netherlands: Lower secondary includes teachers in upper secondary.

Italy, Spain, United States: Upper secondary general includes teachers in upper secondary vocational.

New Zealand, United Kingdom: Upper secondary general includes teachers in lower secondary.

Spain: Primary education includes teachers in lower secondary education.

Sources

Austria: Österreichische Schulstatistik, e.d. ÖSTAT, BMUK.

Belgium: Ministerie van de Vlaamse Gemeenschap – Departement Onderwijs; Service des statistiques du ministère de la Communauté française.

Germany: Federal Statistical Office, 1996.

Greece: Ministry of National Education and Religious Affairs.

Hungary: Statistical Yearbook of Hungary, 1996.

Ireland: Department of Education and Science.

Italy: Sistema Informativo Ministero Pubblica Instruzione.

Korea: Statistical Yearbook of Education 1996.

Netherlands: CASO IPTO.

New Zealand: Education Statistics of New Zealand, 1996.

Switzerland: Lehrkräfte 1995/96, Bundesamt für Statistik.

United Kingdom: England: Database of Teacher Records (DTR). Scotland: School census, September 1994.

United States: Aggregate data from Common Core of Data and Private School Survey. Distribution by age and gender according to Schools and Staffing Surveys. Data from samples applied to national statistics (1995/96 data, distributed based on 1993/94 staff).

INDICATOR E3: TEACHING TIME

■ Notes on specific countries

Coverage

Belgium: Refers to the French and Flemish Communities of Belgium, combined using weights based on population numbers.

Greece: Examination periods are included.

Italy: Examination periods are not included.

United Kingdom: Refers to England and Scotland, combined using weights based on population numbers.

Chile: Teaching time was defined for an average teacher that works 30 hours per week.

Notes on interpretation

Denmark: There are differences between formal figures and average figures calculated by the Ministry of Finance (1993/94): these are 644 hours for primary and lower secondary, 561 for upper secondary general, and 680 for upper secondary vocational.

Sweden: New national agreements between teacher organisations and the Swedish Association of Municipalities in April 1995 differ from the past. Salaries and working conditions are decided through local negotiations at the school level. Very few schools reached any local agreements for the school year 1995/96 and the old national agreements, reported in this indicator, remained valid.

Notes on methodology

Germany: Teaching time in hours is a weighted average for Germany, in full-time equivalent units. Decrees state how many lessons a specific type of teacher in a specific type of school is supposed to teach, different from "Land" to "Land".

New Zealand: Primary and lower secondary schools are required to be open for 394 half-days in a school year. There is no formal rule governing the number of lessons or the duration of a lesson. For this indicator, it is assumed that there are 5 teaching hours of 60 minutes in each teaching day.

Sources

Austria: School Periods Act; Staff laws for teachers; Austrian School Statistics.

Belgium (Flemish Community): Decree on primary schools of 25.2.97, decree on the organisation of the school year of 17.4.91.

Denmark: Collective agreements.

France: Primary schools: law; secondary schools: national survey.

Greece: National legislation.

Hungary: Public Education Act, 1993.

Ireland: Law.

Italy: Law, DPR 399/88 L 476/86 DPR 417 CCNL 21.7.95.

Korea: Length of the school year: presidential decree on public servant regulations and the notification of curriculum by the Ministry of Education. Teaching time in hours: from Statistical Yearbook of Education 1996.

Netherlands: Law, Arbeidsvoorwaarden O.P. 1995.

Norway: Agreements between the Ministry of Education and the Teachers' Unions on working hours and working conditions.

Portugal: Statute of the Teaching Career; school calendar bill issued annually (Resp 36/ME/95-5).

Sweden: National agreements.

Switzerland: Lehrkräfte 1995/96, Bundesamt für Statistik Besoldigungsstatistik 1.1.95, LCH Dachverband Schweizer Lehrerinnen und Lehrer, National statistics and LCH Besoldigungsstatistik.

United Kingdom: England: Schools' census, January 1996. Scotland: Scottish Joint Negotiating Committee – Scheme of salaries and conditions of service, National Salary Agreement.

United States: Schools and Staffing Surveys (sample survey, 1993/94).

For WEI *participants see Indicator* E1.

INDICATOR E4: TOTAL INTENDED INSTRUCTION TIME FOR PUPILS AT THE LOWER SECONDARY LEVEL

■ General notes

Notes on methodology

List of possible subjects that are taught under the headings used in Indicator E4 (non-exhaustive enumeration, derived from notes provide by member countries):

Reading and writing in the mother tongue: Reading and writing in the mother tongue; reading and writing in a second "mother tongue"; reading and writing in the tongue of the country as a second language (for non natives); language studies; public speaking; literature.

Modern foreign languages: Foreign languages.

Social studies: Social studies; community studies; contemporary studies; economics; environmental studies; geography; history; humanities; legal studies; liberal studies; studies of the own country; social sciences; ethical thinking; philosophy.

Arts: Arts; music; visual arts; practical art; drama; performance music; photography; drawing; creative handicraft; creative needlew ork.

Mathematics: Mathematics; mathematics with statistics; geometry.

Science: Science; physics, physical science; chemistry; biology, human biology; environmental science; agriculture/horticulture/ forestry.

Technology: Orientation in technology, including information technology; computer studies; construction/surveying; electronics; graphics and design; home economics; keyboard skills; word processing; workshop technology / design technology.

Religion: Religion; history of religions; religion culture.

Physical education: Physical education; gymnastics; dance; health.

Vocational skills: Vocational skills (preparation for specific occupation); technics; domestic science; accountancy; business studies; career education; clothing and textiles; polytechnic programmes; secretarial studies; tourism and hospitality; sloyd (handicraft).

Other: Subjects that cannot be classified under one of the above headings.

■ Notes on specific countries

Coverage

Australia: Data are for the New South Wales school system only and refer to general education. The subjects under "other" are chosen from Board of Studies syllabuses and from "School Courses" endorsed by the Board of Studies. Subjects include: history, geography, commerce, aboriginal studies, studies in society, studies of religion, languages other than English, technological and applied studies, creative arts and personal development, health and physical education.

Austria: The flexible part consists of optional subjects (*Freigagenstunde*). Not all optional subjects listed in the curriculum are offered at every school and no pupil is obliged to choose one.

Belgium: Refers to the French and Flemish Communities of Belgium, combined using weights based on population numbers. French Community of Belgium: Technical and professional education is not included. The category "others" represents the periods of teaching in which subjects are chosen by the school establishments. They relate to disciplines such as Latin, mathematics, art education, physical education, technologies, sciences, social sciences, philosophy, education, foreign languages, *etc*. Two remedial periods are included as optional courses (flexible part).

France: Data are for general education, age 12 = classe de cinquième, age 13 = classe de quatrième, age 14 = classe de troisième.

Germany: Data are based upon the number of lesson hours per week for years 6, 7, 8 (except special schools – "Sonderschulen"). The subject "modern foreign languages" also includes ancient languages such as Latin.

Greece: "Other" subjects include ancient Greek literature, civic education and domestic economics.

Ireland: Data are for the Junior Cycle in post-primary schools, which is of three years duration and caters to the 12 to 14 age group.

Netherlands: "Other" subjects include social and life skills (verzorging); skills to gather and analyse information (informatiekunde).

Norway: "Other" subjects include home economics, pupils' class council and the second foreign languages.

Spain: The 12 year-old students were, for the first time, in the 6th grade of the new primary education in 1995/96. Some of the 13 and 14 year-old students were studying in the new educational system while others still remained in the old system. The figures in the table refer to the "prototype" number of hours per year at these school years (the first cycle of the lower secondary education). There is also the possibility for 12 year-old students to choose between religion or socio-cultural activities and for the 13 and 14 year-olds (taking the old education programmes) to choose between religion or society, culture and religion. One of these two subjects will cover an average of 54 hours per year.

United Kingdom: Refers to England and Scotland, combined using weights based on population numbers. England: Figures given for years 7, 8 and 9. They are provided in terms of the percentages of pupil periods per year. "Other" subjects include personal and social education; special education needs; general studies; and other subjects not specified in the survey from which the data were drawn.

Thailand: The data on vocational and technical programmes exclude practical work.

Notes on interpretation

Hungary: In 1995/96 an old curriculum, prepared in 1978, was still valid legally, although schools have had the opportunity to make individually formed curricula from the late 80's. This has led to a divergence between the national curriculum of 1978 and the practice of teaching in the 1995/96 school year. A new curriculum, the National Core Curriculum, will be introduced from 1 September 1998 at grades 1 and 7.

Ireland: Reading and writing in the mother tongue includes both Irish and English. In Vocational Schools it is not obligatory to teach History and Geography. These schools can opt instead for the more practical or vocational subjects. There are no regulations regarding the precise amount of time to be spent each week on teaching the different subjects of the curriculum, although the allocation in Table E4.2 is an accurate representation of general practice in schools. It should be noted that, in practice, religion is regarded as a core part of the curriculum in all schools.

New Zealand: The figures shown are rough estimates and will vary from school to school. The New Zealand education system is a devolved system in which decisions on how the curriculum is to be implemented are made at each school. Curriculum standards are set nationally for each of the main subject areas. These cover the areas that are to be taught and the standards that are to be met. A review system operates to periodically measure and report to the various stakeholders on each school's performance in meeting the curriculum and other goals set for it.

Portugal: Instead of religion, students may choose the subject of "social and personal development".

Spain: All the students at the 6th grade of primary education have 2.5 hours per week for breaks (playtime). This time is considered as academic time, and taken into account for the total computation of the 25 hours of school time per week. This time must be, according to the formal regulations, controlled and lead by teachers and has thus been included in the flexible part of the curriculum.

Sweden: The curriculum stipulates the number of hours during 9 years of compulsory schooling. It is up to the school to decide how to give these lessons over the years. As time is not formally stipulated, it varies across schools.

Brazil: Federal law 5692/71 and Federal Decree 240/91 establish the total instruction time per school year and the compulsory subject matter. There is no regulation as to how instruction time should be distributed.

Notes on methodology

Australia: Most secondary schools divide the teaching days into 8 sessions of 40 minutes (the figures included in this indicator) but others have a more flexible timetable which includes sessions of 30 minutes, 60 minutes etc. The number of compulsory sessions to be taught in each subject is specified for a 4-year period (years 7-10). For the purpose of this data collection the sessions have been divided into four groups and three of these (years 7, 8 and 9) have been included in the table. For languages other than English the number of compulsory sessions to be taught during years 7-10 is 150. These sessions must be taught in one year (*i.e.* in year 7, 8, 9 or 10). For the purpose of this collection of data the 150 sessions have been divided into four groups of 37.5 (rounded to 38), three of which are included in the table. Personal Development, Health and Physical Education is an integrated course with the requirement that two-thirds of teaching time will be devoted to Personal Development and Health and one-third will be devoted to Physical Education.

Italy: Data on intended instructional time are an average across two types of schools: 75% of pupils attend 1 020 hours and 25% attend 1 360 hours. The flexible part (340 hours) is compulsory only for pupils who attend schools who have chosen the longer pattern (so called "tempo prolungato").

Spain: The intended curriculum specifies to what subjects 65 per cent of the school time (55 per cent in the case of the Autonomous Communities with their own languages) must be dedicated. The rest of the time is decided by each Autonomous Community's government. According to this, the number of hours per week is different in each Autonomous Community with autonomy in education, mainly because some of them have their own languages and others not. All figures in indicator E4 for 12 year-olds students are calculated weighting the number of hours per week in each subject in each Autonomous Community, by the number of students in each of them.

United Kingdom (England): Data on intended instruction time per subject were calculated by multiplying the standardised number of periods spent on the subject by the number of pupils taking the subject. These data, therefore, reflect the implemented curriculum.

Sources

Australia: New South Wales (NSW) Government (1990) *Education Reform Act* 1990; Board of Studies, NSW (1991) *Curriculum Requirements for NSW Schools*; NSW Department of Education and Training (1992), Memorandum to Secondary Principals: "1992 Curriculum Requirements for Government Secondary Schools".

Austria: Curricula of the Hauptschule and the Realgymnasium.

Belgium (Flemish Community): Ministerieel besluit van 22 oktober 1992.

France: Regulations governing curricula.

Germany: Timetables of the different schools and Länder.

Greece: Ministry of National Education and Religious Affairs – National legislation.

Hungary: National Curriculum, 1978.

Ireland: Department of Education. Regulations.

Italy: National curriculum.

Korea: Middle School Curriculum published by the Ministry of Education 1992.

Netherlands: Law or policy document based on law (data on formal arrangements).

Norway: Curriculum Guidelines for Compulsory Education in Norway.

Portugal: Handbook for the launching of the School Year (LAL 1995/96).

Sweden: National Curriculum for compulsory basic school.

United States: National Center for Education Statistics, Schools and Staffing Survey, 1993/94.

United Kingdom: England: National survey. Scotland: Curriculum and Assessment in Scotland: National Guidelines "The structure and balance of the curriculum 5-14"; "Curriculum design for the secondary stages – guidelines for headteachers".

Argentina: Ministerio de Cultura y Educación de la Nación.

Brazil: Federal Law 5692/71, Federal Decree 240/91 and States' Legislation.

China: Ministry of Education and China National Institute for Educational Research.

India: Department of Education.

Jordan: Ministry of Education.

Malaysia: Curriculum Development Centre, Ministry of Education.

Paraguay: Dirección de Curriculum. Ministerio de Educación y Culto.

Thailand: Pre-primary to general upper secondary education refer to research on efficiency in utilising teachers: macro quantitative analysis. Office of the National Education Commission P.171,1996. Vocational and technical programmes refer to research on Vocational Education Efficiency: Production system efficiency. Office of the National Education Commission P.66, 1994.

Philippines: Department for Education, Culture and Sports.

Russian Federation: Research Institute for Higher Education.

Thailand: Office of the National Education Commission.

Uruguay: Statistics Department – Education and Culture Ministry.

INDICATOR E5: LOCUS OF DECISION MAKING IN LOWER SECONDARY EDUCATION

■ General notes

The indicators on the locus and mode of decision making in education are from the 1998 OECD-INES locus of decision making questionnaire and refer to the school year 1997/98.

Conceptual framework of the questionnaire

Territorial decentralisation is concerned with the distribution of powers between levels of government. This concept encloses two different dimensions: *i*) **the locus of decision-making**, that is, it identifies which level has the decision-making authority; and *ii*) **the mode of decision-making**, which distinguishes between degrees to which levels are autonomous or "sharing" in decision-making authority.

When interpreting the indicators, it is important to recognise that the results are based on the 35 decision items included in the survey. The survey items were selected to be typical of the range of decisions taken in education systems and reviewed on this basis in participating countries. Each of the decision domains was given equal weight – and thus equal importance – in calculating the indicators.

• *Levels of decision-making*

With respect to the levels of decision-making the questionnaire distinguished between six levels:

Central Government: The central government consists of all bodies at the national level that make decisions or participate in different aspects of decision-making, including both administrative (government bureaucracy) and legislative bodies (*e.g.* parliament).

State Governments: The state is the first territorial unit below the nation in "federal" countries or countries with similar types of governmental structures. State governments are the governmental units that are the decision making bodies at this governmental level.

Provincial/Regional Authorities or Governments: The province or the region is the first territorial unit below the national level in countries that do not have a "federal" or similar type of governmental structure and the second territorial unit below the nation in countries with a "federal" or similar types of governmental structures. Provincial/regional authorities or governments are the decision making bodies at this governmental level.

Sub-Regional or Inter-Municipal Authorities or Governments: The sub-region is the second territorial unit below the nation in countries that do not have a "federal" or similar type of governmental structure. Sub-regional or inter-municipal authorities or governments are the decision-making bodies at this governmental level.

Local Authorities or Governments: The municipality or community is the smallest territorial unit in the nation with a governing authority. The local authority may be the education department within a general-purpose local government or it may be a special-purpose government whose sole area of authority is education.

School, School Board or Committee: The school attendance area is the territorial unit in which a school is located. This level applies to the individual school level only and includes school administrators and teachers or a school board or committee established exclusively for that individual school. The decision-making body – or bodies – for this school may be: *i*) an external school board, which includes residents of the larger community; *ii*) an internal school board, which could include headmasters, teachers, other school staff, parents, and students; and *iii*) both an external and an internal school board. Parents and teachers were considered as an element of the school level.

The descriptions of "at what level" and "how" educational decisions are made reflects the actual decision-making process. In some cases, a higher level of government may have formal or legal responsibility for decision-making, but in practice, that level of government delegates its decision-making authority to a lower level of government. In describing the actual decision making process, the lower level of government is identified as the decision-maker. Similarly, a higher level of government may provide a lower level of government with choices in a particular area of decision-making, (*e.g.*, the selection of textbooks for particular courses). In that case too, the lower level of government is the actual decision-maker, but within a framework established by a higher level of government. Finally, there are cases in which one level of government may have the responsibility for an individual decision, but inaction by the higher level results in a decision being made by a lower level within the educational system. If a decision is left to the discretion of a lower level through the lack of determination of higher levels, then the level that actually makes the decision was indicated.

• *Mode of decision-making*

The mode of decision-making refers to the issues as to how autonomously decisions are taken. The following categories were used:

Full autonomy: subject only to any constraints contained in the constitution or in legislation outside the education system itself.

After consultation with bodies located at another level within the education system.

Independently, but within a framework set by a higher authority (*e.g.*, a binding law, a pre-established list of possibilities, a budgetary limit, *etc.*).

Other mode:

• *Decision-making items*

Organisation of instruction: Bodies determining the school attended; Decisions affecting school careers; Instruction time; Choice of textbooks; Grouping pupils; Assistance to pupils; Teaching methods; Assessment of pupils' regular work.

Personnel management:

1. Hiring the principal; Dismissal of the principal; Hiring teacher; Dismissal of teacher; Hiring a person for the non-teaching post; Dismissal of the person for a given non-teaching post.
2. Duties and conditions of service of principal; Duties and conditions of service of teaching staff; Duties and conditions of service of non-teaching staff.
3. Fixing of salary scales for principals; Fixing of salary scales for teaching staff; Fixing of salary scales for non-teaching staff.
4. Influence over the career of the principal; Influence over the career of teachers; Influence over the career of non-teaching staff.

Planning and structures: Creation or closure of schools; Creation or abolition of a grade level; Designing programmes of study; Selection of programmes of study offered in a particular school/Selection of subjects taught in a particular school; Definition of course content; Setting of qualifying examinations for a certificate or diploma; Credentialling.

Resource allocation and use:

1. Allocation of resources to the school for teaching staff; Allocation of resources to the school for non-teaching staff; Allocation of resources to the school for capital expenditure; Allocation of resources to the school for operating expenditure.
2. Use of resources for staff; Use of resources for capital expenditure; Use of resources for operating expenditure.

Data collection procedure

The questionnaire was completed by panels of national experts in order to avoid problems with ambiguities and differences of opinion. For each level of education, a panel comprising one member from each of the following three decision-making levels was constituted: highest level (central government), middle levels (state governments, provincial/regional authorities or governments, sub-regional or inter-municipal authorities or governments, local authorities or governments), lowest level (individual school). This group completed the questionnaire and arrived at consensus on all questions. For each level of education, a second expert panel comprising representatives of the three decision-making levels was constituted and the process repeated. The INES Network C Representative or WEI National Co-ordinator then reviewed and compared the results of the two surveys to identify differences in responses to the questionnaire. In cases where the responses differed, the INES Network C Representative used source documents and consulted with the National Co-ordinator to reconcile disagreements between the two panels.

Calculating the indicators

The indicators were calculated to give equal importance to each of the four domains. Each domain contributes 25 per cent to the results for the indicators. Because there are different numbers of items in each domain, each item is weighted by the inverse of the number of items in its domain.

If a single item was coded with multiple answers, although this was not specifically allowed in the instructions of the questionnaire, each answer received half (or one third, if three answers had been given) of the original weight of the item.

■ Notes on specific countries

Names and numbers of decision-making units per decision-making level

Belgium

Standard Territorial Unit	Territorial Unit (country name)	Number of Units
Nation	België/Belgique	1
States	• Federale Staat/État fédéral	1
	• Gemeenschappen/Communautés: → Vlaamse Gemeenschap/Communauté flamande → Franse Gemeenschap/Communauté française → Duitstalige Gemeenschap/Communauté germanophone	3
	• Gewesten/Régions: → Vlaams Gewest/Région flamande → Brussel Hoofdstedelijk Gewest/Région de Bruxelles capitale → Waals Gewest/Région wallone	3
Provinces/Regions	Provincies/Provinces	10
Municipalities/Communities	Gemeenten/Communes	589

Czech Republic

Standard Territorial Unit	Territorial Unit (country name)	Number of Units
Nation	Czech Republic	1
Sub-regions	District OKRES	86*
Municipalities/Communities	OBEC	6 716**
School Attendance Areas	ŠKOLA	5 961

* According to National Statistics the Czech Republic is divided into 77 districts, but for the decision-making in education it is divided into 86 units (76 + 10 districts for Prague).
** Municipalities (obec) 6 234 + towns (m sto) 482 = 6 716

Denmark

Standard Territorial Unit	Territorial Unit (country name)	Number of Units
Nation	Denmark	1
Provinces/Regions	Counties/Amtet	16
Municipalities/Communities	Municipalities/Kommunen	275
School Attendance Areas	School Boards/Skolebestyrelsen Headteacher/Skolelederen	2 715

Finland

Standard Territorial Unit	Territorial Unit (country name)	Number of Units
Nation	Suomi	
Provinces/Regions	Lääni Maakunta	5 20
Sub-regions	Kuntayhtymä	70*
Municipalities/Communities	Kunta	452
School Attendance Areas	Koulupiiri	–**

* The number is changing, because the situation is evolving continuously (in vocational education).
** This information is available only at the local level. After the school legislation reform school attendance areas will be very flexible.

France

Standard Territorial Unit	Territorial Unit (country name)	Number of Units
Nation	France	1
Provinces/Regions	Régions/Académies	26/30
Sub-regions	Départements/Inspections d'académie	100/100
Municipalities/Communities	Communes	36 633*
School Attendance Areas	Ecoles ISCED 0,1 Collèges ISCED 2 Lycées ISCED 3	54 479 5 126 2 504

* 10 712 (29.2%) of the communes have no schools. These data refer to 1996/97, other data refer to 1997/98.

Germany

Standard Territorial Unit	Territorial Unit (country name)	Number of Units
Nation	Bundesrepublik Deutschland	1
States	Bundesländer	16
Provinces/Regions	Regierungsbezirke	40
Sub-regions	Kreisfreie Städte/Landkreise	439
Municipalities/Communities	Städte/Gemeinden	14 500
School Attendance Areas	Schulbezirk/Schule	48 200

Hungary

Standard Territorial Unit	Territorial Unit (country name)	Number of Units
Nation	Ország (country)	1
Sub-regions	Megye (county)	20
Municipalities/Communities	Helyi önkormányzat (municipality)	3 168

Ireland

Standard Territorial Unit	Territorial Unit (country name)	Number of Units
Nation	Ireland	1
Municipalities/Communities	Vocational Education Committees	33
School Attendance Areas	School Catchment Areas	4 079

Italy

Standard Territorial Unit	Territorial Unit (country name)	Number of Units
Nation	Italia	1
Provinces/Regions	Regione/Provincia	20/104
Municipalities/Communities	Comuni	8 100
School Attendance Areas	Istituti Scolastici (Circoli e scuole principali 1997/98)	13 159

Korea

Standard Territorial Unit	Territorial Unit (country name)	Number of Units
Nation	Korea	1
Provinces/Regions	Capital city	1
	Metropolitan city	6
	Province	9
Municipalities/Communities	City	72
	County	91
	Metropolitan district	69
	District	21

Norway

Standard Territorial Unit	Territorial Unit (country name)	Number of Units
Nation	Norge	1
Provinces/Regions	Fylke	19
Municipalities/Communities	Kommune	435

Portugal

Standard Territorial Unit	Territorial Unit (country name)	Number of Units
Nation	Portugal	1
Provinces/Regions	Region/Região	5
Municipalities/Communities	Minicipalities/municípios	305
School Attendance Areas	Schools/escolas	11 500

Spain

Standard Territorial Unit	Territorial Unit (country name)	Number of Units
Nation	*España*	1
States	Communidades Autónomas	17
	7 (completely autonomous in education)	
	10 (depending on the Ministry)	
Provinces/Regions	Provincias	52
Municipalities/Communities	Municipios	8 082*
School Attendance Areas	Centros escolares	49 112**

* 1996 Data.
** School Year 1996/97.

Sweden

Standard Territorial Unit	Territorial Unit (country name)	Number of Units
Nation	Sverige	1
Provinces/Regions	Landsting	102
Municipalities/Communities	Kommuner	
	compulsory (year 1-9)	288*
	upper secondary (year 10-12)	279***
School Attendance Areas	Skolor	4 981**
	compulsory (year 1-9)	
	upper secondary (year 10-12)	638****

* Communities 288; samic 6; independent 118.
** Communities 4679; samic 6; independent 296.
*** Independent 45.
**** Communities 428; landsting 128; independent 82.
Special schools are not included.

United Kingdom

Standard Territorial Unit	Territorial Unit (country name)	Number of Units
Nation	United Kingdom	1
States	England, Wales, Scotland, Northern Ireland	4
School Attendance Areas	England/Wales: local education authorities Scotland/Northern Ireland: local education boards	150/22 32/5

United States

Standard Territorial Unit	Territorial Unit (country name)	Number of Units
Nation	United States	1
States	States District of Columbia	50 1
Municipality/Communities	School districts	14 833
School Attendance Areas	Schools	87 125

Notes on methodology

Austria: The criteria for determining which school a student attends (*e.g.* age, maturity, performance in other schools, priority given to children with brothers/sisters in that school, domicile of the pupil) is stipulated in the School Instruction Act. It is up the school to choose among those who meet the conditions for being admitted. The framework (provisions of the School Instruction Act) is set by the Parliament. Textbooks are chosen by the schools from a list (Schulbuchliste) handed to them by the Ministry of Education. All the books on the list have been approved by experts.

Czech Republic: Parents decide which school is attended, although entrance exams are required and the district school office consulted. Principals choose textbooks from those approved by the Ministry of Education, and according to the recommendation of the school subject committee.

Denmark: The administrative regulations for the Danish Folkeskole are to a considerable extent intended as a framework. They provide for decentralised decision-making, not only from national to municipal authority level but also from municipal authority to the individual school boards. Decision-makers have the prime responsibility of determining the objectives and scope of the underlying authority's school policies: the intention is not, however, to determine in detail how these policies are to be implemented. Influence and responsibility are concentrated in a few central bodies. Today influence is centred in the municipal authority as the overall and economically responsible body, and in the schools' own boards as the common denominator for parents, staff and pupils.

The municipality can decide to provide a "free choice of school within the municipality". If this is decided, there are only general restrictions on enrolment, adopted by the municipality council (MC), as in cases where too many pupils apply for the same school. If the MC has not decided to provide a free choice of the school, the local school has to give its consent to enrolment of a pupil, and this consent has to be in line with the general decisions of the MC regarding the municipality's school structure. Decisions regarding promotion or repetition require consent of the parents, and transfer of a pupil to another school requires consultation with parents. With regard to textbook choice, schools have full autonomy but must choose textbooks that ensure that the centrally stipulated Aims and Central Knowledge and Proficiency areas (CKP's) are covered.

Italy: "Full autonomy" does not exclude that decision-makers have to act within the framework of existing legislation.

New Zealand: Parents, in general, decide which school is attended, but where there is pressure on a school's capacity, provisions exists for enrolment restriction to apply. These are devised by the school board, subject to approval by the Minister of Education. National legislation provides for a minimum number of half days in the school year that schools must be open for instruction. Choice of textbooks and other learning materials is entirely a matter for schools to decide. The manner in which resources are allocated for staff depends on whether or not the school is directly resourced. If it is directly resourced, the school gets a bulk grant which it is free to use for either staff or operating expenditure. Any unexpended money is retained by the school. If the school is not directly resourced, Central Government decides on the number of staff to be allocated on the basis of roll driven formulas. About 10 per cent of State and State supported schools are directly resourced. Direct resourcing is an optional scheme.

Norway: In primary and lower secondary education all pupils are promoted to a higher grade. Grouping of pupils according to abilities is not permitted.

Spain: All the decisions that are said to be taken by each Autonomous Community (AC) in full autonomy are, ultimately, within a general framework (of basic principles and regulations) set by the Central Government in agreement with all the Autonomous Communities AACC.

Sweden: Parents can choose the school for their children, if there is place.

United Kingdom: England: Parents choose which school they want their child to attend. Where a school is oversubscribed, places are allocated according to criteria set by the school's admission authority (for most schools this is the local education authority). The great majority of parents get a place for their child at the school of their choice. Schools decide the number of teaching 'periods' and their distribution between subjects. Central Government specifies the minimum number of days on which schools must meet each year and recommends a minimum number of hours for instruction. Scotland: Although local authorities identify a catchment area for each school, parents can choose if a place is available in a school outside their delineated catchment area once all those within have been provided for.

United States: There is a new movement to allow parents choice of schools in some localities.

Chile: Parents can choose any public school independently of where they live. The central government defines age limits to enter the system (the government assures education for all). The legal framework for teaching staff and non-teaching staff is established by the legislative power in the congress. For principal teaching staff it is established by the legislative power; for non-teaching staff there is a minimum wage established by the executive power, which applies to all labour contracts. The teaching law establishes: professional functions, training, participation in educational matters, career, rights of teaching staff (including the principal) special bonuses, working hours *etc*. The framework set by the central government defines minimum facilities and minimum curriculum content for creating a new school. The central government elaborates programmes of study for each grade which sets the minimum content and the minimum hours for each school. Each school can elaborate their own programmes of study within the minimum set by the central government. Each school can increase the number of subjects and hours taught for each grade, but they have to teach all that is considered the minimum set by the central government. The central government sets the minimum content for each course. Each school can then decide how they wish to teach. The central government sets the minimum subjects included in the exams for the certificate or diploma. Each school can increment the number of subjects included in the exams.

India: Parents generally decide the schools attended. In some provinces, the policy of neighbourhood schools is also prevalent. Schools generally take decisions on school careers. Salary levels in India are fixed according to scales of pay already approved by the Provincial Governments. Annual assessment of work of staff by their superiors affect the careers of staff.

Indonesia: Periods of instruction have been defined in the primary and junior secondary curriculum of 1994's Ministerial Decree. For primary and junior secondary there is no grouping for interest, subject and ability. For primary as well as junior secondary school, parents organisations support small allocation for staff welfare.

Jordan: Basic education cycle (grades 1-10 for the 6-16 age group) is compulsory by virtue of Education Act No. 3 of 1994, whereas secondary cycle is not. Enrolment in secondary education is determined by students' abilities, interests and results. MOE annually issues regulations with regard to promotion, repetition and streaming students in secondary education cycle. Instruction time is totally determined by the central government after consulting the Board of Education which consists of 18 members from all social sectors headed by the MOE Minister. Curricula and textbooks in all schools, public and private, shall be approved by the Board of Education. MOE issues regulations on student grouping and the school board supervises the implementation. Capacity of classroom shall not exceed 45 normal students and these are distributed randomly in class units. MOE responds to students with special needs; both those gifted and those with learning difficulties. Hiring and dismissal are subject to the civil service by law. This is stipulated in the Education Act No. 3 of 1994 and the civil service by law. Designing programmes of study is set out by the general directorate of curriculum and textbooks upon the recommendation of the Board of Education. The ministry issues regulations by virtue of the Education Act with regard to credentialling. The government treasury (Ministry of Finance) annually allocates the MOE budget. The Directors of Educational directorates are authorised to assess the need for staff.

Malaysia: The education system in Malaysia is highly centralised. The standardised curriculum to be taught in schools, periods of instruction, selection of textbooks, creation and closure of schools, hiring and dismissal of the teaching staff and the conditions of service are some of the major issues addressed by the central government. However, the choice of teaching methods, assessment of pupils' work, additional support activities and use of resources in schools are the responsibilities of school administrators and teachers. The main examinations in Malaysia are conducted either by the Examinations Syndicate or the Examinations Council, depending on the level of examinations. Recently, the Ministry of Education introduced a national assessment test at Year 3 whereby extremely successful candidates are promoted to Year 5. Opportunity for promotion for teachers could fall into the following categories: *i*) when a teacher is due for promotion, the selection process will be based upon vacancy, seniority and merit; *ii*) as a master teacher *i.e.* a teacher identified as an expert in a certain field of study; *iii*) time-based promotion *i.e.* mainly based on seniority. The allocation of resources for capital and operating expenditure is the responsibility of the central government. The use of these resources must adhere to the norms, guidelines and procedures as outlined by the central government.

Paraguay: Private schools are in charge of selecting students according to their abilities and interests. In the hiring system there is a contract and a methodology at the school level. For dismissal there is another methodology which is exclusively managed at the central government level. There is a function manual which stipulates duties, conditions and salary. In pre-primary, primary and adult education the initiative is taken at school level with consultation of the central level. Private schools should carry out the official curriculum, but they have the autonomy to incorporate other areas. The content is defined at central level. The compulsory curriculum establishes basic competencies which make up 80 per cent of the programme. A margin of 20 per cent is left to adjust the curriculum so that programmes can be adjusted to the region.

Philippines: Pupils/parents choose the school to attend. However, they are encouraged to go to the school within their community (for elementary schools) and within the municipality (for high schools). Central government prescribes standards for promotion which are then implemented at the school level. Central government evaluates/approves textbooks under a multiple adaptation scheme. Individual schools select textbooks to use amongst the approved textbooks. In some schools there are lower sections / classes. Teachers administer tests to determine the progress of students. In addition central, regional and provincial/city offices administer achievement tests. Central government prescribes qualification standards of principals and teachers. Regional offices appoint principals upon recommendation of provincial offices. Provincial offices appoint teachers upon recommendation by district or school. Duties are specifies in statements of duties and responsibilities. Working conditions are prescribed in civil service regulations and relevant laws, *e.g.* Magna Carta for Public School Teachers. School personnel are national government employees whose salaries are set by the national government. Personnel have to meet qualification standards for the position to which they are being promoted. Principals are recommended by district supervisors or division officials. Principals recommend teachers and other school personnel for promotion. Elementary schools are opened and closed by provincial offices while secondary schools are opened by the central office or through legislation. It is usually in remote rural elementary schools with small enrolments where certain grades are closed temporarily and then reopened the following year. For example, in one school year a school will offer grade I and III, then next year offer grade II and IV. The curriculum prescribes the courses to be taken in every grade. In high school, these are electives in the higher years. The mother tongue is used as an auxiliary medium of instruction in the first few grades. All elementary schools follow the same curriculum; however, private schools may add subjects specific to their philosophies. The school year is divided into 4 grading periods and this is followed by all elementary schools. Central government allocates teachers to regions which in turn distribute these to provincial offices. Provincial offices hire and deploy teachers to individual schools in consultation with principals and district supervisors. Provincial offices allocate capital expenditure to individual schools based on needs. Elementary schools receive resources in kind from provincial offices and regional offices. Secondary schools receive both cash resources and resources in kind. Resources allocated to the school are used in accordance with assessed needs subject to prescribed regulations and guidelines coming from central office and in certain cases also from regional and provincial offices.

Thailand: Schools attended according to zoning policy and not prescribed by law. Schools are able to choose textbooks from the list of the Department of Curriculum and Instruction Development, based on manuals and standards set by central authorities.

Sources

Argentina: Ministerio de Cultura y Educación de la Nación.

Brazil: Ministério da Educação e do Desporto – MEC (Ministry of Education and Sports). INEP – Instituto Nacional de Estudos e Pesquisas Educacionais (National Institute for Educational Studies and Research).

Chile: Ministry of Education.

China: Department of Planning and Construction and China National Institute for Educational Research.

India: Department of Education.

Indonesia: Ministry of Education and Culture.

Jordan: Ministry of Education.

Malaysia: Ministry of Education.

Paraguay: Ministerio de Educación y Culto.

Philippines: Department of Education, Culture and Sports.

Russian Federation: Centre for Science Research and Statistics, Moscow.

Thailand: Office of the National Education Commission.

Uruguay: Anep y Universidad de la Republica.

INDICATORS F1, F2: STUDENT ACHIEVEMENT

Data are based on the Third International Mathematics and Science Study (TIMSS) that was undertaken by the International Association for the Evaluation of Educational Achievement (IEA) in the school year 1994/95. For detailed notes see Annex 3 in the 1997 edition of *Education at a Glance*.

INDICATOR F3: VARIATION OF STUDENT ACHIEVEMENT ASSOCIATED WITH STUDENT AND SCHOOL LEVELS IN 8TH GRADE

See notes on Indicator F1.

No *a posteriori* changes to the model (that is, removal of non-significant predictor variables) were made in order to ensure comparability of the analysis across countries.

England, Japan: No information on parental educational attainment and that expected by the student was available.

Japan: No information was available for number of books in the student's home.

Scotland: No information on students' liking of maths and finding maths an easy or boring subject was available.

INDICATOR F5: LABOUR-FORCE ACTIVITY BY LEVEL OF EDUCATIONAL ATTAINMENT

See notes on Indicator A1.

INDICATOR F6: LABOUR-FORCE ACTIVITY OF PERSONS LEAVING EDUCATION

■ Notes on specific countries

Notes on interpretation

Australia: Data refer to successful leavers in upper secondary education, and to all leavers in lower secondary education.

Canada: Data for "one year after completion" refer to the situation 2 years after leaving.

Czech Republic: Data for "one year after completion" refer to the situation 8 months after leaving.

France: Students who completed the level but did not pass the final exam/tests and students who left school before completing the level (drop-outs) are included and classified as leavers from the previous level. Young persons are considered to be school leavers at the end of apprenticeship.

Germany: "Verwaltungsfachhochschulen" (Fachhochschulen for administration science) are not included.

Ireland: Students who completed ISCED level 3 but did not pass the final exam/tests and students who left school before completing ISCED level 3 (drop-outs) are included and classified as leavers from ISCED level 2. Drop-outs from ISCED level 2 education (about 4% of the leavers from ISCED level 2) are not included. Data for "one year after completion" of higher education refer to the situation 9-12 months after leaving.

Portugal: Data for "one year after completion" refer to the situation 14 months after leaving.

Sweden: The labour force status is classified as self-reported main activity. Data for "one year after completion" refer to the situation 10 months after leaving. Data for "five years after completion" refer to the situation 3 years and 6 months after leaving.

United Kingdom: Only England and Wales are covered. Labour force status is based on the self-reported main activity. Data for "one year after completion" refer to the situation 9 months after leaving. All leavers with qualifications are classified as ISCED 3. Those leaving at age 16/17 without qualifications are classified as ISCED 2.

United States: Data for "one year after completion" refer to the situation 5 months after leaving. Both successful leavers and leavers without graduation/diploma are included.

Sources

	Source	Reference period for reported data	Short-term perspective	Long-term perspective
Australia	Transition from Education to Work	May 1996	5 months	. .
Canada	Short-term 1997 National Graduates Survey – Survey of 1995 Graduates Long-term 1995 Follow-up of the 1990 Graduates Survey – Survey of 1990 Graduates	May-August 1997	2 years	5 years
Czech Republic	School leavers/job seekers at Labour Offices	April 1997	8 months	. .
Denmark	*a)* Register of educational attainment of the population *b)* Register of labour force and unemployment	*a)* 1996 (Oct. 1995) *b)* 1996 (Nov. 1995)	1 year and about 3 months in 1991 after leaving school in 1989/90	5 years and about 3 months in 1996 after leaving school in 1989/90
Finland	The data are based on the combined data files of the Regional Employment Statistics and the Register of Completed Education and Degrees	. .	1 year	5 years
France	Labour Force Survey	March 1996	1 year	5 years
Germany	Survey on Graduates 1993	March 1994	1 year	. .
Ireland	School Leavers Survey 1996	September 1996	1996 SLS = 1 year	. .
Poland	Professional life of school-leavers, Labour Force Survey supplement	1994		
Portugal	Transition School Working Life Survey	December 1994	14 Months	
Spain	European Household Panel	First wave of the panel (1994)		
Sweden	Leavers from upper secondary school programmes and entry into the labour market survey	March 1997	10 months	3 years and 6 months
Switzerland	Survey of leavers 1995	1995	1 year	. .
United Kingdom	Youth Cohort Study	Spring 1996	About 9 months	. .
United States	Current Population Survey	October 1996	5 months	. .

INDICATOR F7: EARNINGS AND EDUCATIONAL ATTAINMENT

■ Notes on specific countries

Coverage

Types of sources of income from work that are excluded from indicator F7

	Part-time employment	Part-year or seasonal employment	Result-related bonus from employer	Overtime compensation	Own farm or other business, part-time	Own farm or other business, full-time	Household production for the market
Belgium				Excluded			
Czech Republic	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	
France					Excluded	Excluded	Excluded
Germany							Excluded
Hungary	Excluded	Excluded			Excluded	Excluded	Excluded
Netherlands					Excluded	Excluded	Excluded
Portugal	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded
United States			Excluded		Excluded		Excluded

Italy: Data refer to income from work after taxes.

Sources

	Source	Reference year	What length of period do the income data refer to?	Size of the sample	Primary sampling unit	Overall rate of non-reponse
Australia	Australian Bureau of Statistics, Aspects of Literacy, 1996	May, June July 1996	Other 12-month period	10 700	H	13%
Canada	Survey of Consumer Finances	1996	Calendar year	About 46 000	H	About 16%
Czech Republic	Microcensus 1992	Model projection for 1996	Month	15 677 households	H	15.7%
Denmark	*a)* Register of personal income and *b)* Register of educational attainment of the population	*a)* End of 1996 *b)* October 1996	Calendar year	. .	. .	. .
Finland	The Register-based Employment Statistics	. .	Calendar year	. .	. .	. .
France	Labour Force Survey	1996	Month	75 000	H	0.07%
Germany	German Socio-economic Panel (SOEP)	1996	Other 12-month period	13 768	H	. .
Hungary	Individual salary and earning of employees	May 1996	Month	. .	. .	. .
Ireland	European Household Panel Survey	1994	. .	. .	. .	. .
Italy	Household Budget Survey	1995	Calendar year	14 298	Municipalities and H	43%
Netherlands	Structure of Earnings Survey 1995	1995	The period depends on the respondents salary system. Hourly, monthly and yearly wages are published.	Due to matching of three sources, size of the sample is not exactly known. The final database of the structure of earnings survey contains information of about 125 000 employees. The population is 5 627 million employees		
New Zealand	Household Economic Survey	April 1995 to March 1996	Other 12-month period	2 887 households	H	About 17%
Norway	Labour Force Survey and Register of salaries and taxes	1996	Calendar year and other 12-month period	24 000	Individual	About 10%
Portugal	List of personnel	October 1996	Month	. .	. .	. .
Spain	Household European Panel	Second wave of the panel (1995)	Calendar year	7 531 households	H	13%
Sweden	National Income Register	1996	Calendar year	. .	. .	. .
Switzerland	Labour Force Survey	1996	Month	19 317	H	15.8%
United Kingdom	General household Survey	April 1996 – March 1997	For employees, data are collected for their usual pay period and then grossed up to give a figure for the previous 12 months. For the self- employed, profit for the last tax year is collected.	Effective sample = 11 845 households Responding sample = 9 158 households.	H	Response rate = 77%, Refusals = 19%, Non-contacts = 3%
United States	Current Population Survey, March 1996 (supplemental section)	Earnings in previous year (1995)	Calendar year	49 682 housing units which include about 130 467 people.	H	10.9%

H = household.

INDICATOR F8: PRIVATE, FISCAL AND SOCIAL RATES OF RETURN TO EDUCATION AT THE UNIVERSITY LEVEL

■ General notes

A pilot data collection of income, taxes, and transfers for different levels of education was undertaken by the INES Network B in the Autumn of 1997. Data were provided by Australia, Belgium, Canada, Denmark, France, Germany, Portugal, Sweden and the United States.

The estimated rate of return to university level education is calculated by finding the rate of discount that equates *i*) the present value of an estimated future stream of *additional* income over a lifetime (from age 16-64), to *ii*) the present value of the *additional* total cost of graduating (including forgone earnings). Formally, this calculation consists of estimating, for educational attainment level *i*, the rate of interest (r) that equates the present value of a stream of additional benefits ($B_i - B_{i-1}$) over a working lifetime with the discounted additional costs ($C_i - C_{i-1}$) of producing a graduate at ISCED level *i* compared to level $i - 1$:

$$\Sigma\,(B_{i,t} - B_{i-1,t})/(1 + r)^t = \Sigma\,(C_{i,t} - C_{i-1,t})/(1 + r)^t$$

The value of *t* is the time at which each observation of earnings or cost is estimated. On the benefits side, t relates to the working lifetime following exit from schooling. On the cost side, *t* refers to the duration of a given level of education.

Costs

The cost of graduating at a given level of education was obtained by multiplying the direct cost of education at this level by the assumed theoretical duration of studies at this level. Cost per student for a given level in US dollars (constant purchasing power parity) was obtained from *Education at a Glance* – OECD *Indicators* (OECD, 1997). Cost refers to direct costs; that is, to the total cost of providing educational services including tuition and educational items and excluding spending on student living costs. Cost per student in local currency amounts were split into public and private sources by taking the relative share of public and private sources in total spending at this level.

For each level of education there is an assumed theoretical duration of studies corresponding to the minimum required number of years for completing a given ISCED level on a *full-time basis*. In practice, duration of studies may vary considerably by programme type and field of study within each ISCED level (as also may the cost per student per annum). However, a best approximation was made for the "typical" programme type within a given ISCED level. Cost per student annum in local currency amounts was multiplied by the assumed theoretical duration of studies to arrive at total cost of graduation. Additional cost for a given level of education is obtained by taking the different in total cost between ISCED level *i* and ISCED level *i*-1.

Income-tax adjusted forgone earnings

If annual earnings for students were not reported, forgone earnings were assumed as 66 per cent of the annual earnings of the similar school-age population. If annual earnings for student cohorts were available, the following procedure was used to derive the forgone earnings:

1. total annual earnings for a student cohort were subtracted from total annual earnings for a similar school-age cohort;
2. the number of students in that cohort was subtracted from the number of similar school-age population;
3. the result from the first step then was divided by the result from the second step to derive estimates for average annual earnings of the non-student cohort;
4. the difference between the average annual earnings of the non-student cohort versus that of the student cohort is the estimate of forgone earnings;
5. income-tax adjusted forgone earnings were estimated by subtracting the income taxes associated with the forgone earning amount from the forgone earnings.

A student was defined as a person who was enrolled in an organised programme of studies in an educational institution for at least 7 months in the previous 12 months.

Benefits and taxes

Unlike Indicator E5 in *Education at a Glance* 1997, the income data refer to all types of income (employment, property and social transfers) and are averaged out over the whole population aged 16-64 and not just those in employment. Total income from different sources or taxes (for all persons in a given category and not just income earners or tax-payers) includes:

1. total gross earnings from employment for individuals (both employed and self-employed) who have received earnings in the previous 12 months;
2. total property income plus occupational pensions (including non-social retirement pensions, employer-based pensions for private sector workers and public employees and other private cash income not classified elsewhere such as, for example, alimony and child support benefits) received in the previous 12 months;
3. total income from social transfer programmes (including disability pay, social retirement benefits, unemployment compensation and maternity allowances, universal social cash transfers such as child or family allowances, public grants to households or students for education, and all other social assistance payments as well as "near-cash" benefits such as subsidised housing rents) received in the previous 12 months;
4. total income tax and employee social security contributions made in the previous 12 months.

Part of the rationale for including property income in the calculation of lifetime benefits from education is that people with a longer temporal horizon are more likely to invest in education, and are more likely to benefit from the knowledge obtained from education through investment in assets. Also, it was not possible to split income taxes into taxes on earnings and taxes on property income, so for the purposes of separating out benefit flows to public authorities it was easier to work with total income including property income. However, a substantial proportion of assets income results from inheritance and is not directly attributable to human capital. The inclusion of inherited income into the calculation may overestimate the education benefits.

■ Notes on specific countries

Australia: Total property income received is the sum of income from interest, dividends, residential and non residential property rent, and superannuation payments. Government or social transfers is the sum of annual income from government pensions and benefits excluding concessions. Sales tax was also included, and was calculated as 10.3 per cent of disposable income.

Canada: Military personnel have not been included. This is for consistency purposes as the military have not been included in other analyses of the Survey of Consumer Finances. Total earnings were made up of wages and salaries, and self-employment. Property income was made up of interest income, dividends, and other investment income (but not imputed rent), alimony, (private) retirement pensions, Registered Retirement Savings Plan (RRSP) annuities. Inheritance has been excluded because it is a one time income. For social transfers, information on subsidised housing rents were not available in the Survey of Consumer Finance. Family benefits have been included as they are reported (usually reflected in the income tax statement by the lower earning parent), and have not been redistributed among all adult family members.

Sweden: The National Income Register gives data for the net income from capital investments from the tax register. The benefits include: received return on capital deposits in banks, bonds etc., capital gain on sold assets (the way these are calculated by the tax authorities), standardised calculation of return on capital invested in own enterprise, and income from rent for private house/apartment. The costs include: paid interest on loans, capital loss on sold assets, standardised calculation of capital cost in own enterprise (in case of negative capital), and costs for finance administration. Student grants are partly given as loans. The part of the student grants that are given as loans are not included in social transfers. Payments to private pensions schemes are not included. Students who left upper secondary education in the spring term and went directly into higher education or municipal adult education the same autumn are excluded due to shortcomings in the register database.

United States: Total property income includes a person's interest income from savings accounts, money market funds/securities/bonds, stock dividends received and reinvested, and other asset income. It also includes occupational pensions and other income which cannot be attributed to either earnings or transfer income. Total income from social transfer programs is a summation of a person's mean-tested transfer income including social security income and various social unemployment compensations. Income taxes include both federal income taxes and employees' contribution to social security minus the earned income tax credits. Information concerning state income taxes was not available. A model-assisted method was adopted to impute income taxes for item non-response cases.

Sources

Australia: Data refer to 1993/94 and are based on unit record data from the Australian Bureau of Statistics 1994/95 Survey of Income and Housing Costs. The survey was conducted over a 12 month period commencing in July 1994.

Belgium: The figures are based on the 1992 socio-economic Panel (SEP). This is a panel survey on Belgian households. The SEP is maintained by the Centre for Social Policy (CSP) of the University of Antwerp (UFSIA). Taxes and employee social security contributions are estimated via a micro-simulation program (MISIM) developed by the Centre for Social Policy.

Canada: Survey of Consumer Finances (April-May 1996).

France: INSEE, Enquête Budget des Familles 1995 / exploitation Division Etudes Sociales.

Sweden: Combined population register with data from the Register on Enrolment in Education (Registret över Personer i Utbildning) and the National Income Register. Both registers are produced annually by Statistics Sweden and used for statistical purposes only. The reference year for the attached data is 1995. The income register contains data on most types of social transfers from the social security insurance and other official sources. Income data are collected from the Tax Authorities.

United States: Survey of Income and Program Participation (SIPP), 1993 conducted by the U.S. Bureau of Census and covering the time from January 1994 to December 1994.

GLOSSARY

Compulsory subjects

Subjects to be taught by each school and to be attended by each student.

Continuing education and training for adults

Continuing education and training for adults refers to all kinds of general and job-related education and training organised, financed or sponsored by authorities, provided by employers or self-financed. Job-related continuing education and training refers to all organised, systematic education and training activities in which people take part in order to obtain knowledge and/or learn new skills for a current or a future job, to increase *earnings** and to improve job and/or career opportunities in current or other fields.

Curriculum (Intended)

The intended curriculum is the subject matter content as defined at the national or the educational system level. The intended curriculum is embodied in textbooks, in curriculum guides, in the content of examinations, and in policies, regulations, and other official statements generated to direct the educational system.

Earnings

Earnings from work

Earnings from work refer to annual money earnings, *i.e.* direct pay for work before taxes. Income from other sources, such as government aid programmes, interest on capital, etc., is not taken into account. Mean earnings are calculated on the basis of data for all people with income from work, including the self-employed.

Relative earnings from work

Relative earnings from work are defined as the mean annual earnings from work of individuals with a certain level of *educational attainment** divided by the mean annual earnings from work of individuals whose highest level of education is the upper secondary level.

Educational attainment

Educational attainment is expressed by the highest completed level of education, defined according to the *International Standard Classification of Education** (ISCED).

Educational Costs

Educational costs represent the value of all resources used in the schooling process, whether reflected in school budgets and expenditures or not.

Note: Words in italics followed by an asterix are defined in the glossary.

EDUCATIONAL EXPENDITURE

Educational expenditure refers to the financial disbursements of educational institutions for the purchase of the various resources or inputs of the schooling process such as administrators, teachers, materials, equipment and facilities.

Current and capital

Current expenditure is expenditure on goods and services consumed within the current year, which needs to be made recurrently to sustain the production of educational services. Minor expenditure on items of equipment, below a certain cost threshold, are also reported as current spending.

Capital expenditure represents the value of educational capital acquired or created during the year in question – that is, the amount of capital formation – regardless of whether the capital outlay was financed from current revenue or by borrowing. Capital expenditure includes outlays on construction, renovation, and major repair of buildings and expenditure for new or replacement equipment. Although capital investment requires a large initial expenditure, the plant and facilities have a lifetime that extends over many years.

Debt servicing expenditure

The stock of educational debt is the cumulative amount of funds borrowed for educational purposes by educational service providers or funding sources and not yet repaid to the lenders. Such debt is usually incurred to finance capital expenditure but may also be incurred, on occasion, to finance portions of current expenditure. The term educational debt does not include any funds borrowed by students or households (student loans) to help finance students' educational costs or living expenses. Expenditure on debt servicing consists of *i*) payment of interest on the amounts borrowed for educational purposes; and *ii*) repayment of loan principal. Neither component of expenditure on debt servicing is included as *capital** or *current** expenditure.

Direct expenditure on educational institutions

Direct expenditure on educational institutions may take one of two forms: *i*) purchases by the government agency itself of educational resources to be used by educational institutions (*e.g.* direct payments of *teachers'** salaries by a central or regional education ministry); *ii*) payments by the government agency to educational institutions that have responsibility for purchasing educational resources themselves (*e.g.* a government appropriation or block grant to a university, which the university then uses to compensate staff and to buy other resources). Direct expenditure by a government agency does not include tuition payments received from students (or the families) enrolled in public schools under that agency's jurisdiction, even if the tuition payments flow, in the first instance, to the government agency rather than to the institution in question.

Financial aid to students

Financial aid to students comprises: *i*) Government scholarships and other government grants to students or households. These include, in addition to scholarships and similar grants (fellowships, awards, bursaries, etc.), the following items: the value of special subsidies provided to students, either in cash or in kind, such as free or reduced-price travel on public transport systems; and family allowances or child allowances that are contingent on student status. Any benefits provided to students or households in the form of tax reductions, tax subsidies, or other special tax provisions are not included; *ii*) Student loans, which are reported on a gross basis – that is, without subtracting or netting out repayments or interest payments from the borrowers (students or households).

Intergovernmental transfers

Intergovernmental transfers are transfers of funds designated for education from one level of government to another. The restriction to funds earmarked for education is very important in order to avoid ambiguity about funding sources. General-purpose intergovernmental transfers are not included (*e.g.* revenue sharing grants, general fiscal equalisation grants, or distributions of shared taxes from a national government to provinces, states, or *Länder*), even where such transfers provide the funds that regional or local authorities draw on to finance education.

Public and private sources

Public expenditure refers to the spending of public authorities at all levels. Expenditure that is not directly related to education (*e.g.* culture, sports, youth activities, etc.) is, in principle, not included. Expenditure on education by other ministries or equivalent institutions, for example Health and Agriculture, is included.

Private expenditure refers to expenditure funded by private sources, *i.e.* households and other private entities. "Households" means students and their families. "*Other private entities*" include private business firms and non-profit organisations, including religious organisations, charitable organisations, and business and labour associations. Private expenditure comprises school fees; materials such as textbooks and teaching equipment; transport to school (if organised by the school); meals (if provided by the school); boarding fees; and expenditure by employers on initial *vocational training**. Note that private *educational institutions** are considered service providers, not funding sources.

Staff compensation

Expenditure on staff compensation includes gross salaries plus non-salary compensation (fringe benefits). Gross salary means the total salary earned by employees (including any bonuses, extra allowances, etc.) before subtracting any taxes or employees' contributions for pensions, social security, or other purposes. Non-salary compensation includes expenditure by employers or public authorities on retirement programmes, health care or health insurance, unemployment compensation, disability insurance, other forms of social insurance, non-cash supplements (*e.g.* free or subsidised housing), maternity benefits, free or subsidised child care, and such other fringe benefits as each country may provide. This expenditure does not include contributions made by the employees themselves, or deducted from their gross salaries.

Transfers and payments to other private entities

Government transfers and certain other payments (mainly subsidies) to other private entities (firms and non-profit organisations) can take diverse forms – for example, transfers to business or labour associations that provide adult education; subsidies to firms or labour organisations (or associations of such entities) that operate apprenticeship programmes; subsidies to non-profit organisations that provide student housing or student meals; and interest rate subsidies to private financial institutions that make student loans.

EDUCATIONAL INSTITUTIONS

Educational institutions are defined as decision-making centres which provide educational services to individuals and/or other institutions. The definition is based on the point of view of management and control, which are normally carried out by a Director, Principal, or President and/or a Governing Board, (or similar titles such as Management Committee, etc.). In general, if a centre has a Director, Principal, or President and a Governing Board then it is classified as an institution. If it lacks these, however, and

is controlled by an educational institution, then it is not a separate institution but rather an off-campus centre of an institution. Where a centre is not managed by a Governing Board but is administered directly by a public education authority, the centre is classified as an institution in its own right.

Public and private educational institutions

Educational institutions are classified as either public or private according to whether a public agency or a private entity has the ultimate power to make decisions concerning the institution's affairs.

An institution is classified as public if it is: *i*) controlled and managed directly by a public education authority or agency; or *ii*) controlled and managed either by a government agency directly or by a governing body (Council, Committee, etc.), most of whose members are either appointed by a public authority or elected by public franchise.

An institution is classified as private if it is controlled and managed by a non-governmental organisation (*e.g.* a Church, a Trade Union or a business enterprise), or if its Governing Board consists mostly of members not selected by a public agency.

In general, the question of who has the ultimate management control over an institution is decided with reference to the power to determine the general activity of the school and to appoint the officers managing the school. The extent to which an institution receives its funding from public or private sources does *not* determine the classification status of the institution.

A distinction is made between "government-dependent" and "independent" private institutions on the basis of the degree of a private institution's dependence on funding from government sources. A government-dependent private institution is one that receives more than 50 per cent of its core funding from government agencies. An independent private institution is one that receives less than 50 per cent of its core funding from government agencies. "Core funding" refers to the funds that support the basic educational services of the institution. It does not include funds provided specifically for research projects, payments for services purchased or contracted by private organisations, or fees and subsidies received for ancillary services, such as lodging and meals. Additionally, institutions should be classified as government-dependent if their teaching staff are paid by a government agency – either directly or through government.

EDUCATIONAL PERSONNEL: FULL-TIME, PART-TIME AND FULL-TIME EQUIVALENT

The classification of educational staff as "full-time" and "part-time" is based on a concept of statutory working time (as opposed to actual or total working time or actual teaching time). Part-time employment refers to individuals who have been employed to perform less than the amount of statutory working hours required of a full-time employee. A *teacher** who is employed for at least 90 per cent of the normal or statutory number of hours of work of a full-time teacher over the period of a complete school year is classified as a full-time teacher for the reporting of head-count data. A teacher who is employed for less than 90 per cent of the normal or statutory number of hours of work of a full-time teacher over the period of a complete school year is classified as a part-time teacher. Full-time equivalents are generally calculated in person years. The unit for the measurement of full-time equivalents is full-time employment, *i.e.* a full-time teacher equals one FTE. The full-time equivalence of part-time educational staff is then determined by calculating the ratio of hours worked over the statutory hours worked by a full-time employee during the school year.

EDUCATIONAL RESEARCH AND DEVELOPMENT (R&D)

Educational R&D is systematic, original investigation or inquiry and associated developmental activities concerning: the social, cultural, economic and political context within which education systems operate; the purposes of education; the processes of teaching, learning and personal development; the work

of educators; the resources and organisational arrangements to support educational work; the policies and strategies to achieve educational objectives; and the social, cultural, political and economic outcomes of education.

The major categories of R&D personnel are researchers, technicians and equivalent staff, and other support staff. Post-graduate students are counted as researchers, but reported separately within that category.

Educational support personnel

Educational, administrative and professional staff covers non-teaching staff providing educational, administrative, and professional support to teachers and students. Examples are: principals, headteachers, supervisors, counsellors, librarians or educational media specialists, psychologists, curriculum developers, inspectors, and former teachers who no longer have active teaching duties. Other support staff covers personnel providing indirect support in areas such as: secretarial and clerical services, building and maintenance, security, transportation, catering, etc.

Employed population

The employed population is defined, in accordance with ILO guidelines, as all persons above a specific age who during a specified brief period, either one week or one day, were in paid employment or self-employment. It includes both those in civilian employment and those in the armed forces.

First and second (or further) educational programmes

A first upper secondary programme is any educational programme selected by a student in the ordinary cycle of upper secondary education that leads to a first qualification or certification at that level. A student is counted as enrolled in a second (or further) upper secondary programme if he or she has completed a normal or ordinary cycle of upper secondary education and has graduated from that sequence and then enrols in upper secondary education again, in order to pursue another upper secondary education programme. If the student then completes that programme (by obtaining the corresponding certification) he or she is considered a graduate of a second (or subsequent) upper secondary education programme. However, those students who enrol only in a partial programme, or repeaters who did not graduate from an ordinary cycle of upper secondary education but nevertheless repeat a cycle, are not counted as enrolled in a second or further educational programme.

Graduates

Graduates are those who were enrolled in the final year of a level of education and completed it successfully during the reference year. However, there are exceptions (especially at the university tertiary level of education) where graduation can also be recognised by the awarding of a certificate without the requirement that the participants are enrolled. Completion is defined by each country: in some countries, completion occurs as a result of passing an examination or a series of examinations. In other countries, completion occurs after a requisite number of course hours have been accumulated (although completion of some or all of the course hours may also involve examinations). Success is also defined by each country: in some countries it is associated with the obtaining of a degree, certificate, or diploma after a final examination; while in other countries, it is defined by the completion of programmes without a final examination.

Gross Domestic Product

Gross Domestic Product (GDP) refers to the producers' value of the gross outputs of resident producers, including distributive trades and transport, less the value of purchasers' intermediate consumption plus import duties. GDP is expressed in local money (in millions). Data for GDP are provided in Annex 2.

GROSS SALARY

Gross salary is the sum of wages (total sum of money that is paid by the employer for the labour supplied) minus employer's contributions for social security and pension (according to existing salary scales). Bonuses that constitute a regular part of the wages – such as a thirteenth month or a holiday or regional bonus – are included in the gross salary.

ISCED LEVELS OF EDUCATION

The levels of education used in this publication are defined with reference to the International Standard Classification of Education (ISCED) of 1976. However, some further elaboration of the ISCED definitions has been undertaken to enhance international comparability.

Early childhood education (ISCED 0)

Early childhood education serves the dual purpose of giving the child daily care while the parents are at work and contributing to the child's social and intellectual development in keeping with the rules and guidelines of the pre-primary curriculum. It covers all forms of organised and sustained centre-based activities designed to foster learning, and emotional and social development in children. The term centre-based distinguishes between activities in institutional settings (such as primary schools, pre-schools, kindergartens, day-care centres) and services provided in households or family settings. The standard starting age at this level is age 3. Children aged 2 years or older are, however, also included in the statistics if they are enrolled in programmes that are considered educational by the country concerned.

Primary level of education (ISCED 1)

Primary education usually begins at age 5, 6, or 7 and lasts for 4 to 6 years (the mode of the OECD countries is 6 years). Programmes at the primary level generally require no previous formal education. Coverage at the primary level corresponds to ISCED 1, except that an upper threshold is specified as follows: in countries where basic education covers the entire compulsory school period (*i.e.* where there is no break in the system between primary and lower secondary education) and where in such cases basic education lasts for more than 6 years, only the first 6 years following early childhood education are counted as primary education.

Lower secondary level of education (ISCED 2)

The core of lower secondary education continues the basic programmes of the primary level but usually in a more subject-oriented manner. This usually consists of 2 to 6 years of schooling (the mode of OECD countries is 3 years). The common feature of lower secondary programmes is their entrance requirement, i.e. a minimum of primary education completed or demonstrable ability to benefit from participation in the programme. Coverage at the lower secondary level corresponds to ISCED 2, except that an upper threshold is specified as follows: in countries with no break in the system between lower secondary and upper secondary education and where lower secondary education lasts for more than 3 years, only the first 3 years following primary education are counted as lower secondary education. Lower secondary education may either be *terminal* (*i.e.* preparing the students for entry directly into working life) or *preparatory* (*i.e.* preparing students for upper secondary education).

Upper secondary level of education (ISCED 3)

Coverage at the upper secondary level corresponds to ISCED 3. This level usually consists of 2 to 5 years of schooling. Admission into educational programmes at the upper secondary level requires the completion of the lower secondary level of education, or a combination of basic education and vocational experience that demonstrates an ability to handle the subject matter. Upper secondary education may

either be terminal (*i.e.* preparing the students for entry directly into working life) or preparatory (*i.e.* preparing students for tertiary education).

Non-university tertiary level of education (ISCED 5)

The non-university tertiary level corresponds to ISCED 5. Programmes at this level generally do not lead to the awarding of a university degree or equivalent. A minimum condition of admission into a programme at this level is usually the successful completion of a programme at the upper secondary level. In some countries, evidence of the attainment of an equivalent level of knowledge, or the fulfilment of specific conditions (such as a combination of age and/or work experience) permits admission. In terms of subject matter, the core programmes at this level often tend to parallel those for which university degrees are granted. They are usually shorter, however, and more practical in orientation. Programmes of a level equivalent to this core vary widely in most countries and are provided through many organisations of very different types.

University tertiary level of education (ISCED 6 *and* 7)

This level of education refers to any programme classified as leading to a university degree or equivalent. Programmes at ISCED level 6 are intended for students who have successfully completed prerequisite programmes at the upper secondary level and who continue their education in a programme that generally leads to the award of a first university degree or a recognised equivalent qualification. University programmes at ISCED level 7 are intended for students who have completed a first university programme. Some countries do not distinguish, for purposes of international reporting, between ISCED levels 6 and 7.

NEW ENTRANTS TO A LEVEL OF EDUCATION

New entrants to a level of education are students who are entering any programme leading to a recognised qualification at this level of education for the first time, irrespective of whether students enter the programme at the beginning or at an advanced stage of the programme. Individuals who are returning to study at a level following a period of absence from studying at that same level are not considered new entrants. New entrants to the tertiary level of education are students who have never entered any tertiary level before. In particular, students who complete tertiary-level non-degree programmes (ISCED 5) and transfer to degree programmes (ISCED 6) are not considered new entrants. On the other hand, foreign students who enrol in a country's education system for the first time in a post-graduate programme are considered new entrants to the tertiary level. Entrants to a level of education are all students enrolled at that level who were not enrolled at that level during the previous reference period.

PURCHASING POWER PARITIES

Purchasing Power Parities (PPP) are the currency exchange rates that equalise the purchasing power of different currencies. This means that a given sum of money, when converted into different currencies at the PPP rates, will buy the same basket of goods and services in all countries. In other words, PPPs are the rates of currency conversion which eliminate the differences in price levels among countries. Thus, when expenditure on GDP for different countries is converted into a common currency by means of PPPs, it is, in effect, expressed at the same set of international prices so that comparisons between countries reflect only differences in the volume of goods and services purchased. The purchasing power parities used in this publication are given in Annex 2.

STUDENTS

A student is defined as any individual participating in educational services covered by the data collection. The number of students enrolled refers to the number of individuals (head count) who are enrolled

within the reference period and not necessarily to the number of registrations. Each student enrolled is counted only once.

STUDENTS ENROLLED: FULL-TIME, PART-TIME AND FULL-TIME EQUIVALENT

Students are classified by their pattern of attendance, *i.e.*, full-time or part-time. The part-time/full-time classification is regarded as an attribute of student participation rather than as an attribute of the educational programmes or the provision of education in general. Four elements are used to decide whether a student is full-time or part-time: the units of measurement for course load; a normal full-time course load, which is used as the criterion for establishing full-time participation; the student's actual course load; and the period of time over which the course loads are measured.

In general, students enrolled in primary and secondary level educational programmes are considered to participate full-time if they attend school for at least 75 per cent of the school day or week (as locally defined) and would normally be expected to be in the programme for the entire academic year. Otherwise, they are considered part-time. When determining full-time/part-time status, the work-based component in combined school and work-based programmes is included.

At the tertiary level, an individual is considered full-time if he or she is taking a course load or educational programme considered to require at least 75 per cent of a full-time commitment of time and resources. Additionally, it is expected that the student will remain in the programme for the entire year.

The full-time equivalent (FTE) measure attempts to standardise a student's actual load against the normal load. For the reduction of head-count data to FTEs, where data and norms on individual participation are available, course load is measured as the product of the fraction of the normal course load for a full-time student and the fraction of the school/academic year. [FTE = (actual course load/normal course load) * (actual duration of study during reference period/normal duration of study during reference period).] When actual course load information is not available, a full-time student is considered equal to one FTE.

STUDENT STOCK AND FLOW DATA

Stock data refer to the characteristics and attributes of a specified pool of students for the reference period under consideration.

Flow data refer to individuals who join the pool at the beginning or during the reference period and to students who leave the pool during or at the end of the reference period. The inflow is the number of students who do not fulfil any of the conditions for inclusion in the stock data before the beginning of the reference period but gain at least one of them during this time.

The outflow refers to the number of individuals who fulfil at least one of the conditions for inclusion in the stock of a group of students at the beginning of the reference period and who lose them all during or at the end of the reference period.

TEACHERS

A teacher is defined as a person whose professional activity involves the transmission of knowledge, attitudes and skills that are stipulated in a formal curriculum to students enrolled in an educational programme. The teacher category includes only personnel who participate directly in instructing students.

This definition does not depend on the qualification held by the teacher or on the delivery mechanism. It is based on three concepts: activity, thus excluding those without active teaching duties – although

teachers temporarily not at work (*e.g.* for reasons of illness or injury, maternity or parental leave, holiday or vacation) are included; profession, thus excluding people who work occasionally or in a voluntary capacity in *educational institutions**; and educational programme, thus excluding people who provide services other than formal instruction to students (*e.g.* supervisors, activity organisers, etc.), whether the programme is established at the national or school level.

In *vocational and technical education**, teachers of the "school element" of apprenticeships in a dual system are included in the definition, and trainers of the "in-company element" of a dual system are excluded.

Headteachers without teaching responsibilities are not defined as teachers, but classified separately. Headteachers who do have teaching responsibilities are defined as (part-time) teachers, even if they only teach for 10 per cent of their time.

Former teachers, people who work occasionally or in a voluntary capacity in schools, people who provide services other than formal instruction, *e.g.*, supervisors or activity organisers, are also excluded.

Total labour force

The total labour force or currently active population comprises all persons who fulfil the requirements for inclusion among the employed or the unemployed as defined in OECD Labour Force Statistics.

Total population

The total population comprises all nationals present in or temporarily absent from the country and aliens permanently settled in the country. For further details, see OECD *Labour Force Statistics*.

Typical ages

Typical ages refer to the ages that normally correspond to the age at entry and ending of a cycle of education. These ages relate to the theoretical duration of a cycle assuming full-time attendance and no repetition of a year. The assumption is made that, at least in the ordinary education system, a student can proceed through the educational programme in a standard number of years, which is referred to as the theoretical duration of the programme.

The typical starting age is the age at the beginning of the first school/academic year of the relevant level and programme. The typical ending age is the age at the beginning of the last school/academic year of the relevant level and programme.

The typical graduation age is the age at the end of the last school/academic year of the relevant level and programme when the qualification is obtained. Using a transformation key that relates the levels of a school system to ISCED, the typical age range for each ISCED level can be derived.

Unemployed

The unemployed are defined, in accordance with the ILO guidelines on unemployment statistics, as persons who are without work, actively seeking employment and currently available to start work. The unemployment rate is defined as the number of unemployed persons as a percentage of the labour force.

Vocational and technical education

Some indicators distinguish between "general and academic" and "vocational and technical" education. Vocational and technical education comprises educational programmes, generally offered by countries

at the secondary and non-university tertiary level of education, that prepare participants for a specific trade or occupation or a range of trades and occupations within an industry or group of industries. Completion of a vocational or technical programme can result in direct entry into the labour force or prepare students for entry into technical and vocational tertiary programmes and institutions. Graduates of vocational schools often attend further educational programmes at the same or higher level.

School-based and combined school and work-based programmes

Some indicators divide vocational and technical programmes into school-based programmes and combined school and work-based programmes on the basis of the amount of training that is provided in school as opposed to training in the workplace.

In school-based vocational and technical programmes, instruction takes place (either partly or exclusively) in *educational institutions**. These include special training centres for vocational education run by public or private authorities or enterprise-based special training centres if these qualify as educational institutions. These programmes can have an on-the-job training component, *i.e.* a component of some practical experience in the workplace.

In combined school and work-based programmes, instruction is shared between school and the workplace, although instruction may take place primarily in the workplace. Programmes are classified as combined school and work-based if less than 75 per cent of the curriculum is presented in the school environment or through distance education. Programmes that are more than 90 per cent work-based are excluded.

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