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*Improving early childhood and primary education is fundamental to developing successful policies for lifelong learning.*

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# Lifelong learning for all

Donald J. Johnston, Secretary-General of the OECD

**A**s we enter the era of the knowledge society, a recent survey of 12 OECD countries provides a sobering thought: at least a quarter of the adult population fails to reach the minimum literacy levels needed to cope adequately with the demands of everyday life and work, let alone structural economic and social change. Sobering indeed, and it is a finding which poses a formidable challenge to education, social, labour market and economic policies. In January 1996 the OECD education ministers agreed to develop strategies for 'lifelong learning for all'. The approach has been endorsed by ministers of labour, ministers of social affairs and the OECD Council at ministerial level. It is an approach whose importance may now be clearer than ever.

The economic rationale for lifelong learning comes from two principal sources. First, with the rise of the knowledge-based economy, the threshold of skills demanded by employers is being constantly raised. Certainly in respect of skills, the migration from the farm to the factory was easily accomplished compared with what is required for the transition to the knowledge economy. Obviously the rise in unemployment in many OECD countries since the mid-1970s and widening income gaps in others are a product of this knowledge and skill gap. Individuals with low skills have been and will continue to be penalised. Second, technological developments demand a continuous renewal and updating of skills, as career jobs with a single employer become rarer and as job descriptions evolve and diversify rapidly under shifting market conditions.

There are irresistible social arguments in favour of promoting education beyond traditional schooling and throughout adult life. The distribution of learning opportunities is already quite uneven and the polarisation between the knowledge 'haves' and 'have-nots' poses a new and pressing political challenge. Apart from unemployment and widening earning gaps there are other problems too; those in small and medium size firms find it harder to gain access to learning than employees of larger firms and in general women have poorer access than men. These discrepancies gnaw at the very fabric of democracy. Lifelong learning strategies can play an important role in breaking the cycle of disadvantage and marginalisation and so reinforce social cohe-

sion. And lifelong learning can instil creativity, initiative and responsiveness in the individual, and therefore deliver better personal economic security.

Lifelong learning does not mean 'recurrent' training, but a constant relationship with education, starting with an emphasis on 'learning to learn'. And while formal education still represents the cornerstone of teaching, the less formal settings of the home, the workplace, the community and society are integral parts of the learning environment too, just as they are part of the foundations of economies and societies. Lifelong learning is already a reality in many OECD countries. The challenge is to find ways of extending it to all.

The importance of basic education cannot be emphasised enough. Lifelong learning policy must begin by strengthening the education of the young. Research suggests that children absorb much more in the first decade of life than thereafter. Early education brings long-term benefits, not only by reducing spending on adult remedial programmes later on, but by equipping people with learning tools that will serve them and their societies for the rest of their lives. Previous generations referred to the importance of the three 'Rs': reading, writing and arithmetic. They were right. These are the essential tools for lifelong learning. Preventing under-achievement and premature school leaving, and facilitating the transition from conventional education to working life are key to building lifelong learning policies. The linkages between different sectors of education and training have to be strengthened, and the pathways between learning and work made more flexible.

Education should not be thought of in isolation, and for policy to work all the stakeholders will have to come together to mobilise the necessary resources. There is a need to develop stronger, more coherent partnerships between a wide range of actors across society.

Of the historical constituents of economic growth – land, labour and capital – human capital has emerged as the most important. Resource-poor societies have developed it to engineer impressive comparative advantages. The foundation upon which human capital is built must be education, especially early childhood and primary education, where the role of the state is fundamental.



# Opening pathways from education to work

Marianne Durand-Drouhin, Phillip McKenzie and Richard Sweet

*The pathways linking full-time education and work can be long and complicated. The journey is an uncertain one, particularly for those young people who have struggled in education from an early age and expect to have little or no contact with tertiary education. Government policy in OECD countries has often concentrated on providing support to these groups after they have left school. Yet the evidence suggests that improving educational attainment would boost young people's chances and at a lower cost to the public purse.<sup>1</sup>*

The participation rate in education has been rising in OECD countries in recent years. Yet, on average around a quarter of young people leave school without completing their upper-secondary education (Table). Intense competition in the labour market and the rising demand for skilled labour make it hard for them to find stable employment, often preventing their smooth integration to adult society. Policies to tackle this have tended to focus on the problems in the transition stage itself, though with mixed results.

Many of the obstacles young school-leavers face are caused by failure or under-achievement at school. Early school-leavers find it difficult to get work simply because they do not have the sound general education, information technology skills and foreign languages which most

growth sectors require. This is particularly true of services, such as in health and information technology, where much employment is being created in OECD countries. And even in those expanding services where skills are not a priority, young job seekers can still be crowded out by over-qualified competitors.

How quickly young people find their first job after leaving school has a powerful effect on their employment and career prospects and a poor start in the labour market can be difficult to overcome.<sup>2</sup> Unqualified early school-leavers tend either to take up part-time or temporary jobs, or to become unemployed. Some leave the labour force altogether.

On the principle that prevention is better than cure, the pathways to work and adult life would be improved by aiming government policy first and foremost at reducing failure levels at school.<sup>3</sup>

1. *Education Policy Analysis*. OECD Publications, Paris, forthcoming 1998.

2. *Employment Outlook*. OECD Publications, Paris, 1998.

3. *Overcoming Failure at School*. OECD Publications, Paris, forthcoming 1998; see pp. 8–10.

That said, improving the success of education is clearly not enough, as the evidence for groups with and without full secondary education in different OECD countries shows.

## Staying in work

There are striking differences between the experiences of people with low levels of qualifications in different countries. Early school-leavers in Germany have more success in obtaining and keeping work in the first five years after leaving initial education than their counterparts in Australia, France, Ireland or the United States (Figure, p. 7). The average job duration for the United States is the shortest, at 3.3 years employment for men and just 1.7 year for women. In each of these five countries people

Table. Getting started,<sup>1</sup> 1995  
%

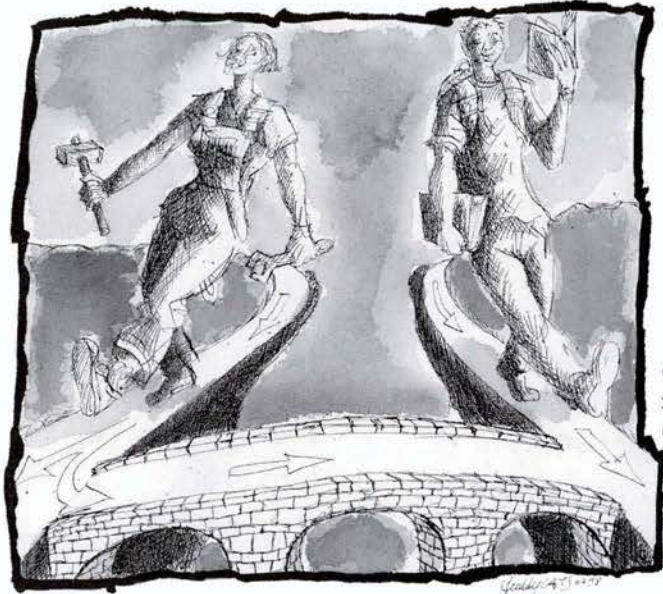
	Total	Men	Women
Australia	32	28	36
Canada	16	18	13
Czech Republic	7	7	8
Denmark	34	37	30
France	11	11	11
Ireland	26	31	21
Korea	6	8	4
Poland	13	15	10
Spain	41	46	35
Sweden	12	11	13
Turkey	65	59	71
United Kingdom	11	11	11
United States	15	16	13

1. 20–24 year-olds whose highest level of educational attainment is lower secondary school.

Source: OECD

Marianne Durand-Drouhin, Phillip McKenzie and Richard Sweet, OECD Directorate for Education, Employment, Labour and Social Affairs; els.contact@oecd.org

# Opening pathways from education to work



with higher qualifications are more likely to work in the years after leaving education than their less qualified counterparts. But between countries the rule does not appear to hold. For example, young German men who have dropped out of school early spend slightly longer in employment – an average of 4.4 years for their first five years out of school – than the 4.2 years spent at work by young Australian men who have completed their tertiary education.

## A question of learning

A commonly cited reason for Germany's strong performance is its apprenticeship system, from which young adults clearly benefit. Apprenticeships are also one of the reasons why youth employment in Germany is relatively low: it stood at 10% in 1997, compared with an OECD average of 13.4% and an EU average of 20.4%. Apprenticeship systems are also important in Austria, Denmark and Switzerland. Their success has prompted other countries to implement similar systems or to expand existing ones. Australia, Norway, the United Kingdom and the United States all have growing apprenticeship systems.

But are apprenticeships the way forward for all OECD countries?

For a start, they are not easy to get right, and particular apprenticeship systems cannot simply be copied from one country to another. This is because a whole range of social, economic and political conditions have to be in place for apprenticeship systems to work. Employers have to be ready to co-operate in formal groups with public authorities to design and implement training regulations, courses and certification. Another condition appears to be the cultiva-

tion of a strong social partnership between governments, employers and trade unions to agree on wage levels and other training conditions. The downside of all this is that the process can be slow and sometimes rigid, since changes can only be implemented after a lengthy and exhaustive period of analysis, consultation and policy debate between the partners. That means that dedicated resources, in terms of both time and money, have to be made available.

Apprenticeship systems also raise questions of balance between initial and continued life-long learning. In countries with extensive apprenticeship provision young people are tracked into at least two different education streams between the ages of 10 and 12. General and vocational pathways are often kept quite separate from each other at the upper secondary level and the connections between apprenticeship training and tertiary education remain limited. In a bid to improve the balance of learning some OECD countries, such as Australia and the United Kingdom, moved away from this two-streamed approach in the 1960s and '70s to develop comprehensive education instead, with an emphasis

*4. Pathways and Participation in Vocational and Technical Education and Training, OECD Publications, Paris, 1998.*

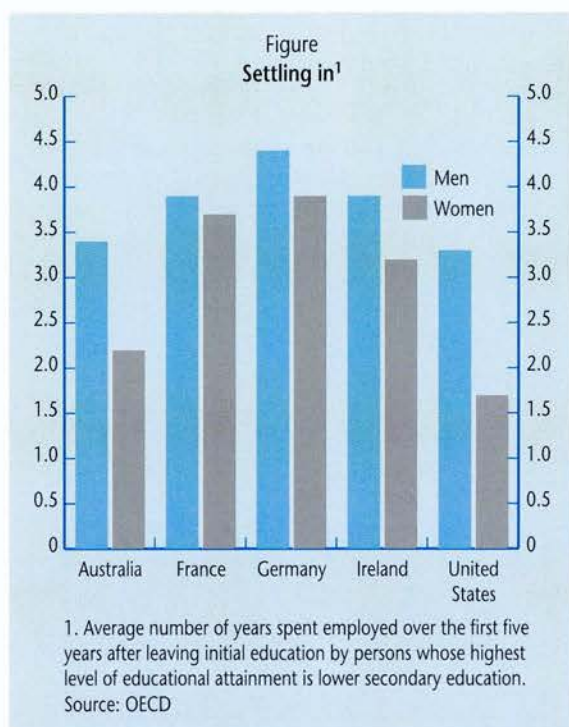
on conventional secondary courses. After that move the perception grew that vocational streams were inferior in quality to conventional education.

This view appears to be increasingly held in the traditional apprenticeship countries themselves. Countries like Austria and Germany now find that more and more young people want to register in general education instead of vocational and technical schools. Apprenticeship programmes are still strong, but are no longer as popular as they were, in part because difficult economic times and increasing competition have forced firms to become more reluctant to provide them. But the main reason would appear to be that, in contrast to full-time vocational and technical education, apprenticeships generally do not leave open the possibility of entering tertiary education at a later stage.

## Double-qualifying pathways

Traditional apprenticeship arrangements may not therefore hold the answer for all OECD countries seeking to reduce youth unemployment or to facilitate young people's transition from education to work. A broader approach would be to create pathways which can meet both the demand for conventional tertiary education and the requirements of the job market. These double-qualifying pathways are in the development stage in a number of countries. They include many types of early contact with the labour market, from formal apprenticeships to internships and student projects. They enable students to see the worlds of work and study as intertwined and therefore create a positive attitude towards lifelong learning. And studies show that vocational approaches which can qualify young people for both work and tertiary-level study are attractive.<sup>4</sup>

Austria, for example, has been providing double qualifying vocational/technical pathways in its full-time schools (Berufliche Höhere Schulen, or BHS) for several years. These programmes are highly regarded by employers and provide access to tertiary education as well. The



BHS curriculum includes obligatory summer internships, in which students are typically required to solve real problems in the firm. This pathway takes a year longer than the traditional four-year programmes of upper secondary education. But young Austrians tend to prefer it to standard vocational education and now more than 20% of young people take it at the end of compulsory schooling. The immediate employment prospects of the graduates from the BHS schools are at least as good as, and often better than, those of apprentices. In addition, because their occupational qualifications are of a stronger level and provide access to higher education, the BHS graduates are able to make better careers.

The community colleges of North America could have the same potential as the Austrian BHS, even though they cater for a wider spectrum of the population. The fact that they are open to all age groups makes them very flexible. They offer school leavers the opportunity to obtain occupational qualifications and, if they wish, to prepare for entry into higher education. Although the community colleges do not have the same formal structures for company involvement as the Austrian BHS, many have devel-

oped their own successful partnerships with industry at local and regional level.

## Nordic policy has coherence...

Beyond specific organisational considerations, there is a wider issue of how to develop coherent education, labour and social policies for young people on preparing for work and adult life. The Nordic countries have come closest to asking that question and have spent two decades developing the youth guarantee approach, which provides an opportunity to all by way of a place in either education, training or work up to the age of 18 or 20. Every attempt is made to ensure that the places on offer are both useful and relevant. Though possible, it is difficult for unemployed young people to refuse an opportunity once it comes up and a system of incentives and penalties, with tight safety nets for those who fail, has helped this policy approach to work.

Although their institutional frameworks differ, the approaches in both the Nordic and the traditional apprenticeship countries have a lot in common. Both are based on the notion of social responsibility towards young people's integration into work. They both depend on the active engagement of employers and trade unions in policy making, programme design and certification. Their broad principles strengthen social and economic policy generally, and rather than being specific to their country's traditions and institutions, can be applied to many other OECD countries.

The Nordic approach highlights the importance of making a distinction between teenagers and young people over the age of 20, who are beyond the normal age of upper secondary education. The most appropriate way to help high-risk teenagers to make a successful transition to work and adult life may, in many cases, be to keep them in school (or apprenticeship) for a

further year or two, to help them to return to school quickly, or to get them into post-school training as rapidly as possible. The measures required for the 20–24 age group are of a different kind. In this group achieving stable employment combined with providing skills training, are the priorities. For this, the age limits for apprenticeships and various educational programmes might have to be raised. And subsidies or tax relief might have to be considered for employers who provide training in the workplace. It is important to strike the right balance of incentives and penalties in welfare support to encourage members of this older age group to seek and take up employment and training.

## ... but is it the answer?

Youth unemployment has not been eradicated in the Nordic countries. However, the number of very young people in the labour market has been considerably reduced, and strong partnerships have been developed between schools, local communities and businesses. The Norwegian and Swedish approaches can put a strain on municipal resources, particularly because of their emphasis on following-up young school leavers, identifying those who have failed to make a successful transition, and developing individual action plans for them. But the Nordic approach has the virtue of keeping the number of early school leavers down. Most of all, it shows that the chances of policy intervention working are higher while young people are still in school. ■

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# Preventing failure at school

Karen Kovacs

*Governments are under pressure to improve the quality, efficiency and relevance of their education systems. Too many young people leave initial schooling ill-equipped for life and work. A better understanding of educational failure and how to address it would help policy-makers to achieve their goals.<sup>1</sup>*

Educational 'failure' was once seen as an almost inevitable, if regrettable, consequence of schooling. Today, failure has become a target of policy action in its own right. Efforts to prevent failure, to boost overall achievement and to reduce the incidence of dropping out of school are being driven by a range of economic and social concerns.

Recent studies show that some 15–20% of young people in OECD countries leave secondary school without the skills and qualifications they need to enter the labour market.<sup>2</sup> Moreover, it appears that as many as a third of all adults in seven member countries have levels of literacy and numeracy which are inadequate for their job requirements.<sup>3</sup> The scale of this problem raises a concern which goes beyond factors relating to economic competitiveness. Low educational attainment has increasingly damaging consequences for individuals and societies. It can consign people to low-paid jobs or long-term unemployment and undermine social cohesion.

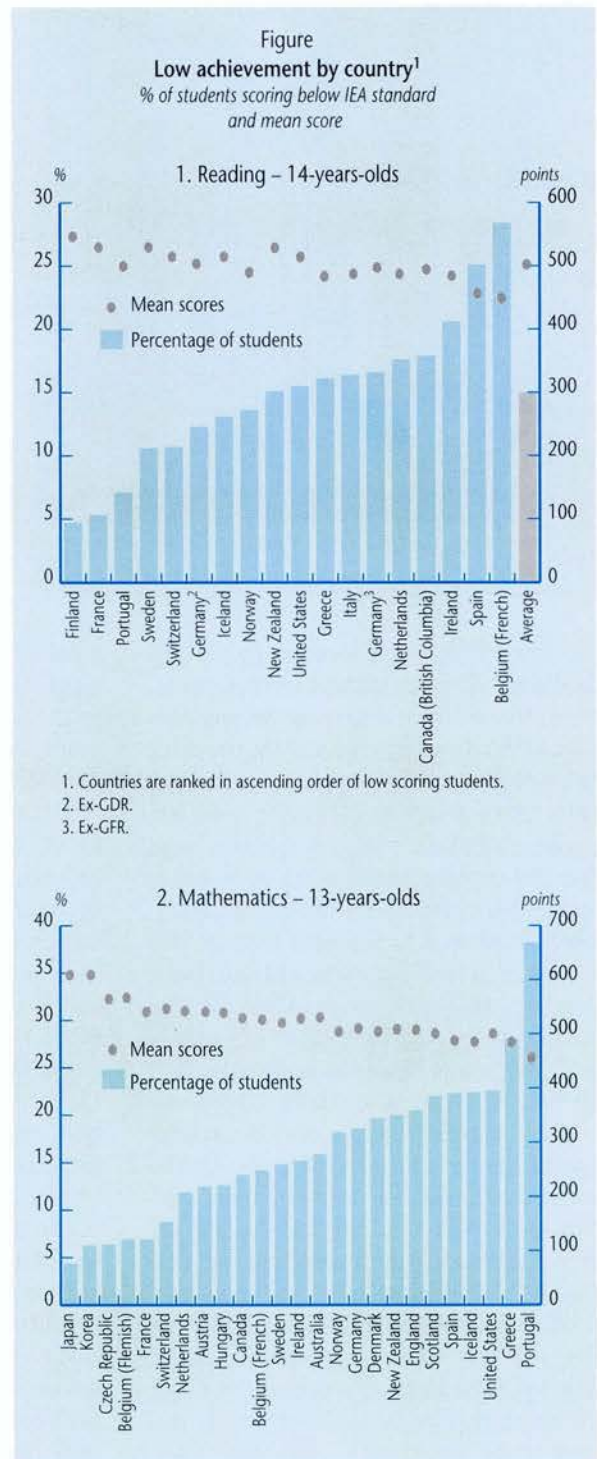
Another reason for dealing with under-achievement is more concrete and pragmatic,

and that is to reduce the strain which low-achieving students exert on national educational resources. Back in the 1980s, France estimated that around 30% of its education budget covered costs arising from failure at school, mainly due to grade repeaters and drop-outs. The French Community of Belgium surmised that its education expenditure could be cut by around 10% if the practice of repeating grades was abolished.<sup>3</sup> In the 1990s, there is a shared awareness across the OECD area that failure is best addressed at an earlier rather than a later stage, since a successful outcome would be more likely and the intervention more cost-effective.

## Seeing failure as a 'process'

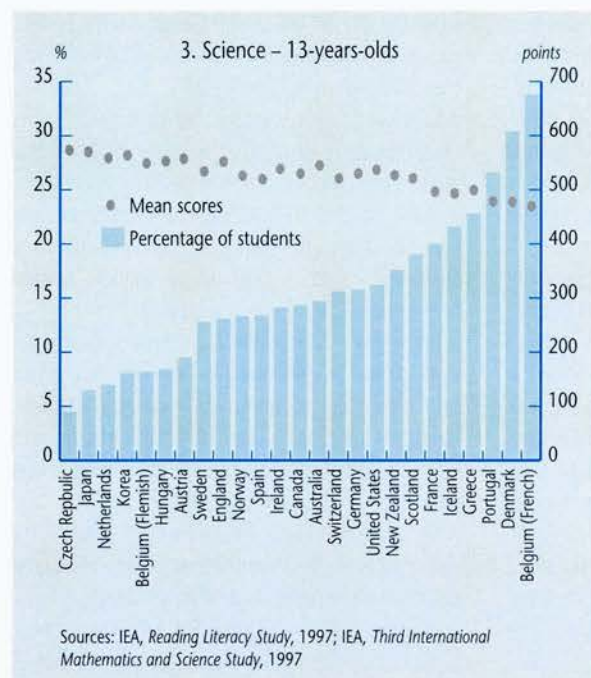
Dealing with educational failure, pressing as it might be, is a highly sensitive issue. Students and organisations can easily be stigmatised,

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and morale and self-confidence further impaired. This is why much controversy has been caused



by drawing attention to institutions which are performing poorly in the hope that they will improve. Some OECD countries – for example France, New Zealand and the United Kingdom – argue that doing so publicly is a necessary first step in helping under-performing schools to do better. Other member countries – such as Australia, Denmark, Finland and Italy – prefer to take the spotlight away from failure by promoting measures to enhance the ‘success’ of students and schools.

Whatever approach is taken, or labels used, the fact remains that unacceptably large numbers of students leave school every year with little or no qualification to speak of. To develop effective means for addressing such failure, policy-makers have to see it as a ‘process’ which students experience. The process has three aspects:

- failure at school itself, when students are consistently low-achievers or do not attain a minimum standard of performance at a given level of schooling

- early school leaving, with pupils dropping out of school before the end of their statutory education period

- post-school transition, whereby some young adults have difficulty integrating into adult life because of their lack of suitable qualifications or skills.

Despite the differences between national education systems in different OECD countries, various international studies, in particular those conducted by the International Association for the Evaluation of Educational Achievement (IEA), have helped to develop comparative measures of student achievement. They do this by giving similar samples of students from each participating country a common test. The IEA’s Reading Literacy and TIMSS studies show that there is a wide gap, within a country, between the highest scoring students and the lowest scoring ones.<sup>5</sup>

The data can therefore be used to identify low-achievers, who are most at risk of failing at school.

1. **Education Policy Analysis.** OECD Publications, Paris, forthcoming 1998.

2. **OECD Jobs Study.** OECD Publications, Paris, 1994.

3. *The International Adult Literacy Survey (IALS) was coordinated by Statistics Canada in partnership with OECD, the National Centre for Education Statistics, the US Department of Education and the Education Testing Service. The results for the first group of countries to participate in the survey (Canada, Germany, the Netherlands, Switzerland – French and German cantons – Poland, the United States and Canada) were released in Literacy, Economy and Society, 1995. Comparable data for a second group (the Flemish Community of Belgium, Australia, New Zealand, Ireland and the United Kingdom) were published in Literacy Skills for the Knowledge Society, 1997.*

4. *European Commission report on ‘Measures to Combat Failure at School: A Challenge for the Construction of Europe’, Brussels, 1996.*

5. *The 1990–91 IEA Reading Literacy Study of 14-year olds (applied in 32 countries, 19 of which are OECD members) and the 1994–95 Third International Mathematics and Science Study (TIMSS) of 13-year olds (applied in 45 countries, 23 of which are from the OECD area). The target population studied by TIMSS is the higher of the two grade levels in which most 13-year olds are enrolled and which, by convention, is referred to as the 8th grade, since in most countries it refers to the eighth year of formal schooling.*

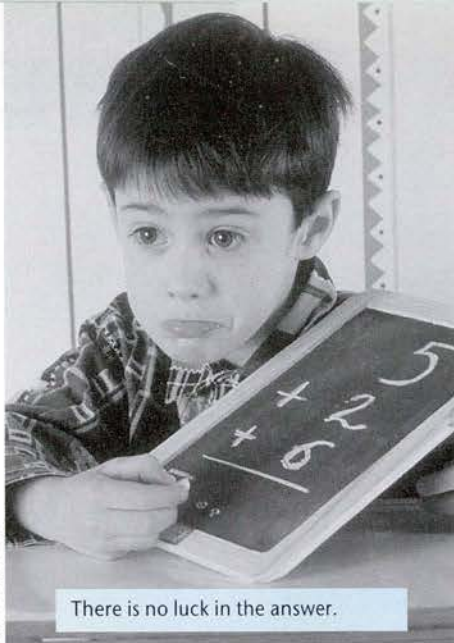
The gap in achievement between the lowest and highest scoring students is equivalent to between two and three years of schooling for science and widens to four years in some countries for mathematics. A similar picture can be seen for reading. In all school systems, in all three subjects and in corresponding grades, there is a substantial gap – equivalent to between two and four years of schooling – between the level attained by the weakest 25% of pupils and the level attained by the strongest 25%.

A common way of tackling low achievement is to have some vulnerable children repeat their grades. Most repeating is done at secondary school rather than at primary level, and more boys repeat than girls. But despite the arguments for making students repeat their grades, the evidence shows that the approach does not in fact reduce under-achievement. Rather, it can increase it.

As a result, grade repeating has been abandoned by some countries – including Denmark, Finland, Greece, Ireland, Norway, Sweden and the United Kingdom – and it has been restricted in France and Portugal. A new approach for helping slower learners is the system of two or three-year ‘cycles’. In this method, repeating is not allowed, except to some extent at the end of a cycle. It is being implemented at primary level in France and Spain, as well as in the French Community of Belgium. One advantage of this system is the flexible curriculum: children of the same age group can progress at different rates through the stages of a cycle. Another advantage is that courses can be geared more to individual needs than is possible in conventional systems, permitting multi-grade teaching and more accurate assessment of students’ strengths and weaknesses.

## Early school leaving

Young people who drop out of school without finishing a course of study, or who leave without the proper qualifications, run a higher risk of being unemployed or trapped in low income work. Even if they find work fairly quickly,



There is no luck in the answer.

Charon/Jerrican

the jobs they take are often only short-lived or low-paid. While they may appear good enough to tempt some pupils away from education, particularly those who come from areas of high unemployment, they are likely to offer little or no long-term prospects.

The age at which compulsory schooling ends in OECD countries varies between 14 and 18. Education systems with higher leaving ages seem to succeed in keeping more young people at school until the end of upper secondary education. So, would raising the age for completing compulsory education in those countries where it is lowest resolve the drop-out problem? Only in part, since there are many reasons why students decide to quit school early. Findings of the recent International Adult Literacy Survey (IALS) show that drop-outs are twice as likely to have left school for economic or family reasons beyond their control than because of a lack of interest in school or a desire to get a job.

What then can the education system do to ameliorate the drop-out problem? Reform of the curriculum to make it more interesting and useful to a wider range of students is one approach. Such reform has recently been carried out in Japan, where the conventional curriculum was judged to be excessively narrow. Other approaches include opening different pathways for students to advance through schooling and improving career guidance. Experience with new pathways is being examined in the OECD's review of the transition from initial education to work.<sup>6</sup>

## Inadequate basic skills

Some students finish compulsory education without having acquired the basic skills necessary to succeed in today's society. The link between inadequate skills and labour market potential has been analysed by IALS. The sur-

vey threw up several interesting points. For example, the highest risks of marginalisation, unemployment or low-income jobs used to be confined to those who failed to complete lower secondary schooling. Now, however, even the statutory period of education may be an insufficient basis for adult life. In most OECD countries, it seems that upper secondary education is increasingly necessary to improve the prospects of finding suitable employment with adequate pay.

Having said that, IALS shows that even many of those who have completed upper secondary education have poor basic skills. This implies that failure to acquire skills cannot be looked at narrowly in terms of school completion, but raises questions about the suitability of the school curriculum. Countries have to ensure that their secondary school graduates have the knowledge and skills necessary for their social and productive integration into modern society. Such a need is reflected in the efforts undertaken in some OECD countries (for example, in Germany, the Netherlands, the United Kingdom and the United States) to spell out more closely the standards or levels of skills young people should have attained by the time they complete a full secondary cycle. It is another matter to consider the ways by which this might be achieved.

Finally, the survey confirms that in Canada, Ireland and the United States the unemployment rate for young adults with poor skills is twice that for those with high skills. In the Netherlands and the United Kingdom the discrepancy is even larger. These findings highlight the importance of addressing the problems associated with under-achievement in school and ensuring wider educational opportunities for all.

## Strategies to fight against failure

Against the backdrop of global competition, combating failure or promoting success at school will remain a priority for OECD policy-makers in the years ahead. The following four principles should guide their efforts:

6. See pp. 5-7.

- Act early: Once under-achievement in its different manifestations has been properly identified, prompt action should be taken to prevent students at risk from continuing unchecked on the path to failure. It is also more cost-efficient to address the problems early.

- Combat failure together: Overcoming failure requires a long-term effort by educational authorities in conjunction with teachers and parents, along with other community groups. Clear leadership at the national level is required to mobilise public support and to co-ordinate the work of the relevant agencies.

- Encourage flexibility: Experience shows the importance of individually-oriented instruction and assistance; adequate assessment of students' strengths and weaknesses; a flexible curriculum; smooth pathways and transitions across levels; and appropriate career guidance.

- Develop the tools for action: In spite of the differences between member countries, learning from the experiences of others helps to build successful policies. Coming up with a set of best-practice guidelines would make sense, though to do so requires effective monitoring. Developing a comparable OECD database on educational failure and success would be an important step in this direction. ■

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# Widening the appeal of science in schools

Edwyn James

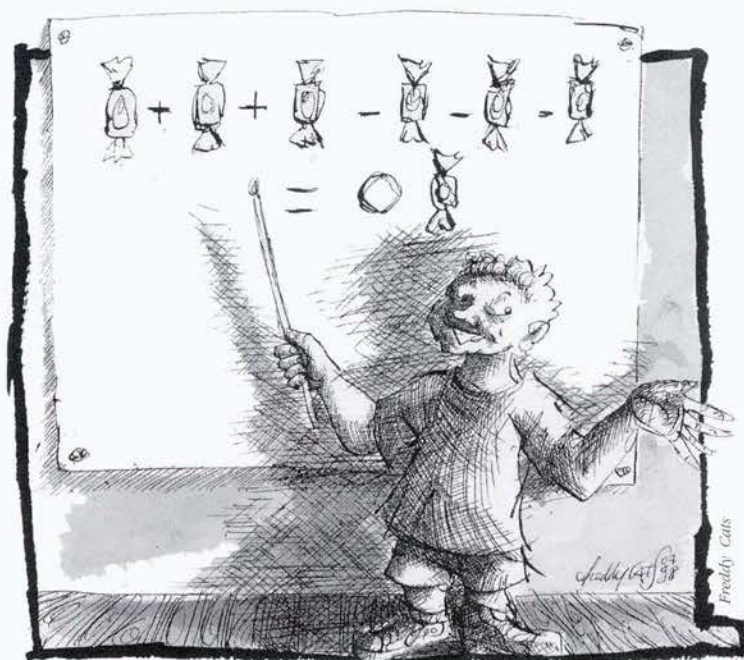
*Science, mathematics and technology are relatively unpopular parts of the school curriculum. In view of their economic and social importance, improving the attractiveness of these subjects will bring clear rewards, both to individuals and society. Several pioneering approaches suggest how these subjects can retain pupils' interest.<sup>1</sup>*

Over the past ten or fifteen years, there have been frequent expressions of concern that so few pupils are taking up mathematics, science, technology and related subjects. This relative lack of interest at school continues into adulthood, as is repeatedly shown both in surveys of scientific literacy<sup>2</sup> and by the regular calls for more scientists and engineers and more awareness of their work and importance. Although hard to quantify, the variation between countries of adults well-qualified in these areas is remarkable, and the lack of equity between men and women adds to the concerns.<sup>3</sup>

In an attempt to discover how to increase enthusiasm for science, mathematics and technology, the OECD examined 23 specific innovations in teaching and learning styles in 13 of its member countries.<sup>4</sup> Each new approach was carefully investigated, and common trends across them identified, making this study the largest of its kind yet undertaken.

The innovations generally started from the daily-life interests and realities of the students and encouraged them to become involved in a practical sense. They were more student-centred, designed to engage interest and commitment, and in some cases the students were allowed to exercise more personal responsibility for their own learning and its assessment. There was also a willingness to cross the boundaries between conventional subjects such as physics, chemistry and biology, making the presentation more akin to the complex and multi-disciplinary matters of interest in the contemporary world, such as genetic engineering or biotechnology. Neither of these subjects fits neatly into the traditional school sciences, though they involve aspects of all three and also incorporate mathematics.

Evidently, such changes in the learning situation have profound implications for the teacher, who will now have to deal with a wider subject area incorporating elements as diverse as ethics and economics. The OECD study revealed a concept of teacher professionalism which was con-



siderably enhanced, with the teachers being seen not so much as the only available figures of authority, but rather as people who were well connected and thus knew where to seek inform-

1. At the end of 1997 the OECD Centre for Educational Research and Innovation (CERI) completed a large-scale dissemination programme for an international study of innovations in science, mathematics and technology education, the initial findings of which were published in *Changing the Subject – Innovations in Science, Mathematics and Technology Education*, OECD/Routledge and Kegan Paul, London, 1996.

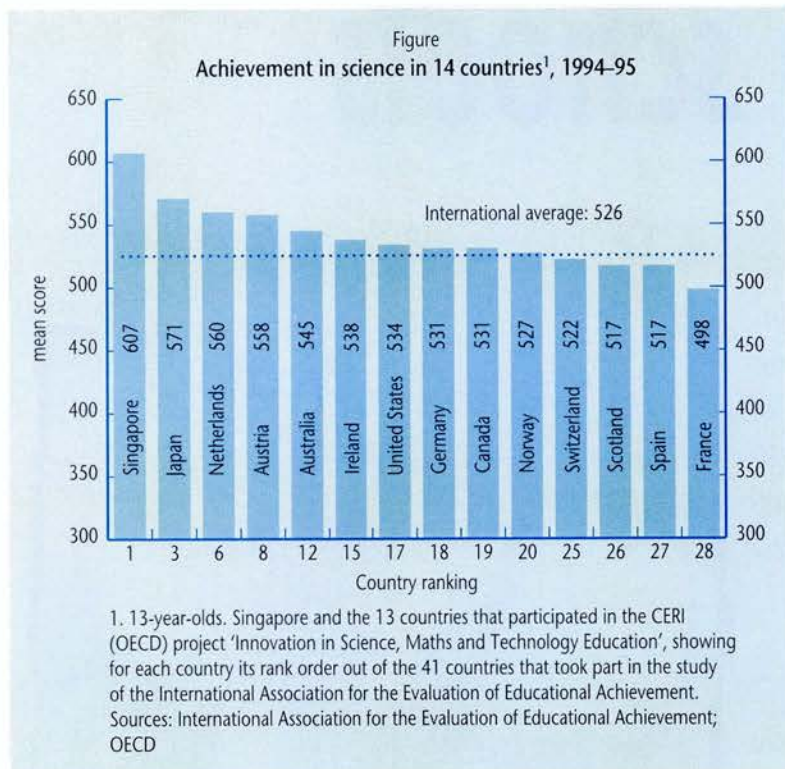
2. See, for example, Jean-Eric Aubert, 'Science and Society: Avoiding a Gulf', *The OECD Observer*, No. 205, April/May 1997, which reports findings that at least 87% of the adults in 14 industrial nations were 'less than well informed' about science.

3. Data for selected countries drawn from *Science and Engineering Indicators – 1996*, National Science Foundation, Washington DC, 1996.

4. Australia, Austria, Canada, France, Germany, Ireland, Japan, the Netherlands, Norway, Scotland, Spain, Switzerland and the United States.

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# Widening the appeal of science in schools



ation and expertise to complement their own. The teachers, indeed, were required to show an ability to cope with uncertainty and to reach informed judgements. That attitude is quite unlike the neatly classified domains of traditional teaching, where teachers are expected to cope in isolation.

The countries participating in the study were concerned to improve the quality of the education they provided and increase the subject-appeal, even though their 13-year-old science students showed average or above-average scores in international comparisons (Figure).<sup>5</sup> Japan, for instance, is a country where there is a contrast between strong social conformity, which ensures the pursuit of success on examinations, and the perceived importance of developing creativity and lateral thinking among young people.

The effectiveness of an integrated, open-ended approach was shown in a Swiss study, which used computer modelling to investigate the rate of growth of a plant (the amaryllis) and

as solubility, acidity and analysis, but on a 'need-to-know basis', meaning that the chemical topics were introduced only if they were relevant to the social issues to be addressed, such as environmental and health concerns. The eight units extended across food, climate, health, chemical resources and industry, petroleum and radioactivity, thereby ensuring wide chemical coverage and encouraging the students to become scientifically literate, not merely equipped with a basis of technical chemical knowledge. The students' reaction was extremely positive.

## Getting students involved

The studies have emphasised how important it is that the student acquire knowledge from practical involvement. Two further examples come from elementary science teaching in Japan for ten-year olds. One class was taken to a river

the spread of an epidemic (AIDS). Fourteen-year-old students became adept at forming hypotheses from their own data-analysis, in situations which did not permit unique or definitive solutions. And an American study, entitled 'Chemistry in the Community', set out to integrate scientific, technological and social topics under eight units. One of these, an investigation of how to meet demand for water, dealt with such conventional topics

to count fish but found none, and so instead they recorded the amount of waste materials such as bottles and cans; higher upstream they found fish and less pollution. In a second case, young students watching a video saw a concrete icicle which, as the camera pulled back, was by degrees seen to be formed from a concrete lintel, in a building which they then recognised to be in their own district. The phenomenon, analogous to icicle formation, is caused by the degradation of the concrete as it is attacked by acid in the air. In both instances it was easy to go on to develop aspects of environmental awareness in a way that now spoke to the students. The scene was set for effective and committed work on the causes and consequences of pollution, with the students keen to make moral judgements and explore responsibilities.

An approach confined to the classroom – more abstract and with more limited, purely academic objectives – may serve a minority, but for most students it can lead to passive assent, even disengagement. A contrasting approach in a Norwegian school asked their 13-year-old students to conclude their work on electric circuits by building a headlamp. They worked with such alacrity that their teachers were confident that every one had acquired the desired competence to connect batteries and bulbs appropriately.

Where students operate with more autonomy, they are encouraged to channel their own interests and enthusiasms into the work. Some US students used the Internet to share with schools elsewhere data they had gathered themselves on such matters as amount of rainfall, degrees of acid in local water, and the rate at which domestic waste was generated. The result was per-

5. Data taken from *The Third International Mathematics and Science Study report 'Science Achievement in the Middle School Years'*, International Association for the Evaluation of Educational Achievement, Chestnut Hill, MA, United States, 1996.

6. Publication details not yet available, but intended to be a companion volume to the Spanish edition of *Changing the Subject*, op. cit., Matemáticas, Ciencia y Tecnología – Innovaciones Educativas, Grupo Editorial Iberoamérica, Mexico, 1997.

7. Those of Norway and Japan can be accessed on the Internet, along with other information about the international study: [http://www.oecd.org/els/edu/ceri/objective/6/snte/snte\\_home.htm](http://www.oecd.org/els/edu/ceri/objective/6/snte/snte_home.htm).

sonal identification with these important contemporary concerns and an eagerness to undertake further work, such as experimentation, field trips and action in the community. Students who had become aware of the scale of use of packaging materials, for instance, wanted to see social action on reducing their use and recycling.

## What teachers can learn

One clear lesson from the success of these initiatives is that there should be more emphasis on learning from experience and less on teaching: a more student-centred approach in schools can capture and maintain interest in science, mathematics and technology. Another is that the role of teachers has to be viewed more comprehensively, extending to important activities outside the classroom, such as pioneering innovations and encouraging their development and adoption; meeting colleagues and others for mutual support and to share insights; working with researchers to develop new curriculum approaches. Thus, the US pre-calculus scheme (a one-year introduction to calculus for 17-year-olds) originated from much out-of-hours work by a small group of enthusiasts, who subsequently infected others with enough enthusiasm for the scheme to be spread successfully elsewhere. The Swiss computer modelling innovation likewise had researchers and teachers working together in the classroom and continuing in dialogue afterwards.

Furthermore, at the point of delivery – the classroom – the changes the innovations require imply considerable changes in the role and expertise demanded of the teacher: in subject competence, as integration puts knowledge into a more holistic framework, and in teaching methods, as the traditional rows of desks and pupils listening to the teacher give way to students who are more actively and responsibly involved. The teacher becomes the manager of a more varied learning environment, within which, far more than previously, the skills of assessment can be developed and deployed as an aid to learning and motivation.

### FOCUS

*'Kids did not like what we had before: we were studying light waves, sound waves, doing cells, talking about oceanography [...] but it never made any connections [...] to the kids' lives.'*

From the US study based on the simulated 'voyage of the Mimi', in which students act the part of scientists and explorers.

*'I would like them [the students] to be able to think mathematically [...], to look at a problem and ask themselves questions that lead them towards solving or understanding the problem, and not just mechanically and blindly say, 'I need this formula ... I don't know why.'*

A US teacher talking to colleagues in an 'Urban Mathematics Collaborative'.

*'In this field [student self-assessment] many have undergone a fine development. They see it can be of use to them and are now honest and clever when assessing themselves. As a result of this they now understand that they must take responsibility for their own learning.'*

A Norwegian mathematics teacher.

*'Initially, some of the teachers were apprehensive about dealing with mathematical situations in which there was no right answer. One of them, in fact, [explained] that the reason she had gone into mathematics was that everything had an answer. It was disturbing for her to find out otherwise.'*

A US teacher engaged in a novel pre-calculus course developed from applications and real-life problem-solving.

*'By taking [Chemistry in the Community] I realise how important science is. I became a scientist in my own right and thought about important issues that did not seem that important before. [...] I catch myself trying to recycle and being aware of our environment. I am glad I took this class.'*

*'They were completely wild about this activity. [...] I have never seen kids so proud. I have one kid who is usually not active in science, he thinks that everything is so boring. But this activity was great for him.'*

A Norwegian science teacher.

Experience can be gained also from the obverse side of the coin, when attempts at reform have been less successful. For instance, teachers are sometimes required to introduce changes that are imposed from above by government without adequate consultation, and which have thus caused tension and unease. If classroom change is to be implemented effectively, professional involvement is essential. In Norway ministry officials and researchers have worked alongside teachers in developing and introducing assessment reform; and in Germany researchers and teachers have collaborated to design, evaluate and modify integrated science curriculum materials. Not all teachers, of course, will want or be able to assume the wide-ranging responsibilities of their new role, but the most forward-looking should certainly be encouraged to contribute in this way.

The series of conferences and seminars arranged around the world by the OECD to promote the effort to increase the popularity of science, mathematics and technology in schools is being turned to practical purpose. A report on a conference in Mexico, for example, will be designed as a handbook for teachers<sup>6</sup> and a film of the conference, supplemented with interviews with leading contributors, released on video. This, the last of the international conferences, was the most ambitious, though earlier conferences produced reports that have been widely circulated.<sup>7</sup> The campaign has also stimulated the publication of a series of articles in academic journals, the educational press and elsewhere in English, French, Japanese, Norwegian and Spanish, thereby stimulating debate among informed and influential people in education and beyond: politicians, academics, researchers, senior teachers and school managers, parents and students. The result has been the birth of a dialogue between many communities of interest, each with its own insights and perspectives.

All these initiatives show a growth in respect for the individual student, and more account being taken of their different backgrounds, starting points and tastes, though there are no standard prescriptions for engaging the interest of every young person in science, mathematics and technology. The implications for teacher profes-

# Redefining

Alan Wagner

ionalism are considerable, and accord well with the notion recently floated by the UK government as well as by other countries of a new grade of teacher with professorial status. Such teachers could support and guide trainees and other colleagues more substantially than hitherto. More diversity of roles within the profession might allow the admission of teacher-assistants, who could perform a valuable function as an extension of the new teacher's influence without prohibitive cost.

It may appear to be self-evident that increasing the appeal of science, mathematics and technology to young people depends on what is done in schools. But the design of the curriculum is vital. It must set out to engage interest, by starting from present-day experience and concerns, by being practically orientated, by acknowledging the rights and developing the responsibilities of each individual. For such a transformation to be effected, more will be asked of teachers. There must be every encouragement for some of the ablest men and women both to enter and to remain within teaching, which underlines the importance of a more professional career structure and a wider recognition of its stature. ■

*Rising participation rates, diminishing labour market opportunities and intense competition for public and private funds have combined to put tertiary education policy under renewed pressure. Moreover, education at this level is increasingly led by demand, with institutions of all types having to adapt themselves to students' requirements. Governments have to readjust their policies too.<sup>1</sup>*

**T**ertiary education is a key part of life-long learning and a cornerstone of today's knowledge society. It is also a broader notion than it used to be, incorporating most forms and levels of education beyond secondary schooling, and including both conventional university and non-university types of institutions and programmes. Tertiary education also means new kinds of institutions, work-based settings, distance learning and other arrangements. Unlike conventional definitions used by the OECD before,<sup>2</sup> tertiary education now puts the focus as much on demand as it does on supply. In other words, it is more student-led than it was in the past, and that has new implications for stakeholders, institutions and resource planning.

cedures, as well as meeting rising costs. And even though the growth in the level of tertiary participation in education has slowed in OECD countries since the start of the 1990s, the participation rate – which is the overall proportion of any post-school age group attending tertiary education – is rising (Table 1). In the United Kingdom, the participation rate of school leavers is slightly above 30%. But this figure fails to take into account the participation rate of mature students; if the latter is included, the probability of participation in tertiary education over a lifetime in the United Kingdom may be above 60%.<sup>3</sup> The Australian education minister, David Kemp, said in a recent policy statement that the 'probability of a current teenager entering some form of post-secondary education or training at some point in their life is near 90%'. This is a high estimate because it considers education over a lifetime and embraces a broad definition of post-secondary education. In Finland, a similar picture has emerged. When the OECD undertook a review of higher education there in 1994, the target participation rate was considered to be ambitiously high, at around 65%. But that figure has since been reached and the government expects the rate to rise further.

One conclusion from all this is that tertiary-level studies are no longer reserved for an exclusive minority. In fact, the trend seems to be towards universal participation. Learners at this level are more diverse in terms of their backgrounds, interests and career paths. The new challenge is how to adapt programmes to student

## Tertiary education is expanding

Tertiary education is where the pressures of growth and change are most acutely felt. As observed in each of the countries participating in the OECD's current review of tertiary education, the challenges are several. They include how to accommodate students, mobilise staff and resources, devise curricula and teaching pro-

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# tertiary education

demand, rather than the traditional approach of plugging students into programmes. This requires that the definition of standards be thought through properly; a practical approach would be to devise a range of standards and qualifications based on a common understanding of learning objectives. There are instructive examples of this in several countries: one is the former Higher Education Quality Council's work in the United Kingdom on 'graduateness' – a new notion which attempts to capture what each graduate should know and be able to do; reforms in the United States to strengthen the general education parts of degree programmes is another example.

Increased student diversity has affected an earlier tendency among different types of institutions to establish distinct missions and patterns of funding, governance and recruitment. The direction of change – as seen in countries such as Belgium (Flemish Community), Denmark and New Zealand – has been to introduce more diversity but less formal differentiation.

New strategic relationships are also emerging between different institutions to meet new demands, for example, in the United States, notably

Virginia, with credit transfers between community colleges and degree institutions in the public and private sectors. The use of telecommunications-based distance learning tools have also spurred co-operation, such as between Blue Ridge Community College and Old Dominion University, via Teletechnet.

In New Zealand, recognition and linkages are improving between different educational institutions; secondary schools now offer tertiary-level modules which polytechnics and universities may accept and credit towards their qualifications. In Australia a few universities have absorbed within their institutional structures some technical and further education institutes (TAFE) which are not a formal part of the higher education system. There are also programmes being offered jointly by special training colleges and private universities in Japan.

In Denmark a policy review is underway as to the possibility of mergers between universities and those institutions running medium-cycle programmes, such as in teacher training, business and physiotherapy. Bringing short-cycle programmes, which tend to provide advanced courses in business fields, such as accounting, into the institutions

offering medium-cycle programmes is also under discussion.

The role of private institutions in education is evolving and conventional private suppliers are finding themselves having to adjust to the new challenges in education too. Private involvement is already important in tertiary education in Japan, Korea, Portugal and the United States, and policies are being proposed to open up the field to private establishments in New Zealand and Australia.

## Student demand is driving change

Many new pathways and combinations in education in OECD countries are the fruit not so much of deliberate policies, but rather of choices made by the students themselves.<sup>1</sup> And such is the diversity of demand that students can no longer be easily distinguished according to programme enrolment. Full-time and part-time students, young and mature, fee paying or grant assisted – all are to be found working alongside each other in the same classrooms, laboratories,



Freddy Cats

Table 1. Net enrolment in public and private tertiary education by age group, 1985–95

	Age 18–21		Age 22–25		Age 26–29	
	1985	1995	1985	1995	1985	1995
Australia	–	29.8	–	14.1	–	8.9
Belgium	24.5	40.7	7.2	16.5	1.5	3.6
Denmark	7.4	8.9	16.3	22.6	8.2	11.2
Germany	8.8	10.6 <sup>a</sup>	15.5	17.0 <sup>a</sup>	8.9	11.4 <sup>a</sup>
New Zealand	14.9	28.6	9.6	13.3	–	7.2
Norway	8.8	17.5	13.2	23.6	5.7	10.0
Sweden	7.9	13.0	11.3	16.6	6.5	7.5
United Kingdom	–	25.8	–	9.3	–	4.8
United States	33.0	34.7	14.5	20.7	8.2	10.5

– not available  
a. break in the series.  
Source: OECD

1. *Redefining Tertiary Education*, OECD Publications, Paris, 1998.

2. *Towards Mass Higher Education*, OECD Publications, Paris, 1974; *Universities Under Scrutiny*, OECD Publications, Paris, 1987.

3. A. Smiters, P. Robinson, 'Post-18 education: growth, change and prospects', *The Council for Industry and Higher Education*, London, 1995.

4. *Education Policy Analysis*, OECD Publications, Paris, 1997.

# Redefining tertiary education

libraries and computing rooms throughout the OECD area. It is a trend which might be extended further. At their meeting in June 1998 OECD employment, labour and social affairs ministers drew attention to the importance of promoting a wider range of opportunities and activities for people as they get older (Table 2). Tertiary education features prominently in this vision. And while public, institutional and employer preferences and constraints remain important, the interests, backgrounds and demands of students are at the centre of thinking and planning.

**Table 2. Participation in formal education,<sup>1</sup> adult education and training<sup>2</sup> over the life-span**

Age group	Formal education 1995	Adult education and training 1994-95
19-21	44.11	46.57
22-24	22.19	45.47
25-29	10.77	44.69
30-34		40.92
35-39		40.39
40-44		41.57
45-49		36.52
50-54		33.36
55-59		25.71

1. Unweighted mean of net participation for 10 countries: Belgium (Flanders), Canada, Germany, Ireland, Netherlands, New Zealand, Sweden, Switzerland (French- and German-speaking for IALS), United Kingdom, United States.

2. Excluding full-time students aged under 24. Sources: OECD; International Adult Literacy Survey

There are several problems in tertiary education which demand attention. Pressure on resources, mainly because of tightening budgets, has resulted in a deterioration in staff-student ratios. Overcrowding is common in several OECD countries and the quality of teaching and learning is often quite uneven. New curriculum designs and educational strategies, for example, encouraging more distance learning, have only partly helped. But much is yet to be done, particularly in ensuring that education continues to

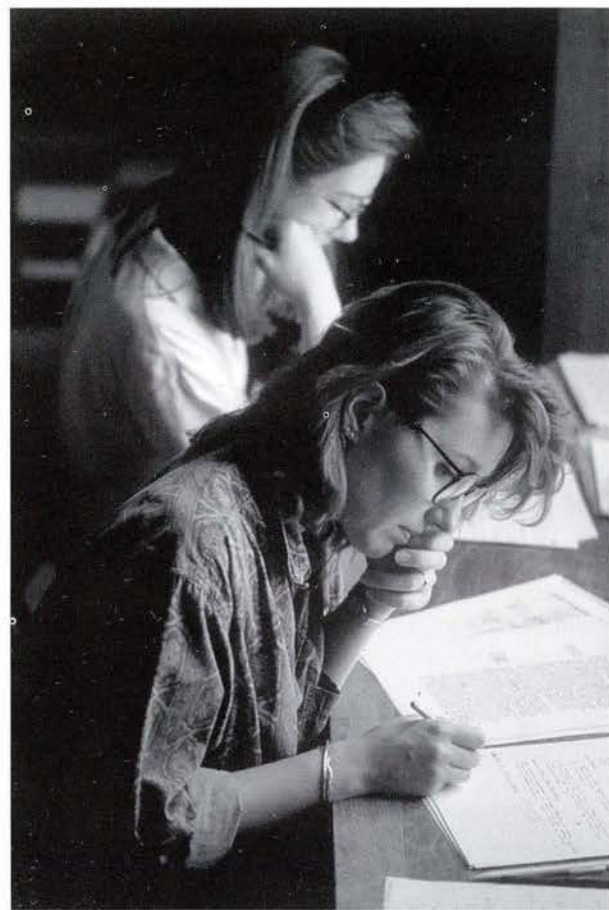
progress to the full benefit of students and that the worlds of learning and work are brought closer together.

Finding ways of reducing the inefficiencies created by high drop-out rates and under-achievement is another pressing challenge, and is the focus of attention particularly at secondary level.<sup>5</sup> But these problems are increasingly being addressed in tertiary education too. The responsibility for overcoming education failure may in general have to be shared widely. But at the tertiary level educational institutions have a particular responsibility towards helping to reduce the level of under-achievement. One possible way of doing this is to work more closely with schools as part of the drive to improve their flexibility and understanding of how students want to learn.

One emerging question is how to deal with the needs of those who remain outside of education as the participation rate rises. A positive strategy might be to find a place for everyone in tertiary education as a pro-active way of enhancing skills and knowledge, boosting life-chances and combating the costly waste generated by social exclusion. In practical terms, that may mean reviewing some of the conditions attached to certain types of welfare benefits so as not only to encourage participation in education, but to make sure that those who wish to study are not penalised in any way for doing so.

## Deep-rooted reforms are needed

Reforms are being carried out in education, but progress has been mixed. The new bachelor's degree in Denmark is an example of the new flexibility that may be required. Its purpose is to offer a tertiary qualification before the nor-



Deep reform may be needed.

mal degree. It is recognised by employers and leaves open the possibility of returning to higher studies later on. Initiatives elsewhere are worth taking note of. The peer *tutorat* in France, in which advanced-level students work alongside new entrants, is one. Enhanced counselling in France and Belgium (Flemish Community) is another approach, wherein special teaching and counselling services are made available to first-year students. And learning centres in Belgium (Flemish Community), the United Kingdom and the United States which bring together library, laboratories and other student services are flexible in that they allow for independent, self-directed study even in constrained environments.

These new initiatives often complement or adapt current teaching and learning approaches. Deeper reforms may be needed, though. Building new links between work and study, as in France, the United Kingdom and the United States, is important. And further improvements in the transferability of academic credits from



one institution to another, such as is possible in New Zealand, and in the recognition and transferability of credits between countries, would give extra momentum to student learning.

As the use of information and communication technology spreads, students will have a wider repertoire of learning sources to draw on. These opportunities will probably foster a more creative and critical approach to learning. Students will be able (and probably be expected) to exercise more choice and to pace their own learning. On the other hand, a mechanical use of available technology as a mere teaching aid would stifle creativity.

So far in the OECD area generally, curricula, teaching and learning have not taken full advantage of the technologies now available.

The conventional idea of specific careers for specific types of education, while still valid in many jobs, is coming under increasing pressure. Not that we have too many graduates – if anything, we may have too few. But rather, tertiary education will have to become broader, encouraging more initiative and entrepreneurship, and a more flexible enthusiasm regarding work and lifelong learning.

## Getting the resources

If, as is suggested in the OECD report, *Redefining Tertiary Education*, participation rates continue to expand, perhaps exceeding 75%,<sup>5</sup> then the question of resources will surely become the most pressing one of all. An argument for mobil-

5. See pp. 8–10.

6. *Human Capital Investment – A Comparative Report*, OECD Publications, Paris, 1998.

**Table 3. Educational expenditure for tertiary education by source of funds, 1994**  
% of GDP

	Direct public expenditure for institutions	Public subsidies for institutions via households and other private entities	Private payments to institutions	Total expenditure for institutions
Australia	1.2	0.16	0.45	1.8
Belgium	1.0	n	..	..
Denmark	1.4	n	0.01	1.4
Germany	0.9	0.01	0.1	1.1
Japan	0.5	..	0.59	1.1
New Zealand	1.1	0.29	..	..
Norway	1.4	n	..	..
Sweden	1.5	–	0.11	1.6
United Kingdom	0.7	0.27	0.005	0.9
United States	1.1	0.02	1.24	2.4

n nil or negligible

.. not available

– not applicable

Source: OECD

ising resources from stakeholders other than governments has been advanced in the OECD's work on human capital investment. While tertiary education constitutes a relatively high cost to the taxpayer (on a per student basis), it appears to generate relatively high direct benefits to those who participate, in terms of subsequent employment and so on.

Spending on tertiary education by students and families has been growing in a number of OECD countries (Table 3). Fees or deferred charges are being either introduced or increased in several OECD countries, and student support schemes are being strengthened in others. However, there are worries about the possible future impacts of different loan schemes, for example, on patterns of domestic demand and there is a hesitancy in some countries about creating future debt obligations on today's students.

Developing in young people the motivation and capacity for learning and giving them a bigger share of the responsibility for learning means changing the way society thinks about 'teaching', its physical infrastructure and technology supports. It demands striking the right balance between new approaches and the traditional

modes of teaching and learning. But this implies more – and more effective – investment than is presently the case.

There may be arguments for increasing investment in tertiary education. But competing demands on resources require that any new investment in learning be undertaken with more attention to type, method and content. In other words, quality of education will be more important than quantity when it comes to working out returns on investment at the tertiary level. Moreover, the investment costs to enable learners to acquire qualifications would not only be diminished over the longer term, the costs

would be shared more widely too.

Lifelong learning is important to the consolidation of the knowledge society and changes in tertiary education are therefore inevitable. The challenge is to manage those changes properly and to cater for the new and increased demands on education. Only then will it be possible to extend the opportunities in tertiary education to a much larger portion of each generation and at a manageable cost to the public budget. ■

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# North America: migration and economic integration

Jean-Pierre Garson

*Liberalisation of trade in goods and services and increased investment can speed up development in countries of emigration and thus help to regulate migration flows. But should the free movement of persons proceed in parallel with the different stages of regional economic integration? Or should it become an objective only when economic convergence is more advanced?*

The relationship between migration and economic integration was one of the most debated topics at the seminar on Migration, Free Trade and Regional Integration in North America held recently in Mexico City by the OECD and the Mexican authorities with the support of Canada and the United States.<sup>1</sup>

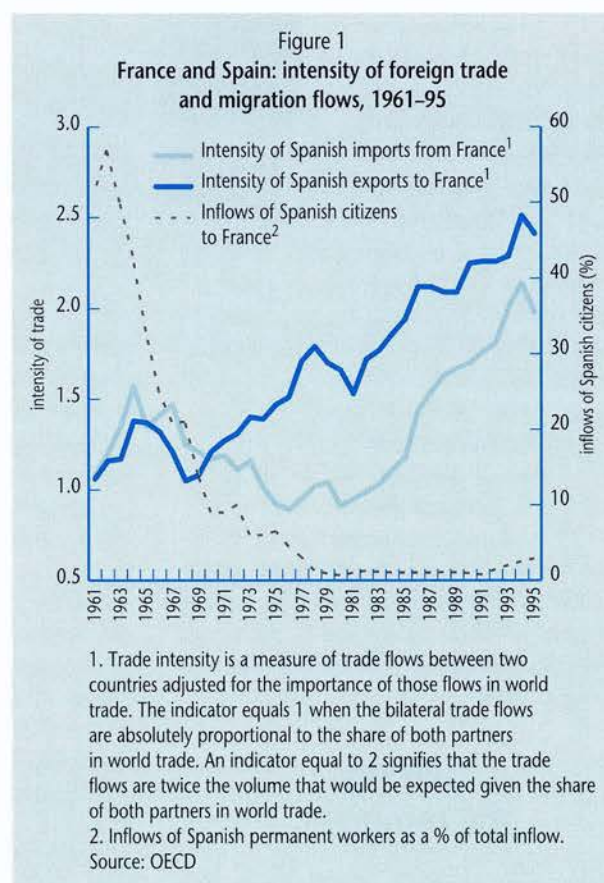
Three levels of regional integration have been identified, whose effects in terms of economic catch-up, inward direct investment, job creation and international migration are not the same.

At the first level is the extensive free trade agreement without full liberalisation of factor flows. The North American Free Trade Agreement (NAFTA) is an example, as are the EU free trade

agreements with non-member Mediterranean countries. The second level of integration involves agreements to enlarge existing regional blocs to include peripheral countries. At this level, new members receive budget transfers, but barriers to labour mobility are maintained. This is the case with the European Union's extension to certain countries of central and eastern Europe. The third level is full economic and monetary integration of member countries – the next stage of European economic and monetary union (EMU), for example – including full freedom of movement and establishment within the area.

The effects of economic convergence on migration, and on factor mobility generally, varies

according to the level of regional integration. In the case of the EU, economic and monetary union explicitly provides for the free movement of persons and therefore of labour. However, labour mobility within the area tends to remain low, or at any rate, lower than capital mobility.



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EU nationals represent less than half of the foreign labour force in all the countries of the Union except Belgium, Ireland and Luxembourg. In the case of NAFTA, the tendency towards economic convergence has not been paralleled by a liberalisation of migration.

## Economic convergence and migrations

The case of the European Union shows that the political will to establish, in stages, an area for free movement of goods, services and capital can help the economic integration of less advanced countries. Free movement of persons was a key part of integration and came prior to establishment of the single currency. In fact, it was introduced in a general context of reversed migration flows, as in the case of Spain (Figure 1) and Greece. Thus the reduction of migration flows appears not so much to be the result of institutional decisions to liberalise trade in order to stem migration with counter flows of goods and capital (NAFTA, Euro-Mediterranean agreements), as the outcome of economic development and technological catch-up brought about regional integration.

The absence of free movement as a formal policy of a regional bloc is not a barrier to migration from one country to another within that bloc. The United States and Canada continue each year to take in very large numbers of new permanent immigrants (mainly from Mexico in the case of the United States). Although this migration has already contributed to regional economic integration, it has not had sufficient impact to accelerate the convergence of Mexico's economy with those of the other two NAFTA countries. GDP per capita in Canada and the United States is still respectively six and eight times higher than in Mexico. Freeing up labour movements is still one of the main issues to be considered in the context of a deepening of NAFTA, and it will be an important part of the process of accession to the European Union of

the Czech Republic, Cyprus, Estonia, Hungary, Poland and Slovenia over the coming years.

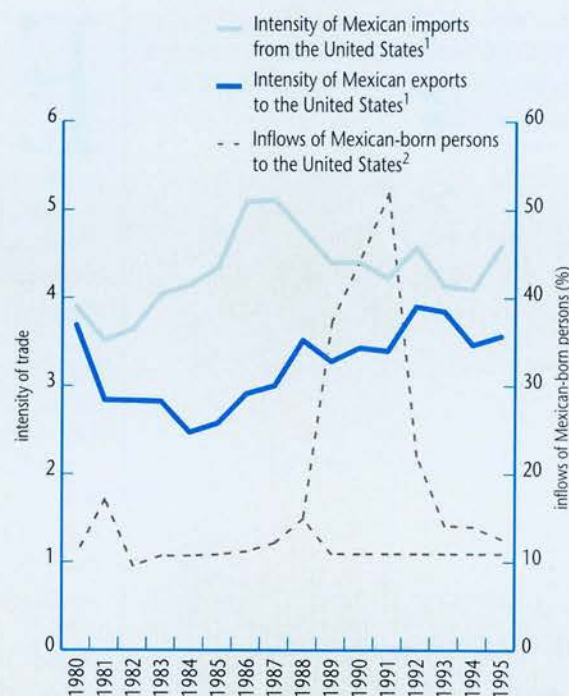
## Free movement of persons

So is free movement an essential factor in accelerating economic convergence and integration in a free trade area? The answer depends on the scale of migration in the period leading up to the area's establishment. In the case of NAFTA, for example, the key feature of movements between member countries was, and still is, the predominance of flows from Mexico to the United States. In 1950 accredited Mexican workers represented 0.5% of the US labour force. By 1990 the figure was around 4% (compared with 15% for Algerians in France and 30% for Turks in Germany). In some geographical areas and economic sectors the figure was much higher. The asymmetric character of labour movements between the United States and Mexico demonstrates the mutual dependence of these two NAFTA countries on migration within the bloc.

NAFTA's emphasis on liberalisation of trade and capital movements, without reference to the free movement of workers, may be interpreted in one of two ways. Either it reflects the signatory countries' determination to prevent the sensitive issue of migration from inhibiting the development of economic and financial integration, in particular between the United States and Mexico. Or it implies that one of the objectives of trade liberalisation under NAFTA is to lessen the incentive to emigrate from Mexico to the other two countries.

The first interpretation seems more plausible. In practice, the determinants of international migration are partly immune to the substitution effects predicted by international trade theory. The turnaround of migration flows in some countries (Greece and Spain, for example) took place well before trade barriers had been dismantled. In the case of relations between the United States and Mexico, trade intensity is high but the re-

Figure 2  
United States and Mexico: intensity of foreign trade and migration flows, 1980-95



1. See Figure 1.

2. The lower dotted line relates to the percentage of Mexican-born immigrants excluding persons who benefited from the 1986 regularisation programme, or approximately 2.7 million people in 1989-96.

Source: OECD

versal of migration flows has not yet begun (Figure 2). The turnaround when it happens will be determined not by trade, but by economic development and catch-up in Mexico, the effectiveness of its public and financial institutions,

# Realising

John Dryden

the introduction of labour-force training and upskilling programmes, and a massive inflow of foreign direct investment (including from emigrants abroad) to sustain growth.

Although the absence of free movement is not an obstacle to regional economic integration, free movement should remain an objective for the longer term, when economic convergence has progressed further. In the meantime, free trade agreements should be complemented by a positive migration policy, whose primary objective would be to discourage unauthorised immigration and regulate flows within the free trade area. One step might be to grant legal immigrant workers the same status as that afforded to host country nationals. That presupposes stepping up co-operation between the countries concerned to combat trafficking and the employment of illegal immigrants. ■

*The growth of electronic commerce marks a major structural change in the economies of the OECD. As one of the engines of globalisation it has much to offer. But the rapid expansion of electronic commerce has thrown up some serious questions and has pushed governments and the private sector together in an attempt to understand this important market and steer its development.<sup>1</sup>*

**E**lectronic commerce is nothing new in itself. In fact, for funds transfer and electronic data interchange it has existed for many years. What has changed is the speed at which it expands, and the extent to which it has captured the imaginations of business, consumers and governments alike, as well as the media. The OECD has been looking into the subject for some time and is already holding its second major ministerial conference, called 'A Borderless World – Realising the Potential of Global Electronic Commerce', in Ottawa on 7–9 October 1998. Is all the excitement justified?

Most probably yes. The development of electronic commerce – which may be loosely defined as business transactions based on the electronic transmission of data over communications networks such as the Internet – can be ascribed to a coincidence of innovations over the past two to three decades, starting with the Internet in the late 1960s and the subsequent lifting in the 1970s of restrictions on its commercial exploitation. The World Wide Web emerged in the 1980s, followed by the widespread diffusion of interface technology, such as browser programmes, in the 1990s. These developments were underpinned by the availability of affordable communications infrastructure, including normal telephone lines. Constant breakthroughs

in hardware and network technologies and higher investment in communications after liberalisation of telecoms all helped to accelerate the process. It was hardly surprising therefore that enterprises, large and small, and their customers would quickly see in the Internet an opportunity for doing business.

## Electronic commerce and the global economy

Forecasts are always tricky, and for electronic commerce some have been a little over optimistic. But even the most conservative private estimates predict ten-fold volume growth in electronic commerce by 2000, the Millennium Bug notwithstanding (box pp. 22–23). Forecasts based on current reported growth rates – an expansion from a few billion dollars in 1997 to over \$300bn in 2001 – still hint at the prospect of a \$1trn electronic marketplace in the not too distant future.

A few barriers would have to be overcome to reach that kind of expansion. One problem is how to win public confidence in electronic transactions. In the United States, consumer shopping receives most of the media's attention. Yet it is the value of business-to-business transactions which dominates, accounting for some 80% of electronic commerce. And, although both business and consumer transactions will undoubtedly rise, it seems unlikely that their share will change significantly in the short term. One

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# the potential of global electronic commerce

reason is that, unlike in the traditional physical marketplace, where consumer protection and rights are cornerstones, in the digital marketplace consumers feel they have little or no protection, for example, against fraud or unsatisfactory products.

Another problem is access to the electronic marketplace. Communication costs and computer prices may be falling, but remain too high for many potential customers. And because technology is improving so fast, many would-be users, particularly families with limited budgets, hesitate to make a purchase for fear of buying equipment that will only too quickly be out of date. Equipping public services, such as libraries and schools, to fill the gaps raises budgetary issues for governments and local authorities to consider.

Computer ownership and Internet access in the OECD area are increasing, but the pattern nonetheless varies from country to country. There are many possible reasons for this. The existence of a thriving competitive market for telecommunications services is one. Public attitudes may be another; some countries, such as Finland and Sweden where some of the world's leading telecommunications companies come from, have embraced communications technology with enthusiasm. In other countries the Internet has not had such a spring board and has taken longer to catch on. Local call charges are also a factor; they are effectively free to telephone subscribers in most parts of the United States and this has been a boon to Internet usage there. In fact, North America accounts for 80–90% of global electronic commerce, with most of the rest taking place in (western) Europe. In other parts of the world, including in Japan, the

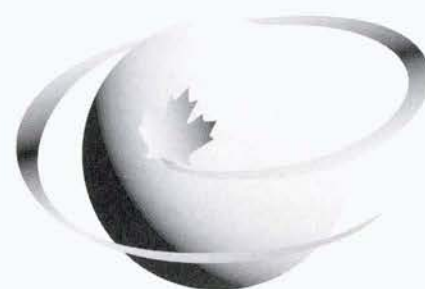
electronic commerce markets are only beginning to develop.

In France the Internet is taking hold fast, but it has had to face early competition from the long-established national screen-based information service, Minitel, run by France Telecom. It is technologically more limited than the Internet, but its reliable payments system has helped it to become a thriving marketplace for everything from train tickets to weekly shopping. An estimated \$625m of transactions were conducted over the Minitel in 1996. That is nearly the same as the figure for total world business-to-consumer transactions on the Internet in the same year.

## A global market with cross-border teething problems

The formidable growth potential of global electronic commerce has pushed it towards the top of the agenda in boardrooms and government offices throughout the world. A whole string of high level meetings, including the OECD council at ministerial level and summits of the G-8, have stressed the economic potential of electronic commerce. The main message from these meetings is that governments should work together with the private sector to take electronic commerce by the horns and steer its development.

The OECD began publishing on various aspects of the global information society over two decades ago and ever since has been working to develop an environment in which electronic commerce can flourish. And in the last three years electronic commerce has become an explicit priority in the activities of the Organisation. That shift reflects the recent upsurge of electronic commerce, and of course that



'A Borderless World – Realising the Potential of Global Electronic Commerce', Ottawa, 7–9 October 1998.

it is a cross-border phenomenon with implications for governments and business everywhere.

Electronic commerce is set to be one of the driving forces behind the global economy. It is a potentially positive force, which can improve the ways people participate in society as citizens, consumers, workers and entrepreneurs.<sup>2</sup>

Table. Outlook for electronic commerce sales,<sup>1</sup> 1996–2005

	Current 1996/97	Short term 2001/02	Future 2005
E-commerce estimates (US billions)	26	330	1,000
US catalogue sales <sup>2</sup> (%)	37	309	780
US credit card purchases <sup>3</sup> (%)	3	24	54
US direct marketing <sup>4</sup> (%)	2	18	42
OECD-7 total retail sales <sup>5</sup> (%)	0.5	5	15

1. Estimates.

2. \$78.6 billion; growth rate: 6.3%.

3. Based on Visa and MasterCard US charges in 1997 (\$870 billion) and the 1996 to 1997 growth rate of 10%.

4. \$1,226 billion; 1996–97 growth rate: 8.7%.

5. \$5,328 billion; Canada (1997), France (1996), Finland (1997), Germany (1995), Japan (1994), United Kingdom (1994), United States (1997).

Sources: OECD; Direct Marketing Association

1. *Electronic Commerce and the Information Society*. OECD Publications, Paris, forthcoming 1998.

2. See pp. 25–28.

# Realising the potential of global electronic commerce

But its rapid development and transborder character has thrown up a number of difficult issues that have to be addressed. For example, the question of taxation, in particular whether products transacted should be taxed at the point of output or consumption, requires some agreement. There are many types of indirect taxation and levels in the OECD area. For a start, companies selling electronic products over the network, such as software, which can be downloaded across borders, will clearly want to pay their tax where the rate is lowest. Recipient governments in the lower taxed countries might not want to argue with them. But other governments will want to prevent any leakage in their tax revenue. In other words, with electronic commerce comes the risk of unhealthy tax competition between OECD countries, which without agreement could end up distorting the market in the years to come.

## Finding agreement

The tax question underlines why giving direction and order to the expansion of electronic commerce is important. It also shows that international co-operation is crucial. The two major conferences organised by the OECD, in Turku, Finland, in 1997 and Ottawa in 1998, are two of the first building blocks for constructing that co-operation.

The Turku conference 'Dismantling the Barriers to Global Electronic Commerce' was hosted by the government of Finland in November 1997. It drew together over 400 policy-makers in government, business leaders and the key relevant international organisations. The main concerns at Turku were to debate how to build confidence in electronic commerce, to develop access and to establish regulatory frameworks. Some technical issues, such as customs clearance for commerce transacted across national borders – this area has seen considerable progress – and payment systems were also discussed. Some general policy principles and

*continued on page 24*

## Y2K

Vladimir López-Bassols

Y2K might sound like the name of a newly discovered planet. In fact, it is the short label for the year 2000 problem, otherwise called the Millennium Bug. Quite simply, most computer systems today were programmed to identify calendar dates using the last two digits of the year. The aim was to save memory. But many computers will not recognise 00 as 2000 when the clock ticks past midnight on December 31, 1999. As a result, it is likely that some programmes will fail or at least malfunction.

There could be all sorts of problems, whether in computer systems, communication networks, or in embedded chips integrated into industrial control systems and consumer electronics. Perhaps the worst scenario would be sudden failure in safety systems affecting health services, defence, nuclear energy gen-

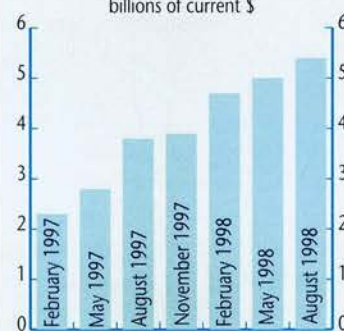
current systems which perform post-2000 forecasting or transactions have already begun to experience failures.

Y2K is a global problem which can be resolved through proper management and co-ordination by firms and governments alike. Most major companies seem to be taking corrective action, but there is concern about whether smaller companies have either the knowledge or the funds to follow suit. It is an expensive business: many firms are allocating up to two-thirds of their annual IT budgets over the next two years to solve the problem. It is also an uncertain one and even the insurance industry has not been able to assess the true scale of the risks of Y2K. Apart from the cost involved, there is also some uncertainty about whether there is enough personnel to go round. Certainly, salaries for some categories of consulting IT professionals have been rising rapidly, which indicates a shortage of supply, although high pay should quickly attract new engineers into the market.

The economic effects of the Millennium Bug can be quantified in various ways: first the direct cost to governments and firms of resources diverted to fix non-compliant systems. Estimates of this cost at a world-wide level are in the \$300–600 billion range (not including embedded systems), according to a study undertaken by the Gartner Group. The direct fixed costs will vary across industries, depending on the extent of their reliance on IT and network communications. Direct spending on achieving compliance could have positive short-term economic spin-offs, such as higher sales of software and increased employment for IT staff. The long-term outcome could include improved efficiency of information systems. Nevertheless, the negative impacts of Y2K are likely to cancel out the short-term benefits. This is because most of the expenditure on fixing Y2K will be related to fixing existing capital stock, rather than improving it.

There are secondary costs too, which non-compliance of systems could generate: billing errors, delayed payrolls and tax collection, and potentially explosive insurance and litigation

Figure  
United States estimates  
for Y2K repair work<sup>1</sup>  
billions of current \$



1. Federal government only.  
Source: US Office of Management and Budget

eration and air travel, or in critical sectors such as utilities, financial services, telecommunications and government services. Even now,



Freddy Cats

bills. All of this could prove very costly for government, and for intermediaries in financial services.

Analysts have finally begun to speculate on the possible macro-economic effects of the millennium bug. Widespread business disruptions would hurt investment spending in technology from this year until after 2000. And financial markets could react badly as the level of Y2K-related risk of firms and countries becomes more apparent, leading to falls in stock and increased bankruptcies. In Europe and other financial centres around the world, the development and conversion of software in

connection with the new euro will largely be concurrent with Y2K work. There may even be short-term inflationary pressures from demand for new investment, supply-side disruptions, and wage increases of IT specialists. Productivity growth is likely to decline temporarily as resources are diverted to maintain the economy's productive capacity.

Given the interdependence of economies and the potential for cross-border disruption from the year 2000, international initiatives are needed to co-ordinate remediation, testing and contingency planning, especially for developing countries where awareness of the

issue remains low, and action is lagging. But governments could do more, for instance:

- step up their preparations and devise contingency plans to ensure the continued functioning of essential government services such as benefit payments, national defence, emergency services, health care, telecommunications, energy, transportation and finance
- establish special co-ordinating bodies and programmes (for example, Canada's Task Force 2000, the Netherlands' National Millennium Platform, France's Passage informatique à l'an 2000) to raise awareness, facilitate information exchange and oversee progress
- encourage business to partake in international alliances in key sectors where cross-border operations are critical, such as aviation, telecommunications, energy and finance
- assess policy options for helping small companies to tackle Y2K, such as the tax and funding incentives that have been introduced in Australia, Canada, Japan, Korea and the United Kingdom
- increase information transparency by reporting on their own preparations, as well as by requesting disclosure by public firms of their projected Y2K costs and readiness (US SEC, Australian and New Zealand Stock Exchanges)
- participate in programmes for developing countries, such as those run by the World Bank and the United Nations.

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# Realising the potential of global electronic commerce

## FOCUS

### International organisations in e-commerce

The OECD co-operates with many other international organisations in a bid to understand electronic commerce and its impact on international trade, telecom services, commercial law and intellectual property. Some of the OECD's major collaborators include:

- World Trade Organization (WTO) for agreements on basic telecommunications, tariff reduction on information technology products and a 'tariff-free zone' for electronically delivered products, as well as possibly extending existing multilateral trade rules to electronic trade
- World Intellectual Property Organization (WIPO) for intellectual property rights (IPR) as well as IPR aspects of Internet governance issues
- United Nations Conference on International Trade Law (UNCITRAL) for the revision of commercial law and for digital signature
- Bank for International Settlements (BIS) for analysing the impacts of electronic financial transactions, including electronic banking and electronic payments
- International Organisation for Standardisation (ISO) and the International Electrotechnical Commission (IEC) for setting standards in various areas of information technology

- The World Bank for telecommunications infrastructure development, as well as policy advice to developing countries
- World Customs Organisation (WCO) for simplifying customs clearance procedures
- World Wide Web Consortium (W<sup>3</sup>C) for Internet standards and technological protocols for self-regulatory mechanisms
- United Nations Conference on Trade and Development (UNCTAD), whose aim is to help developing countries join the global electronic marketplace
- Other international organisations include International Telecommunications Unions (ITU), the Universal Postal Union (UPU), the United Nations Educational, Scientific and Cultural Organisation (UNESCO) and the regional United Nations Commissions, notably the UN Economic Commission for Europe (UN-ECE) and the Council of Europe.

The European Commission is also working intensively on all aspects of electronic commerce. The commissioner for information and telecommunication technologies, Martin Bangemann, has proposed a global Internet charter to stress the importance of international co-operation on global information networks.

taxation problem mentioned earlier. It would also have to deal with legal frameworks, trade policy, market access and protection of intellectual property rights. Framework conditions have been developed by the OECD in the area of taxation and preparatory work is well under way on some of the other issues. Other international bodies, such as the World Trade Organization and the World Intellectual Property Organization stand ready to continue developing the appropriate international conventions.

- Enhancing the information infrastructure for electronic commerce: For electronic commerce to develop, affordable access to the communications infrastructure will be needed. Internet governance and technical standards are other issues to be addressed. Competitive telecommunications markets and reform of regulatory practices can play an important role in helping to solve some of the problems of access, particularly by bringing down the cost of Internet service provision and the high prices for local calls which still prevail in some countries.

- Maximising the benefits: If electronic commerce is to be one of the keystones of the knowledge-based society, businesses, consumers and public institutions will have to be encouraged to use it more. Skills and general awareness may have to be improved, while more has to be done to encourage the spread of electronic commerce in non-OECD countries, particularly in the developing world. More work is needed to help understand the social and economic impact of electronic commerce and the OECD work is an important contribution in this field. International organisations can only do so much, and the responsibility for finding ways of driving electronic commerce forward and realising its full potential, as with most conventional markets, falls to both governments and business. ■

guidelines were laid down and the organisations capable of studying the problems affecting growth in electronic commerce and developing the right solutions were identified (see box above).

The holding of the Ottawa conference reflects a new sense of urgency about putting a broad, concerted policy framework in place. Bringing governments, international organisations, business leaders and representatives of labour and consumer groups together is an essential part of this, to discuss the issues and agree on ways forward. OECD work on electronic commerce, which may act as a guide, is structured around four main interdependent themes:

- Building trust for users and consumers: The frameworks and safeguards which provide con-

fidence in the physical marketplace have to be adjusted to instil confidence in its digital counterpart. That means being able to guarantee the protection of personal data and privacy, and protecting the rights of consumers. It also means that buyers and sellers should be able to authenticate and verify on-line transactions. The OECD's declarations on Privacy and Personal Data Protection and on Authentication for Electronic Commerce and work on Guidelines for Consumer Protection in the context of Electronic Commerce are important steps in this direction.

- Establishing ground rules for the digital marketplace: The objective here is to get broad agreement on the design and implementation of the ground rules for global electronic commerce. These rudiments would have to treat the type of

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# The promise of 21st century technology

Riel Miller

*The development of electricity, telephones, aviation and private motor cars underpinned the mass economy that dominated most of the 20th century, rapidly driving up living standards in the OECD area. But what about tomorrow's technologies? Which social and economic conditions are likely to turn technology's potential into a desirable reality?<sup>1</sup>*

As the century draws to a close, it is worth wondering whether the world is on course for further dramatic social and economic change, and whether such changes as do take place can be steered to our benefit. There are many questions that have to be asked. Do we have the technological and social capacity to keep on advancing and inventing new tools, new products and new ways of organising everyday work and home life? What will the costs and the risks be? And what does it all mean for our traditions, or for the environment? Preservation versus change, conservatism versus dynamism, incrementalism versus radicalism – these are the dividing lines of the debate as we approach not only a new century but a new millennium too.

The OECD is actively engaged in the discussion and has developed a range of outlooks. At

one end of the spectrum are scenarios which involve almost exclusive dependence on technology to solve pressing problems. At the other end the pace of technical innovation is slow, held back by efforts to avoid breaking with social and cultural norms. The conclusion from this analysis is striking: the prospects for prosperity over the next twenty-five years will probably depend on encouraging social and economic changes of at least the same magnitude as those we have experienced in the twentieth century. That means transitions at least as important as those from the farm to the factory floor to the office, and from country to city to suburb.

Ensuring that tomorrow's extraordinary technological potential gets beyond the drawing-board and makes a full contribution to human well-being will be a challenge. It will depend on fostering a particular interplay of forces and changes, a series of mutually reinforcing devel-

opments which together are likely to create what might be called socio-technical dynamism.

Realising this dynamism will largely rest upon our capacity to undertake change in almost everything we do, from the way work is organised and what is produced to where people live and how they relate to each other. Making such complex and profound changes will not be easy. But a brief examination of technology's potential shows it is likely to be worth the effort.

Over the next few decades significant progress is expected across a broad spectrum of technologies: computing, genetics, brain technology, new materials (in particular miniaturisation and smart composites), energy, transportation and environmental tools and systems. The technical foundation (as distinct from the economic and social ones) for this wave of innovation will come, in large part, from some important developments in the fields of digital and genetic information. The manipulation of these two building blocks – one of calculation, the other of nature – is likely to open whole new horizons for both tool builders and users.

One easy way of tracking technological change over time is to compare measurements of speed, size and cost. Twenty-five years ago a megabyte of semiconductor memory cost around



Technology could create new lifestyle choices...

Pierre Boutat/Cosmos

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1. *21st Century Technologies: Promises and Perils of a Dynamic Future*. OECD Publications, Paris, forthcoming 1998.



... and help to improve existing ones.

\$550,000; today it costs around \$4. Microprocessors in 1997 were 100,000 times faster than the 1950 originals. Should these trends continue – and there are many experts who think they will – by 2020 one desktop computer will be as powerful as all of the computers currently in Silicon Valley.

Twenty-five years from now, after more than five decades of development, the microprocessor, information technologies in general and networks will probably have penetrated every aspect of human activity. Even remote corners of the world will have access to interactive and responsive global networks. Beyond simply accelerating the pace of change or reducing the cost of many current activities, the use of these high-performance digital tools could lead to more profound transformations in work and life styles.

## New places, new markets

The advanced power of computing may be used to help people create new kinds of communities, both virtual and real. In some parts of the world this could mean the emergence of new types of villages, with new structures and economic purposes. Other people will be attracted by better infrastructure, services and improved environmental conditions to stay in cities and so-called silicon alleys. In either case, the use of computing power will enable choices about how to live that are not possible today. Physical isolation or distance will no longer have to be a disadvantage, while new types of co-operation will lessen the pressure on people to work together in the same factory, office or classroom. And the availability of massively powerful information technology will open up the way to im-

2. See pp. 22–23.

proving efficiency as well as to new ways of thinking about traditional activities, such as urban transportation, energy and health care.

For instance, computer-enabled development of electronic commerce is likely to profoundly modify current ways of doing business. Anyone with a computer and Internet access will be in a position to become a merchant and reach out to customers across the globe, and any consumer will be able to shop the world for goods and services. As a result, consumers could become producers and yesterday's retailing intermediary could become tomorrow's evaluator of product quality. Indeed, the process of inventing and selling products could be spread more evenly, with consumers becoming generators of value-added by feeding in custom specifications, then searching out producers and marketing their new good.

This is already beginning to happen, for example, with the development of a powerful computer language, Linux, which though inspired by one individual, Linus Torvalds, is the outcome of the contributions of thousands of volunteer programmers around the world. Even products as basic as the bicycle could be redesigned by ordinary individuals then re-sold either as a physical good or as intellectual property. In other words, cyberspace could one day become a global marketplace where consumers and producers are so seamlessly integrated they can change places with each other.

As for the inquiry and collaboration that are indispensable for learning and basic scientific research, the power of tomorrow's information technologies will open up new vistas by radically improving the capacity to communicate and simulate. For instance, convincing and complex virtual reality simulations should allow more people to 'learn by doing'. Such technology will also make joint experimental research easier and could enhance the independence of learners by

allowing them to study at their own pace. Once liberated from some of the constraints of cost, time and space of traditional education, learning systems that encourage individual creativity may take over.

## Biotechnology will open up new vistas

The identification of genetic information and applications of genetic engineering are already making their mark in society and will profoundly affect many facets of everyday life in the future. Human health, food production (both livestock and plants) and food processing are all likely to be influenced by advances at the interface of genetics and technology.

Work is already well under way on the human genome; by 2005, at the latest, scientists should know the full DNA sequence of a typical man or woman. Although at present only a very small percentage of this information has been mapped, the pace of discovery is expected to accelerate. As the average cost of sequencing each of the millions of DNA base pairs rapidly diminishes – from \$5 in 1990 to less than fifty cents by the beginning of the next century – the number of DNA base pairs sequenced each year is rising exponentially, from around 40 million in 1990 to over 400 million in 1997. In parallel, the next twenty-five years could see major breakthroughs in disentangling the complexity of the human body's biochemical pathways along which genetic information is transferred, and in understanding how certain genes interact with environmental influences to exert different effects on different people.

But perhaps the most dramatic breakthroughs will be achieved through combinations of various scientific disciplines. Innovative work cutting across biochemistry, physics, molecular biology, neuroscience, biotechnology, nanotechnology and microelectronics looks set to make significant advances in the field of bioelectronics, for example, with the development of biosensors, and neuroinformatics, which link micro-processing with the human nervous system. With the expected trend toward more diversification of

R&D spending on genetics into chemicals, materials, energy technologies and so on, major advances in other cross-disciplinary fields could take on significant proportions – for example, the creation of synthesised gene-derived enzyme catalysts, non-existent in nature, for use in chemical engineering; biological processes to fabricate molecular structures and more complex materials; bio-engineered plants to produce pharmaceuticals and raw materials for plastics.

Biotechnology applications are likely to become more pervasive in human activity in the next quarter-century. Already well entrenched and expanding in human health, animal husbandry, plant agriculture and food processing, they could find their way increasingly into environmental management, manufacturing processes, new materials and computers.

## But what are the risks?

The picture painted here is a promising one. But of course there are myriad risks too which could attend tomorrow's plausible technological innovations. That has always been the case. New tools often have more than one use; for

example, lasers are an indispensable medical tool, and they also have applications as a military weapon.

Technological advances *per se* provide no foregone conclusions about how they will be used. Indeed, looked at purely from the perspective of technical feasibility – without taking into account the economic and social safeguards that are likely to be prerequisites for the rapid emergence of tomorrow's technological breakthroughs – three broad dangers can be identified.

First, tomorrow's technologies could contain destructive potential which will be both powerful and difficult to control. They could pose threats to the natural and human environment, either by accident or through malevolence.

Second, there are purely technological risks involving the possibility of more vulnerability to system-wide breakdowns, like the imminent Y2K.<sup>2</sup> As the world becomes more diversified, decentralised and dependent on technology, unmanageable and potentially harmful failures could arise. Dependence on computers, networks and the software that runs them could leave critical parts of society's support infrastructure, from medical systems and sewage treatment facilities to security and air-traffic control, open

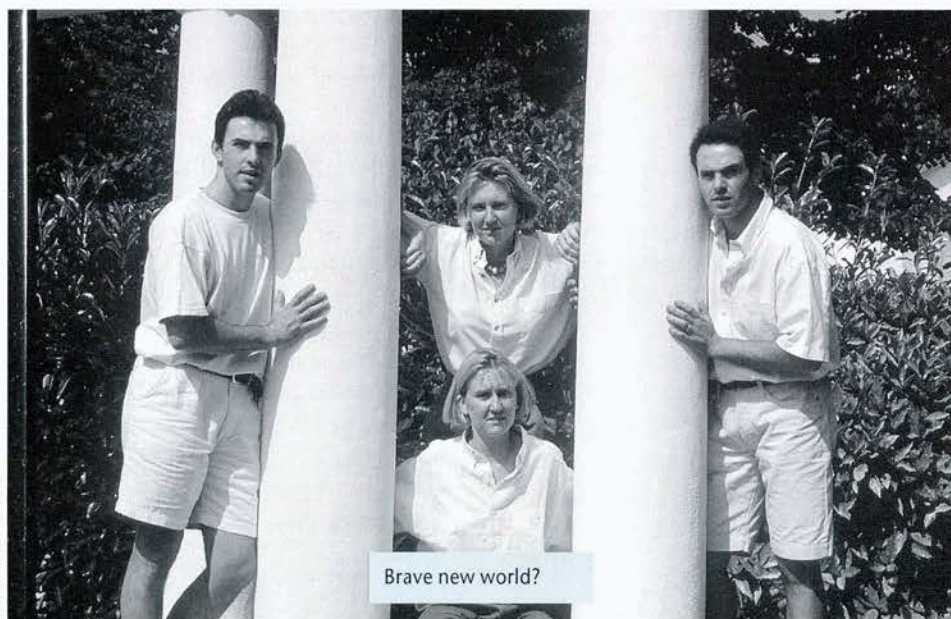
to inadvertent crashes, or even intentional attack. There is also the danger that as information technology spreads it will make it easier to violate basic privacy or civil rights and to engage in criminal practices ranging from fraud to theft and collusion.

The third danger relates to ethics, values and mindsets. Even the initial steps in the long-term development and diffusion of radically innovative technologies could pose a strong challenge to existing ethical and cultural standards, testing people's tolerance of the unknown and the unfamiliar. Some technological breakthroughs, such as human cloning, could end up provoking serious social unrest.

## Encouraging socio-technical dynamism

Reducing the chance that one of these risks becomes a reality while also harvesting technology's potential will require concerted action. As history demonstrates, the availability of a particular scientific discovery or innovative technology is no assurance that its potential will be extended into responsible and useful applications, or that it will spread to those who might use it to generate the most social and economic benefits. Appropriate conditions and focused policies will both be essential in order to realise the virtuous circle of socio-technical dynamism.

So, what are the conditions within which this technological potential can be achieved? These can be broken down into four important trends. The first one is the diffusion and intensification of competition in existing and emerging markets, in part through the process of globalisation. Second, the transition to a knowledge economy may rupture many of the entrenched relationships of the industrial era and open up new possibilities for intangible, non-firm-based value-added activity. In tomorrow's knowledge economy, imagination – even art – could become as important for competitiveness as the speed at which a product is brought to the market. Third, growing economic, social and environmental interdependence, particularly at the global level, will probably bring about signifi-



C. Pinedras/Ereñiko

Brave new world?

# OECD taxes revisited

Steven Clark and Flip de Kam

cant changes in the way knowledge, resources and sovereignty are managed. And finally, individual and collective aspirations and the drive for a better life will as ever play their fundamental role in shaping public policy and motivating individuals to take the risks necessary to invent new social and economic structures and foster new lifestyles.

Reinforcing these broad trends may be a necessary, but not sufficient, condition for realising socio-technical dynamism. An important step is to introduce policies aimed at stimulating creativity and innovation, as well as improving collective decision-making at local, national and global levels. These policies are central to the attainment of socio-technical dynamism because the individual's capacity to compete, assess risk and learn very much depends on co-operative efforts to ensure the accessibility and reliability of information in the knowledge economy. Furthermore, unless policies are predicated on pursuing openness and tolerance, people's ability to find creative inspiration from the free sharing of ideas and contrasting perspectives will be impaired.

The traditional job of governments to assure a stable macro-economic framework, encourage efficient markets, boost learning capacity and limit social exclusion will remain. However, finding the appropriate combinations of public and private, local and global, innovative and traditional approaches will be an ongoing challenge. It is also a moving target, for if creativity is to be the well-spring of tomorrow's prosperity, then the policies for socio-technical dynamism are likely to be continuously evolving. ■

*Governments claim over a third of the annual output of the OECD area to finance their spending. This overall level of taxation hides enormous variations in the structure of national tax systems and the bills taxpayers in OECD countries face. Those intent on reform need to understand the economic effects of these different taxes, particularly in this time of increasing tax mobility.*

**T**he current weight of taxes, their role in financing state spending and their intricate interplay with economic processes make them a central issue for governments and taxpayers alike.

Every year, the OECD publishes two reports to assist policy-makers and other interested parties in monitoring tax trends. *Revenue Statistics* presents detailed, internationally comparable data on the tax revenues of OECD countries for all strata of government and a wide range of tax bases, including contributions to finance publicly-run social security and health programmes. *The Tax/Benefit Position of Employees* supplements this coverage by reporting the personal income tax and social-security contributions paid by employees and employers, measured by their impact on ordinary households. The study also compares the cash benefits received by families with children. The resulting figures, which in-

clude calculations of average and marginal tax rates, show the net impact of taxes and benefits for households at different wage rates and under alternative assumptions of family size.

The data presented in *Revenue Statistics* reveal that over the past thirty years the average tax burden – including social-security contributions – has risen in nearly every OECD country, though at varying speeds. Between 1965 and 1996, in Canada, Mexico and the United States the tax-take from GDP inched up from an (unweighted) average of 25% to 27%. In OECD Europe, by contrast, the overall tax/GDP ratio increased from 27% to 40%. In Australia, Japan and New Zealand, the corresponding figure expanded from 22% to 30% of GDP.

Data from individual countries show considerable variation in the national tax burden and its evolution (Table 1). In the European region, for example, in five countries – Belgium, Den-

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mark, Finland, France and Sweden – the tax burden in 1996 exceeded 45% of GDP. In contrast, Mexico's total tax revenues were only 16% of GDP, and four countries – Japan, Korea, Turkey and the United States – had tax burdens in the 20-30% range.

## Liberalisation, globalisation and the 'tax mix'

A firm grasp of the differences in national 'tax mixes' – the share of separate types of taxes in total tax revenues – and a good understanding of their potential implications is crucial to effective policy making. Over the past 30 years the tax mix has been remarkably stable. Nevertheless, several trends have emerged.

Liberalisation and globalisation may have led to improved resource allocation and prosperity around the world, but they have also widened opportunities for tax evasion and avoidance, with income from profits, interest and dividends showing itself to be a particularly mobile tax base. Increasingly, countries, such as the Netherlands, which set relatively high tax rates on capital income, run the risk of seeing a growing part of their revenue base evaporate as firms and private investors shift profit and other investment income to countries with lower tax regimes. And as that income tax base becomes more mobile, governments will be forced to rely more heavily on taxes imposed on labour, consumption and other less-mobile activities to finance their outlays. Such developments tend to make tax systems less equitable because the resulting growing share in the mix of regressive taxes places a disproportionate burden on people with lower incomes. Moreover, the shift to less mobile tax bases may lead to new tax-induced distortions. For example, higher taxes on labour would discriminate against jobs, with the risk of driving up unemployment or fuelling illegal labour markets.

Recent changes in the tax mix in OECD countries give some evidence that these effects of liberalisation and globalisation are already being felt. Although taxes on income and profits (which are relatively mobile tax bases) remain the largest

source of revenue – 35% of the total tax revenues for OECD countries taken as a whole – their role gradually declined during the first half of the 1990s (Table 1). This decline was matched by the growing weight of consumption taxes (which in 1996 yielded over 32% of total revenue) and of social-security contributions (25%), which may well be explained by growing difficulties encountered by authorities in taxing income from capital. Consumption taxes are already the single most important source of revenue in nine OECD countries – Greece, Hungary, Iceland, Korea, Mexico, Norway, Poland, Portugal and Turkey.

The ability of OECD countries to continue raising revenue from capital income, and in particular from corporate profits, will thus be of considerable importance. New forms of international co-operation in this area may be required to counter tax planning and tax avoidance. To this end, in April the OECD Council approved a report prepared by the OECD Committee on Fiscal Affairs which makes 19 wide-ranging recommendations to counteract the distorting effects of harmful tax practices in the form of tax havens and harmful preferential tax regimes around the world. The report focuses on geographically mobile activities, such as financial and other service activities.<sup>1</sup>

## Bismarck versus Beveridge

Over the past quarter-century unemployment rates have more than doubled in many OECD countries, particularly in Europe. Reduced employment opportunities are partly reflected in the growing take-up of disability and early-retirement programmes (which are tantamount to 'hidden unemployment').<sup>2</sup> In addition, as larger

**Table 1. Tax mix in the OECD area, 1970-96**  
% share of major tax categories in total tax revenue

	1970	1980	1990	1996	1970-96 (% points)
Personal income tax	27.8	31.3	29.4	26.8	-1.0
Corporate income tax	8.7	7.6	7.9	8.2	-0.5
Social security:					
. employee contributions	6.2	6.7	7.4	7.8	1.6
. employer contributions	11.1	13.5	12.8	14.5	3.4
. other contributions	2.3	2.1	2.6	2.8	0.5
Payroll taxes	1.2	1.3	1.0	0.8	-0.4
Property taxes	7.0	5.2	5.6	5.4	-1.6
Consumption taxes:					
. general consumption	13.5	14.2	17.4	17.8	4.3
. specific goods	20.4	16.5	12.8	12.9	-7.5
. other consumption taxes	1.9	1.7	1.6	1.8	-0.1
Other taxes				1.2	
Total	100	100	100	100	-

Source: OECD

segments of the population have reached retirement age, spending on old-age pensions has risen substantially. Moreover, the costs of health care – often publicly financed – have proved very difficult to contain, as higher demand, ageing populations and increased access to new and more expensive medical services and products have driven up spending. Together, these trends largely explain the higher share of social-security contributions in the tax mix of a range of OECD countries.

In six countries – Austria, the Czech Republic, France, Germany, the Netherlands and Spain – social-security contributions are now the main source of general government revenue. The dominant role of such contributions in these countries stems directly from the so-called Bismarck model which remains the foundation of the social-security system in much of Europe today. The model sees government-provided social security as a special form of insurance, with both benefits and contributions linked to the wages of workers. In a number of countries the contributions are channelled through separate funds which are kept apart from the budget of central government. By contrast, in systems inspired by the Beveridge model found in most English-speaking countries almost all or a

# OECD taxes revisited

substantial part of public spending on social security tends to be financed from the central budget.

## Income taxes and redistribution

Consumption taxes and social-security contributions have flat rates. Although lower rates of value-added tax usually apply to basic necessities, consumption taxes disproportionately hit lower-income households, which consume a larger part of their disposable income. Social-security contributions are often capped in that they are levied on income below a certain ceiling. This makes such taxes regressive. Generally, countries tax corporate profits at flat rates too.

In contrast, the structure of the personal income-tax rates is progressive everywhere, meaning that as taxable income rises, the fisc claims an increasingly bigger share. It follows that in countries where the personal income tax sup-

plies the larger part of the revenue, the tax system tends to bring about more redistribution of income. Taxes on personal and corporate income are the main source of revenues used to finance government spending in fourteen OECD countries, and in five of them – Australia, Canada, Denmark, New Zealand and the United States – their share in the tax mix exceeds 45%. In OECD countries where regressive taxes predominate, such as France, Germany and the Netherlands, the overall redistribution of personal income by government may nevertheless be more effective because the size and targeting of transfers outweigh any regressive tax effects.

Between 1960 and 1996, despite increased opportunities for shifting some types of personal income offshore and an overall drop in its share in the tax mix, revenues from personal income tax still rose as a percentage of GDP. They almost doubled from 6.8% to 12.3% of GDP in OECD America. In the OECD Pacific region, they rose from 7.2% to 9.6% of total output. Similar figures of 7.0% in 1995 and 10.4% in 1996, are observed for OECD Europe.

In the same period revenue from taxes on corporate income fell substantially in OECD America, from 3.9% to 3.0% of GDP. In OECD Pacific, the percentage fell slightly, to 3.9%; in OECD Europe, it increased from 1.7% to 2.9%. But these unweighted averages tell only part of the story. In France, for example, corporate-tax revenues fell slightly, from 1.8% to 1.7% of GDP. Germany witnessed a much larger drop, from 2.5% to 1.4%. In contrast, the United Kingdom saw its corporate-tax revenues increase, from 2.2% to 3.8% of GDP. They rose also in the Netherlands, and more than doubled in Luxembourg, from 3.1% to 7.2%.

These different trends are the outcome of an amalgam of sometimes conflicting factors. One is that many OECD countries have integrated their personal and corporate tax systems to avoid double taxation of income from capital organised in corporate form. Adjustments to these systems, including the degree to which income taxes are integrated, can result in shifts between the taxation measured on personal and corporate incomes. Tax revenues from corporate income will also be a function of the ability of a country to attract inbound investment – and to discourage outbound investment – which will in part reflect the influence of tax incentives available to corporations or shareholders.

## Why visibility matters

Taxes on income, property and net wealth are highly visible if they are levied by annual assessment, which is usually the case. In contrast, taxes and contributions directly paid by firms and employers, or withheld from gross wages and consumption taxes that are not explicitly included in sales prices, are generally less visible to taxpayers. Some might argue that a relatively large share of income, property and wealth taxes in a tax mix will tend to encourage taxpayer resistance, with voters inclined to press for lower taxation and less government spending. Country data on the share of 'visible' taxes in the mix and the overall volume of public spending offer some evidence in support of this



Where are the taxes?

Richard Damore/REA

view, as with Australia, Japan and the United States.

But there are exceptions, like Denmark, where social security forms part of the central budget. The explanation may be that voters in a number of countries are used to, and actually demand, government spending on such visible benefits as health and education, and are willing to pay a higher 'tax price' to obtain them. But a high price does not mean any price. Most voters probably prefer relatively generous government provision of goods, social benefits and income transfers, but are reluctant about paying the taxes required to fund them. They tend to accept the corresponding tax burden when it is at least perceived as being relatively modest. If this line of reasoning has any merit, then making taxes 'invisible' will attract policy-makers keen on shoring up or expanding the public sector in the economy without upsetting the electorate. However, being economical with the fiscal truth in this way may only build up pressure for future reform.

## Employee contributions

OECD countries differ strongly in the part of social-security spending they finance from earmarked contributions, but also in the wide variety of contributions from employees and employers. Employee contributions combine with income tax to explain the gap between gross and net wage earnings (Table 2).

In 1996, for unmarried workers at average earnings in Belgium, Denmark and Germany, payments of personal income tax and employee

**Table 2. Income tax plus employees' and employers' social security contributions, 1996<sup>1</sup>**

*% of labour costs, unless otherwise indicated*

Country <sup>2</sup>	Income tax	Social-security contributions		Total <sup>3</sup>	Labour costs <sup>4</sup> \$
		Employee	Employer		
Belgium	19	10	26	56	38,455
Germany	18	17	17	51	33,936
Switzerland	10	10	10	30	32,146
Italy	12	7	32	51	32,064
Luxembourg	12	11	12	35	30,386
Netherlands	5	31	8	44	29,683
United States	17	7	7	31	29,584
Canada	21	5	6	32	29,019
Denmark	36	9	0	45	28,993
Finland	23	6	20	50	28,992
Sweden	22	4	25	50	27,658
Norway	19	7	11	38	27,184
France	6	13	30	50	26,447
Australia	23	2	0	24	26,323
Japan	6	7	7	19	26,168
Austria	7	15	20	42	26,125
United Kingdom	16	8	9	33	26,062
Ireland	20	5	11	36	24,658
Spain	10	5	24	39	22,548
Korea	2	2	2	6	22,518
New Zealand	22	0	0	22	22,243
Iceland	21	0	4	24	20,212
Greece	1	12	22	36	16,301
Turkey	20	7	9	36	14,107
Czech Republic	7	9	26	43	13,692
Portugal	6	9	19	34	13,084
Poland	12	0	33	45	11,710
Hungary	12	8	32	52	9,852
Mexico	4	4	17	25	8,562

1. Single individual at the income level of the average production worker.
  2. Ranked by decreasing order of labour costs.
  3. Due to rounding, total may differ by one percentage point from aggregate.
  4. Adjusted for purchasing power parities.
- Source: OECD

social-security contributions claimed more than 40% of annual gross wages; in Greece, Japan, Korea, Mexico, Poland and Portugal, this figure was under 20%. For one-earner couples with two dependent children, the gap between gross wage-earnings and net take-home pay is generally smaller. Greece (where employers pay higher wages to bread-winners), Mexico and Turkey are exceptions here. And in Iceland, when cash benefits for children are taken into account, the net transfer becomes positive, which means that

transfers received exceed taxes paid, resulting in a net payment to the household.

## Employer contributions

In most OECD countries, employers contribute substantially to financing the social-security system, with their total labour costs being determined by workers' gross wage-earnings plus social-security contributions made by employers themselves. It follows that workers 'earn' substantially higher wages than they are aware of, because as a rule employers' social-security contributions do not figure on pay slips. Most pay slips show the amount of the gross wage, which is the total labour cost minus the employer's social-security contributions, and the net wage, or take-home pay, which is the gross wage less taxes and other obligatory state deductions.

In 1996 the wedge between total labour costs to the employer and net take-home pay to workers, at average earnings, ranged from a low 6% of labour costs in Korea and 19% in Japan, to 52% in Hungary and

56% in Belgium. Differences in tax/GDP ratios and the varying share of personal income tax and social-security contributions in national tax mixes go far to explain the wide variation in the size and make-up of tax wedges in OECD countries.

In Greece and Korea employees at average earnings pay hardly any income tax (1% and 2% respectively); in Denmark, by contrast, they pay 36%. Employees' contributions to social security also vary widely, ranging from 0% in Iceland,

# OECD taxes revisited



Michel Loye/Cosmos

Governments are looking for more immobile sources of tax revenues.

New Zealand and Poland to 31% in the Netherlands. Employers, on the other hand, pay 33% in social-security contributions in Poland, 32% in Hungary and Italy, and 30% in France, while employers in Australia, Denmark and New Zealand are not subject to such levies at all.

## Taxation at the margin

Average tax rates show the part of labour costs or gross wages, respectively, absorbed by taxes and contributions. Often, workers will hardly be aware of this tax take and instead will tend to focus on the net wage they receive. In some cases, for example, when workers consider whether it pays to do over-time, or to invest that time and other resources in training and education in the expectation of higher future wages, they may be interested in knowing by how much their gross wage earnings might increase, but they will particularly want to know how much additional pay they may take home. The marginal tax rate shows how much the fisc claims from additional wages.


When gross wages rise marginally, additional personal income tax and employee social-security contributions in most cases absorb 30–50% of a worker's pay rise. In four OECD countries – Denmark, Belgium, Finland and Germany – single workers without children earning average production-worker (APW) wages face marginal rates in the range of 50–55%. Ireland and the Netherlands impose rates that are slightly higher still. Workers in Japan (16%), Greece (20%), Poland (21%) and Mexico (22%) have the lowest marginal tax rates.

In most countries, the marginal tax rate for married one-earner couples with APW wages is the same as for single individuals without young children, or is a few points lower, although Luxembourg (29 percentage points), Ireland (21 percentage points) and France (15 percentage points) show much lower rates for married one-earner couples.

Taxes on labour income drive a wedge between what firms pay to hire labour and the pay workers take home, thus pushing up the cost to business of employing workers and discouraging part of the work-force from taking a job. Similarly, taxes influence the volume and allocation

of savings and investment, which are increasingly sensitive to tax regimes. The growing mobility of whole tax bases is restricting governments' room for manoeuvre in tax policy-making. Accurate and up-to-date information from tax statistics is of vital importance for policy analysts, both inside and outside of government. The OECD has brought to light a number of pressing developments in tax policy areas. Not least, it is clear from our tax statistics that in many countries the share of taxes with a mobile base in the national mix is shrinking. The corresponding increase in the share of consumption taxes and social-security contributions tends to discourage the input of labour to the productive process and to erode the redistributive potential of tax systems. ■

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### Note to readers:

Taxation will be the subject of our special analysis section in the next issue of the *Observer*, No. 215, published in December 1998.



## Spotlight

# Germany

## Reforming federal fiscal relations

Eckhard Wurzel

In Germany fiscal relations between the various levels of government have come to the fore of the policy debate. The fiscal system can encourage overspending in some areas, while it appears to have had little success in achieving economic convergence between the Länder. Reform is therefore needed.<sup>1</sup>

The high fiscal burden arising from the integration of the new eastern states into Germany has intensified discussion of whether or not the system of inter-governmental transfers discourages the federal states (Länder) from improving their finances. Furthermore, there are questions about how to spread the burden of fiscal consolidation implied by the Maastricht treaty between the different levels of government. And there is a third question of whether a leaner and more efficient public sector would be achieved by more closely matching local and regional public spending with state and local tax responsibilities.

In assigning tasks to the different levels of government and stipulating the budgetary independence of the federal government (Bund) and the Länder, the German constitution broadly follows the subsidiarity principle. But in practice the functional segregation of responsibilities is not a strict one. Co-operation and policy co-ordination are an important feature of fiscal relations. The Länder have an important input into federal decision-making through the upper house

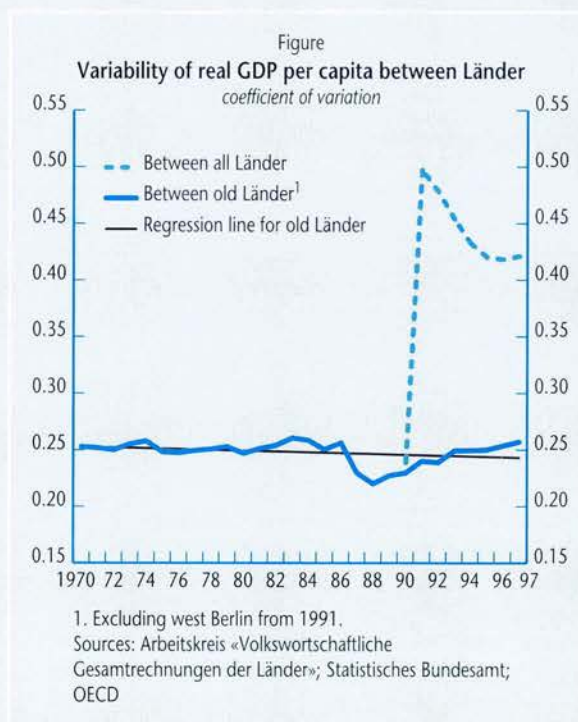
of parliament, the Bundesrat, while policy co-ordination is institutionalised in a number of inter-governmental councils. Some co-financing of Länder tasks by the Bund – covering jointly planned projects, investment aid and regional and social transfers – reflects the weight Germany attaches to attaining broadly similar living standards across the federation. Furthermore, a fiscal equalisation system – or *Finanzansgleich* – aims at providing fairer revenue levels across states, or for the communities within a state. Taxing powers are largely centralised and the degree of sharing of tax revenue between the different layers of government has increased over the last decades.

### The fiscal equalisation system

Under the fiscal equalisation system, financially weak Länder receive transfers from wealthier states and from the federal government. This yields a substantial redistribution of income in favour of the poorer Länder. Yet, it appears to have had little success in achieving economic convergence as measured by the Länder's GDP

per capita, with the variation between the old Länder of real GDP per capita having declined little. In statistical terms, the standard deviation remained at around one fourth of the mean over the last 27 years (Figure).

The reason for this disappointing outcome appears to be one of disincentives within the system. Consider what happens under the rules of tax sharing and subsequent redistribution of revenues via the equalisation system to additional tax revenues generated by an individual state. An additional DM1 million in income tax receipts generates only between DM80,000 and



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# Germany

## Reforming federal fiscal relations

tax auditing by an individual Land may appear uneconomic, since it gets only part of any extra tax generated, but must bear the full cost of the audit itself.

A system which moderated this reduction in Länder revenues would improve public sector efficiency without necessarily compromising the basic aim of the fiscal equalisation process. One such reform could be a two-stage system which allocates lump-sum payments, fixed over a multi-annual period, to poorer states in stage one, and in stage two conditions the current redistribution of taxes between states on their financial capacity as it prevails after stage one. Introducing such lump-sum payments would allow lowering the rates of tax redistribution in comparison to the present system.

### Implementing the stability and growth pact

With Germany obliged to observe the Maastricht treaty's budgetary criterion, it has been argued that the Länder could run excessive fiscal deficits, while the Bund would face any consequent sanction. The excessive deficits procedure was agreed by EU leaders in Dublin in 1996, with the objective of preventing excessive general government deficits among those EU governments participating in the single currency and, if they occur, to ensure their prompt correction, probably by imposing stiff financial penalties. Germany's federal government has therefore proposed budget caps for the Bund and the states, which would apply in the event of an excessive budget deficit. Evidence from elsewhere suggests that such caps help strengthen budgetary consolidation.

While poorer Länder would argue for the caps to be set in line with their higher financial need as evidenced by large deficits, states with low deficits argue that this would be another disincentive to use resources efficiently. For them, a 'per capita' allocation of the deficit ceilings would be preferable on efficiency grounds, but the deficits of the new Länder would then have to fall significantly; in 1997 the eastern states accounted for 21½% of the German population but

for 35 % of the overall Länder deficit. Hence, to avoid cuts in investment outlays in the new Länder, seen as necessary to catch up with the west, a transitional arrangement would be required to allow the new Länder to move gradually from present deficit positions to per capita-based deficit allocations.

### The case for more state autonomy

Economic efficiency would justify co-funding of fiscal projects if externalities existed between governments. Leaving financing exclusively to the government which provides the goods could then lead to under-provision. Bund participation in funding the construction of a university, for example, is justifiable as long as the university in question conveys positive externalities to other states in terms of the education provided. However, even in this example the mere existence of externalities does not automatically demand the involvement of the federal government, since part of the university's construction costs could be transferred to the states that benefit from it by introducing fees for the services. After all, in some fields services can be provided more efficiently if governments cooperate or are combined into larger administrative units. But if the externalities are minimal, federal grants end up encouraging overspending by the recipient Länder, since the full costs of providing goods and services are not then reflected in their budgets. Effectively, federal grants can allow the Länder governments to provide services and benefits and to pass on part of the associated costs to taxpayers in other states. Thus, in Germany the Länder are responsible for investment in hospitals, but not for financing their running costs or covering their deficits. That gives a strong incentive to expand hospital capacity, to create local employment, for example. Overall, co-financing in Germany appears excessive and should be reduced.

Similarly, responsibility for financing the social benefits could be given entirely to either the Länder (and communities) or to the Bund, depending on whether they are judged to be sup-



Decoret/REA

plementary at the regional level, or whether complete standardisation of provision is considered to be desirable. If some regional discretion is desired over benefits which should be provided across the federation, the Bund could fully finance basic provision, which the Länder or communities could then top up.

In addition, more regional tax autonomy would typically engender pressure for tax or expenditure savings. Regional tax autonomy could be increased by allowing for a Länder-specific or community-specific surcharge on the income tax. However, in such a system the underlying income tax schedule would have to be lowered. While compliance costs could be higher than in a completely harmonised system, restricting regional tax autonomy to variations in the surcharge would require virtually no additional expertise on the side of the tax payer and would keep additional administrative costs for the tax authorities to a minimum.

Similarly, incentives to reduce the tax burden and to balance the costs and benefits of publicly-provided goods would be strengthened by a shift to a system which relied more on charging fees for services. This would match public service provision more to local demand, because it would introduce incentives for customers to ask for services that were tailored to their preferences. ■

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# The slow transformation of Russian agriculture

Andrzej Kwiecinski

*The story of Russian agriculture since the collapse of the Soviet Union has been one of sharp declines in production, share of GDP, labour productivity, capacity utilisation, food consumption and wages. And although these adverse trends have been seen in other transition economies, they have lasted much longer in Russia. The most substantial impediment to the development of the agricultural sector has been the absence of a sound macro-economic environment and institutional framework.<sup>1</sup>*

Russia is the largest country in the world in size and sixth in terms of population. Its vast land resources – 221 million hectares, or about 1.5 hectare per capita – favour extensive farming practices. But soils are generally of low fertility and the predominantly continental climate is prone to drought, including those areas where the land is richest, such as Krasnodar.

The Russian agro-food sector has been through a difficult period of adjustment since the transition to a market economy began in 1991. There have been dramatic macro-economic shifts, as well as institutional and structural reforms. Costs of inputs rose more quickly than the rise in output prices, while privatisation of agricult-

ural enterprises coincided with a sharp decline in demand for livestock products. The share of agriculture in the economy has diminished considerably, falling from 15.4% of GDP in 1990 to 6.5% in 1997. The proportion of the total working population in agriculture grew from 13% to about 14%, but the rise was the result of larger falls in employment elsewhere in the economy. The fall in agriculture's economic importance and its higher share in employment indicates a marked drop in output per worker since 1991 and suggests growing hidden unemployment in rural areas. Indeed, in absolute terms, employ-

ment in agriculture fell by 7% between 1990 and 1997, and the volume of agricultural production by 36% over the same period (Table).

A key reason behind these problems was the relative decline in farming prices compared with other sectors after the removal of price controls in 1992. In the early years of reform (1992–93), despite huge inflationary pressures, cuts in subsidies to consumers and the fall in real incomes precipitated a sharp decline in demand for agricultural produce, holding down agricultural prices. But input prices, by contrast, soared towards world-market levels. Meanwhile, inefficient producers in food processing simply attempted to pass on their extra costs to agricultural producers and consumers.

**Table. Share of agro-food sector in the economy, 1990–97**

	1990	1996	1997
Share of agriculture in GDP (%)	15.4	6.7	6.5
Share of food industry in GDP (%)	..	1.8	..
Share of agriculture in employment (%)	12.9	14.0	13.9
Share of food industry in employment (%)	2.1	2.2	..
Capital investment in agro-industrial complex (billion rubles, 1991 prices) of which: agriculture	70.4 39.5	4.7 1.8	4.3 1.5

Figures in *italics* are provisional  
.. not available  
Source: Goskomstat

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*1. Reviews of Agricultural Policies: Russian Federation, OECD Publications, Paris, 1998.*

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At the beginning of the transitional period, some regional administrations, such as in Tatarstan, tapped into funds from their sizable oil and gas deposits to prevent a substantial decline in agricultural output in their regions. Their Soviet style agro-food policies, such as large-scale state procurement and production subsidies, have been costly for taxpayers and consumers alike, and have probably stored up difficult and costly adjustment for the future.

## Farm privatisation and restructuring

The Russian agricultural privatisation programme can be traced back as far as 1989–90 when Soviet legislation allowed, first, the creation of a non-state enterprise as a co-operative; second, the denationalisation of land and non-land assets by transferring them legally from the state to *kolkhozes* (broadly speaking, co-operative farms) and *sovkhoses* (state farms); and third, the establishment of a legal basis for individual (family) farming. After the dissolution of the Soviet Union, the programme was intended to allow those who wished to run privately-owned farms to do so. It facilitated the transfer of land and other assets to those who lived and worked on the large farms at the time of the reform, and the transformation of *kolkhozes* and *sovkhoses* into market-oriented agricultural enterprises. No restitution of land to the heirs of pre-Revolutionary landowners or to those of peasants collectivised in the 1930s was provided for. These efforts to introduce fundamental change in land tenure, in large-scale farm organisations and management and in legal ownership were fiercely resisted by local administrations, managers and others seeking to resist change and preserve the status quo.

With the introduction of the Law on the Peasant Farm in December of 1990 and subsequent laws and decrees defining the legal forms of large agricultural enterprises and of land ownership and the procedures for certifying and exercising ownership rights, it was expected that private holdings would be created in rural areas and the *kolkhozes* and *sovkhoses* would be re-



Sherbell/Saba-REA

Operating practices remain largely unchanged.

structured. But as it turned out few peasants were interested in establishing individual farms, and management and operating practices inside large agricultural enterprises remain largely unchanged. Clearly legislation was not enough to bring private agriculture into being. Too many barriers lay in the way: lack of capital, unfavourable input and output price ratios and uncertainties about reform were just a few. Moreover, apart from the resistance by local and regional officials, there was no tradition of family farming to spur the reforms on.

By the end of 1997, re-organisation in the vast majority of large-scale agricultural enterprises had still not progressed beyond the legal registration of the farms. Family farms, which in 1997 accounted for about 6% of agricultural land in Russia, are of minor importance. Most of the 62% of so-called privately-held agricultural land is still under collective share-holding, mainly as re-registered large-scale farms. Even family farms and household plots, which together make up nearly 10% of agricultural land, are constrained in exercising full ownership rights.

Moreover, despite legislation from the beginning of the 1990s providing for the transfer to

local authorities of other social assets, ranging from clubhouses and recreation grounds to medical centres, schools and libraries, large agricultural enterprises are still charged with the provision of public services, such as education, medical services and recreation. The provision of electricity, gas, water and heat, roads, sewerage systems, fire stations and even telephone networks is also their responsibility. At the beginning of 1997 an estimated 70% of social assets and public utilities were still under their charge, diverting financial and management resources away from commercial functions and slowing down restructuring.

A similar picture can be painted for sectors upstream and downstream of farming, such as chemical and fertiliser producers, machinery manufacturers and food processing enterprises. Privatisation in these sectors is virtually complete, but majority control by insiders, often in coalition with agricultural producers, has held up market measures and undermined the drive to boost productivity, efficiency and return on capital. The agro-food industry as a whole remains seriously inefficient. The total number of employees in the food processing sector has not

declined since 1990, though production has halved. The result is marked over-employment and low capacity utilisation.

Impetus for change has come in recent years from foreign investors, particularly in the production of high value-added agro-food products, such as confectionery, baby food, ice cream and tobacco products. By the end of 1997, the agro-food sector attracted 24% of total foreign direct investment (FDI) in Russia. Such inflows bring not only an infusion of new capital and technology, but also expertise and market-oriented leadership.

## Trends in trade

After the collapse of the Council for Mutual Economic Assistance (CMEA) and the disintegration of the Soviet Union, Russia was forced to negotiate new trading arrangements with each of its traditional partners. It has also had to seek to reintegrate itself into the world economy on new terms. Several new trade agreements have been concluded, in particular the Partnership and Co-operation Agreement with the European Union (EU) and various agreements with the New Independent States (NIS). Russia is also in the process of negotiating accession to the World Trade Organization (WTO). Future WTO membership will give Russia most-favoured-nation trade status, which means that any trade privilege provided to one partner has to be extended to all other partners having the same status. It will also help to drive reforms forward by providing an institutional grounding. But membership will also require Russia to abide by the provisions of the 1994 Uruguay Round Agreement on Agriculture, which fixes the maximum amount of support allowed and determines the choice among various policy measures, with some of them allowed and others, such as quantitative trade restrictions, prohibited.

Throughout the 1990s trade in food and agricultural products has represented a substantial part of Russia's total imports, but only a small proportion of exports: in 1996, the shares stood at 25% and 4%, respectively. The agro-food trade

deficit amounted to \$8.2 billion, down from \$10.5 billion in 1995. This fall may indicate a weakening of an initial surge in imports of selected food products, which arose to compensate for a drop in output and competitiveness among domestic producers. Another reason for the earlier rise in imports was the appreciation of the ruble. Export subsidies applied by some exporters to Russia, including the EU, were no doubt also a factor.

The recent decline in Russia's dependence on imports seems to be confirmed by the declining ratio of net agro-food imports (valued at the annual average exchange rate) to the total value of agricultural production (valued at current prices): it fell from 24% in 1994 to 15% in 1996. Russia nonetheless remains a net importer of agro-food products from all its trading partners.

The geographical structure of Russian imports has changed substantially since the reforms were first implemented: agro-food imports from OECD countries, especially the EU, have increased, but imports from traditional suppliers, such as central and eastern European countries, have declined. In 1996, Russia's main food suppliers were the Ukraine, the United States, Germany, Moldova, Kazakhstan and the Netherlands.



A. September/Sygnia

There has also been a striking shift in the composition of Russia's agro-food imports: imports of raw agricultural products have fallen sharply and those of processed foods have increased. More specifically, grain imports declined from about 30 million tonnes in 1992 to about 4 million annually between 1994 and 1996. Imports of meat and meat products rose from 0.5 million tonnes in 1992 to about 2 million tonnes in 1995, but then declined to 1.7 million tonnes in 1996. In the 1997/98 season, which runs from July to June, following a sharp rise in grain output in 1997, Russia may even become a net exporter of feed grains.

## How much support?

Progress towards developing a market-oriented agricultural policy framework can be measured in part by the trend in the Producer Subsidy Equivalent (PSE).<sup>2</sup> This measure shows that the degree of support can be largely divided into three periods (Figure, p. 38).

In the final years of the Soviet era, between 1986 and 1990, support of market prices and budgetary subsidies were high. The net PSE was about 90% of gross farm revenues, well above the OECD average.

The second period covers 1992 and 1993, when major macro-economic reforms and significant, sometimes chaotic, adjustments resulted in a substantial 'implicit' taxation of agriculture, with the PSEs at -105% in 1992 and -26% in 1993. This means that producers were receiving prices that were below world market prices, and that the shortfall was not compensated for by budgetary subsidies. Consumers, on the other hand, were implicitly subsidised during this period, since the domestic prices they were paying were below world-market prices. This implicit taxation of producers was not helped by

2. The total Producer Subsidy Equivalent is an indicator of the total value of money transfers to agricultural producers through policy in a given year. Both transfers from consumers of agricultural products and transfers from taxpayers are included. The percentage PSE is an indicator of the value of transfers as a percentage of gross farm revenues.

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inefficiencies along the food chain nor by restrictions imposed on agricultural exports, which kept producer prices down.

The third period began in 1994. The appreciation of the ruble, combined with the introduction of border protection against imports of most agro-food products pushed up the degree of support as domestic prices for most commodities moved closer to world reference prices and even exceeded them. As a result, support to Russian agriculture turned positive, reaching 21% in 1995 and 32% in 1996. However, the support fell back again to an estimated 26% in 1997, which was lower than the OECD average of 35%, because of the fall in prices of several agricultural commodities, such as grains and oilseeds, the decline in the budgetary support provided to agriculture, the government's resistance to increase trade barriers, and the stable exchange rate.

## Further reforms?

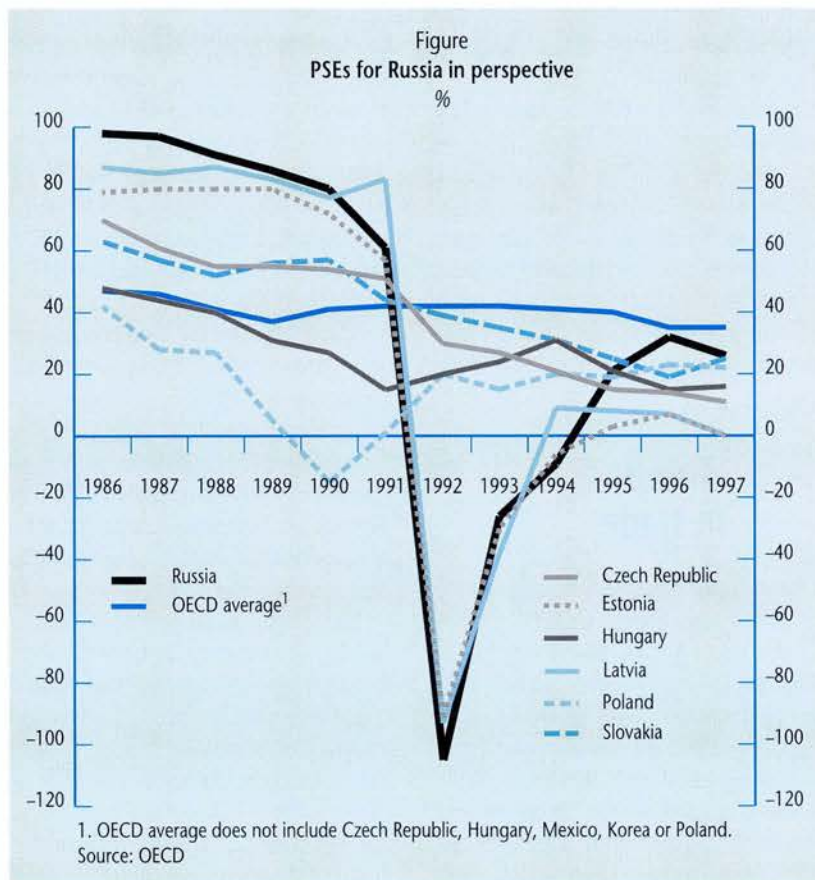
In view of the long period of Soviet rule in Russia, the difficulties of restructuring and re-orienting agriculture towards an efficient, market-oriented mode of operation have been immense. Although the vast majority of state and collective farms have re-registered as private enterprises and have formally transferred ownership of collectively held land and non-land assets to workers and pensioners, the re-organisation has been mostly paper-based and has done little to improve the organisational structure, size, management and economic behaviour of the farms. The fact is that large-scale enterprises of more than 100 hectares work more than 80% of agricultural land in Russia. This creates favourable conditions for productivity growth and increased international competitiveness of Russian agriculture, but only if they are properly organised and managed.

One of the major obstacles to reform is the excessive regionalisation of agricultural policies, with unequal degrees of farm support across regions, inter-regional trade barriers and different restructuring policies. Their combined effect

is to distort incentives: farm operators do not engage in the activities that would be most suitable for their location; instead, they engage in those that receive the highest support from their respective regional governments. In other words, specialisation based on comparative advantage is a concept that has yet to be driven home. Agricultural policy should focus attention on removing inefficiencies by increasing competition, introducing more market transparency and information about prices, and by providing training, education and consultancy to producers. Market-price support, on the other hand, should be reduced, since it distorts market signals and harms both producers and consumers.

Russia's economic potential is enormous, and agriculture could play an important role in fulfilling that potential. However, if the government skews its policies to suit sectoral interests, then the types of failures witnessed in some OECD

countries are likely. Russia should therefore seize the opportunity to put in place a set of policies aimed at eliminating structural barriers to help stimulate the emergence of a strong and competitive agro-food sector. ■



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# Liberalising capital flows: lessons from Asia

Pierre Poret

*The Asian crisis has prompted calls from several quarters for tighter controls on foreign investment and capital flows in emerging markets. But such calls are misplaced. There are several compelling arguments in favour of freeing up capital flows in these markets, provided it is done in an orderly and properly structured way.*

The Asian crisis has provided a reminder – and a particularly dramatic one – that countries which open themselves to capital inflows become more vulnerable to large capital outflows when investor sentiment turns downwards. This could result in sharp currency depreciation, financial instability and severe recession. Net private flows to Korea, Indonesia, Malaysia, the Philippines and Thailand, which increased rapidly in the 1990s to reach \$97 billion in 1996, turned into a large net outflow of \$12 billion in 1997. Output was expected to fall in these countries by nearly 6% in 1998 after 4.5% growth last year.

The financial turmoil in Asia has led to several calls for tighter controls on inflows of foreign investment, particularly short-term. Yet, there is plenty of evidence to show that as markets and institutions mature, the efficiency and regulatory gains arising from the liberalisation of capital movements outweigh the risks. None of the developed OECD countries maintain general capital controls, even on short-term capital, and there is no indication of a change in their posi-

tion. And with reason, as estimates suggest that the annual gains arising from the mobility of international capital are on average of the order of at least 1 percentage point of GDP, possibly much higher.<sup>1</sup> As emerging market economies persevere in their efforts to close the gap with advanced OECD economies, further global integration in financial markets will become all the more necessary. In other words, the question for emerging market economies is not whether capital movements should be liberalised, but how to move towards this objective with a minimum of risk.

Several conditions are important to maximise the benefits of foreign investment and reduce the risks associated with capital liberalisation. They include prudent macro-economic policies and responsive exchange rate regimes. A robust domestic banking system and securities markets and good corporate governance are also key, as is the removal of distortions from government support and guarantees. Another requirement is to instil market discipline through transparency and disclosure, for example, by providing timely and reliable statistics to guide decision-making.

The experience with the implementation of the OECD Code of Liberalisation of Capital Movements – one of the main substantive obligations of OECD membership – also points to complementary measures which, rather than focusing on restricting short-term investment, actually encourage longer-term foreign investment.

## Promoting foreign equity investment

In most OECD countries foreign investment in equity is considered extremely important to sustaining the liberalisation process. One reason is simply that foreign corporate investors are not usually willing to take long-term commitments unless they have an opportunity to exert influence on the enterprises they invest in. Equity investment provides a way of doing this. Foreign equity investment also has the potential to enhance local corporate governance practices and the investor can help develop the financial infrastructure and institutions needed to cope with free capital flows. Furthermore, equity investment, unlike debt-creating instruments, imposes no obligation on the debtor to make pre-established interest payments and to reimburse the principal at a set date. Equity investment is also generally denominated in the currency of the recipient country so that the exchange-rate risk is shared by the foreign investor.

The Asian emerging economies which were most affected by the recent crisis (Korea, Indonesia, Malaysia, Thailand) all maintained tight quantitative ceilings – never more than 49% – on non-resident purchases on the stock market, together with the possibility of general discretionary screening procedures for foreign equity investments. Even stricter limits on foreign

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1. 'Regulatory Reform in the Financial Services Industry', *OECD Report on Regulatory Reform*, Vol. 1: Sectoral Studies, OECD Publications, Paris, 1997.

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ownership in protected sectors such as banking and finance were imposed in some of them.

## The disciplining effect of international exposure

Excessive reliance on short-term foreign funds intermediated by banks poorly equipped to perform market-based credit selection has been identified as one of the main causes for the recent crises in Asian emerging economies. Net interbank lending to Korea, Indonesia, Malaysia, the Philippines and Thailand rose from \$14 billion per year in 1990–94 to \$43 billion in 1995–96, two thirds of which had maturities with less than a year; these figures compare with net equity inflows of only \$11 billion and \$17 billion over the same periods.<sup>2</sup>

Recourse to direct corporate finance from abroad, in particular through the issue and introduction of domestic securities on foreign run markets, contributes to alleviating the burden on domestic banks, thereby reducing their vulnerability to shocks. It also exposes domestic corporations to the disclosure requirements and other disciplines of international capital markets, and allows investors and fund managers to keep a closer watch on the investment behaviour and financial standing of the companies they hold interests in.

Again, in the same four economies most affected by the crisis (Korea, Indonesia, Malaysia, Thailand), prior approval and other restrictions governed the issue and introduction of domestic corporate securities on international markets. Moreover, accounting rules and corporate practices were not always well adapted to international standards and hampered admission to world securities markets.

## Improving credit-risk management

Several critics watching the Asian crisis have advocated a tightening of regulations on the intermediation of banks in cross-border capital flows to help reduce reliance on short-term lending.

Yet such limitations on banks' external borrowing, which are permitted under the OECD Code through regulations on net foreign exchange exposure and net external positions, already existed in Asian emerging market economies before the crisis. True, there may have been room for more effective enforcement of existing regulations. But there were always limits to what the rules could achieve without interfering with the normal conduct of business, in particular trade finance. And in any case the Asian crisis had less to do with controlling cross-border flows to banks, than with a breakdown in internal credit management. No amount of regulation on capital flows could have prevented that.

Another option, therefore, is to regulate and supervise the local lending practices of domestic banks so as to ensure prudent and effective credit-risk management. Banks would then have less incentive to look to external funds to finance indiscriminate investment. Appropriate guidelines for credit selection, diversification rules for debtor exposure, adequate provisioning against default risks and effective enforcement mechanisms – the lack of which was very much at the root of the crisis in Asian emerging markets – would go a long way towards achieving this objective. Consistent with the practice in a number of OECD countries for years, requirements that certain credits extended by domestic banks to residents be settled in local currency might have been tightened in Asia's emerging markets.

In the OECD Code, liberalisation means that residents and non-residents should be allowed to transact freely between each other – subject only to possible reporting and other simple formalities to ensure data collection and avoid illegal activities. In the case of the worst-hit Asian economies, the opening of their capital account was to a large extent primarily the result of discretionary authorisation granted to selected sectors. Apart from the favouritism and corruption that discretionary and ad hoc liberal policies almost inevitably give rise to, they also create the perception among foreign financiers and domestic debtors that the government is sharing

the risk, a perception which may encourage excessive inflows of capital. At the same time, such practices cast doubt over the transparency of the rules and the strength of the authorities' commitment to liberalisation. That, in turn, discourages long-term financial investment.


Policies to liberalise capital movements were not in themselves the cause of the recent Asian problem. The aim of continuing policies should therefore be to shift the structure of capital inflows in favour of high-quality foreign investment and gain the confidence of long-term investors. That means promoting foreign equity investment, allowing direct exposure of corporations to the disciplines of international securities markets and reducing the scope for opaque and patronising authorisation policies. And if prudent rules for credit-risk management are effectively implemented, excessive reliance on short-term external borrowing through fragile banking systems and misallocation of investment resources would be reduced. The outcome would be an orderly liberalisation process that works. ■

2. 1998 Annual Report of the Bank for International Settlements.






# Indicators




**AUSTRALIA**

	period	% change from previous	
		period	year
Gross Domestic Product	Q2 98	0.9	4.2
Leading Indicator	Jun. 98	-0.4	0.0
Consumer Price Index	Q2 98	0.6	0.7
		current period	same period last year
Current Balance	Q2 98	-4.09	-2.19
Unemployment Rate	Mar. 98	8.2	8.8
Interest Rate	Jul. 98	5.17	5.19




**AUSTRIA**

	period	% change from previous	
		period	year
Gross Domestic Product	Q4 95	0.0	0.3
Leading Indicator	Jul. 98	0.8	5.9
Consumer Price Index	Jul. 98	0.0	0.9
		current period	same period last year
Current Balance	Jun. 98	-0.53	-0.45
Unemployment Rate	Jul. 98	4.5	4.4
Interest Rate	Aug. 98	3.59	3.45




**BELGIUM**

	period	% change from previous	
		period	year
Gross Domestic Product	Q4 97	-0.4	2.6
Leading Indicator	Jul. 98	0.4	-1.1
Consumer Price Index	Aug. 98	-0.4	0.4
		current period	same period last year
Current Balance	Q1 98	2.58	3.04
Unemployment Rate	Jul. 98	8.8	9.3
Interest Rate	Jun. 98	3.65	3.27




**CANADA**

	period	% change from previous	
		period	year
Gross Domestic Product	Q2 98	0.4	3.1
Leading Indicator	Jul. 98	-0.7	-3.0
Consumer Price Index	Jul. 98	0.0	1.0
		current period	same period last year
Current Balance	Q2 98	-3.09	-2.0
Unemployment Rate	Jul. 98	8.4	9.0
Interest Rate	Jul. 98	5.02	3.51




**CZECH REPUBLIC**

	period	% change from previous	
		period	year
Gross Domestic Product	Q1 98	..	-0.9
Leading Indicator	..	..	..
Consumer Price Index	Jul. 98	1.9	10.4
		current period	same period last year
Current Balance	Q1 98	-0.35	-1.07
Unemployment Rate	Jul. 98	6.3	4.5
Interest Rate	Aug. 98	14.23	14.70




**DENMARK**

	period	% change from previous	
		period	year
Gross Domestic Product	Q1 98	-0.3	3.3
Leading Indicator	Jun. 98	0.4	7.2
Consumer Price Index	Jul. 98	-0.1	1.8
		current period	same period last year
Current Balance	Q4 97	-0.80	-0.91
Unemployment Rate	Jul. 98	4.6	5.6
Interest Rate	Aug. 98	4.45	3.60




**FINLAND**

	period	% change from previous	
		period	year
Gross Domestic Product	Q1 98	-0.5	6.4
Leading Indicator	Apr. 98	-0.7	-2.3
Consumer Price Index	Jul. 98	-0.3	1.1
		current period	same period last year
Current Balance	Jun. 98	0.61	0.53
Unemployment Rate	Jul. 98	12.1	12.8
Interest Rate	Aug. 98	3.61	3.13



**FRANCE**

	period	% change from previous	
		period	year
Gross Domestic Product	Q2 98	0.7	3.0
Leading Indicator	Jul. 98	0.6	4.7
Consumer Price Index	Jul. 98	-0.4	0.8
		current period	same period last year
Current Balance	May 98	3.28	3.83
Unemployment Rate	Jul. 98	11.8	12.4
Interest Rate	Aug. 98	3.56	3.43




**GERMANY**

	period	% change from previous	
		period	year
Gross Domestic Product	Q1 98	1.0	3.0
Leading Indicator	Jul. 98	-0.2	2.7
Consumer Price Index	Jul. 98	0.3	0.9
		current period	same period last year
Current Balance	Jun. 98	1.74	2.85
Unemployment Rate	Jul. 98	9.6	10.0
Interest Rate	Aug. 98	3.50	3.26



**GREECE**

	period	% change from previous	
		period	year
Gross Domestic Product	1996	..	2.6
Leading Indicator	Jul. 98	0.0	1.0
Consumer Price Index	Aug. 98	0.0	5.0
		current period	same period last year
Current Balance	Feb. 98	-1.04	-0.85
Unemployment Rate	..	..	..
Interest Rate	Jul. 98	11.50	9.60




**HUNGARY**

	period	% change from previous	
		period	year
Gross Domestic Product	..	..	..
Leading Indicator	..	..	..
Consumer Price Index	Jul. 98	-0.2	14.1
		current period	same period last year
Current Balance	..	..	..
Unemployment Rate	Jul. 98	9.3	10.6
Interest Rate	Jul. 98	17.10	19.70



**ICELAND**

	period	% change from previous	
		period	year
Gross Domestic Product	1996	..	5.5
Leading Indicator	..	..	..
Consumer Price Index	Aug. 98	-0.5	1.1
		current period	same period last year
Current Balance	Q1 98	-0.22	0.00
Unemployment Rate	Jul. 98	3.4	4.7
Interest Rate	Jul. 98	7.30	7.10



**IRELAND**

	period	% change from previous	
		period	year
Gross Domestic Product	1996	..	8.6
Leading Indicator	Jul. 98	0.2	11.0
Consumer Price Index	Jul. 98	-0.3	2.7
		current period	same period last year
Current Balance	Q1 98	-0.11	-0.43
Unemployment Rate	Jul. 98	9.1	10.1
Interest Rate	Aug. 98	6.08	6.23




**ITALY**


	period	% change from previous	
		period	year
Gross Domestic Product	Q1 98	-0.1	2.5
Leading Indicator	Jun. 98	-0.9	4.1
Consumer Price Index	Aug. 98	0.1	1.9
		current period	same period last year
Current Balance	Apr. 98	0.63	2.51
Unemployment Rate	Apr. 98	12.4	12.2
Interest Rate	Jul. 98	4.88	6.89

## Definitions and Notes


**Gross Domestic Product:** Volume series, seasonally adjusted except for Czech Republic and Portugal  
**Leading Indicator:** A composite indicator, based on other indicators of economic activity (employment, sales, income, etc.), which signals cyclical movements in industrial production from six to nine months in advance  
**Consumer Price Index:** Measures changes in average retail prices of a fixed basket of goods and services  
**Current Balance:** \$ billion; not seasonally adjusted except for Australia, the United Kingdom and the United States  
**Unemployment Rate:** % of civilian labour force – standardised unemployment rate; national definitions for Czech Republic, Iceland, Korea, Mexico, Poland, Switzerland and Turkey; seasonally adjusted apart from Turkey  
**Interest Rate:** Three months, except for Greece (twelve months) and Turkey (overnight interbank rate)  
 ... not available  
 Source: Main Economic Indicators, OECD Publications, Paris, September 1998.



JAPAN			
	period	% change from previous	
		period	year
Gross Domestic Product	Q1 98	-1.3	-3.7
Leading Indicator	Jul. 98	0.8	-3.1
Consumer Price Index	Jul. 98	-0.6	-0.1
		current period	same period last year
Current Balance	Jun. 98	10.28	8.63
Unemployment Rate	Jul. 98	4.1	3.4
Interest Rate	Aug. 98	0.73	0.59




KOREA			
	period	% change from previous	
		period	year
Gross Domestic Product	Q2 98	-1.2	-6.7
Leading Indicator		..	..
Consumer Price Index	Aug. 98	0.3	6.9
		current period	same period last year
Current Balance	Jun. 98	3.43	-0.22
Unemployment Rate	Jul. 98	8.6	2.4
Interest Rate	Jul. 98	14.00	11.90




LUXEMBOURG			
	period	% change from previous	
		period	year
Gross Domestic Product	1996		3.0
Leading Indicator	Jul. 98	0.3	3.5
Consumer Price Index	Jul. 98	0.3	1.1
		current period	same period last year
Current Balance		..	..
Unemployment Rate	Jul. 98	2.3	2.6
Interest Rate		..	..




MEXICO			
	period	% change from previous	
		period	year
Gross Domestic Product	Q2 98	1.9	4.2
Leading Indicator	Jun. 98	1.1	5.3
Consumer Price Index	Jul. 98	1.0	15.4
		current period	same period last year
Current Balance	Q2 98	-3.54	-1.13
Unemployment Rate	Jul. 98	3.0	3.8
Interest Rate	Jul. 98	21.82	19.40




NETHERLANDS			
	period	% change from previous	
		period	year
Gross Domestic Product	Q2 98	0.7	3.7
Leading Indicator	Jul. 98	0.3	1.7
Consumer Price Index	Jul. 98	0.2	2.0
		current period	same period last year
Current Balance	Q1 98	3.54	4.66
Unemployment Rate	Jun. 98	3.9	5.4
Interest Rate	Aug. 98	3.44	3.42




NEW ZEALAND			
	period	% change from previous	
		period	year
Gross Domestic Product	Q1 98	-0.6	2.3
Leading Indicator		..	..
Consumer Price Index	Q2 98	0.5	1.7
		current period	same period last year
Current Balance	Q1 98	-0.27	-0.61
Unemployment Rate	Q2 98	7.7	6.7
Interest Rate	Aug. 98	6.79	8.34




NORWAY			
	period	% change from previous	
		period	year
Gross Domestic Product	Q2 98	1.0	1.7
Leading Indicator	Jun. 98	-0.4	0.2
Consumer Price Index	Jul. 98	0.1	2.4
		current period	same period last year
Current Balance	Q4 97	1.43	2.65
Unemployment Rate	Q1 98	3.3	4.2
Interest Rate	Jul. 98	5.40	4.00




POLAND			
	period	% change from previous	
		period	year
Gross Domestic Product		..	..
Leading Indicator		..	..
Consumer Price Index	Jul. 98	-0.4	11.7
		current period	same period last year
Current Balance	May 98	-0.12	-0.14
Unemployment Rate	Jul. 98	9.6	11.1
Interest Rate	Jun. 98	20.88	20.91




PORTUGAL			
	period	% change from previous	
		period	year
Gross Domestic Product	Q4 97	1.9	4.8
Leading Indicator	Jun. 98	0.0	2.5
Consumer Price Index	Jul. 98	0.2	3.1
		current period	same period last year
Current Balance	Q4 97	-0.69	-0.87
Unemployment Rate	Jul. 98	6.2	7.0
Interest Rate	Aug. 98	4.35	5.49




SPAIN			
	period	% change from previous	
		period	year
Gross Domestic Product	Q1 98	0.9	3.7
Leading Indicator	Jun. 98	0.6	3.2
Consumer Price Index	Jul. 98	0.4	2.3
		current period	same period last year
Current Balance	Jun. 98	-0.10	-0.14
Unemployment Rate	Jul. 98	18.6	21.0
Interest Rate	Aug. 98	4.35	5.34




SWEDEN			
	period	% change from previous	
		period	year
Gross Domestic Product	Q2 98	1.9	4.2
Leading Indicator	Jul. 98	0.5	2.5
Consumer Price Index	Jul. 98	-0.2	-0.1
		current period	same period last year
Current Balance	May 98	-0.10	-0.13
Unemployment Rate	Jul. 98	8.6	10.1
Interest Rate	Aug. 98	4.19	4.17




SWITZERLAND			
	period	% change from previous	
		period	year
Gross Domestic Product	Q1 98	0.5	2.4
Leading Indicator	Jul. 98	0.4	5.1
Consumer Price Index	Aug. 98	0.3	0.1
		current period	same period last year
Current Balance	Q2 98	5.10	5.26
Unemployment Rate	Jul. 98	3.5	5.2
Interest Rate	Jul. 98	1.98	1.42



TURKEY			
	period	% change from previous	
		period	year
Gross Domestic Product	Q1 98	4.3	7.1
Leading Indicator		..	..
Consumer Price Index	Jul. 98	3.4	85.3
		current period	same period last year
Current Balance	Q2 98	-0.47	-1.06
Unemployment Rate	Q2 98	6.4	5.9
Interest Rate	Aug. 98	76.41	73.93



UNITED KINGDOM			
	period	% change from previous	
		period	year
Gross Domestic Product	Q2 98	0.5	2.6
Leading Indicator	Jul. 98	-0.4	-0.2
Consumer Price Index	Jul. 98	-0.2	3.5
		current period	same period last year
Current Balance	Q1 98	-5.30	2.23
Unemployment Rate	May 98	6.2	7.2
Interest Rate	Aug. 98	7.66	7.15



UNITED STATES			
	period	% change from previous	
		period	year
Gross Domestic Product	Q2 98	0.4	3.6
Leading Indicator	Jul. 98	0.1	2.0
Consumer Price Index	Jul. 98	0.1	1.7
		current period	same period last year
Current Balance	Q1 98	-47.21	-36.99
Unemployment Rate	Jul. 98	4.5	4.9
Interest Rate	Aug. 98	5.58	5.60

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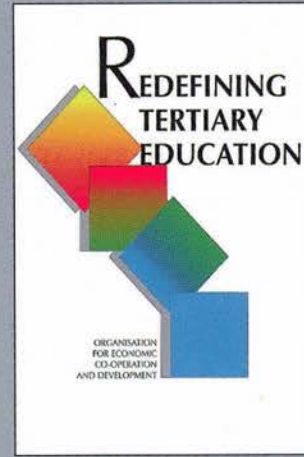
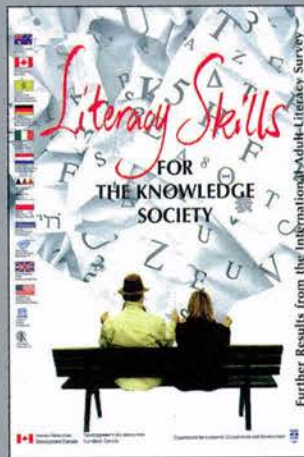
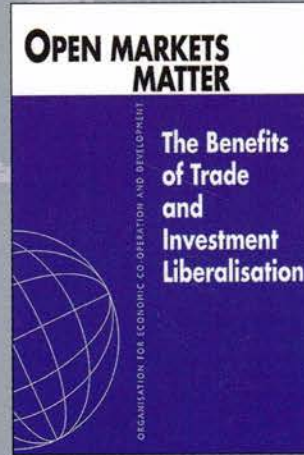
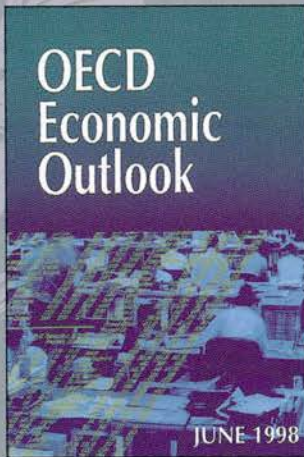
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