Chapter 1

REGAINING MOMENTUM IN SCIENCE, TECHNOLOGY AND INDUSTRY

Economies worldwide have endured an economic slowdown from which they are only now beginning to recover and which has constrained the capacity of governments and industry to invest in science, technology and innovation. As OECD *countries continue to move towards more knowledge-based economies and face increasing economic competition from non-member economies, their reliance on the creation, diffusion and exploitation of knowledge – including scientific and technical knowledge – will grow.* This *chapter examines recent science, technology and industry trends in the* OECD *area.* It *reviews performance according to a number of indicators –* R&D *expenditures, human resources, patents and trade – taking into account the increase in globalisation.*

Introduction

Recent years have been challenging ones for science, technology and industry. Science continues to advance the understanding of natural phenomena at scales large and small, technology continues to apply new knowledge to social and economic needs, and nations continue to shift to more knowledge-based economies. At the same time, economies worldwide have endured an economic slowdown from which they are only now beginning to recover and which has constrained the capacity of governments and industry to invest in science, technology and innovation. Growing concerns about safety and security have also had an impact on business and government, shifting patterns of demand and hence business profitability and adding to the range of objectives towards which government resources are directed.

The result has been a reduction in the momentum that carried OECD countries' investments in science, technology and innovation to the brink of the 21st century. Throughout the 1990s, and in particular in the second half of the decade, the business and government sectors of many OECD countries made sizeable increases in their investments in R&D and their uptake of information and communications technology (ICT). The subsequent economic downturn exerted pressure on such investments, and, while gains continue to be made in many part of the OECD, rates of growth have generally slowed. Of course, these forces were felt differently across the OECD, and the effects were more pronounced in some countries than in others, most notably in the United States. With an economic recovery now under way, the challenge to OECD countries is to regain their earlier momentum and to reconfirm their commitment to science, technology and innovation as a key driver of industrial performance and economic growth.

This chapter examines recent science, technology and industry trends in the OECD area. It identifies factors in the economic environment that have shaped – and will continue to shape – investments in science, technology and innovation. It then reviews performance according to a number of indicators – R&D expenditures, human resources, patents and trade – taking into account the increase in globalisation. Where possible, the analysis focuses on trends in the past few years, using updated statistics to examine how national science, technology and innovation systems have responded to the economic slowdown and other disturbances. Also, an attempt is made, where possible, to identify future trends or forces that will affect them. As the chapter shows, the past few years have been unsettling, and the future remains uncertain, so that precise forecasts are not possible. Nevertheless, the general trends reveal a number of issues for policy makers to address.

A changing macroeconomic environment

Trends in science, technology and industry have been shaped by the rapid changes in the economic environment during the past several years. Following a decade of economic expansion in the 1990s, OECD countries suffered a widespread economic slowdown in 2001 and 2002, from which they have just recently begun to emerge. OECD-wide economic growth slowed from an average pace of 2.7% a year between 1991 and 2000 to just 1% in 2001, with growth in the United States tumbling to 0.5%. Market corrections in the ICT sector, combined with rising energy prices, a contraction in international trade and growing concerns about international terrorism led to falling confidence and reduced economic growth rates in many industrialised countries, with high-technology sectors shouldering much of the burden. These changes had a significant effect on business-sector investments in science and technology, and in particular in ICT.

Recovery in sight

Current OECD projections foresee a strong and sustainable recovery buoyed by rising business investment, recovering corporate profits, a revival in high-technology sectors, and more resilient consumer spending. Overall OECD-area GDP growth is expected to climb from 2.2% in 2003 to 3.3% by 2005, and although job creation has picked up relatively slowly, unemployment is expected to decline from 7.1% to 6.7% of the labour force. Inflation is also expected to remain under control, although rising energy costs (driven by increased oil prices) remain a concern. Moreover, the recovery may proceed at different rates, with growth in the United States, the United Kingdom and Japan forging ahead of that in the euro area. The OECD projects average growth of 4.3% in the United States and 4.4% in Japan in 2004, compared to 2.0% in the euro area. Unemployment is also expected to drop to 5.2% or less of the workforce in the United States and Japan, compared to 8.5% in the euro area, potentially easing concerns about increased globalisation and outsourcing of jobs, particularly in the service sector.

Government fiscal imbalances remain a possible cloud on the horizon, and one that could obscure other positive economic news. Public finances have deteriorated considerably in the largest OECD countries since the onset of the downturn, and deficits are projected to worsen in 2004 before recovering slightly in 2005 to 3.9% of GDP in the United States, 6.6% of GDP in Japan and 3.1% of GDP in the euro area. While Canada, Spain and a number of smaller OECD economies have managed to preserve fiscal surpluses, deficits in the larger economies put pressure on exchange rates and interest rates. In addition, they may further constrain government spending, including on science, technology and innovation.

Table 1.1. **Key economic variables**

	Average 1991-2000	2001	2002	2003	2004[1]	2005[1]
Real GDP growth[2]	2.7	1.0	1.7	2.2	3.5	3.3
United States	3.3	0.5	2.2	3.1	4.3	3.7
Japan	1.5	0.4	–0.3	2.7	4.4	2.8
Euro area	2.4	1.7	0.9	0.5	2.0	2.4
Unemployment[3]	6.9	6.4	6.9	7.1	6.9	6.7
United States	5.6	4.8	5.8	6.0	5.5	5.2
Japan	3.3	5.0	5.4	5.3	5.0	4.6
Euro area	9.6	8.0	8.4	8.8	8.8	8.5
Inflation[4]	3.8	2.9	2.5	2.0	1.7	1.6
United States	–	2.4	1.5	1.7	1.7	1.6
Japan	–	–1.5	–1.2	–2.5	–1.8	–1.1
Euro area	–	2.4	2.6	2.0	1.7	1.7
Fiscal balance[5]	–2.8	–1.1	–2.9	–3.7	–3.6	–3.1

1. Projected. 2004 GDP figures reflect updated OECD estimates as of September 2004.
2. Year-on-year increase.
3. Per cent of labour force.
4. GDP deflator; year-on-year increase.
5. Per cent of GDP.

Source: OECD, *Economic Outlook*, 2004.

An innovation-led recovery?

Science, technology and innovation promise to be a significant part of the economic recovery. As OECD countries continue to move towards more knowledge-based economies and face increasing economic competition from non-member economies, their reliance on the creation, diffusion and exploitation of knowledge – including scientific and technical knowledge – will grow. Already science, technology and innovation are key elements of economic success. In 2000 high- and medium-high-

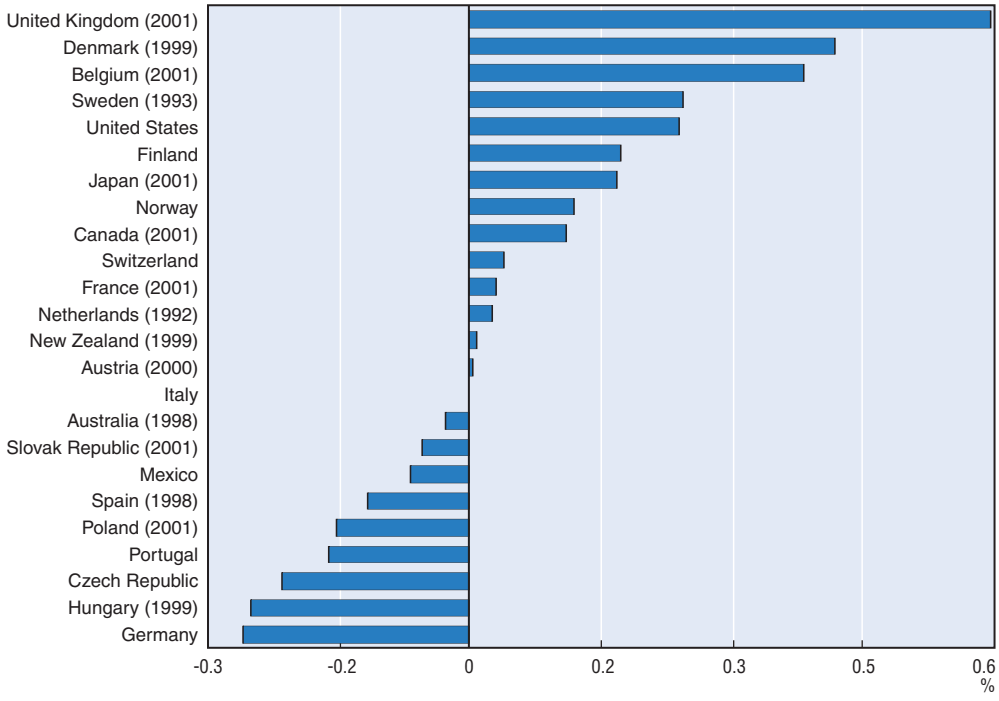
technology manufactures accounted for 8.4% of total gross value added in the OECD area, and knowledge-intensive market services accounted for an additional 19%.[1] When education and health are added, technology- and knowledge-based industries accounted for 38% of total OECD-area value added in 2000.

Value added in these sectors is growing rapidly. In the United States and Japan, for example, value added in high- and medium-high-technology manufacturing industries increased by 46% and 22%, respectively, between 1995 and 2001. Among the larger European economies, value added in these sectors grew by roughly 10% in Germany and Italy, 15% in the United Kingdom and more than 37% in France. Similarly, growth in knowledge-based market services has been rapid. The United States saw gains of 44%, and Japan of 33% between 1995 and 2001. In Europe, value added increased at a rate of 24% in France, 36% in Italy, 40% in Germany and 56% in the United Kingdom.

Knowledge-intensive industries are increasingly important in international trade. High- and medium-high technology industries accounted for 67% of exports and 64% of manufacturing trade among OECD countries in 2001, up from 60% in 1995.[2] Growth rates in the last half of the 1990s were highest in the most R&D-intensive sectors – office, accounting and computing machinery; pharmaceuticals; and aircraft and spacecraft – each of which grew at a rate of 10% or more. Furthermore, most OECD countries improved their technology balance of payments during the 1990s.[3] While the deficit expanded for the EU as a whole, the surpluses of the US and Japan grew at a faster rate. Moreover, by 2001 12 of the 22 countries reporting such data indicated a positive trade balance, compared with just five countries in 1990 (Figure 1.1).

R&D is essential to knowledge-intensive industries. In 1999 (the latest year for which comparable data are available), high- and medium-high-technology industries accounted for 69% of total OECD

Figure 1.1. **Technology balance of payments for OECD countries, 2002**
As a percentage of GDP



Source: OECD Technology Balance of Payments database, June 2004.

business R&D expenditure. Even though the service sector is not often thought of as R&D-intensive, it accounted for 21%, up from 14% in 1991. Most of this R&D occurs in knowledge-intensive sectors such as computing, communications and R&D services. To be sure, the R&D intensity of services is far below that of manufacturing, but in the computing services sector, for example, R&D is on average 4% of value added, a share above that of many medium- and low-technology manufacturing sectors. Recent innovation surveys indicate that the service sector is only slightly less innovative on average than manufacturing, and some service sector industries are more innovative than the average manufacturing sector (see Chapter 4 for a more detailed discussion of R&D and innovation in services).

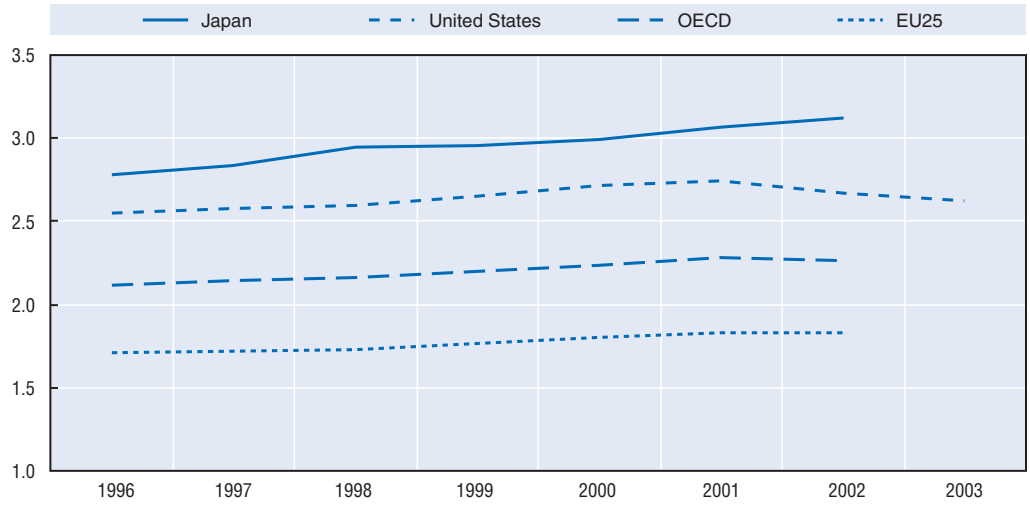
Such considerations highlight the importance of investigating trends in the creation, diffusion and exploitation of knowledge; these are, in particular, the primary objective of investments in R&D. Both government and industry investments are of interest, as they play different roles in the innovation system, financing and performing different types of R&D with somewhat different motivations.

Investments in science and technology

Investments in R&D have been strongly influenced by world events. In the wake of weak economic conditions after 2001, growth in OECD-wide spending on R&D slowed in 2002, increasing by less than 1% in constant prices, compared to average annual growth rates of 4.6% between 1994 and 2001. In relative terms, R&D spending declined from 2.28% to 2.26% of GDP between 2001 and 2002, owing to significant cutbacks in the more R&D-intensive sectors of the economy, most notably ICT manufacturing and related services (Figure 1.2). Most of the slowdown was due to declining R&D expenditures in the United States, where it dropped in real terms for the first time since 1993-94, slipping marginally from USD 246 billion to USD 245 billion, or from 2.74% to 2.67% of GDP. US R&D spending more than regained its losses in real terms in 2003, climbing to USD 248 billion in constant prices, but it continued to decline as a share of GDP. R&D spending in the European Union and Japan, in contrast, continued to climb during this period.

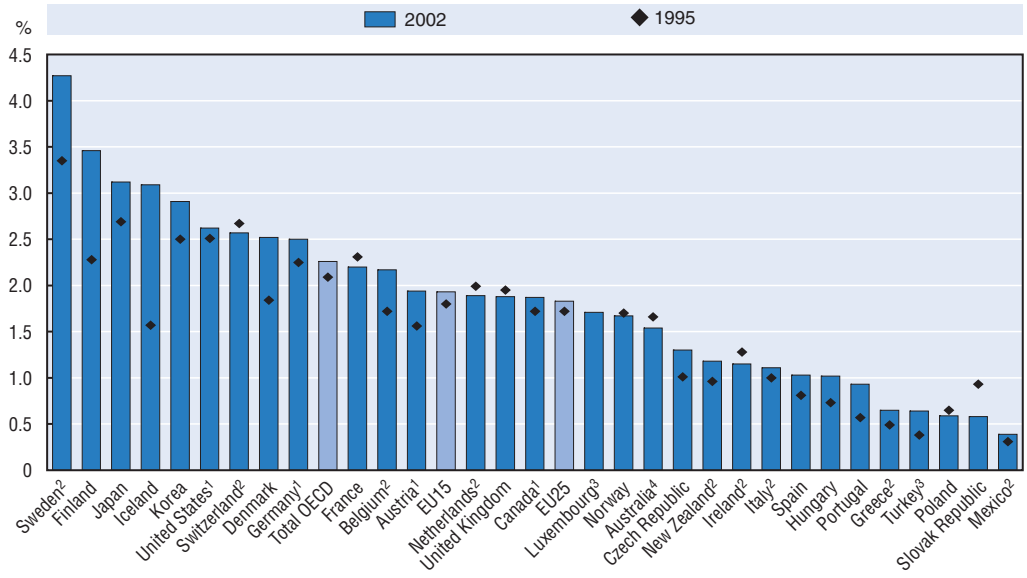
R&D intensity increased in many OECD countries between 1995 and 2002, although the gap between the most R&D-intensive and least R&D-intensive countries widened (Figure 1.3). Sweden,

Figure 1.2. **Trends in R&D intensity, 1995-2003**
GERD as a percentage of GDP



GERD = Gross domestic expenditure on R&D.
Source: OECD, MSTI database, June 2004.

Figure 1.3. **R&D intensity in OECD countries, 2002**
GERD as a percentage of GDP



1. 2003.
2. 2001.
3. 2000.
4. 1996 instead of 1995.

Source: OECD MSTI database, June 2004.

Finland and Iceland saw the most sizeable changes in R&D intensity, with each country posting more than a full percentage point increase between 1995 and 2002. All three countries, along with Japan, had high R&D intensities already in 1995, and they climbed above 3.0% in 2002. Among the larger European economies, growth rates were considerably slower, and several countries, including France, the Netherlands and the United Kingdom, saw declining levels of R&D intensity. Eastern European economies showed mixed trends, with R&D intensity increasing in the Czech Republic, Hungary and Turkey, but declining in Poland and the Slovak Republic. Hence, while OECD average improved somewhat (from 2.1% to 2.3% of GDP) the gap between the country with the highest R&D intensity (Sweden) and the lowest R&D intensity (Mexico) increased from 3.1 to 3.9 percentage points.

Growing commitment to R&D

Despite weakening R&D investments, a number of OECD countries and non-member economies have strengthened their commitment to R&D. An increasing number of national and regional governments have established explicit targets for levels of R&D spending, often with the goal of increasing gross expenditures on R&D (GERD) to a specified level of GDP (*i.e.* R&D intensity) by a specified year, or of achieving a specific ranking among OECD countries in terms of R&D intensity. As of 2003, Austria, Canada, Finland, Germany, Hungary Japan, Norway, Spain and the European Union had set specific R&D spending targets (Table 1.2). The EU's target (see Box 1.1), along with those of Austria, Germany and Spain, is linked to an absolute measure of R&D intensity; those of Canada, Norway and Hungary are based on a relative ranking of R&D intensity among OECD countries; Korea's is linked to government R&D expenditures measured as a share of total government expenditure. Many of these targets are inspired by the experience of Finland, the United States and to a lesser degree Ireland, countries whose economic performance in the 1990s appeared to be innovation-driven and which succeeded in rapidly increasing their R&D intensity.

Table 1.2. **Examples of R&D spending targets in the OECD**

Country/region	R&D intensity in 2002	R&D target	Target date
Austria	1.93%	2.5% of GDP	2006
Canada	1.91%	Top 5 in OECD	2010
European Union-25	1.83%	3.0% of GDP	2010
Germany	2.52%	3.0% of GDP	2010
Hungary	1.02%	OECD average	2006
Ireland[1]	1.40%	2.5% of GNP	2010
Korea	2.91%	Double national investment in R&D	2007
Mexico[2]	0.39%	1.0% of GDP	2006
Norway	1.67%	At least OECD average	2005
Poland	0.66%	1.5% of GDP	2006
Spain	1.03%	1.4% of GDP	2007
United Kingdom	1.88%	2.5% of GDP	2014

1. Figures for Ireland are expressed as in terms of gross national product, instead of gross domestic product, consistent with its national reporting scheme.
2. R&D intensity for 2001.

Source: OECD (2002) and OECD MSTI database, June 2004.

R&D spending targets reflect a growing recognition of the linkages among R&D, innovation and economic growth and more widespread efforts to use science and technology policy (*e.g.* R&D funding policy) to meet economic objectives. Such targets provide tangible goals for S&T policy and regard R&D funding as an input to an innovation process that will improve economic performance, boost productivity and result in increased wages and standards of living. Meeting such targets can, however, require significant reforms, as R&D intensity is strongly influenced by the industrial structure (*i.e.* by the relative size of R&D-intensive sectors) and by the relative attractiveness of a country as a location for

Box 1.1. The EU's 3% target

At the March 2002 meeting of the European Council in Barcelona, European Ministers announced a goal of "… turning the EU into the most competitive knowledge-based economy in the world". One identified objective for achieving this status is to raise spending on R&D and innovation in the EU from its 2002 level of 1.9% of GDP (a figure that declines to 1.8% if new members are included) so that it approaches 3% by 2010. Approximately two-thirds of the increased R&D spending is to come from the private sector (European Commission, 2002, p. 20). The objective is not for each member country to raise its R&D intensity to 3% of GDP, but to achieve that target as a region.

The target is intended to close R&D spending gaps between the EU, Japan and the United States, which widened noticeably during the 1990s after closing somewhat in previous years. While the EU, the United States and Japan all saw declining levels of R&D spending as a share of GDP in the early 1990s, R&D intensity climbed rapidly in the United States and Japan during the latter half of the decade but remained essentially flat in the EU. Between 1994 and 2000, US R&D intensity climbed from 2.4% to 2.7% and Japan's increased from 2.7% to 3.0%; R&D intensity in the EU15 rose only from 1.8% to 1.9% of GDP.

The gap in R&D spending derives almost entirely from differences in business-performed R&D, and most of that difference results from a widening gap in industry-financed R&D. In 1983, the overall R&D financing gap of 0.85 percentage points of GDP was divided evenly between shortfalls in industry- and government-financed R&D. By 2000, the gap in government-financed R&D had declined to just 0.1 percentage points of GDP, while that for industry-financed R&D had widened to more than 0.8 percentage points. Hence, the EU target aims to boost industry financing of R&D, while government financing is expected to increase at a much slower rate.

Source: Sheehan and Wyckoff (2003).

R&D. The latter is influenced, in turn, by a range of conditions, including the quality of the public science base and the education system, the size and sophistication of local markets, and support for entrepreneurship. In fact, achieving high levels of R&D can require structural and regulatory changes that go well beyond what an apparently straightforward financial goal would seem to require (Sheehan and Wyckoff, 2003).

The renewed commitment of OECD governments to R&D has led to a moderate increase in government-financed R&D in recent years. Between 2000 and 2002, government-financed R&D in the OECD area increased from 0.63% to a projected 0.68% of GDP. This figure remains significantly below its levels of 0.79% and 0.71% of GDP in 1991 and 1995, respectively, and reflects changing patterns of government funding of R&D, in particular for defence. Interestingly, recent growth has not been driven by the EU, despite its R&D spending target and the strong commitment of many EU countries to R&D. Between 1998 and 2001, government-financed R&D remained flat in the EU25 at 0.63% of GDP, as large EU economies reduced defence spending and faced other constraints on government spending. Most of the growth in OECD-wide government R&D financing (as a share of GDP) has resulted from increases in the United States (where it grew from 0.71% to 0.81% of GDP between 1998 and 2002), as well as in Canada (from 0.54% to 0.64%) and Korea (from 0.66% to 0.74%).

Public research organisations are better financed

Growth in government-financed R&D has been a boon to the public research sector in recent years. OECD-wide funding for R&D performed in the higher education sector (HERD) rose to 0.41% of GDP in 2002, compared to 0.37% in 1998 (Figure 1.4). Much of this growth was fuelled by an 11% increase in real spending between 2000 and 2002, from USD 94 billion to USD 104 billion. Roughly half of this increase came from gains in the United States, where funding rose from USD 33 billion in 2000 to USD 39 billion in 2002, and is projected to have increased further to USD 41.6 billion in 2003. Gains in France, Germany, Spain and the United Kingdom totalled more than USD 2.1 billion. Most other countries, except for Japan and the Netherlands, also saw real increases in HERD funding, which stood at USD 104 billion in 2002.

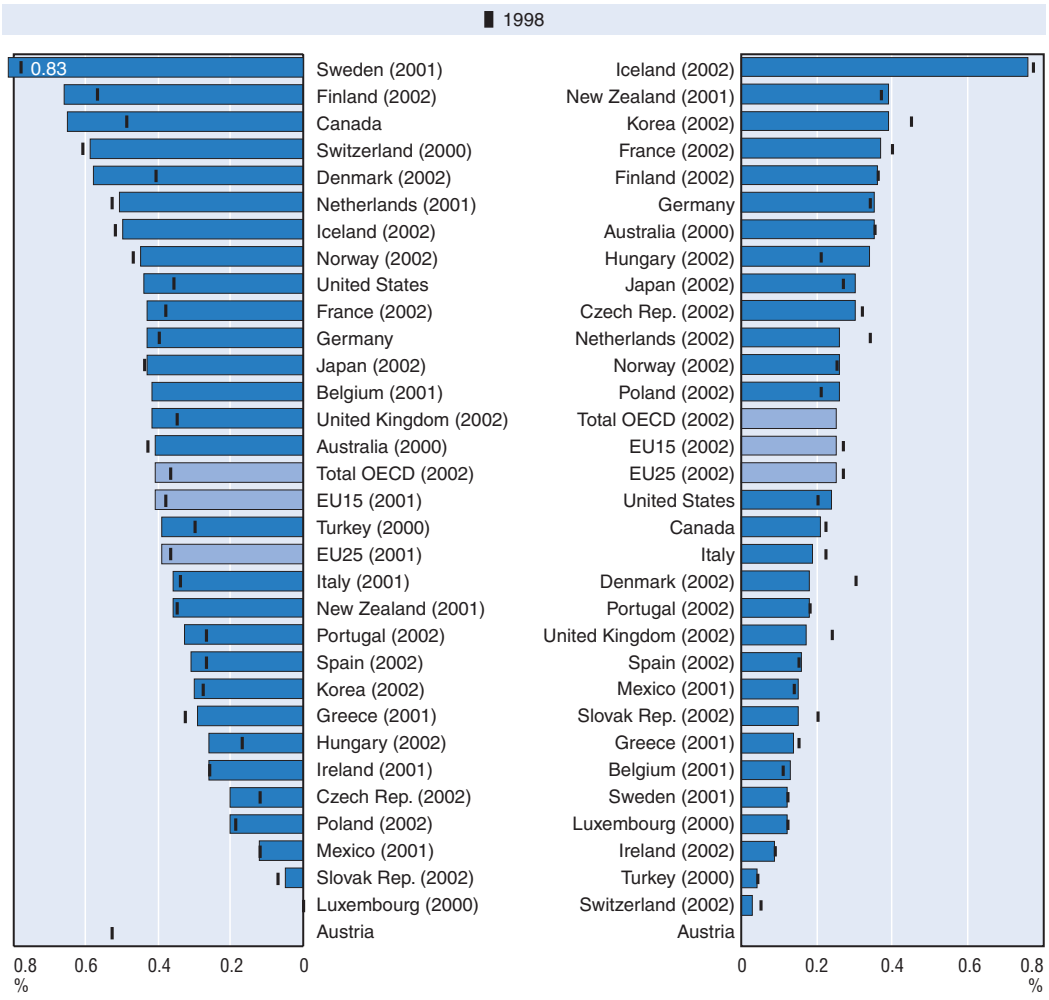
Spending on R&D performed by government laboratories also took a positive turn after 2000. While spending levels generally declined between 1991 and 2000, from 0.28% to 0.23% of GDP, they saw modest increases in recent years, rising to 0.25% of GDP in 2002. Total funding increased from USD 57 billion in 2000 to USD 63 billion in 2002. Much of the recent increase has been fuelled by the United States, where government-performed R&D (GOVERD) grew from USD 17 billion in 2000 to almost USD 22 billion in 2002. Funding gains in the EU totalled just over USD 500 million during this time period – just ahead of those in Korea – while funding levels remained almost flat in Japan.

Growing defence spending appears to be a primary driver of increases in government R&D. The largest increases in government-performed R&D occurred in the United States, and the share of government R&D spending allocated to defence grew from 50.5% in 2001 to a projected 55.1% in 2004, reversing the trend of the 1990s when the share of defence spending declined sharply. Shares of defence in government R&D funding also increased in France, Norway, Spain, Sweden (from 7.1% in 2000 to 22.2% in 2003), and, to a lesser extent, the United Kingdom, although they continued to decline in Korea and remain low in Japan (at 4.5% of total government R&D).

Despite increased funding for government research laboratories, the gap between R&D performed in the government sector and in the higher education sector continues to widen. Whereas they accounted for approximately the same share of national R&D expenditures in 1981 (between 15% and 16%), universities accounted for 18% in 2002 but government laboratories for only 11%. This is indicative of changing government priorities for R&D (*e.g.* a move away from defence and towards general knowledge-creation) and changing perceptions of the role of universities and government laboratories in national innovation systems. The former are seen as contributing to social and economic objectives more than was the case a decade or more ago.

Figure 1.4. **R&D funding in public research organisations, 1998 and 2002**

Higher education R&D as a percentage of GDP



Government R&D as a percentage of GDP

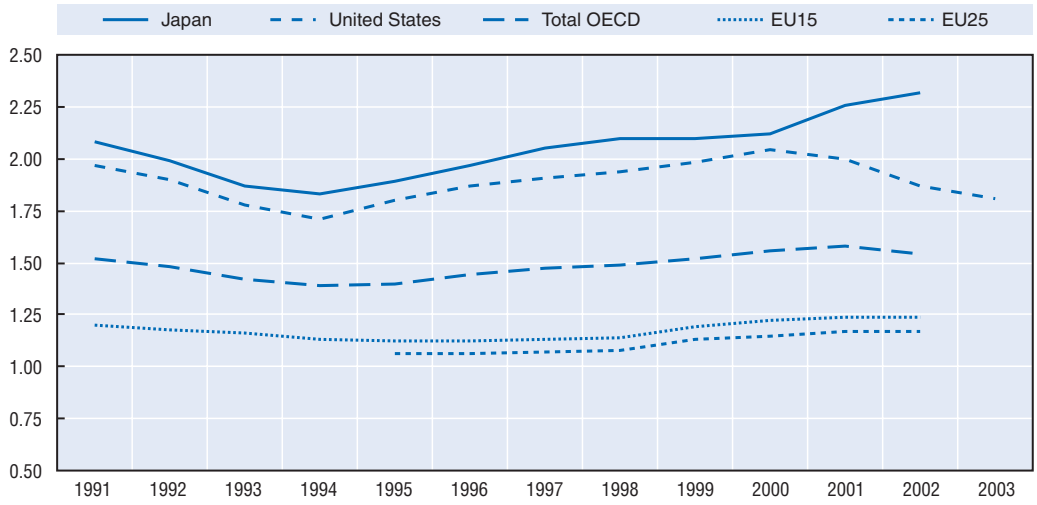
Source: OECD MSTI database, June 2004.

Slowdown in business-sector R&D *driven by* United States

Reductions in industry financing account for most of the slowdown in global R&D spending, but regional differences are significant. Across the OECD, R&D financed by industry declined from a peak of 1.45% of GDP in 2001 to 1.41% in 2002, and R&D performed by the business sector (BERD) declined from 1.58% to 1.54% of GDP (Figure 1.5). These declines come after a period of increasing business-sector R&D stretching back to 1994, but they are driven primarily by trends in North America. Industry-financed R&D declined precipitously in the United States between 2000 and 2003, from 1.88% to 1.65% of GDP, in response to the weak economic situation. Similarly, R&D performed by the US business sector also declined between 2000 and 2003, dropping by 6.6% in real terms from USD 183 billion to USD 171 billion, or from 2.04% to 1.81% of GDP. Owing to the close links between the US and Canadian economies, Canadian BERD also declined significantly, from 1.15% to 1.01% of GDP between 2000 and 2003.

In contrast, Asia-Pacific and Europe enjoyed continued growth in business-sector R&D. Industry-financed R&D increased rapidly in Japan, from 2.17% to 2.31% of GDP between 2000 and 2002, with

Figure 1.5. **Business R&D as a share of GDP in major OECD regions**



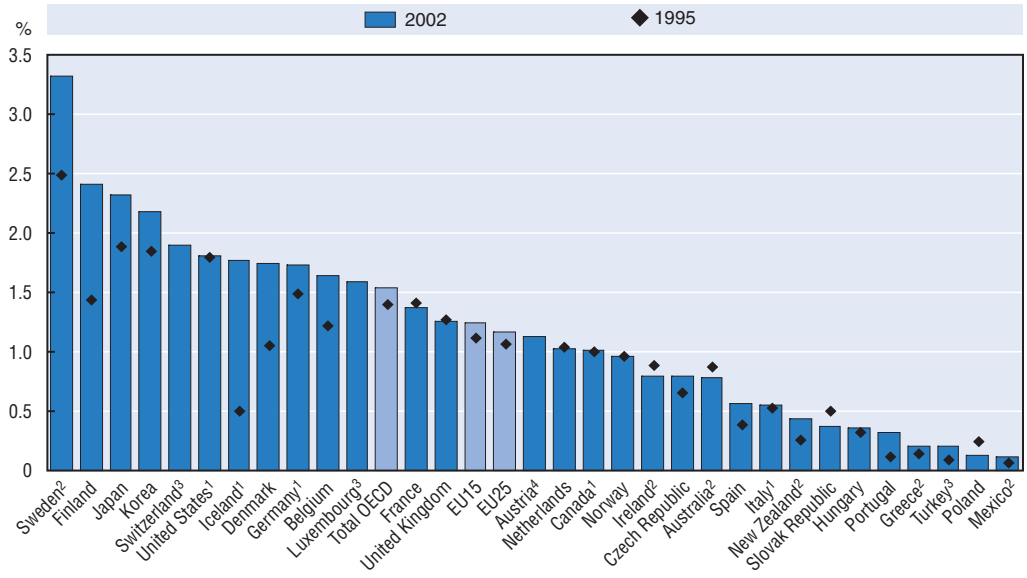
Source: OECD, MSTI database, June 2004.

BERD rising from 2.12% to 2.32% of GDP. In Korea, industry-financed and business-performed R&D declined marginally as a share of GDP between 2001 and 2002, but real spending grew, continuing the expansion that began at the end of the financial crisis in 1998. In Europe, the economic slowdown appears to have had only a marginal effect on business R&D. While BERD was flat during the mid-1990s in the block of countries that now comprise the EU25, it has seen steady growth since 1998, rising from 1.08% to 1.17% of GDP in 2002. Spending patterns in individual EU countries have been highly heterogeneous, with strong growth in Belgium, Denmark, Finland, Germany, Iceland, and, to a lesser extent, Spain and the United Kingdom, and relative stagnation in France, Italy and the Netherlands (Figure 1.6). Nevertheless, a persistent gap remains between business R&D intensity in the EU and that in Japan and the United States.

Recent industry surveys indicate that US trends are likely to persist in the near term, at least until the economy recovers more fully. In the most recent annual survey of its members, for example, the US-based Industrial Research Institute (IRI) found that more companies planned to reduce than to increase their R&D spending in 2004 (IRI, 2003). While the number of companies planning to increase R&D funding rose between the 2003 and 2004 surveys, the number of companies planning reductions grew even faster. Moreover, a larger number of firms reported plans to cut their targeted ratio of R&D spending to sales, implying that R&D spending will drop faster than sales revenues. These findings are supported by the funding forecast prepared by Battelle and R&D M*agazine*, which anticipates a 0.5% decline in US industry R&D spending in 2004 when adjusted for inflation (Duga and Studt, 2004). In spite of improving economic prospects, R&D managers may be reluctant to hire new staff and firms may prefer instead to reap the benefits of continued improvements in productivity. Increased movement of R&D work to offshore locations may further slow R&D growth in the United States.

Future patterns of business R&D investment in Europe are harder to predict and will be influenced by conditions in individual countries. A recent survey by the European Roundtable of Industrialists (ERT) indicates that member companies (42 of the largest firms in Europe) plan to increase their R&D expenditures in future years, which could have a significant effect on overall levels of R&D spending (Box 1.2). Many of these firms report, however, that the bulk of that increase will likely be spent outside Europe; almost 40% of the R&D financed by these firms already takes place outside Europe (ERT, 2003). These results suggest that business R&D intensity will not rise rapidly in the EU unless there is a change in business perceptions of the attractiveness of Europe for sourcing and exploiting knowledge.

Figure 1.6. **Business R&D as a share of GDP in OECD countries, 1995 and 2002**



1. 2003.
2. 2001.
3. 2000.
4. 1998.

Source: OECD MSTI database, June 2004.

Collaboration remains key

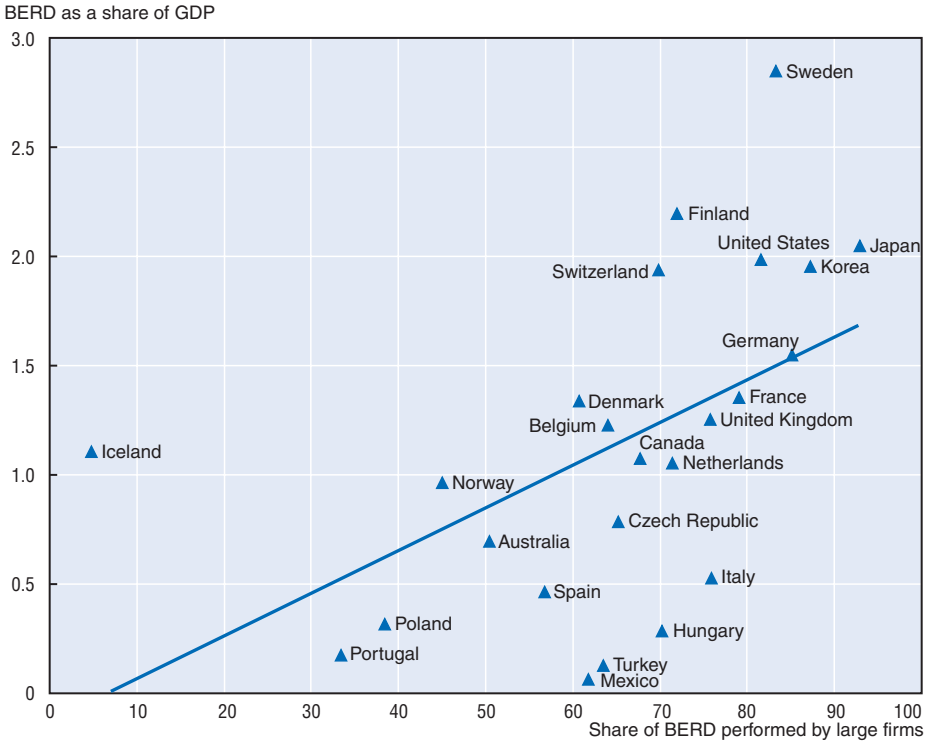
As firms attempt to extract greater value from their R&D investments in an era of uncertain growth, collaboration and external sourcing of technology can be expected to increase. The Battelle survey reports that industrial organisations expected to outsource 7% of their R&D activities in 2004, a 12% increase over 2003. They will outsource more to other companies, commercial laboratories and universities than to government laboratories, non-profit organisations or foreign laboratories (Duga and Studt, 2004). The IRI survey found that firms anticipated collaboration to play a more significant role than arms-length relationships. Firms expected to reduce outsourcing of R&D to other firms and inward licensing of technology, but to increase collaboration with university research consortia and government labs, and to enter into more joint ventures and alliances with other firms for R&D (IRI, 2003). Such collaboration is expected not only to augment internal capabilities, but also to help firms avoid staff increases until the economic situation becomes clearer.

Although collaboration is important for business R&D, it is affected by the business and economic environment. Throughout the 1990s, as industry R&D financing grew, the share of higher education R&D financed by industry also grew, from 5.3% in 1990 to 6.2% in 2000. As the economic environment weakened after 2000 and businesses began cutting back on their R&D expenditures, industry financing of higher education also decreased, most notably in those countries where business R&D declined most. Across the OECD area, the share of HERD financed by industry fell to 5.8% in 2002. The decline was most pronounced in the United States, where the share of higher education R&D financed by industry dropped from 6.1% in 1999 to 4.5% in 2003, and in the United Kingdom, where it dropped from 7.1% in 2000 to 5.8% in 2002. In most EU countries, the share remained steady or continued to rise, consistent with growth in business R&D. This suggests that the recent reductions in industry financing of

Box 1.2. Business R&D in firms large and small

In most countries with high levels of R&D intensity, business R&D is concentrated in firms with more than 500 employees (Box Figure 1.1). More than 80% of business R&D in Japan, Korea, Germany, Sweden and the United States is conducted in large enterprises, and much of it in a small number of firms.

Box Figure 1.1. **Business R&D intensity and share of R&D performed by firms with 500 or more employees**



Source: OECD R&D database, February 2003.

In 2001 in the United States more than half of all business R&D was performed by firms with 10 000 or more employees – even though such firms represented less than 1% of all R&D-performing companies (NSB, 2004). Ten large firms accounted for about one-quarter of all business enterprise R&D (IRI, 2002).*

In Sweden, the top ten R&D-performing companies account for about half of all business R&D, and the top 20% hold approximately 80% of all patents. Ericsson's R&D expenditures were equivalent to almost 60% of Sweden's BERD in 2001, although some of the R&D was performed elsewhere in Europe, Asia and North America (Ericsson, 2001).

In Finland, Nokia was responsible for performing approximately one-third of Finnish BERD in 1999, and its global R&D expenditures were equivalent to more than 80% of Finnish BERD in 2001, although an estimated 40% of this funding was invested in foreign R&D centres (Ali-Yrkkö *et al.*, 2000).

In Korea, the top five companies account for 35% of total business expenditure on R&D, and 29.6% of total researchers employed in industry. The top 20 companies account for 55.4% and 40.2%, respectively (MOST, 2002).

* The Industrial Research Institute reports that in 2001 Ford invested USD 7.4 billion in R&D, GM USD 6.2 billion, Lucent USD 3.5 billion, IBM USD 4.6 billion, Cisco Systems USD 3.9 billion, Motorola USD 4.4 billion, Intel USD 3.8 billion, Microsoft USD 4.8 billion, Pfizer USD 4.8 billion, Johnson and Johnson USD 3.6 billion.

Box 1.2. **Business R&D in firms large and small** (*cont.*)

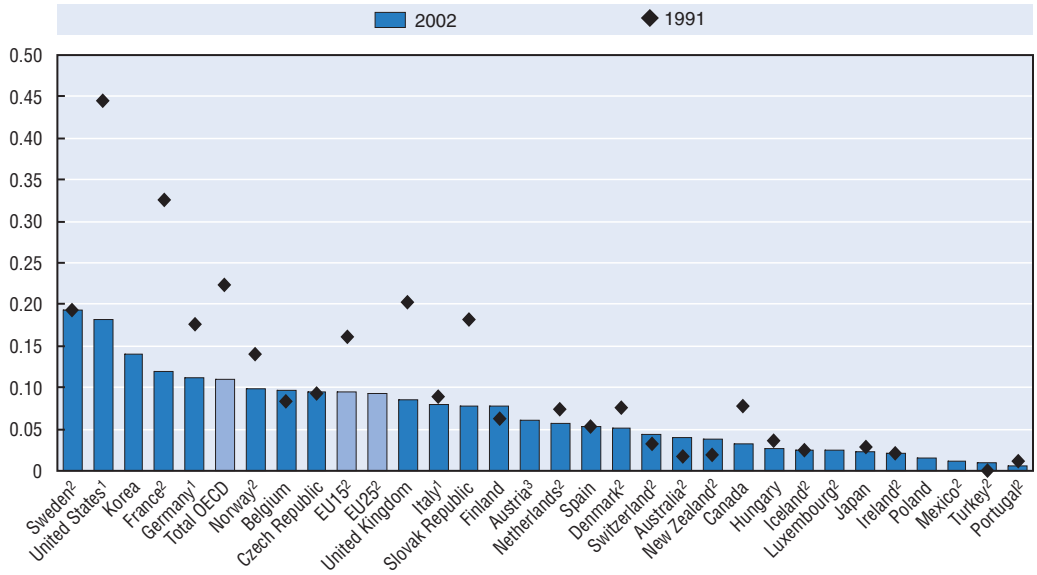
The role of large firms in driving high overall levels of business R&D intensity does not detract from the importance of SMEs in the innovation process. In the United States, for example, the share of business R&D performed by SMEs grew during the 1990s from approximately 12% to 18% of all business R&D, while the largest US firms (those with more than 10 000 employees) saw their share decline. Nevertheless, large firms may be important to the establishment and growth of SMEs, especially new technology-based firms (NTBFs). Not only do large firms purchase goods and services from SMEs, they also invest in them through mechanisms like corporate venture capital funds. Mergers and acquisitions by large firms can provide investors, such as venture capitalists, with an alternative to initial public offerings for recouping their investments in NTBFs, thereby encouraging venture financing. Strong links between NTBFs and large firms therefore appear to be important in boosting R&D intensity, whether such links are forged domestically or internationally.

higher education may be short-lived. As firms increase their R&D spending, they will increase their financing of universities as well.

Government financing for business R&D *is changing*

Both the volume and nature of government financing of business R&D are changing. Between 1991 and 2002, direct government funding of R&D performed in the business sector declined from USD 41.8 billion to USD 27.8 billion in real terms, or from 0.22% to 0.11% of GDP (Figure 1.7). These

Figure 1.7. **Government funding of business R&D, 1991 and 2002**
As a percentage of GDP



1. 2003.
2. 2001.
3. 2000.

Source: OECD MSTI Database, June 2004.

figures are equivalent to 14.7% and 7.1%, respectively, of total business R&D; hence, they represent a small and declining fraction of total business R&D spending. Reductions have been most pronounced in the United States and the large European economies that had spent more heavily on defence-related R&D. Shares financed by government remain highest in eastern European countries (*e.g.* the Slovak Republic, the Czech Republic, Poland and Hungary), which are in the midst of a transition to more market-oriented R&D, as well as in Italy and the United States, where spending tends to be linked to government missions, such as defence, energy and transport. In a few of the smaller OECD economies whose governments are beginning to play a more active role in innovation policy, such as Australia, Belgium, the Czech Republic and Finland, government financing for business R&D has increased. Australian funding, for example, more than doubled between 1999 and 2001 to almost USD 190 million, owing in large part to new initiatives aimed at enhancing Australia's innovation capabilities (see Chapter 2). Interest is growing in ways to manage government financing of business R&D to ensure that it complements business R&D funding effectively and can help businesses overcome obstacles to innovation.

While direct financing of business R&D has declined, indirect financing in the form of tax incentives for business R&D has risen as tax incentive programmes have become more generous. Since 2000, new tax incentive schemes have been introduced in Ireland, Norway and the United Kingdom (see Chapter 2 for a description of these schemes), many of which focus on small and medium-sized enterprises (SMEs). Several other countries have made existing tax incentive programmes more generous, for example, by increasing the rate of tax reduction or changing the methodology for calculating qualifying expenditures. In Portugal, for example, the rate of tax subsidies for EUR 1 of R&D investment increased by 35%, that in Spain increased by more than 15%, and those in the United Kingdom and United States by almost 10% between 1995 and 2001.

Reductions in venture capital

Reductions in business R&D have been accompanied by a severe downturn in venture capital. These reductions have been led by declines in the United States, which saw total venture capital investments plummet from a peak of USD 106 billion in 2000 to just USD 18 billion in 2003 (in nominal terms) and the number of annual investments fall from 8 068 to 2 779 (NVCA, 2004). In relative terms, early- and expansion-stage venture capital investments dropped by a factor of five, from 0.92% of GDP in 2000 to 0.17% of GDP in 2002. Canada also saw steep declines in early- and expansion-stage funding, from 0.58% to 0.20% of GDP. European venture capital investments declined as well, but somewhat more modestly than in North America, from a peak of EUR 19.6 billion in 2000 to EUR 9.8 billion in 2002 (EVCA, 2003). Early- and expansion-stage capital also dropped by half from 0.22% to 0.10% of GDP. Declines in Australia, Japan and Korea appear to have been less dramatic, but these countries tended to have lower levels of investment in venture capital and did not experience the same surge in venture capital investments during the late 1990s.

Declines in venture capital have not been evenly distributed across industry sectors. They were particularly steep in the ICT sector. In the EU, ICT-related venture capital investments dropped from 0.12% to 0.05% of GDP between 2000 and 2002, while health and biotechnology-related investments declined more modestly from 0.04% to 0.03%. In the United States, venture capital investments in ICT-related industries fell from 0.67% of GDP to 0.12% of GDP between 2000 and 2002, while those in health and biotechnology dropped from 0.08 to 0.05%. Investments in other technology areas remained relatively stable.

Capitalising on science and technology investments

The direct output of national investments in science and technology continues to grow, according to a number of measures. In general, numbers of patents and published scientific and technical articles correlate closely with R&D spending. Countries with high R&D intensities also have high measures of patents and publications per million inhabitants, especially when time lags – between the completion of a research project and the production of a patent or publication – are taken into account (OECD,

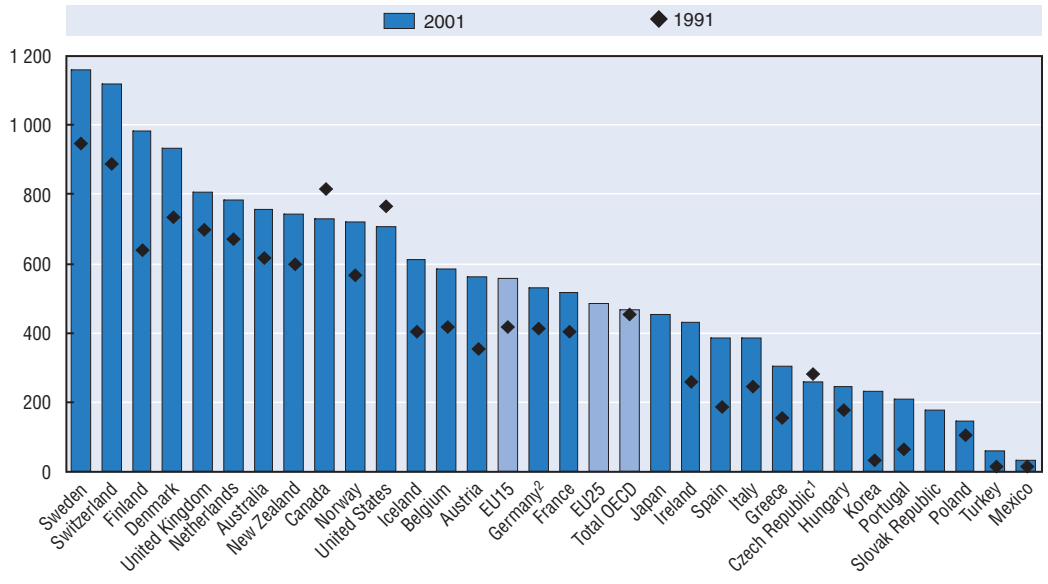
2002). While the number of patents and publications continued to grow in OECD countries in recent years, the rates of growth have slowed in many cases.

Scientific publications

OECD-wide, the number of published scientific and technical articles per million inhabitants has mirrored changes in R&D spending. Between 1991 and 2001, R&D spending increased by 40% in real terms, but R&D intensity (R&D spending as a share of GDP) remained essentially unchanged, declining in the first half of the decade and recovering in the second. Publications per million followed a similar track, declining slightly in the beginning of the decade and increasing after 1995 to 468 publications per million in 2001, 3% higher than in 1991. Between 1999 and 2001, however, publications per million remained relatively flat as did R&D intensity, and, as of 2001, OECD countries varied considerably in the number of scientific and technical articles published per million population (Figure 1.8). The range extends from Mexico, with 32 publications per million, to Sweden and Switzerland, each with more than 1 100. Growth has been driven by increases in Japan and the EU, as the number of publications per million declined by 8% in the United States, from 766 in 1991 to 705 in 2001, while growing by more than 30% in Japan and the EU15. Interestingly, the US reduction has occurred despite growing expenditures for basic research between 1995 and 2002, which might be expected to yield more publications than applied research (or development).

Publication patterns by field of science show interesting trends. In spite of what is considered to be a dramatic increase in research funding for the life and medical sciences, the shares of publications in clinical medicine, biomedical research, biology and health sciences declined slightly between 1988 and 2001, from 55% to 53% of all scientific and technical publications. The fields that grew as a share of total publications were Earth and space sciences and engineering and technology, the latter most likely reflecting the boom in ICT-related fields. These patterns are most pronounced in the EU15, where medical and life sciences dropped from 56.7% to 49.2% of total publications and engineering and technology increased from 6.2% to 10%.

Figure 1.8. **Scientific and engineering publications by country, 1991 and 2001**
Published articles per million inhabitants



Source: National Science Board (2004). Population data from OECD MSTI database, June 2004.

Is *the patent boom slowing*?

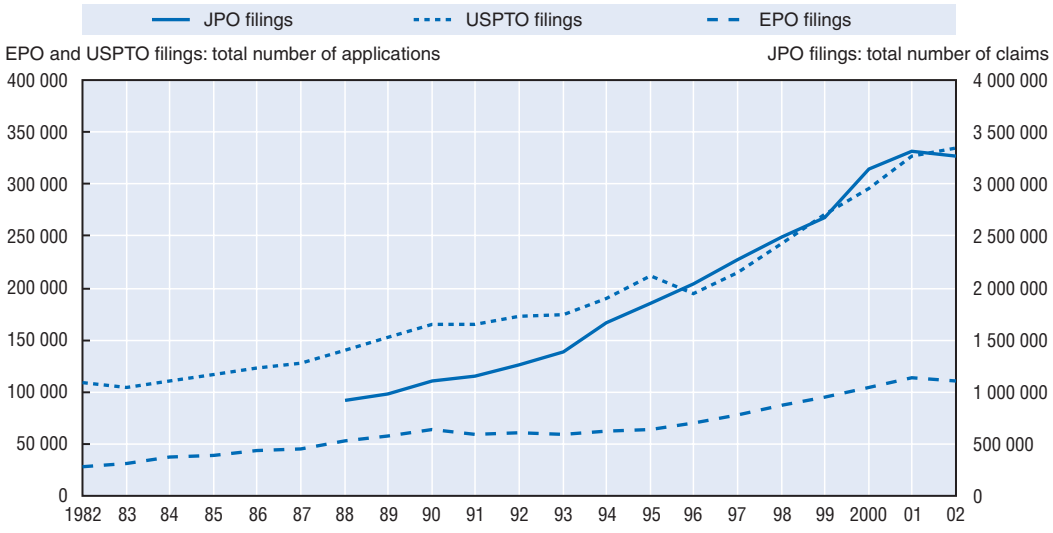
Throughout the 1990s, increases in business R&D went hand in hand with increased patenting. More than 850 000 patent applications were filed at the European Patent Office (EPO), the Japan Patent Office (JPO) and the US Patent and Trademark Office (USPTO) in 2002, up from 600 000 in 1992 (Figure 1.9). The number of triadic patent families – patents filed at the EPO, JPO and USPTO to protect the same invention[4] – also increased rapidly during the 1990s, rising by approximately 30% between 1994 and 2000, from 31 700 to 42 700 (Figure 1.10).[5] The number of patent families per million population also increased notably in most OECD countries between 1991 and 2000, with the highest patent family densities in Switzerland, Sweden, Japan, Finland and Germany.

Interestingly, growth in patent applications and in patent families slowed dramatically towards the end of the decade. Even through R&D spending continued to climb in preceding years, the number of filings at the EPO and JPO declined between 2001 and 2002, and the rate of growth in applications to the USPTO fell from its level of 10% a year during the late 1990s to below 3%. After growing from 31 700 to 41 500 between 1994 and 1997, the number of OECD-wide patent families rose by only an additional 1 300 in the three-year period ending in 2000. The slowdown occurred in all the largest patenting countries – France, Germany, Japan and the United States – and in the EU25. As a result, regional shares of patent families remained relatively constant: the United States retained the largest share, with approximately 35% of total OECD patent families; the EU25 held approximately 32%, and Japan held approximately 26%.

Much of the growth in patenting is driven by high-technology sectors. By 2000, approximately 35% of patents filed at the EPO were related to ICT, including some 40% of applications from Japanese and US inventors. Biotechnology patenting also grew rapidly after 1993 and by 2001 accounted for more than 5.5% of EPO applications, including 9% of applications from US inventors. Moreover, nearly half the increase in patenting at the EPO between 1994 and 2001 came from patents in ICT and biotechnology. Similar patterns were observed at the USPTO and JPO.

The longer-term growth in patenting over the past two decades reflects a number of fundamental changes in industry structure, business innovation processes, patenting strategies and patent regimes.

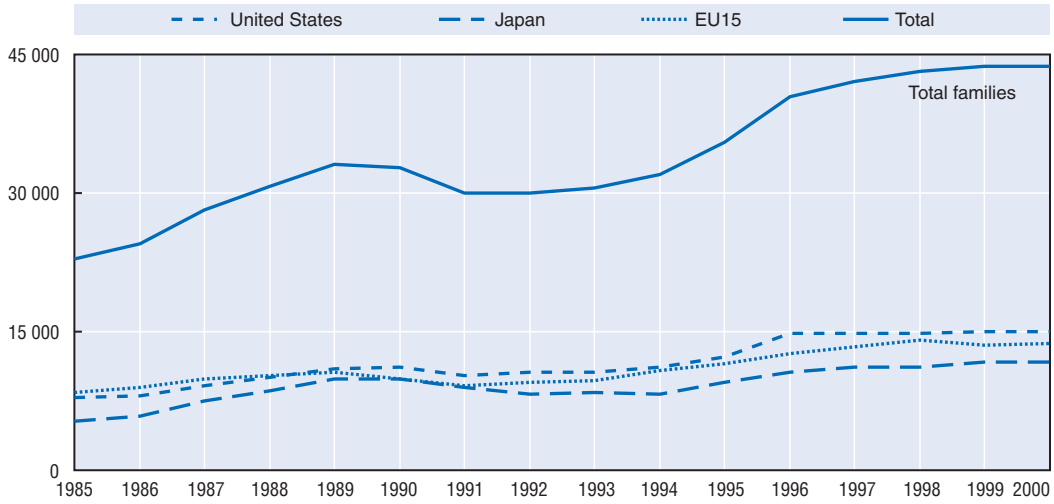
Figure 1.9. **Patent filings in the main patent offices**



Note: EPO and USPTO filings correspond to total number of applications. JPO filings correspond to total number of claims (number of claims per application multiplied by total number of applications) to account for the effect of the 1988 law reform allowing more than one claim per patent application at JPO.

Source: OECD Patent Database and USPTO, EPO and JPO Annual Reports. JPO figures for 2001 and 2002 are OECD estimates.

Figure 1.10. **Number of triadic patent families**[1]
According to the residence of the inventors, by priority year[2]



1. Patents applied for the same invention at the European Patent Office, Japan Patent Office and US Patent and Trademarks Office. 1999 and 2000 figures are estimates.
2. Priority year refers to the year in which the patent application was first filed. It is therefore closer to the date of invention than is the year in which the patent was granted.

Source: OECD Patents database, July 2004.

Although the relative importance of these factors is difficult to determine, some insight can be gleaned from a recent survey of firm patenting and licensing strategies conducted by the OECD and the Business and Industry Advisory Committee (BIAC), which identified several factors behind growing patenting activity:[6]

- I*ncreased inventiveness*. Part of the rise in patenting derives from an increase in the number of inventions generated by firms, owing to increased business R&D and increased efficiency of R&D expenditures. In the OECD/BIAC survey, 78% of firms cited a greater number of inventions as a very or moderately important driver of their patenting growth, and statistics indicate that OECD-wide expenditures on business R&D increased 38% between 1991 and 2001.
- I*ncreased international patenting*. Inventors increasingly file patents to protect the same invention in several geographic areas. Of the more than 160 000 applications filed at the USPTO in 2002, for example, more than 70 000 were also filed with the EPO and with the JPO.
- I*ncreasing proclivity to patent inventions*. Almost 70% of respondents to the OECD/BIAC survey reported that they patented inventions they would not have sought to patent ten years earlier. At the EPO, in particular, the ratio of patent applications to industry-financed R&D increased notably during the 1990s.
- E*xpansion of patentable subject matter* to cover inventions related to software, business methods and genetic inventions (although regional differences remain). As noted above, ICT-related patents (including software) and biotechnology patents accounted for much of the growth in patenting in all three patent offices.
- I*ncreased protection afforded by patents*. Many firms report that patenting has become a more effective means of protecting their competitive position. They perceive a strengthening of patent holder's rights and stronger enforcement of patent rights.

Some of these changes reflect changes in innovation processes themselves. Innovation is now seen as more central to business strategy, and firms, especially in high-technology industries, view

innovation as a key source of competitive advantage. Innovation is also occurring in a more diverse range of firms, including services firms, SMEs and new technology-based firms. The latter often have few competitive assets other than their intellectual property and patents can be important in attracting venture capital and other financial investments. More competitive global markets have also encouraged firms to protect their intellectual property more actively. Finally, innovation is becoming less centred around individual firms and more dependent on co-operation and technology sharing. Patents can become a currency in such markets to enable transfers of technology.

Reforms to national and international patent regimes have also tended to encourage patenting by strengthening the protection afforded by patents, as well as their enforcement. New governing bodies with global reach, such as the World Intellectual Property Organization (WIPO) and the World Trade Organization (WTO), have facilitated international patent filing and enhanced global enforcement of patents. Creation of specialised courts for intellectual property disputes has tended to further enforce patent holders' rights and increase damage awards for infringements. Reductions in EPO filing fees have reduced the cost of patenting, despite the fact that many firms report that overall costs of patenting (filing, enforcement, renewal) have not changed significantly. Together, these changes have made patenting a simpler, less costly and more effective means of protecting inventions, and this has encouraged increased patenting across the OECD area.

Human resources for science and technology

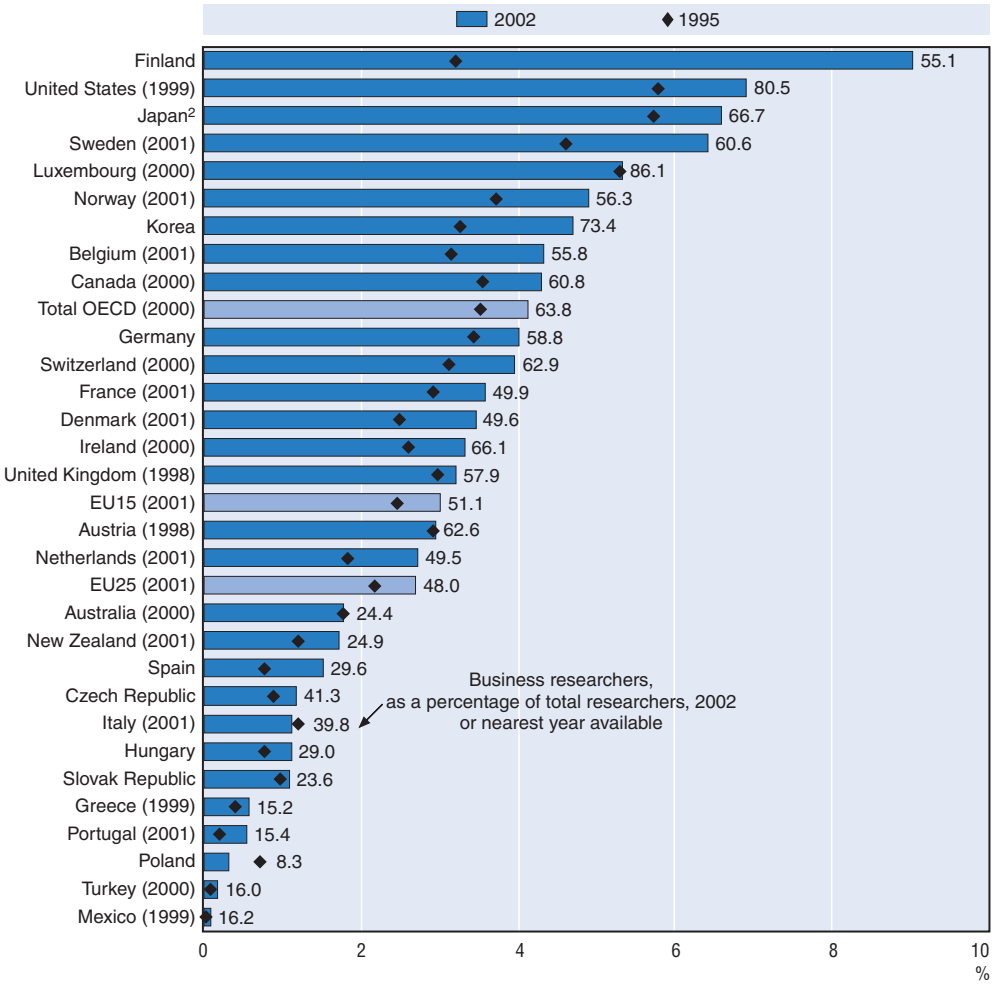
The size of the scientific and technological workforce tends to follow trends in R&D spending, as a large fraction of R&D expenditures pays for workers' salaries. This was apparent throughout the 1990s, when the total number of researchers in OECD countries increased from 2.3 million in 1990 to 3.4 million in 2000.[7] The share of researchers in the workforce also grew from 5.6 per thousand in 1990 to 6.5 per thousand in 2000. Countries with strong high-technology sectors, such as Finland, Japan and Sweden, have among the highest densities of researchers, with Finland's reaching 16.4 per thousand in 2002, up from fewer than 6.0 per thousand in 1990. Researchers per thousand in the Czech Republic, Hungary, Poland and the Slovak Republic remain below the OECD average and range between 2.9 and 4.6 researchers per thousand, despite modest growth.

Numbers of researchers are growing

Business enterprise researchers continue to account for the bulk of the researcher population. In 2000, some 64% of all researchers in OECD countries (or 2.2 million of the total 3.4 million) worked in the business sector, a figure that remained fairly constant over the previous decade. Nevertheless, clear regional differences remain. Business researchers represented more than 80% of US researchers in 1999; in Japan and Korea, business researchers accounted for 67% and 74%, respectively, of the researcher population in 2002. These figures are far above those of the EU25, where business researchers comprised only 48% of the research population in 2001, a figure that has increased modestly in recent years as BERD spending has increased. Nevertheless, the low relative level of business researchers has remained an issue in the EU, especially as the region attempts to meet its objective of boosting R&D spending to 3% of GDP by 2010 – a task that by some estimates would require an additional 700 000 researchers, mostly in the business sector.

Trends in the population of business researchers follow patterns of R&D spending. Between 1995 and 2002, the number of business researchers per thousand employees increased from 3.6 to 4.1 (Figure 1.11). The largest gains were seen in Finland, which saw a jump from 3.2 to 9.0 business researchers per thousand workers. In Japan and the US, the numbers increased from just below 6.0 to almost 7.0. Business researchers per thousand are well below OECD average in the EU and remain at 1.2 per thousand or below in most eastern European economies. Real declines in business R&D expenditure in the United States can be expected to reduce the size of the US research population in 2001 and 2002 (data are not yet available), but sustained growth in R&D spending can be expected to

Figure 1.11. **Business researchers per thousand employees in OECD countries, 1995 and 2002**



Source: OECD MSTI database, June 2004.

encourage firms to hire additional researchers. Germany reported a small reduction in business researchers between 2001 and 2002, but the total remains above the 2000 level. Most other OECD countries have continued to report growing numbers of business researchers, commensurate with increases in business R&D spending. In the United Kingdom, for example, the number of business researchers jumped from 86 000 in 2000 to 105 000 in 2002;[8] in Japan it increased from 421 000 to 431 000; and in Korea it rose sharply from 72 000 to 104 000.

Numbers of higher-education researchers have also continued to grow. Between 1997 and 2001, the number of researchers in the higher-education sector of the EU25 countries grew from 350 000 to more than 416 000. Numbers of government researchers, however, have declined slightly from their peak level in 1999. Across the OECD, the number of government researchers declined from 273 000 in 1999 to less than 271 000 in 2001, with the EU25 shedding some 7 000 government researchers. Government researchers represented just over 8% of the total research workforce in 2000, down from almost 10% in 1991, but they continue to comprise a significant share in several eastern European countries. In the Czech Republic, Hungary, Poland and the Slovak Republic, government researchers continued to account for 25% or more of all researchers in 2002.

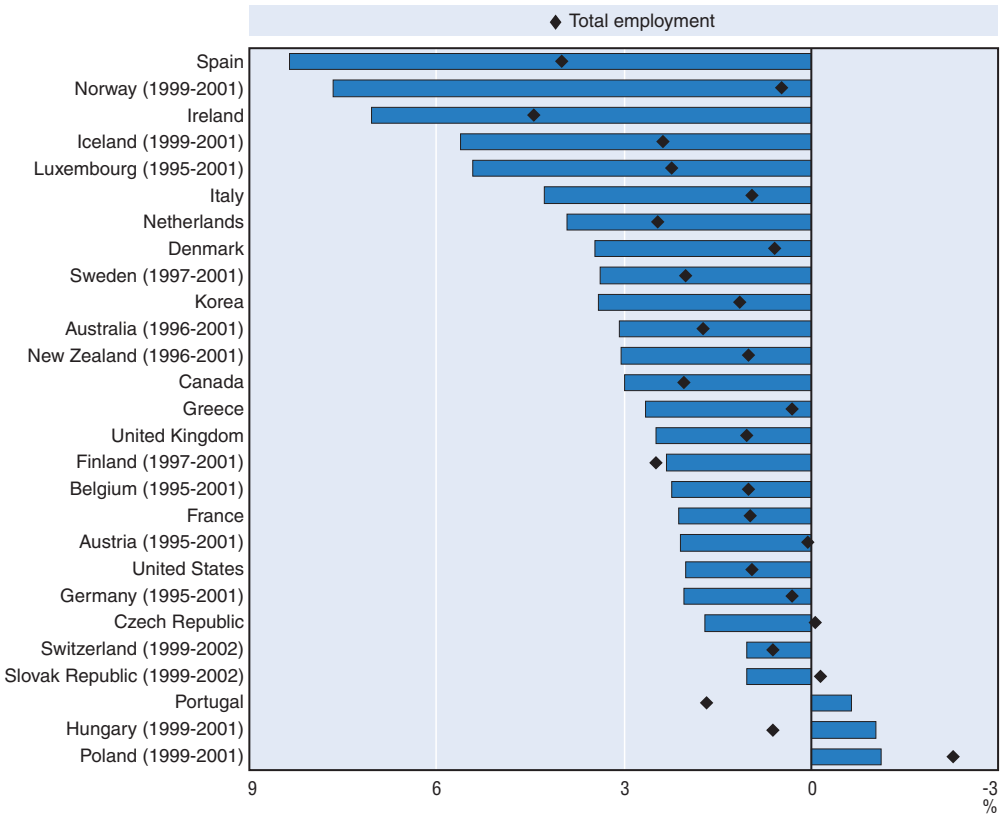
Supplies may be strained

Growing demand for researchers and for a much larger pool of human resources for science and technology (HRST) can be expected to strain supply. In most OECD countries, HRST now account for 25% to 35% of total employment. Growth in HRST occupations has been much faster than total employment. In the United States, Germany, the United Kingdom and France (the largest OECD economies for which data are available), growth in HRST occupations ranged between 2% and 2.5% a year between 1995 and 2002, while overall employment grew by 1.1% or less (Figure 1.12). Even in Ireland and Spain, which saw annual employment growth of 4.5% and 4%, respectively, during the period, HRST employment grew rapidly, at 7.1% and 8.4% a year, respectively. At the same time, changing demographics have resulted in an overall ageing of the research workforce in many OECD countries, especially in the public research sector.

Moreover, there is concern about an apparent decline in interest in science and engineering among youth in many OECD countries and declining graduation rates in science and engineering fields in some countries. Across the OECD, the number of tertiary-level graduates in science and engineering has grown in recent years. Between 1998 and 2001, science graduates increased 5% annually from 511 000 to 566 000; engineering graduates increased more slowly, rising at less than 1% a year from 657 000 to 669 000. Their growth has been slower than that of overall graduates; hence, while science graduates

Figure 1.12. **Growth in employment in HRST occupations, 1995-2002**

Average annual growth rate



Source: OECD calculations and estimates, based on data from the Eurostat Community Labour Force Survey, the US Current Population Survey, the Canadian and Japanese labour force surveys, the Korean Economically Active Population Survey and the Australia and New Zealand censuses, May 2003.

increased from 9.6% to 10% of total graduates, engineering graduates declined from 12.4% to 11.8%, owing mostly to reductions in the United States and Europe, including both the larger European economies (France, Germany and the United Kingdom) and those in eastern Europe (the Czech Republic, Hungary and Poland).

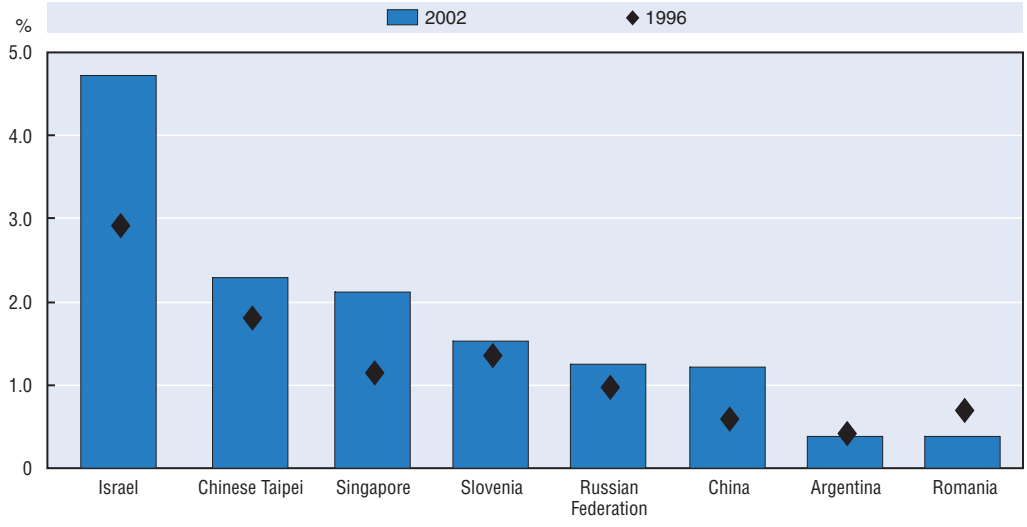
Globalisation of science, technology and industry

Growing attention is being paid to the globalisation of science, technology and industry. While it has long been accepted that certain industrial activities, such as manufacturing, sales and marketing, need to be near international markets for goods and services, it had been thought that other, more knowledge-intensive portions of value chains would remain closer to home. Recent years have seen increased globalisation of R&D – a phenomenon that has caused particular concern because it is seen as moving high-productivity, high value-added jobs to foreign countries. Moreover, while globalisation of R&D had been seen as a step subsequent to the globalisation of manufacturing and geared towards the customisation of products and services to local needs, it is now increasingly divorced from manufacturing and linked to the development of global knowledge networks. Firms establish R&D facilities in foreign countries not just to be near local markets, but to be near centres of scientific and technological excellence where they can tap into local knowledge (and then transfer it elsewhere in their corporation). As such, globalisation of R&D owes as much to the growing capabilities of non-OECD economies as it does to the strategies of multinational enterprises.

Non-members more capable

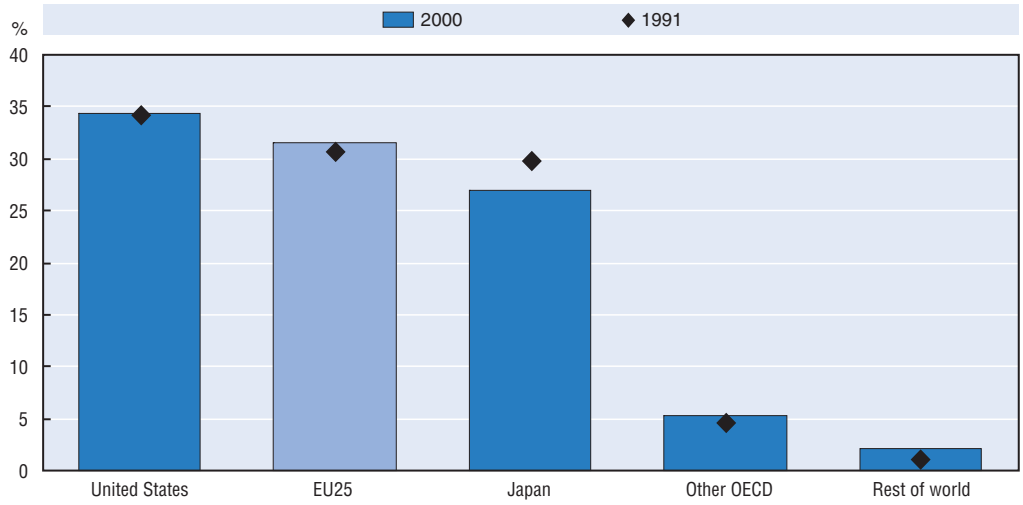
A number of non-OECD economies are making rapid strides in their scientific and technological capabilities. In terms of R&D funding alone, China's R&D intensity doubled from 0.6% to 1.2% of GDP between 1995 and 2002, and its total R&D investment rose to USD 72 billion, third only to the United States and Japan (Figure 1.13). The Russian Federation, Israel and Singapore also made significant progress in R&D expenditure, with expenditures reaching USD 14.7 billion, USD 6.3 billion and USD 2.0 billion, respectively, in 2002. Israel's R&D intensity reached 4.72% – higher than that of any OECD country – and that of Singapore exceeded 2.0%. The fruits of these investments are becoming evident as well. Israel's production of published scientific and technical articles per million inhabitants, at

Figure 1.13. **R&D intensity in non-OECD economies as a share of GDP**



Source: MSTI Database, June 2004.

Figure 1.14. **Regional and national shares of triadic patent families**



Source: OECD Patents database, June 2004.

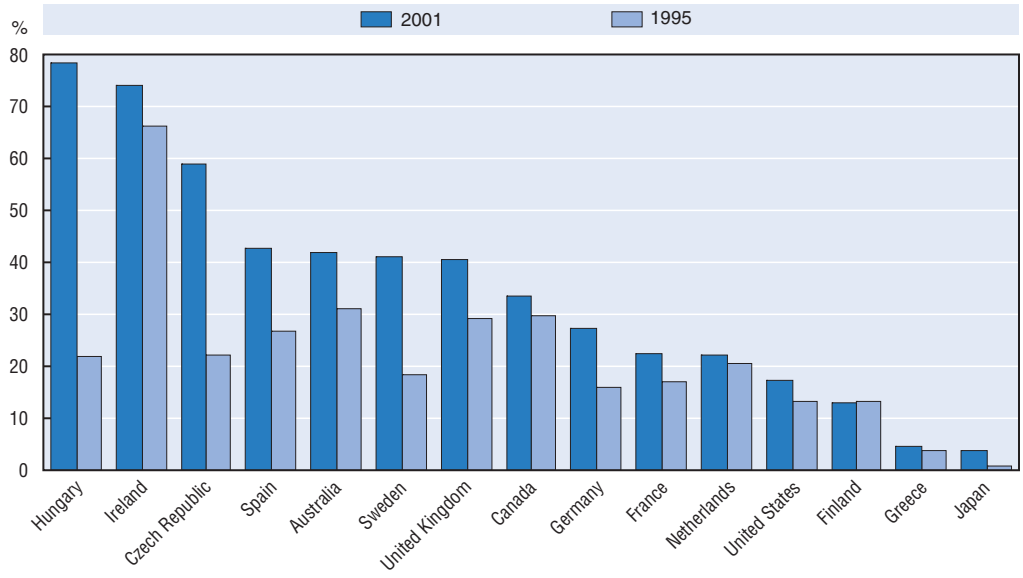
1 007 in 2001, exceeds that of all OECD countries except Sweden and Switzerland, and that of Russia (110) is above that of some newer OECD members. The number of patent families held by Chinese inventors rose from 12 in 1991 to 93 in 2001, placing it ahead of a dozen of the smaller OECD economies, but the number of Chinese patent families per million inhabitants remains far below OECD average.

Such advances must be placed in context. Available statistics provide evidence that scientific and technological capabilities are spreading more broadly across the globe, but they also show the limits of that expansion. For example, in 1995, the R&D expenditures of China, Israel and the Russian Federation totalled USD 28 billion, equivalent to 6.4% of OECD R&D expenditures.[9] By 2001, R&D spending in these three countries had risen to USD 85 billion, or 14.7% of OECD R&D expenditures. When a fuller set of non-member economies, including Argentina, Romania, Singapore and Chinese Taipei, are added to the calculation, the share rises to 17%. Hence, while R&D spending has grown rapidly in non-member economies, it remains at about one-sixth the level of OECD countries. Relative shares of patent families show a similar pattern. The United States, the EU25 and Japan accounted for 94.4% of all triadic patent families in 1991; by 2000, that share had declined modestly to 92.7%, with most of the reduction in the shares of EU and Japanese patent holders (Figure 1.14). The share of all countries outside the United States, EU25 and Japan rose from 5.6% to 7.3%. It can be expected that this share will continue to rise as other countries become more fully integrated into global innovation structures.

Foreign affiliates expanding

Rising levels of R&D spending by foreign affiliates of multinational enterprises are contributing to R&D spending in OECD countries and non-member economies (Figure 1.15). R&D performed by foreign affiliates represents over 12% of total expenditures on industrial R&D in the OECD area. Total R&D performed by foreign affiliates in selected OECD countries increased by more than 50% in nominal terms between 1995 and 2000, to more than USD 50 billion. Foreign affiliates accounted for approximately 17% of US R&D in 2001 and more than 20% in France and Germany. They accounted for between 30% and 40% of R&D in the United Kingdom, the Netherlands, Canada, Sweden and Spain, and more than 70% in Hungary and Ireland. These shares have risen most noticeably in the Czech Republic, Hungary, Sweden and the United Kingdom, and have remained relatively constant or increased only

Figure 1.15. **R&D investments by foreign affiliates, 1995-2001**
As % of R&D expenditure by enterprises



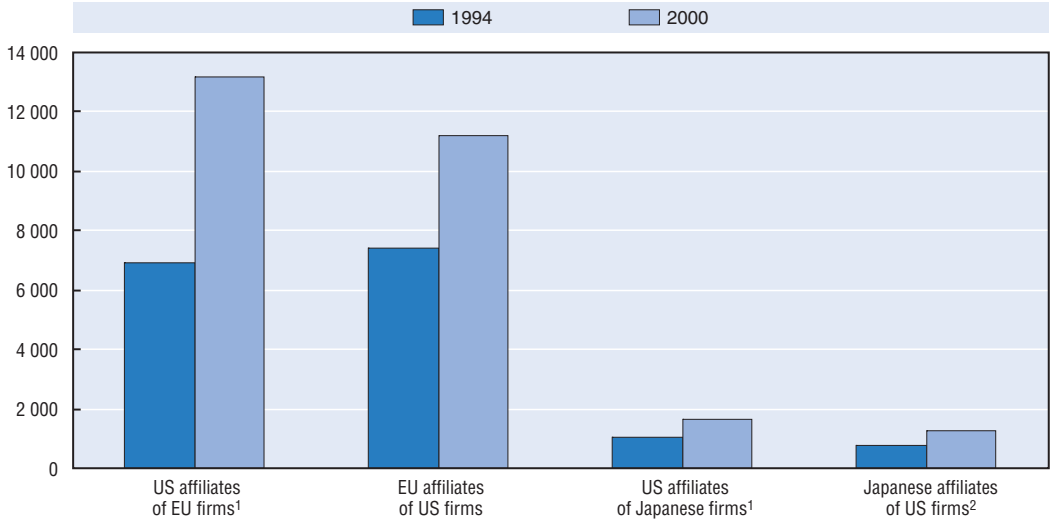
Note: Or nearest available years. 1995-99 for Australia, Germany, Greece, Hungary; 1995-2000 for Japan, Sweden; 1995-2002 for the United Kingdom; 1997-2002 for the Czech Republic; 1997-2001 for Finland; 1997-2000 for the Netherlands.
Source: OECD, AFA Database, May 2004

slowly in most other countries, suggesting that foreign affiliate R&D has increased roughly as fast as domestic R&D.

A considerable portion of the R&D performed by foreign affiliates remains in the OECD area. In 2000, for example, USD 15 billion of the USD 23 billion in manufacturing R&D performed by foreign affiliates in the United States came from firms headquartered in the EU15 or Japan. Similarly USD 13 billion of the spending by foreign affiliates in the EU15 came from the United States or Japan. Between 1994 and 2000, the United States experienced a gain in its share of OECD foreign affiliate R&D funding, from 45% to 55%. A significant portion of the shift towards the United States came from EU firms. Between 1994 and 2000, R&D expenditures of US-based affiliates of EU firms climbed by USD 6.3 billion, from approximately USD 7 billion to more than USD 13 billion (Figure 1.16). US firms increased their R&D investments in EU-based affiliates from USD 7.4 billion to USD 11.2 billion, a gain of USD 3.8 billion. As a result, the net difference shifted from an advantage of USD 500 million for the EU to a net gain of USD 2 billion for the United States. In the 1990s, inward R&D investments in the United States were aimed primarily at high-technology areas. Pharmaceuticals and communications equipment alone accounted for more than half of the R&D expenditures by foreign affiliates in 2000. This figure tends to confirm that firms increasingly locate R&D facilities near centres of scientific and engineering expertise, not just near markets of interest.

While much R&D funding attributed to foreign affiliates takes place among OECD countries, non-members appear to be playing a larger role. In the case of the United States (for which the most complete data are available), outward R&D investments in foreign affiliates nearly doubled between 1994 and 2000, from USD 12 billion to just under USD 20 billion. While impressive in absolute terms, these figures represent a relative reduction in outward R&D investments, from 12.0% to 10.8% of total industry R&D spending. Motor vehicles; radio, televisions and communications equipment; computing equipment and non-pharmaceutical chemicals comprised the bulk of this investment. While outward investments grew in all major regions of the globe in nominal terms, growth has been fastest

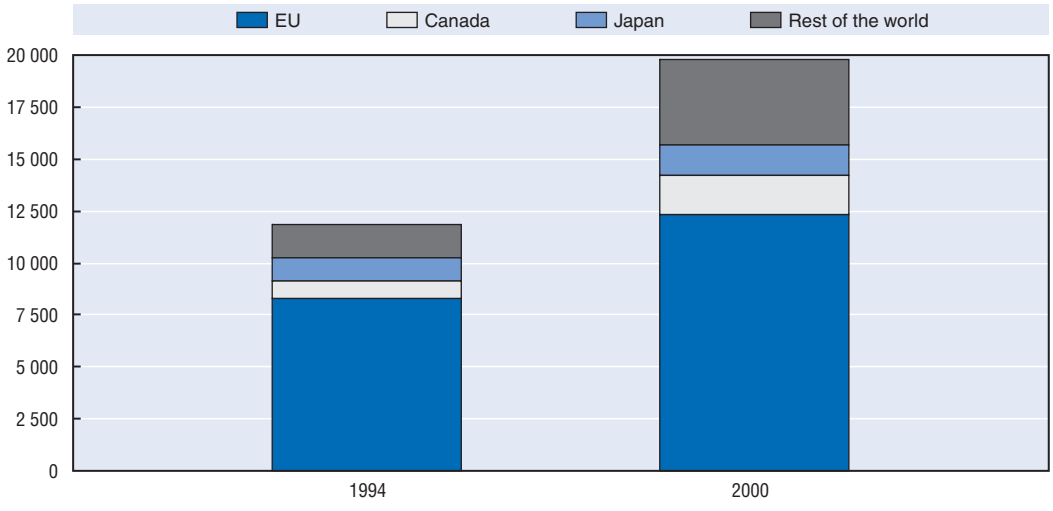
Figure 1.16. **Changes in R&D spending by foreign affiliates, 1994-2000**
R&D expenditures in manufacturing, millions of current PPP USD



1. 1994 data refer to R&D funded by majority- and minority-owned affiliates; 2000 data refers to R&D performed by majority- and minority-owned affiliates.
2. Data refer to majority-owned affiliates only.
Source: Estimates data based on OECD MSTI database May 2004 and OECD AFA database, June 2004.

outside the EU15, Canada and Japan. Investments in the rest of world grew by a factor of 2.5 during the period. In the case of China, US R&D investments increased from USD 7 million in 1994 to USD 506 million in 2000 (Figure 1.17). Such trends can be expected to continue as long as countries such as China build up their science and technology infrastructure and open markets to foreign entrants.

Figure 1.17. **Outward investment in R&D by US-owned firms**
Millions of USD



Source: OECD AFA Database, February 2004.

Conclusion

OECD countries continue to advance in their exploration and exploitation of science, technology and innovation with the aim of improving industrial performance and economic growth. While the economic downturn limited the ability of many firms and governments to maintain high levels of growth in science and technology investment as the entered the new millennium, they will be better able to regain their momentum if the economic recovery unfolds as expected. To ensure that the benefits of science, technology and innovation continue to accrue to OECD countries, however, policy makers will need to continue to take steps to ensure the development of human resources for science and technology and to develop science, technology and innovation policies that will enable them to benefit effectively from the growing technological capabilities of non-member economies.

NOTES

1. OECD defines high-technology industries as the following: aircraft and spacecraft; pharmaceuticals; office, accounting and computing machinery; radio, TV and communications equipment; and medical, precision and optical instruments. Medium-high technology industries are: electrical machinery and apparatus not elsewhere classified; motor vehicles, trailers and semi-trailers; chemicals excluding pharmaceuticals; railroad equipment and transport equipment not elsewhere classified; and machinery and equipment not elsewhere classified. Knowledge-intensive market services include: post and telecommunications services; finance and insurance services; and business activities (excluding real estate activities).
2. Manufacturing trade figures are based on the average value of imports and exports.
3. Technology balance of payments data capture commercial transactions related to international technology transfers. It includes money paid or received for the acquisition and use of patents, licences, trademarks, designs, know-how and closely related technical services and for industrial R&D carried out abroad.
4. Because they represent patents filed in the three major patent offices, patent families are often considered to count high-quality patents that inventors expect to exploit globally and for which they are willing to pay application and maintenance fees to several patent offices. By avoiding multiple counting, they also tend to reduce some of the effects of international patenting.
5. The years shown for patent families refers to the priority year of the application; that is, the year the first application was filed. Grant dates tend to be several years later.
6. See OECD (2004) for a more complete summary of the survey results.
7. Researchers are defined as professionals engaged in the conception and creation of new knowledge, products, processes, methods and systems and are directly involved in the management of projects. In this report, numbers of researchers are expressed in full-time equivalents and include staff engaged in R&D during the course of one year.
8. Some of the increase in business researchers in the UK resulted from the privatisation of the Defence Evaluation and Research Agency in 2001.
9. China, Israel and the Russian Federation are three of the Observers to the OECD's Committee for Scientific and Technological Policy for which science and technology statistics are collected. South Africa is he fourth Observer country.

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Statistical Annex

MAIN OECD DATABASES USED

Databases maintained by the Directorate for Science, Technology and Industry (DSTI)

Industrial structure and performance

STAN: The database for **Industrial Analysis** includes annual measures of output, labour input, investment and international trade which allow users to construct a wide range of indicators focused on areas such as productivity growth, competitiveness and general structural change. The industry list provides sufficient details to enable users to highlight high-technology sectors and is compatible with those used in related OECD databases. STAN is primarily based on member countries' annual National Accounts by activity tables and uses data from other sources, such as national industrial surveys/censuses, to estimate any missing detail. Since many of the data points in STAN are estimated, they do not represent the official member country submissions.

The latest version of STAN is based on the International Standard Industrial Classification (ISIC) Rev. 3 and covers all activities (including services). Further details on STAN are available on the Internet at: *www.oecd.org/sti/stan*.

P*ublication*: STAN is available on line on SourceOECD (*www.sourceoecd.org*), updated on a "rolling" basis (*i.e.* new tables are posted as soon as they are ready) to maximise timeliness. In May 2004, a CDROM was published providing a snapshot of the STAN industrial database together with related databases covering R&D Expenditure and Bilateral Trade by industry (ANBERD and BTD) as well as a set of derived indicators (*http://oecdpublications.gfi-nb.com/cgi-bin/*OECDB*ookShop.storefront*/EN/*product*/922004063C3).

Science and technology

R&D and TBP: The **R&D** database contains the full results of the OECD surveys on **R&D expenditure and personnel** from the 1960s. The **TBP** database presents information on the **technology balance of payments**. These databases serve, *inter alia*, as the raw material for both the ANBERD and MSTI databases.

P*ublication*: OECD (2004), *Research and Development Statistics*: 2003 E*dition*. Annual on CD-ROM (a printed edition is also available every two years).

MSTI: The **Main Science and Technology Indicators** database provides a selection of the most frequently used annual data on the scientific and technological performance of OECD member countries and eight non-member economies (Argentina, China, Israel, Romania, Russian Federation, Singapore, Slovenia, Chinese Taipei). The indicators, expressed in the form of ratios, percentages, growth rates, cover resources devoted to R&D, patent families, technology balance of payments and international trade in highly R&D-intensive industries.

P*ublication*: OECD (2004), *Main Science and Technology Indicators* 2004/1. Biannual. Also available on CD-ROM.

ANBERD: The **Analytical Business Enterprise Research and Development** database is an estimated database constructed with a view to creating a consistent data set that overcomes the problems of international comparability and time discontinuity associated with the official business enterprise R&D data provided to the OECD by its member countries. ANBERD contains R&D expenditures for the period 1987-2001, by industry (ISIC Rev. 3), for 19 OECD countries.

P*ublication*: OECD (forthcoming), *Research and Development Expenditure in Industry*, 1987-2002. Annual. Also available on line and on the CD-Rom STAN Structural Analysis databases (*http://oecdpublications.gfi-nb.com/cgi-bin/*OECDB*ookShop.storefront*/EN/*product*/922004063C3).

Patent database: This database contains patents filed at the largest national patent offices – European Patent Office (EPO); US Patent and Trademark Office (USPTO); Japanese Patent Office (JPO) – and other national or regional offices. Each patent is referenced by: patent numbers and dates (publication, application and priority); names and countries of residence of the applicants and of the inventors; and technological categories, using the national patent classification as well as the International Patent Classification (IPC). The compiled indicators mainly refer to single patent counts in a selected patent office, as well as counts of "triadic" patent families (patents filed at the EPO, the USPTO and the JPO to protect a single invention).

The series are published on a regular basis in OECD, *Main Science and Technology Indicators*.

Globalisation and international trade

AFA: The **Activities of Foreign Affiliates** database presents detailed data on the performance of foreign affiliates in the manufacturing industry of OECD countries (inward and outward investment). The data indicate the increasing importance of foreign affiliates in the economies of host countries, particularly in production, employment, value added, research and development, exports, wages and salaries. AFA contains 18 variables broken down by partner country and by industrial sector (based on ISIC Rev. 3) for 22 OECD countries.

Publication: OECD, *Measuring Globalisation: The Role of Multinationals in* OECD *Economies*, 2001 Edition. Vol. I: Manufacturing. Biennial. Also available on line on SourceOECD (*www.sourceoecd.org*).

FATS: This database gives detailed data on the **activities of foreign affiliates** in the **service** sector of OECD countries (inward and outward investment). The data indicate the increasing importance of foreign affiliates in the economies of host countries and of affiliates of national firms implanted abroad. FATS contains five variables (production, employment, value added, imports and exports) broken down by country of origin (inward investments) or implantation (outward investments) and by industrial sector (based on ISIC Rev. 3) for 19 OECD countries.

Publication: OECD, *Measuring Globalisation: The Role of Multinationals in* OECD *Economies*, 2001 Edition. Vol. II: Services. Biennial. Soon available on line.

Bilateral Trade (BTD): This database for industrial analysis includes detailed trade flows by manufacturing industry between a set of OECD *declaring* countries and a selection of *partner* countries and geographical regions. Data are presented in thousands of USD at current prices, and cover the period 1988-2001. The data have been derived from the OECD database *International Trade by Commodities Statistics* (ITCS – formerly *Foreign Trade Statistics* or FTS). Imports and exports are grouped according to the country of origin and the country of destination of the goods. The data have been converted from product classification schemes to an activity classification scheme based on ISIC Rev.3, that matches the classification currently used for the OECD's STAN, Input-Output tables and ANBERD databases.

Publication: OECD, *Bilateral Trade Database*, 2002. Also available on CD-ROM with STAN and ANBERD databases (*http://oecdpublications.gfi-nb.com/cgi-bin/*OECDBookShop.storefront/EN/*product*/922004063C3).

Information and communication technology (ICT)

Telecommunications: This database is produced in association with the biennial *Communications Outlook*. It provides time-series data covering all OECD countries for the period 1980-2001. It contains both telecommunication and economic indicators.

Publication: OECD (2003), *Telecommunications Database* 2003. Only available on diskette and CD-ROM.

ICT: Work is under way to develop a database on ICT supply and ICT usage statistics. Statistics on employment, value added, production, wages and salaries, number of enterprises, R&D, imports and exports for the ICT sector are been collected following the OECD ICT sector definition based on ISIC Rev. 3.

Publication: OECD (2002), *Measuring the Information Economy*, 2002. Freely available as a Web book with "clickable" access to the data used in charts and figures at: *www.oecd.org/sti/measuring-infoeconomy*.

Current country coverage of main DSTI databases used in this publication

	Industry	Science and technology					Globalisation			ICT
	STAN	R&D	TBP	MSTI	ANBERD	Patents	AFA	FATS	BTD	Telecom.
Australia	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Austria	✓	✓	✓	✓		✓		✓	✓	✓
Belgium	✓	✓	✓	✓	✓	✓		✓	✓	✓
Canada	✓	✓	✓	✓	✓	✓	✓		✓	✓
Czech Republic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Denmark	✓	✓	✓	✓	✓	✓			✓	✓
Finland	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
France	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Germany	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Greece	✓	✓		✓		✓	✓	✓	✓	✓
Hungary	✓	✓	✓	✓		✓	✓	✓	✓	✓
Iceland		✓		✓		✓			✓	✓
Ireland		✓		✓	✓	✓	✓	✓	✓	✓
Italy	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Japan	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Korea	✓	✓	✓	✓	✓	✓			✓	✓
Luxembourg	✓			✓		✓	✓	✓	✓	✓
Mexico	✓	✓	✓	✓		✓	✓		✓	✓
Netherlands	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
New Zealand	✓	✓	✓	✓		✓			✓	✓
Norway	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Poland	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Portugal	✓	✓	✓	✓		✓	✓	✓	✓	✓
Slovak Republic	✓	✓	✓	✓		✓	✓		✓	✓
Spain	✓	✓	✓	✓	✓	✓	✓		✓	✓
Sweden	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Switzerland		✓	✓	✓		✓			✓	✓
Turkey		✓		✓		✓	✓	✓	✓	✓
United Kingdom	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
United States	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Other OECD databases

ADB: Analytical DataBase (Economics Department).

ANA: Annual National Accounts (Statistics Directorate).

Education database (Directorate for Education).

ITCS: International Trade in Commodities Statistics (Statistics Directorate).

International Direct Investment (Directorate for Financial, Fiscal and Enterprise Affairs).

LFS: Labour Force Statistics (Statistics Directorate).

SSIS: Structural Statistics for Industry and Services (Statistics Directorate).

Services: Value Added and Employment (Statistics Directorate).

Further details on OECD statistics are available on the Internet at: *www.oecd.org/statistics/*.

STANDARD STATISTICAL NOTES USED IN THIS PUBLICATION FOR SCIENCE AND TECHNOLOGY INDICATORS

a) Break in series with previous year.
b) Estimate.
c) Defence excluded (all or mostly).
d) Including R&D in the social sciences and humanities.
e) Excluding R&D in the social sciences and humanities.
f) Federal or central government only.
g) Excludes data for the R&D content of general payment to the higher education sector for combined education and research.
h) Excludes most or all capital expenditure.
i) Total intramural R&D expenditure instead of current intramural R&D expenditure.
j) Overestimated or based on overestimated data.
k) Underestimated or based on underestimated data.
l) Included elsewhere.
m) Includes other classes.
n) Provisional.
o) At current exchange rate and not at current purchasing power parities.
p) Unrevised breakdown not adding to the revised total.
q) Does not correspond exactly to the OECD recommendations.
r) Including extramural R&D expenditure.

STANDARD INDUSTRY AGGREGATION BY TECHNOLOGY LEVEL

(*based on* ISIC Revision3)

The *high-technology* industries (HT) are defined as the sum of:

- Pharmaceuticals (2423),
- Office and computing machinery (30),
- Radio, TV and communication equipment (32),
- Medical, precision and optical equipment (33),
- Aircraft and spacecraft (353).

The *medium-high-technology* industries (MHT) are defined as the sum of:

- Chemicals excluding pharmaceuticals (24 excl. 2423),
- Machinery and equipment (29),
- Electrical machinery and apparatus (31),
- Motor vehicles and trailers (34),
- Railroad and transport equipment (352+359).

The *medium-low-technology* industries (MLT) are defined as the sum of:

- Coke, refined petroleum products and nuclear fuel (23),
- Rubber and plastic products (25),
- Other non-metallic mineral products (26),
- Basic metals (27),
- Fabricated metal products except machinery and equipment (28),
- Building and repairing of ships and boats (351).

The *low-technology industries* (LT) are defined as the sum of:

- Food products, beverages and tobacco (15-16),
- Textiles, textile products, leather and footwear (17-19),
- Wood, pulp, paper, paper products, printing and publishing (20-22),
- Manufacturing n.e.c. and recycling (36-37).

ANNEX TABLES

Table 1. Breakdown of GDP per capita into its components, 1990-2003

United States = 100

	GDP per capita (US=100)		Effect of labour force participation (%)										GDP per person employed (US=100)		GDP per hour worked (US=100)	
			Total effect		Working-age population[1] to total population		Labour force to working-age population		Unemployment		Working hours					
	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)=(1)-(2)	
	1990	2003	1990	2003	1990	2003	1990	2003	1990	2003	1990	2003	1990	2003	1990	2003
Australia[2]	73	78	-1	1	-10	-10	9	11	-1	0	1	1	75	77	73	77
Austria	82	79	-	-	-10	-9	14	14	1	0	-	-13	77	74	-	87
Belgium	78	76	-26	-30	-10	-12	-6	1	-1	-2	-9	-17	95	89	104	106
Canada	83	83	-3	3	-12	-10	14	15	-2	-1	-2	-2	83	79	86	81
Czech Republic	48	43	1	2	-7	-3	7	3	1	-1	-	3	47	44	-	41
Denmark	79	80	-11	-14	-10	-12	17	16	-1	0	-17	-19	73	75	90	93
Finland	78	73	-1	-9	-10	-10	12	9	2	-2	-5	-6	74	77	79	82
France	79	77	-25	-30	-12	-13	0	5	-3	-3	-10	-19	94	88	104	106
Germany	96	70	-14	-19	-9	-9	8	10	1	-2	-14	-18	95	72	110	90
Greece	49	54	-12	-10	-9	-10	-5	-1	-1	-2	3	4	64	67	61	63
Hungary[3]	35	39	-3	-9	-5	-4	1	-5	1	0	-	-	38	48	-	-
Iceland	87	80	10	12	-15	-12	23	21	3	2	0	0	77	69	77	68
Ireland	56	90	-21	-13	-13	-11	-5	5	-6	1	4	-8	80	94	77	102
Italy	75	70	-31	-29	-9	-9	-9	-6	-4	-3	-9	-12	97	88	106	100
Japan[2]	81	74	12	3	-7	-8	9	12	3	0	7	0	76	71	69	71
Korea	32	47	-4	-1	-3	-3	-2	1	1	1	-	-	36	48	-	-
Luxembourg	108	137	-14	-13	-10	-18	-9	2	6	4	-	-	122	150	-	-
Mexico	27	26	-47	-35	-32	-27	-17	-10	2	2	-	1	74	61	-	60
Netherlands	77	80	-46	-37	-8	-9	-12	1	0	3	-26	-31	97	86	123	117
New Zealand	60	62	-7	1	-2	0	-3	0	-2	1	-1	0	66	61	67	61
Norway	78	96	-21	-27	-13	-16	13	20	0	1	-22	-32	77	92	99	123
Poland	26	31	-4	-7	-4	-2	-	-2	-	-6	-	3	-	41	-	38
Portugal	46	49	-2	-3	-7	-6	4	7	0	0	1	-4	49	48	48	53
Slovak Republic[4]	28	35	-5	-6	-4	-3	1	2	-3	-5	-	0	33	41	-	41
Spain	57	62	-24	-10	-9	-8	-10	3	-5	-4	0	0	81	72	81	72
Sweden	81	75	-6	-13	-14	-13	19	12	3	1	-14	-13	74	75	87	88
Switzerland	107	82	8	3	-11	-10	27	23	5	1	-12	-11	86	68	98	80
Turkey	20	18	-8	-10	-5	-3	-2	-6	-1	-1	-	-	28	29	-	-
United Kingdom	71	78	-4	-5	-11	-12	11	12	0	1	-3	-6	72	77	75	83
United States	100	100	0	0	0	0	0	0	0	0	0	0	100	100	100	100
Total OECD	**69**	**81**	**-28**	**-9**	**-10**	**2**	**-3**	**2**	**1**	**-1**	**-17**	**-13**	**81**	**77**	**97**	**90**
EU-25[4]	**65**	**69**	**-11**	**-4**	**-9**	**-6**	**1**	**4**	**-4**	**-2**	**-**	**-**	**76**	**73**	**-**	**-**
EU-15	**76**	**75**	**-20**	**-15**	**-10**	**-7**	**1**	**6**	**-1**	**-2**	**-10**	**-12**	**86**	**78**	**96**	**90**

1. 15-64 years. 2. 2002 instead of 2003. 3. 1991 instead of 1990. 4. 1994 instead of 1990.

Source: OECD, GDP from National Accounts database; other data from *OECD Economic Outlook* 75, 2004.
Complementary estimates for hours worked from *OECD Employment Outlook*, 2004.

StatLink: http://dx.doi.org/10.1787/515628628843

Table 2. Income and productivity levels in the OECD, 1950-2002

	GDP per capita (US=100)						GDP per hour worked (US=100)					
	1950	1973	1980	1990	2000	2003	1950	1973	1980	1990	2000	2003
Australia[1]	77	76	75	73	74	78	72	69	72	73	77	77
Austria	42	73	81	82	79	79	-	-	-	-	90	87
Belgium	60	76	81	78	73	76	59	85	102	104	108	106
Canada	81	86	91	83	80	83	85	86	88	86	84	81
Czech Republic	50	57	58	48	39	43	-	-	-	-	37	41
Denmark	80	91	87	79	79	80	60	81	89	90	95	93
Finland	46	69	74	78	72	73	35	60	64	79	84	82
France	55	78	82	79	73	77	46	77	88	104	103	106
Germany	42	74	78	96	70	70	39	76	88	110	92	90
Greece	24	56	57	49	47	54	-	-	-	61	60	63
Hungary[2]	39	51	43	35	33	39	-	-	-	-	-	-
Iceland	-	72	87	87	79	80	-	59	74	77	69	68
Ireland	38	43	49	56	79	90	-	46	58	77	96	102
Italy	41	70	78	75	70	70	43	83	97	106	108	100
Japan	20	67	71	81	73	-	15	47	55	69	72	72
Korea	9	15	20	32	43	47	7	10	16	-	-	-
Luxembourg	-	98	92	108	137	137	-	-	-	-	-	-
Mexico	27	31	35	27	26	26	31	42	-	-	63	60
Netherlands	67	83	84	77	76	-	59	92	106	123	116	117
New Zealand	94	79	68	60	58	62	-	81	71	67	63	61
Norway	63	74	91	78	101	96	57	79	101	99	133	123
Poland	29	36	35	26	29	31	-	-	-	-	35	38
Portugal	22	44	43	46	48	49	19	40	-	48	53	53
Slovak Republic	38	43	44	-	30	35	-	-	-	-	35	41
Spain	28	57	56	57	57	62	25	56	69	81	75	72
Sweden	69	78	78	81	75	75	58	79	83	87	90	88
Switzerland	100	114	106	107	84	82	86	96	101	98	86	80
Turkey	15	17	17	20	19	18	-	-	-	-	-	-
United Kingdom	72	72	69	71	71	78	61	64	70	75	81	83
United States	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*

1. 2002 instead of 2003. 2. 1991 instead of 1990.

Source: Previous annex; *OECD Science, Technology and Industry Scoreboard,* 2003.

StatLink: http://dx.doi.org/10.1787/482201516226

Table 3. Gross R&D expenditures, 1981-2003

Millions constant USD (1995 PPPs)

	1981	1991	1995	2000	2001	2002	2003
Australia[1, 2]	2 362	5 141	6 570	7 107	-	-	-
Austria	1 457	2 488 [b]	2 821 [b]	3 855 [b]	4 019 [b,n]	4 098 [b,n]	4 131 [b,n]
Belgium[3]	2 605 [a]	3 350 [b]	3 762	5 110	5 488	-	-
Canada	5 843	9 373	11 250	15 373	16 529	16 072 [n]	16 065 [b,n]
Czech Republic	-	2 324 [c,q]	1 257 [a]	1 760	1 771	1 800	-
Denmark[4]	945	1 773	2 159	2 854	3 272	3 471	-
Finland	904 [a]	1 938 [a]	2 218	4 162	4 221	4 374	-
France	17 870 [a]	27 961	28 461	30 646 [a]	31 994	31 923 [n]	-
Germany	27 895	41 987 [a]	39 412 [b]	47 838 [b]	48 518	48 934 [b]	48 426 [b]
Greece[4]	205 [a]	484	671 [a]	1 056	1 106 [b]	-	-
Hungary	-	981 [c,q]	684 [c]	908 [c]	1 116 [c]	1 249 [c]	-
Iceland	29	68	93	207 [b]	237	238 [b]	-
Ireland	251	487 [b]	822 [b]	1 184 [b]	1 253 [b]	-	-
Italy	7 914 [r]	13 880 [a]	11 892	13 975	14 830	-	-
Japan	38 752 [b,j]	74 412 [b,j]	75 659 [b,j]	90 184	93 007	94 172	-
Korea	-	7 563 [e]	12 919 [e]	17 374 [e]	19 721 [e]	20 858 [e]	-
Luxembourg	-	-	-	318	-	-	-
Mexico	-	-	1 935	3 037	3 194	-	-
Netherlands	4 304	6 076	6 650	7 649	7 670	-	-
New Zealand[4]	-	524	605	712	873 [a]	-	-
Norway[4]	937	1 512	1 765 [a]	2 055	2 296	2 358 [b]	-
Poland	-	-	1 881 [a]	2 472	2 407	2 244	-
Portugal[5, 1]	271	780	751	1 279 [b]	1 371	1 512 [b]	-
Slovak Republic	-	868 [b,c,q]	405 [c]	340 [k]	346 [k]	326 [k]	-
Spain	1 754	4 944	5 010	6 998	7 314	8 090	-
Sweden[4]	3 234 [a,k]	4 883 [k]	6 294 [a,k]	7 715 [k]	9 503 [k]	-	-
Switzerland[1, 2]	3 233 [b]	4 739	4 971	5 255	-	-	-
Turkey	-	1 538	1 284	2 627	-	-	-
United Kingdom	19 201 [a]	21 673	22 498	24 816	25 530	26 207	-
United States	114 530 [h]	176 578 [h]	184 079 [h]	243 271 [h]	246 187 [h]	245 430 [h,n]	248 064 [b,h,n]
Total OECD	**254 691 [b]**	**414 522 [a,b]**	**438 558 [a,b]**	**553 399 [b]**	**569 275 [b]**	**574 708 [b,n]**	**-**
EU-25	**-**	**-**	**138 328 [b]**	**166 859 [b]**	**172 704 [b]**	**175 929 [b,n]**	**-**
EU-15	**88 551 [b]**	**132 558 [a,b]**	**133 421**	**160 547 [b]**	**166 123 [b]**	**169 525 [b,n]**	**-**
China	-	13 824 [k]	18 022 [k]	45 002 [a]	52 399	65 485	-
Israel	-	1 937 [c]	2 630 [c]	5 613 [c]	5 937 [c,n]	5 516 [c,n]	-
Russian Federation	-	23 032	7 475	10 537	12 277	13 651	-

Times series notes:

(a) to (r): See standard statistical notes for science and technology indicators earlier in the Annex.

Year availability:

1. 1992 instead of 1991.
2. 1996 instead of 1995.
3. 1983 instead of 1981.
4. 1999 instead of 2000.
5. 1982 instead of 1981.

Source: OECD, MSTI database, May 2004.

StatLink: http://dx.doi.org/10.1787/367403882784

Table 4. GERD intensity, 1981-2003

As a percentage of GDP

	1981	1991	1995	2000	2001	2002	2003
Australia[1, 2]	0.94	1.52	1.66	1.54	-	-	-
Austria	1.13	1.47 [b]	1.56 [a,b]	1.86 [b]	1.92 [b,n]	1.93 [b,n]	1.94 [b,n]
Belgium[3]	1.56 [a]	1.62 [b]	1.72	2.04	2.17	-	-
Canada	1.24	1.60	1.72	1.92	2.03	1.91 [n]	1.87 [b,n]
Czech Republic	-	2.02 [c,q]	1.01 [a]	1.33	1.30	1.30	-
Denmark[4]	1.06	1.64	1.84	2.19	2.40	2.52	-
Finland	1.18 [a]	2.04 [a]	2.28	3.40	3.41	3.46	-
France	1.93 [a]	2.37	2.31	2.18 [a]	2.23	2.20 [n]	-
Germany	2.43	2.52 [a]	2.25 [b]	2.49 [b]	2.51	2.52 [b]	2.50 [b]
Greece[4]	0.17 [a]	0.36	0.49 [a]	0.67	0.65 [b]	-	-
Hungary	-	1.06 [c,q]	0.73 [a,c]	0.80 [c]	0.95 [c]	1.02 [c]	-
Iceland	0.64	1.17	1.57	2.75 [b]	3.06	3.09 [b]	-
Ireland	0.68	0.93 [b]	1.28 [b]	1.15 [b]	1.15 [b]	-	-
Italy	0.88 [r]	1.23 [a]	1.00	1.07	1.11	-	-
Japan	2.12 [j]	2.76 [j]	2.69 [j]	2.99	3.07	3.12	-
Korea	-	1.92 [e]	2.50 [e]	2.65 [e]	2.92 [e]	2.91 [e]	-
Luxembourg	-	-	-	1.71	-	-	-
Mexico	-	-	0.31	0.37	0.39	-	-
Netherlands	1.79	1.97	1.99 [a]	1.90	1.89	-	-
New Zealand[4]	-	0.98	0.96	1.02	1.18 [a]	-	-
Norway[4]	1.18	1.64	1.70 [a]	1.65	1.60	1.67	-
Poland	-	-	0.65 [a]	0.66	0.64	0.59 [b]	-
Portugal[5, 1]	0.30	0.61	0.57 [a]	0.80 [b]	0.85	0.93 [b]	-
Slovak Republic	-	2.13 [c,q]	0.93 [c]	0.65 [k]	0.64 [k]	0.58 [k]	-
Spain	0.41	0.84	0.81 [a]	0.94	0.95	1.03	-
Sweden[4]	2.22 [a,k]	2.72 [k]	3.35 [a,k]	3.65 [k]	4.27 [k]	-	-
Switzerland[1, 2]	2.12 [b]	2.59	2.67	2.57	-	-	-
Turkey	-	0.53	0.38	0.64	-	-	-
United Kingdom	2.38 [a]	2.07	1.95	1.84	1.86	1.88	-
United States	2.34 [h]	2.72 [h]	2.51 [h]	2.72 [h]	2.74 [h]	2.67 [h,n]	2.62 [b,h,n]
Total OECD	**1.93 [b]**	**2.22 [a,b]**	**2.09 [a,b]**	**2.24 [b]**	**2.28 [b]**	**2.26 [b,n]**	**-**
EU-25	**-**	**-**	**1.72 [b]**	**1.80 [b]**	**1.83 [b]**	**1.83 [b,n]**	**-**
EU-15	**1.67 [b]**	**1.90 [a,b]**	**1.80**	**1.88 [b]**	**1.92 [b]**	**1.93 [b,n]**	**-**
China	-	0.74 [k]	0.60 [k]	1.00 [a]	1.07	1.23	-
Israel	-	2.50 [c]	2.74 [c]	4.72 [c]	5.04 [c,n]	4.72 [c,n]	-
Russian Federation	-	1.43	0.85	1.05	1.16	1.24	-

Times series notes:

(a) to (r): See standard statistical notes for science and technology indicators earlier in the Annex.

Year availability:

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4. 1999 instead of 2000.
5. 1982 instead of 1981.

Source: OECD, MSTI database, May 2004.

StatLink: http://dx.doi.org/10.1787/036108151783

Table 5. GERD by source of funds, 1981-2003

As a percentage of total national R&D expenditures

	Business enterprise						Government					
	1981	1991	1995	2001	2002	2003	1981	1991	1995	2001	2002	2003
Australia[1, 2, 3]	20.2 [p]	44.0	47.8	46.3 [-]	-	-	72.8 [p]	50.2	45.8	45.7 [-]	-	-
Austria	50.2	50.3 [b]	45.3 [b]	39.9 [b,n]	40.3 [b,n]	40.8 [b,n]	46.9	46.5 [b]	47.3 [b]	41.1 [b,n]	40.9 [b,n]	40.4 [b,n]
Belgium[4]	64.8 [a]	64.8 [b]	67.1	64.3	-	-	33.4 [a]	31.3 [b]	23.1	21.4	-	-
Canada	40.8	38.2	45.7	48.3	45.3 [n]	44.3 [n]	50.6	45.7 [b]	35.9 [b]	30.5 [b]	33.3 [b,n]	34.0 [b,n]
Czech Republic	-	-	63.1	52.5	53.7	-	-	-	32.3	43.6	42.1	-
Denmark	42.5 [a]	51.4	45.2	61.5 [s]	-	-	53.5	39.7	39.6	28.0 [s]	-	-
Finland	54.5 [a]	56.3 [a]	59.5	70.8	69.5	-	43.4 [a]	40.9 [a]	35.1	25.5	26.1	-
France	40.9 [a]	42.5	48.4	54.2	-	-	53.4 [a]	48.8	41.9	36.9	-	-
Germany	56.9	61.7 [a]	60.0 [b]	65.7	65.6 [b]	65.1 [b]	41.8	35.9 [a]	37.9 [b]	31.4	31.5 [b]	32.1 [b]
Greece	21.4 [a]	21.8	25.5 [a]	29.7 [b]	-	-	78.6 [a]	57.7	53.9 [a]	46.9 [b]	-	-
Hungary	-	56.0 [c,q,s]	38.4 [c,s]	34.8 [c,s]	29.7 [c,s]	-	-	40.0 [c,q,s]	53.1 [c,s]	53.6 [c,s]	58.6 [c,s]	-
Iceland	5.7	24.5	34.6	46.2	-	-	85.6	69.7	57.3	34.0	-	-
Ireland[3]	37.7	60.6 [b]	72.3 [b,p]	66.0 [b]	-	-	56.5	27.9 [b]	22.5 [b,p]	22.6 [b]	-	-
Italy	50.1 [r]	44.4 [a]	41.7	-	-	-	47.2 [r]	49.6 [a]	53.0	-	-	-
Japan	67.7 [j]	77.4 [j]	72.3 [j]	73.0	73.9	-	24.9 [k]	16.4 [k]	20.9 [k]	18.5 [b]	18.2 [b]	-
Korea	-	-	76.3	72.5 [e]	72.2 [e]	-	-	-	19.0	25.0 [e]	25.4 [e]	-
Luxembourg[3]	-	-	-	91.0 [-]	-	-	-	-	-	7.7 [-]	-	-
Mexico	-	-	17.6	29.8	-	-	-	-	66.2	59.1	-	-
Netherlands	46.3	47.8	46.0	51.8	-	-	47.2	48.6	42.2	36.2	-	-
New Zealand	-	27.4	33.7	37.1 [a]	-	-	-	61.8	52.3	46.4 [a]	-	-
Norway	40.1	44.5	49.9 [a]	51.7	-	-	57.2	49.5	44.0 [a]	39.8	-	-
Poland	-	-	36.0 [a]	30.8	31.0	-	-	-	60.2 [a]	64.8	61.1	-
Portugal[5, 1]	30.0	20.2	19.5	31.5	-	-	61.9	59.4	65.3 [a]	61.0	-	-
Slovak Republic	-	68.3 [c,q]	60.4 [c]	56.1 [j]	53.6 [j]	-	-	31.7 [c,q]	37.8 [c]	41.3	44.1	-
Spain	42.8	48.1	44.5	47.2	48.9	-	56.0	45.7	43.6 [a]	39.9	39.1	-
Sweden	54.9 [a]	61.9	65.5 [a]	71.9	-	-	42.3 [a]	34.0	28.8 [a]	21.0	-	-
Switzerland[1, 2, 3]	75.1 [b]	67.4	67.5	69.1 [-]	-	-	24.9 [b]	28.4	26.9	23.2 [-]	-	-
Turkey[3]	-	28.5	32.9	42.9 [-]	-	-	-	70.1	62.4	50.6 [-]	-	-
United Kingdom	42.1 [a]	49.6	48.2	47.3	46.7	-	48.1 [a,b]	35.0	32.8	28.5	26.9	-
United States	49.4 [h]	57.2 [h]	60.2 [h]	67.3 [h]	64.4 [h,n]	63.1 [h,n]	47.8 [h]	38.9 [h]	35.4 [h]	27.8 [h]	30.2 [h,n]	31.2 [h,n]
Total OECD	**51.7** [b]	**58.7** [a,b]	**59.4** [a,b]	**63.6** [b]	**62.3** [b,n]	**-**	**44.1** [b]	**35.7** [a,b]	**34.0** [a,b]	**28.9** [b]	**29.9** [b,n]	**-**
EU-25	**-**	**-**	**51.9** [b]	**55.4** [b]	**-**	**-**	**-**	**-**	**39.4** [b]	**34.7** [b]	**-**	**-**
EU-15	**48.7** [b]	**52.0** [a,b]	**52.2**	**56.0** [b]	**-**	**-**	**46.7** [b]	**41.1** [a,b]	**39.1**	**34.1** [b]	**-**	**-**
China[3]	-	-	-	57.6 [s]	-	-	-	-	-	33.4 [s]	-	-
Israel[3]	-	43.5 [c]	47.7 [c]	69.6 [c,n]	-	-	-	36.9 [c]	35.9 [c]	24.7 [c]	-	-
Russian Federation	-	-	33.6	33.6	33.1	-	-	-	61.5	57.2	58.4	-

Times series notes:

(a) to (r): See standard statistical notes for science and technology indicators earlier in the Annex.

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Source: OECD, MSTI database, May 2004.

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Table 5. GERD by source of funds, 1981-2003 (cont'd)

As a percentage of total national R&D expenditures

	Other national sources						Abroad					
	1981	1991	1995	2001	2002	2003	1981	1991	1995	2001	2002	2003
Australia[1, 2, 3]	2.1 [p]	3.9	4.4	4.8 [-]	-	-	1.0 [p]	1.8	2.1	3.3 [-]	-	-
Austria	0.4	0.3 [b]	0.4 [b]	0.3 [b,n]	0.3 [b,n]	0.3 [b,n]	2.5	3.0 [b]	7.1 [b]	18.7 [b,n]	18.5 [b,n]	18.5 [b,n]
Belgium[4]	0.8 [a]	1.0 [b]	2.3	2.5	-	-	1.0 [a]	3.0 [b]	7.5	11.8	-	-
Canada	4.8	6.7 [b]	6.9 [b]	8.4 [b]	9.4 [b,n]	10.0 [b,n]	3.8	9.4	11.6	12.9	12.0 [n]	11.7 [n]
Czech Republic	-	-	1.3	1.7	1.5	-	-	-	3.3	2.2	2.7	-
Denmark	2.0 [a]	4.6	4.3	2.6 [s]	-	-	2.1	4.4	11.0	7.8 [s]	-	-
Finland	1.1 [a]	1.5 [a]	1.0	1.2	1.2	-	1.0 [a]	1.3 [a]	4.5	2.5	3.1	-
France	0.7 [a]	0.7	1.7	1.7	-	-	5.0 [a]	8.0	8.0	7.2	-	-
Germany	0.4	0.5 [a]	0.3 [b]	0.4	0.4 [b]	0.4 [b]	1.0	2.0 [a]	1.8 [b]	2.5	2.5 [b]	2.4 [b]
Greece	-	0.7	2.5 [a]	2.0 [b]	-	-	-	19.9	18.2 [a]	21.4 [b]	-	-
Hungary	-	0.1 [c,q,s]	0.5 [c,s]	0.4 [c,s]	0.3 [c,s]	-	-	1.8 [c,q,s]	4.9 [c,s]	9.2 [c,s]	10.4 [c,s]	-
Iceland	4.4	1.7	3.7	1.6	-	-	4.3	4.1	4.4	18.3	-	-
Ireland[3]	1.1	2.2 [b]	1.9 [b,p]	2.6 [b]	-	-	4.8	9.4 [b]	8.5 [b,p]	8.9 [b]	-	-
Italy	0.0 [r]	-	-	-	-	-	2.7 [r]	6.1 [a]	5.3	-	-	-
Japan	7.3 [b,k]	6.1 [b,k]	6.7 [b,k]	8.1 [b]	7.6 [b]	-	0.1 [b,k]	0.1 [b,k]	0.1 [b,k]	0.4	0.4	-
Korea	-	-	4.7	2.1 [e]	2.0 [e]	-	-	-	0.0	0.5 [e]	0.4 [e]	-
Luxembourg[3]	-	-	-	-	-	-	-	-	-	1.3 [-]	-	-
Mexico	-	-	9.5	9.8	-	-	-	-	6.7	1.3	-	-
Netherlands	1.3	1.8	2.6	1.1 [a]	-	-	5.2	1.9	9.3	11.0	-	-
New Zealand	-	8.2	10.1	9.9 [a]	-	-	-	2.5	3.9	6.6 [a]	-	-
Norway	1.4	1.3	1.2 [a]	1.4	-	-	1.4	4.6	4.9 [a]	7.1	-	-
Poland	-	-	2.1 [a]	2.0	3.2	-	-	-	1.7 [a]	2.4	4.8	-
Portugal[5, 1]	4.8	5.4	3.3	2.4	-	-	3.3	15.0	11.9 [a]	5.1	4.9 [b]	-
Slovak Republic	-	-	0.1 [c]	0.8 [j]	0.3 [j]	-	-	-	1.6 [c]	1.9 [j]	2.1 [j]	-
Spain	0.1 [l]	0.6	5.2 [a]	5.3	5.2	-	1.1	5.6	6.7	7.7	6.8	-
Sweden	1.4 [a]	2.7	2.2 [a]	3.8	-	-	1.5 [a]	1.5	3.4 [a]	3.4	-	-
Switzerland[1, 2, 3]	-	2.3	2.5	3.4 [-]	-	-	-	1.9	3.1	4.3 [-]	-	-
Turkey[3]	-	1.3	2.7	5.3 [-]	-	-	-	0.2	2.0	1.2 [-]	-	-
United Kingdom	3.0 [a]	3.5	4.5	5.8	5.9	-	6.9 [a]	11.9	14.5	18.4	20.5	-
United States	2.8 [h]	3.9 [h]	4.4 [h]	5.0 [h]	5.4 [h,n]	5.7 [h,n]	-	-	-	-	-	-
Total OECD	**2.9** [b]	**3.5** [a,b]	**4.0** [a,b]	**4.6** [b]	**4.8** [b,n]	**-**	**-**	**-**	**-**	**-**	**-**	**-**
EU-25	**-**	**-**	**1.9** [b]	**2.2** [b]	**-**	**-**	**-**	**-**	**6.7** [b]	**7.6** [b]	**-**	**-**
EU-15	**1.1** [b]	**1.3** [a,b]	**1.8** [b]	**2.2** [b]	**-**	**-**	**3.5** [b]	**5.6** [a,b]	**6.9**	**7.8** [b]	**-**	**-**
China[3]	-	-	-	-	-	-	-	-	-	2.7 [s]	-	-
Israel[3]	-	13.1 [c]	12.0 [c]	2.8 [c,n]	-	-	-	6.5 [c]	4.4 [c]	2.8 [c,n]	-	-
Russian Federation	-	-	0.3	0.5	0.4	-	-	-	4.6	8.6	8.0	-

Times series notes:

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Source: OECD, MSTI database, May 2004.

Table 6. GERD by two main sources of funds, as a percentage of GDP, 1981-2003

	Industry						Government					
	1981	1991	1995	2001	2002	2003	1981	1991	1995	2001	2002	2003
Australia[1, 2, 3]	0.19 [p]	0.67	0.79	0.71 [-]	-	-	0.69 [p]	0.76	0.76	0.70 [-]	-	-
Austria	0.57	0.74 [b]	0.70 [a,b]	0.77 [b,n]	0.78 [b,n]	0.79 [b,n]	0.53	0.68 [b]	0.74 [a,b]	0.79 [b,n]	0.79 [b,n]	0.78 [b,n]
Belgium[4]	1.01 [a]	1.05 [b]	1.15	1.40	-	-	0.52 [a]	0.51 [b]	0.40	0.47	-	-
Canada	0.51	0.61	0.79	0.98	0.86 [n]	0.83 [b,n]	0.63	0.73 [b]	0.62 [b]	0.62 [b]	0.64 [b,n]	0.64 [b,n]
Czech Republic	-	-	0.64	0.68	0.70	-	-	0.59 [c,k,q]	0.33 [c,k,q]	0.57	0.55	-
Denmark	0.45	0.84	0.83	1.48 [s]	-	-	0.57	0.65	0.73	0.67 [s]	-	-
Finland	0.64 [a]	1.15	1.36	2.41	2.40	-	0.51 [a]	0.83 [a]	0.80	0.87	0.90	-
France	0.79	1.01	1.12	1.21	-	-	1.03 [a]	1.16	0.97	0.82	-	-
Germany	1.38	1.55 [a]	1.35	1.65	1.66 [b]	1.63 [b]	1.01	0.90 [a]	0.85	0.79	0.80 [b]	0.80 [b]
Greece	0.04	0.08	0.12 [a]	0.19	-	-	0.14 [a]	0.21	0.26 [a]	0.31	-	-
Hungary	-	0.59 [m,q,s]	0.28 [a,s]	0.33 [s]	0.30 [s]	-	-	0.42 [c,m,q]	0.39 [a,c,s]	0.51 [c,s]	0.60 [c,s]	-
Iceland	0.04	0.29	0.54	1.41	-	-	0.54	0.82	0.90	1.04	-	-
Ireland[3]	0.26	0.56 [b]	0.92 [b,p]	0.76 [b]	-	-	0.38	0.26 [b]	0.29 [b,p]	0.26 [b]	-	-
Italy	0.44 [r]	0.54 [a]	0.42	-	-	-	0.42 [r]	0.61 [a]	0.53	-	-	-
Japan	1.44 [j]	2.14 [j]	1.95 [j]	2.24	2.31	-	0.53 [b]	0.45 [b]	0.56 [b]	0.57 [b]	0.57 [b]	-
Korea	-	-	1.91	2.12 [e]	2.10 [e]	-	-	-	0.48	0.73 [e]	0.74 [e]	-
Luxembourg[3]	-	-	-	1.56 [-]	-	-	-	-	-	0.13 [-]	-	-
Mexico	-	0.10 [b,j,q]	0.05	0.12	-	-	-	0.21 [f,q]	0.20	0.23	-	-
Netherlands	0.83	0.94	0.91 [a]	0.98	-	-	0.84	0.95	0.84 [a]	0.68	-	-
New Zealand	-	0.27	0.32	0.44 [a]	-	-	-	0.61	0.50	0.55 [a]	-	-
Norway	0.47	0.73	0.85 [a]	0.83	-	-	0.67	0.81	0.75	0.64	-	-
Poland	-	-	0.23	0.20	0.18 [b]	-	-	-	0.39 [a]	0.41	0.36 [b]	-
Portugal[5, 1]	0.09	0.12	0.11 [a]	0.27	-	-	0.18	0.36	0.37 [a]	0.52	-	-
Slovak Republic	-	1.46 [q]	0.56	0.36	0.31	-	-	0.68 [c,q]	0.35 [c]	0.26 [k]	0.25 [k]	-
Spain	0.18	0.40	0.36 [a]	0.45	0.50	-	0.23	0.38	0.35 [a]	0.38	0.40	-
Sweden	1.22 [a,k]	1.69 [k]	2.20 [k]	3.07 [k]	-	-	0.94 [a,k]	0.93 [k]	0.96 [a,k]	0.90 [k]	-	-
Switzerland[1, 2, 3]	1.59 [b]	1.75	1.80	1.77 [-]	-	-	0.53 [b]	0.74	0.72	0.60 [-]	-	-
Turkey[3]	-	0.15	0.13	0.28 [-]	-	-	-	0.37	0.24	0.32 [-]	-	-
United Kingdom	1.00	1.03	0.94	0.88	0.88	-	1.15 [a,b]	0.72	0.64	0.53	0.50	-
United States	1.16 [h]	1.56 [h]	1.51 [h]	1.85 [h]	1.72 [h,n]	1.65 [b,h,n]	1.12 [h]	1.06 [h]	0.89 [h]	0.76 [h]	0.81 [h,n]	0.82 [b,h,n]
Total OECD	**1.00** [b]	**1.30** [a,b]	**1.24** [a,b]	**1.45** [b]	**1.41** [b,n]	**-**	**0.85** [b]	**0.79** [a,b]	**0.71** [a,b]	**0.66** [b]	**0.68** [b,n]	**-**
EU-25	**-**	**-**	**0.89** [b]	**1.01** [b]	**-**	**-**	**-**	**-**	**0.68** [b]	**0.63** [b]	**-**	**-**
EU-15	**0.81** [b]	**0.99** [a,b]	**0.94**	**1.07** [b]	**-**	**-**	**0.78** [b]	**0.78** [a,b]	**0.70**	**0.65** [b]	**-**	**-**
China[3]	-	-	-	0.58 [s]	-	-	-	-	-	0.33 [s]	-	-
Israel[3]	-	1.09	1.31	3.29 [n]	-	-	-	0.92 [c]	0.98 [c]	1.17 [c]	-	-
Russian Federation	-	-	0.29	0.39	0.41	-	-	-	0.52	0.67	0.73	-

Times series notes:

(a) to (r): See standard statistical notes for science and technology indicators earlier in the Annex.

Year availability:

1. 1992 instead of 1991.
2. 1996 instead of 1995.
3. 2000 instead of 2001.
4. 1983 instead of 1981.
5. 1982 instead of 1981.

Source: OECD, MSTI database, May 2004.

StatLink: http://dx.doi.org/10.1787/846033432367

Table 7. R&D expenditures by sector of performance, 1981-2003

As a percentage of total national R&D expenditures

	Business enterprise						Higher education					
	1981	1991	1995	2001	2002	2003	1981	1991	1995	2001	2002	2003
Australia[1, 2, 3]	25.0 [b]	44.2	48.2	47.5 [-]	-	-	28.6	26.2	26.3	26.8 [-]	-	-
Austria[4]	55.9	-	-	63.6	-	-	32.8	-	-	29.7	-	-
Belgium[5]	70.6 [a]	66.5 [b]	71.3	73.7	-	-	19.2 [a]	26.2 [b]	23.9	19.2	-	-
Canada	48.1	49.7	58.1	59.6	55.2 [n]	53.7 [n]	26.7	30.6	26.8	29.3	32.8 [n]	34.9 [n]
Czech Republic	-	69.4 [c,q]	65.1 [c,q]	60.2	61.1	-	-	1.6 [c,q]	8.5 [c,q]	15.7	15.6	-
Denmark	49.7	58.5	57.4	68.7	69.3	-	26.7	22.6	24.5	18.8	23.1 [a]	-
Finland	54.7 [a]	57.0 [a]	63.2	71.1	69.9	-	22.2 [a]	22.1 [a]	19.5	18.1	19.2	-
France	58.9 [a]	61.5	61.0	63.2 [a]	62.2 [n]	-	16.4 [a]	15.1	16.7	18.9	19.5 [n]	-
Germany	69.0	69.4 [a]	66.3 [b]	69.9	69.4 [b]	69.1 [b]	17.1	16.2 [a]	18.2 [b]	16.4	16.9 [b]	17.1 [b]
Greece	22.5 [a]	26.1	29.5 [a]	32.7 [b]	-	-	14.5 [a]	33.8	44.3 [a]	44.9 [b]	-	-
Hungary	-	41.4 [c,q,s]	43.4 [c,s]	40.1 [c,s]	35.5 [c,s]	-	-	20.3 [c,q,s]	24.8 [c,s]	25.7 [c,s]	25.2 [c,s]	-
Iceland	9.6	21.8	31.9	58.9	57.2 [b]	-	26.0	29.4	27.5	18.8	16.1 [b]	-
Ireland	43.6	63.6 [b]	70.0 [b]	69.7 [b]	-	-	16.0	23.2 [b]	20.4 [b]	22.4 [b]	-	-
Italy	56.4 [r]	55.8 [a]	53.4	49.1	-	-	17.9 [r]	21.5 [a]	25.5	32.6	-	-
Japan	66.0 [b,j]	75.4 [b,j]	70.3 [b,j]	73.7	74.4	-	17.6 [b,k]	12.1 [b,k]	14.5 [b,k]	14.5	13.9	-
Korea	-	-	73.7	76.2 [e]	74.9 [e]	-	-	-	8.2	10.4 [e]	10.4 [e]	-
Luxembourg[3]	-	-	-	92.6 [-]	-	-	-	-	-	0.3 [-]	-	-
Mexico	-	-	20.8	30.3	-	-	-	-	45.8	30.4	-	-
Netherlands	53.3	49.7	52.1	58.3	-	-	23.2	29.7	28.8	27.0	-	-
New Zealand	-	26.8	27.0	36.5 [a]	-	-	-	28.6	30.7	30.3 [a]	-	-
Norway	52.9	54.6	56.7 [a]	59.7	57.4	-	29.0	26.7	26.0 [a]	25.7	26.8	-
Poland	-	-	38.7 [a]	35.8	21.4	-	-	-	26.3 [a]	32.7	33.5	-
Portugal[6, 1]	31.2	21.7	20.9 [a]	31.8	34.4 [b]	-	20.6	43.0	37.1 [a]	36.7	35.6 [b]	-
Slovak Republic	-	74.6 [c,q]	53.9 [c]	67.3 [j]	64.3 [j]	-	-	3.9 [c,q]	5.9 [c]	9.0 [j]	9.1 [j]	-
Spain	45.5	56.0	48.2	52.4	54.6 [a]	-	23.0	22.2	32.0	30.9 [b]	29.8	-
Sweden	63.7 [a,j]	68.5	74.3 [a]	77.6	-	-	30.0 [a,j]	27.4 [j]	21.9 [a,h,j]	19.4 [j]	-	-
Switzerland[1, 2, 3]	74.2 [b]	70.1	70.7	73.9 [-]	-	-	19.9 [b]	25.0	24.3	22.9 [-]	-	-
Turkey[3]	-	21.1	23.6	33.4 [-]	-	-	-	71.1	69.0	60.4 [-]	-	-
United Kingdom	63.0 [a]	67.1	65.0	66.8 [a]	67.0	-	13.6 [a]	16.7	19.2	21.8	22.6	-
United States	71.2 [h]	72.5 [h]	71.8 [h]	73.0 [h]	70.2 [h,n]	68.9 [h,n]	13.2 [h]	14.5 [h]	15.2 [h]	14.5 [h]	15.9 [h,n]	16.8 [h,n]
Total OECD	**66.2** [b]	**68.8** [a,b]	**67.2** [a,b]	**69.3** [b]	**68.0** [b,n]	**-**	**16.0** [b]	**16.3** [a,b]	**17.5** [a,b]	**17.4** [b]	**18.1** [b,n]	**-**
EU-25	**-**	**-**	**61.6** [b]	**64.0** [b]	**63.6** [b,n]	**-**	**-**	**-**	**20.8** [b]	**21.5** [b]	**-**	**-**
EU-15	**62.3** [b]	**63.4** [a,b]	**62.1** [b]	**64.7** [b]	**64.4** [b,n]	**-**	**17.6** [a,b]	**18.8** [a,b]	**20.8** [a,b]	**21.4** [b]	**-**	**-**
China	-	39.8 [k,s]	43.7 [k,s]	60.4	61.2	-	-	8.6 [j,s]	12.1 [j,s]	9.8	10.1	-
Israel	-	55.7 [c]	58.7 [c]	75.3 [c,n]	73.0 [c,n]	-	-	26.6 [c,e]	25.6 [c,e]	16.1 [c,e,n]	17.5 [c,e,n]	-
Russian Federation	-	77.5	68.5	70.3	69.9	-	-	5.7 [h]	5.4	5.2	5.4	-

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1. 1992 instead of 1991.
2. 1996 instead of 1995.
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Source: OECD, MSTI database, May 2004.

StatLink: http://dx.doi.org/10.1787/458542005788

Table 7. R&D expenditures by sector of performance, 1981-2003 (cont'd)

As a percentage of total national R&D expenditures

	Government						Private non-profit					
	1981	1991	1995	2001	2002	2003	1981	1991	1995	2001	2002	2003
Australia[1, 2, 3]	45.1	28.1	23.5	22.9 [-]	-	-	1.3	1.6	2.1	2.7 [-]	-	-
Austria[4]	9.0	-	-	6.4	-	-	2.3	-	-	0.3	-	-
Belgium[5]	5.6 [a]	6.1 [b]	3.5	6.0	-	-	4.6 [a]	1.2 [b]	1.4	1.1	-	-
Canada	24.4	18.7	14.4	10.9	11.7 [n]	11.2 [n]	0.8	1.0	0.7	0.2	0.2 [n]	0.2 [n]
Czech Republic	-	29.0 [c,q]	26.5 [c,q]	23.7	23.0	-	-	-	0.1	0.5	0.3	-
Denmark	22.7	17.7	17.0	11.7	7.0 [a]	-	0.9	1.2	1.1	0.7	0.6	-
Finland	22.6 [a]	20.2 [a]	16.7	10.2	10.4	-	0.6 [a]	0.7 [a]	0.6	0.6	0.6	-
France	23.6 [a]	22.7	21.0	16.5	17.0 [n]	-	1.1 [a]	0.8	1.3	1.4	1.4 [n]	-
Germany	13.4	14.4 [a]	15.5 [b,m]	13.7 [m]	13.7 [b,m]	13.8 [b,m]	0.5	0.5 [b]	-	-	-	-
Greece	63.1 [a]	40.1	25.5 [a]	22.1 [b]	-	-	-	-	0.7 [a]	0.4 [b]	-	-
Hungary	-	24.5 [c,q,s]	25.6 [c,s]	25.9 [c,s]	32.9 [c,s]	-	-	-	-	-	-	-
Iceland	60.7	44.5	37.5	20.1	24.5 [b]	-	3.7	4.4	3.2	2.3	2.2 [b]	-
Ireland	39.3	11.6 [b]	9.0 [b]	7.9 [b]	-	-	1.1	1.7 [b]	0.8 [b]	-	-	-
Italy	25.7 [r]	22.7 [a]	21.1	18.4	-	-	-	-	-	-	-	-
Japan	12.0 [b,k]	8.1 [b,k]	10.4 [b,k]	9.5	9.5	-	4.5 [b,k]	4.4 [b,k]	4.8 [b,k]	2.3 [a]	2.1	-
Korea	-	-	17.0	12.4 [e]	13.4 [e]	-	-	-	1.2	1.1 [e]	1.3 [e]	-
Luxembourg[3]	-	-	-	7.1 [-]	-	-	-	-	-	-	-	-
Mexico	-	-	33.0	39.1	-	-	-	-	0.4	0.2	-	-
Netherlands	20.8	18.3	18.1	14.2	-	-	2.8	2.3 [a,m]	1.0	0.6	-	-
New Zealand	-	44.6	42.2	33.2 [a]	-	-	-	-	-	-	-	-
Norway	17.7	18.8	17.3 [a]	14.6	15.8	-	0.5	-	-	-	-	-
Poland	-	-	35.0 [a]	31.3	44.9	-	-	-	0.1	0.2	0.3	-
Portugal[6, 1]	43.6	22.1	27.0	20.8	19.8 [b]	-	4.6	13.2	15.0 [a]	10.8	10.2 [b]	-
Slovak Republic	-	21.5 [c,q]	40.2 [c]	23.7 [c]	26.6 [c]	-	-	-	-	0.0	0.0	-
Spain	31.6	21.3	18.6	15.9	15.4	-	-	0.5	1.1	0.8	0.2	-
Sweden	6.1 [a,f]	4.1 [f]	3.7 [a,f]	2.8 [f]	-	-	0.3 [a]	0.1	0.2 [a]	0.1	-	-
Switzerland[1, 2, 3]	5.9 [b]	3.7 [f]	2.5 [f]	1.3 [a,f]	-	-	3.2 [a,h]	1.2	2.5	1.9 [-]	-	-
Turkey[3]	-	7.9	7.4	6.2 [-]	-	-	-	-	-	-	-	-
United Kingdom	20.6 [a]	14.5 [a]	14.6	9.9 [a]	8.9	-	2.9 [a]	1.8	1.3	1.5	1.5	-
United States	12.5 [f]	9.8 [f]	9.4 [f]	7.9 [f]	8.8 [f,n]	9.1 [f,n]	3.1 [h]	3.3 [h]	3.6 [h]	4.7 [h]	5.1 [h,n]	5.3 [h,n]
Total OECD	**15.2** [b]	**12.4** [a,b]	**12.5** [a,b]	**10.5** [b]	**11.0** [b,n]	**-**	**2.6** [b]	**2.6** [a,b]	**2.7** [a,b]	**2.8** [b]	**2.9** [b,n]	**-**
EU-25	**-**	**-**	**16.8** [b]	**13.6** [b]	**13.7** [b,n]	**-**	**-**	**-**	**0.9** [b]	**0.9** [b]	**0.8** [b,n]	**-**
EU-15	**18.8** [b]	**16.9** [a,b]	**16.2** [b]	**13.1** [b]	**13.0** [b,n]	**-**	**1.4** [b]	**0.9** [a,b]	**0.9** [b]	**0.9** [b]	**0.8** [b,n]	**-**
China	-	49.6 [j,s]	42.1 [j,s]	29.7	28.7	-	-	-	-	-	-	-
Israel	-	10.8 [c]	9.9 [c]	5.2 [c,n]	5.8 [c,n]	-	-	6.9 [c]	5.8 [c]	3.4 [c,n]	3.8 [c,n]	-
Russian Federation	-	16.8	26.1	24.3	24.5	-	-	0.0 [h]	0.0	0.2	0.2	-

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Source: OECD, MSTI database, May 2004.

Table 8. GERD by sector of performance, 1981-2003

As a percentage of GDP

	Business enterprise						Higher education					
	1981	1991	1995	2001	2002	2003	1981	1991	1995	2001	2002	2003
Australia[1, 2, 3]	0.2 [b]	0.7	0.8	0.7	-	-	0.3	0.4	0.4	0.4	-	-
Austria[4]	0.6	-	-	1.1 [b, n]	-	-	0.4	-	-	0.5 [b,n]	-	-
Belgium[5]	1.1 [a,a]	1.1 [b]	1.2	1.6	-	-	0.3 [a]	0.4 [b]	0.4	0.4	-	-
Canada	0.6	0.8	1.0	1.2	1.1 [n]	1.0 [b, n]	0.3	0.5	0.5	0.6	0.6 [n]	0.7 [b,n]
Czech Republic	-	1.4 [c, q]	0.7 [c, q]	0.8	0.8	-	-	0.0 [c,q]	0.1 [c,q]	0.2	0.2	-
Denmark	0.5	1.0	1.1	1.6	1.7	-	0.3	0.4	0.5	0.5	0.6 [a]	-
Finland	0.6 [a]	1.2 [a]	1.4	2.4	2.4	-	0.3 [a]	0.5 [a]	0.4	0.6	0.7	-
France	1.1 [a]	1.5	1.4	1.4 [a]	1.4 [n]	-	0.3 [a]	0.4	0.4	0.4	0.4 [n]	-
Germany	1.7	1.7 [a,a]	1.5 [b]	1.8	1.7 [b]	1.7 [b]	0.4	0.4 [a]	0.4 [b]	0.4	0.4 [b]	0.4 [b]
Greece	0.0 [a]	0.1	0.1 [a]	0.2 [b]	-	-	0.0 [a]	0.1	0.2 [a]	0.3 [b]	-	-
Hungary	-	0.4 [c, q, s]	0.3 [a, c, s]	0.4 [c, s]	0.4 [c, s]	-	-	0.2 [c,q,s]	0.2 [a,c,s]	0.2 [c,s]	0.3 [c,s]	-
Iceland	0.1	0.3	0.5	1.8	1.8 [b]	-	0.2	0.3	0.4	0.6	0.5 [b]	-
Ireland	0.3	0.6 [b]	0.9 [b]	0.8 [b]	-	-	0.1	0.2 [b]	0.3 [b]	0.3 [b]	-	-
Italy	0.5 [r]	0.7 [a]	0.5	0.5	-	-	0.2 [r]	0.3 [a]	0.3	0.4	-	-
Japan	1.4 [b, j]	2.1 [b, j]	1.9 [b, j]	2.3	2.3	-	0.4 [b,j,k]	0.3 [b,j,k]	0.4 [b,j,k]	0.4	0.4	-
Korea	-	-	1.8 [e]	2.2 [e]	2.2 [e]	-	-	-	0.2 [e]	0.3 [e]	0.3 [e]	-
Luxembourg[3]	-	-	-	1.6	-	-	-	-	-	0.0	-	-
Mexico	-	-	0.1	0.1	-	-	-	-	0.1	0.1	-	-
Netherlands	1.0	1.0	1.0 [a]	1.1	-	-	0.4	0.6	0.6 [a]	0.5	-	-
New Zealand	-	0.3	0.3	0.4 [a]	-	-	-	0.3	0.3	0.4 [a]	-	-
Norway	0.6	0.9	1.0 [a]	1.0	1.0	-	0.3	0.4	0.4 [a]	0.4	0.4	-
Poland	-	-	0.3 [a]	0.2	0.1 [b]	-	-	-	0.2 [a]	0.2	0.2 [b]	-
Portugal[6, 1]	0.1	0.1	0.1 [a]	0.3	0.3 [b]	-	0.1	0.3	0.2 [a]	0.3	0.3 [b]	-
Slovak Republic	-	1.6 [c, q]	0.5 [c,c]	0.4 [j, k]	0.4 [j, k]	-	-	0.1 [c,q]	0.1 [c]	0.1 [j,k]	0.1 [j,k]	-
Spain	0.2	0.5	0.4 [a]	0.5	0.6 [a]	-	0.1	0.2	0.3 [a]	0.3 [b]	0.3	-
Sweden	1.4 [a, j, k]	1.9 [k]	2.5 [a, k]	3.3 [k]	-	-	0.7 [a,j,k]	0.7 [j,k]	0.7 [a,h,j,k]	0.8 [j,k]	-	-
Switzerland[1, 2, 3]	1.6 [b]	1.8	1.9	1.9	-	-	0.4 [b]	0.6	0.6	0.6	-	-
Turkey[3]	-	0.1	0.1	0.2	-	-	-	0.4	0.3	0.4	-	-
United Kingdom	1.5 [a]	1.4	1.3	1.2 [a]	1.3	-	0.3 [a]	0.3	0.4	0.4	0.4	-
United States	1.7 [h]	2.0 [h]	1.8 [h]	2.0 [h]	1.9 [h, n]	1.8 [b, h, n]	0.3 [h]	0.4 [h]	0.4 [h]	0.4 [h]	0.4 [h,n]	0.4 [h,n]
Total OECD	**1.3** [b]	**1.5** [a, b]	**1.4** [a, b]	**1.6** [b]	**1.5** [b, n]	**-**	**0.3** [b]	**0.4** [a,b]	**0.4** [a,b]	**0.4** [b]	**0.4** [b,n]	**-**
EU-25	**-**	**-**	**1.1** [b]	**1.2** [b]	**1.2** [b, n]	**-**	**-**	**-**	**0.4** [b]	**0.4** [b]	**-**	**-**
EU-15	**1.0** [b]	**1.2** [a, b]	**1.1** [b]	**1.2** [b]	**1.2** [b, n]	**-**	**0.3** [a,b]	**0.4** [a,b]	**0.4** [a,b]	**0.4** [b]	**-**	**-**
China	-	0.3 [k, s]	0.3 [k, s]	0.6	0.8	-	-	0.1 [j,k,s]	0.1 [j,k,s]	0.1	0.1	-
Israel	-	1.4 [c]	1.6 [c]	3.8 [c, n]	3.4 [c, n]	-	-	0.7 [c,e]	0.7 [c,e]	0.8 [c,e,n]	0.8 [c,e,n]	-
Russian Federation[1]	-	0.6	0.6	0.8	0.9	-	-	0.0 [h]	0.0	0.1	0.1	-

Times series notes:

(a) to (r): See standard statistical notes for science and technology indicators earlier in the Annex.

Year availability:

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5. 1983 instead of 1981.
6. 1982 instead of 1981.

Source: OECD, MSTI database, May 2004.

StatLink: http://dx.doi.org/10.1787/500804062506

Table 8. GERD by sector of performance, 1981-2003 (cont'd)

As a percentage of GDP

	Government						Private non-profit					
	1981	1991	1995	2001	2002	2003	1981	1991	1995	2001	2002	2003
Australia[1, 2, 3]	0.4	0.4	0.4	0.4	-	-	0.0	0.0	0.0	0.0	-	-
Austria[4]	0.1	-	-	0.1 b,n	-	-	0.0	-	-	0.0	-	-
Belgium[5]	0.1 a	0.1 b	0.1	0.1	-	-	0.1 a	0.0 b	0.0	0.0	-	-
Canada	0.3	0.3	0.2	0.2	0.2 n	0.2 b,n	0.0	0.0	0.0	0.0	0.0 n	0.0 b,n
Czech Republic	-	0.6 c,q	0.3 c,q	0.3	0.3	-	-	-	-	0.0	0.0	-
Denmark	0.2	0.3	0.3	0.3	0.2 a	-	0.0	0.0	0.0	0.0	0.0	-
Finland	0.3 a	0.4 a	0.4	0.3	0.4	-	0.0 a	0.0 a	0.0	0.0	0.0	-
France	0.5 a	0.5	0.5	0.4	0.4 n	-	0.0 a	0.0	0.0	0.0	0.0 n	-
Germany	0.3	0.4 a	0.3 b,m	0.3 m	0.3 b,m	0.3 b,m	0.0	-	-	-	-	-
Greece	0.1 a	0.1	0.1 a	0.1 b	-	-	-	-	0.0 a	0.0 b	-	-
Hungary	-	0.3 c,q,s	0.2 a,c,s	0.2 c,s	0.3 c,s	-	-	-	-	-	-	-
Iceland	0.4	0.5	0.6	0.6	0.8 b	-	0.0	0.1	0.0	0.1	0.1 b	-
Ireland	0.3	0.1 b	0.1 b	0.1 b	-	-	0.0	0.0 b	0.0 b	-	-	-
Italy	0.2 r	0.3 a	0.2	0.2	-	-	-	-	-	-	-	-
Japan	0.3 b,j,k	0.2 b,j,k	0.3 b,j,k	0.3	0.3	-	0.1 b,j,k	0.1 b,j,k	0.1 b,j,k	0.1 a	0.1	-
Korea	-	-	0.4 e	0.4 e	0.4 e	-	-	-	0.0 e	0.0 e	0.0 e	-
Luxembourg[3]	-	-	-	0.1	-	-	-	-	-	-	-	-
Mexico	-	-	0.1	0.2	-	-	-	-	0.0	0.0	-	-
Netherlands	0.4	0.4	0.4 a	0.3	-	-	0.0	0.0 a,m	0.0 a	0.0	-	-
New Zealand	-	0.4	0.4	0.4 a	-	-	-	-	-	-	-	-
Norway	0.2	0.3	0.3 a	0.2	0.3	-	0.0	-	-	-	-	-
Poland	-	-	0.2 a	0.2	0.3 b	-	-	-	-	0.0	0.0 b	-
Portugal[6, 1]	0.1	0.1	0.2 a	0.2	0.2 b	-	0.0	0.1	0.1 a	0.1	0.1 b	-
Slovak Republic	-	0.5 c,q	0.4 c	0.2 k,c	0.2 k,c	-	-	-	-	-	0.0 k	-
Spain	0.1	0.2	0.2 a	0.2	0.2	-	-	0.0	0.0 a	0.0	0.0	-
Sweden	0.1 a,f,k	0.1 f,k	0.1 a,f,k	0.1 f,k	-	-	0.0 a,k	0.0 k	0.0 a,k	0.0 k	-	-
Switzerland[1, 2, 3]	0.1 b	0.1 f	0.1 f	0.0 a,f	-	-	-	0.0	0.1	0.0	-	-
Turkey[3]	-	0.0	0.0	0.0	-	-	-	-	-	-	-	-
United Kingdom	0.5 a	0.3 a	0.3	0.2 a	0.2	-	0.1 a	0.0	0.0	0.0	0.0	-
United States	0.3 f,h	0.3 f,h	0.2 f,h	0.2 f,h	0.2 f,h,n	0.2 b,f,h,n	0.1 h	0.1 h	0.1 h	0.1 h	0.1 h,n	0.1 h,n
Total OECD	**0.3 b**	**0.3 a,b**	**0.3 a,b**	**0.2 b**	**0.2 b,n**	**-**	**0.1 b**	**0.1 a,b**	**0.1 a,b**	**0.1 b**	**0.1 b,n**	**-**
EU-25	**-**	**-**	**0.3 b**	**0.2 b**	**0.3 b,n**	**-**	**-**	**-**	**0.0 b**	**0.0 b**	**0.0 b,n**	**-**
EU-15	**0.3 b**	**0.3 a,b**	**0.3 b**	**0.3 b**	**0.3 b,n**	**-**	**0.0 b**	**0.0 a,b**	**0.0 b**	**0.0 b**	**0.0 b,n**	**-**
China	-	0.4 j,k,s	0.3 j,k,s	0.3	0.4	-	-	-	-	-	-	-
Israel	-	0.3 c	0.3 c	0.3 c,n	0.3 c,n	-	-	0.2 c	0.2 c	0.2 c,n	0.2 c,n	-
Russian Federatior	-	0.1	0.2	0.3	0.3	-	-	0.0 h	0.0	0.0	0.0	-

Times series notes:

(a) to (r): See standard statistical notes for science and technology indicators earlier in the Annex.

Year availability:

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Source: OECD, MSTI database, May 2004.

Table 9. Business R&D expenditures, 1981-2003

	Millions constant USD (1995 PPPs)							As a percentage of total OECD					
	1981	1985	1991	1995	2001	2002	2003	1981	1985	1991	1995	2001	2002
Australia	591 [b]	1 067 [b]	1 896	3 306	3 718	-	-	0.4	0.5	0.7	1.1	0.9	-
Austria[1]	814	949 [b]	-	-	2 214	-	-	0.5	0.4	-	-	0.6	-
Belgium	1 664	2 020	2 228 [b]	2 681	4 042	4 170 [n]	-	1.0	0.9	0.8	0.9	1.0	1.1
Canada	2 811	3 958	4 660	6 536	9 850	8 875 [n]	8 630 [b,n]	1.7	1.7	1.6	2.2	2.5	2.3
Czech Republic	-	-	1 613 [c,q]	818 [a]	1 066	1 100	-	-	-	0.6	0.3	0.3	0.3
Denmark	470	671	1 038	1 239	2 248	2 404	-	0.3	0.3	0.4	0.4	0.6	0.6
Finland	494	797	1 105	1 402	3 001	3 056	-	0.3	0.4	0.4	0.5	0.8	0.8
France	10 528	12 974	17 191	17 356	20 217 [a]	19 853 [n]	-	6.2	5.7	6.0	5.9	5.1	5.1
Germany	19 239	23 586	29 116 [a]	26 122	33 897	33 934 [b]	33 464 [b]	11.4	10.4	10.2	8.9	8.6	8.7
Greece[2]	46	95	126	198	361 [b]	-	-	0.0	0.0	0.0	0.1	0.1	-
Hungary	-	-	406 [q]	297	447	443	-	-	-	0.1	0.1	0.1	0.1
Iceland	3	6	15	29	139	136 [b]	-	0.0	0.0	0.0	0.0	0.0	0.0
Ireland	109	160	310	575	873	-	-	0.1	0.1	0.1	0.2	0.2	-
Italy	4 461 [r]	6 199 [r]	7 746 [a]	6 351	7 278	7 221 [n]	7 313 [n]	2.6	2.7	2.7	2.2	1.8	1.8
Japan	25 562 [j]	37 894 [j]	56 098 [j]	53 174 [j]	68 522	70 103	-	15.2	16.7	19.7	18.0	17.4	17.9
Korea	-	-	-	9 525	15 024	15 621	-	-	-	-	3.2	3.8	4.0
Luxembourg[3]	-	-	-	-	294 [-]	-	-	-	-	-	0.1	-	-
Mexico	-	-	543 [b,j,q]	402	968	-	-	-	-	0.2	0.1	0.2	-
Netherlands	2 292	2 866	3 018	3 466	4 468	4 203 [n]	-	1.4	1.3	1.1	1.2	1.1	1.1
New Zealand	-	-	141	164	319 [a]	-	-	-	-	0.0	0.1	0.1	-
Norway	495	834	825	1 001 [a]	1 372	1 354 [b]	-	0.3	0.4	0.3	0.3	0.3	0.3
Poland	-	-	-	728 [a]	863	480	-	-	-	-	0.2	0.2	0.1
Portugal[4, 2, 5]	85	95	169	157 [a]	436	521 [b]	-	0.0	0.0	0.1	0.1	0.1	0.1
Slovak Republic	-	-	648 [b,c,q]	219 [c]	233	210	-	-	-	0.2	0.1	0.1	0.1
Spain	798	1 351	2 768	2 416	3 830	4 416 [a]	-	0.5	0.6	1.0	0.8	1.0	1.1
Sweden	2 058 [a]	3 024	3 344 [k]	4 673 [a,k]	7 376 [k]	-	-	1.2	1.3	1.2	1.6	1.9	-
Switzerland[2, 5, 6, 3]	2 399 [b]	3 482 [a]	3 321	3 513	3 884 [-]	-	-	1.4	1.5	1.2	1.1	1.0	-
Turkey[2]	-	-	324	303	879 [-]	-	-	-	-	0.1	0.1	0.2	-
United Kingdom	12 089	13 045	14 533	14 615	17 053 [a]	17 564	-	7.2	5.7	5.1	5.0	4.3	4.5
United States	81 589 [h]	112 257 [h]	127 965 [h]	132 109 [h]	179 673 [h]	172 371 [h,n]	170 945 [b,h,n]	48.4	49.4	44.9	44.8	45.5	44.1
Total OECD	**168 685** [b]	**227 013** [b]	**284 999** [a,b]	**294 874** [a,b]	**394 706** [b]	**390 610** [b,n]	**-**	**100**	**100**	**100**	**100**	**100**	**100**
EU-25	**-**	**-**	**-**	**85 141** [b]	**110 640** [b]	**111 945** [b,n]	**-**	**-**	**-**	**-**	**28.9**	**28.0**	**28.7**
EU-15	**55 136** [b]	**67 794** [b]	**84 074** [a,b]	**82 839** [b]	**107 593** [b]	**109 291** [b,n]	**-**	**32.7**	**29.9**	**29.5**	**28.1**	**27.3**	**28.0**
China	-	-	5 505 [k,s]	7 871 [k,s]	31 668	40 066	-	-	-	1.9	2.7	8.0	10.3
Israel	-	-	1 079 [c]	1 544 [c]	4 470 [c,n]	4 024 [c,n]	3 916 [c,n]	-	-	0.4	0.5	1.1	1.0
Russian Federation[5]	-	-	7 532	5 121	8 628	9 539	-	-	-	2.7	1.7	2.2	2.4

Times series notes:

(a) to (r): See standard statistical notes for science and technology indicators earlier in the Annex.

Year availability:

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Source: OECD, MSTI database, May 2004.

StatLink: http://dx.doi.org/10.1787/730082336242

Table 10. BERD intensity, 1981-2003

As a percentage of value added in industry

	1981	1985	1991	1995	2000	2001	2002	2003
Australia	0.3 [b]	0.5 [b]	0.8	1.2	1.0	1.1	-	-
Austria[1]	0.9	1.0 [b]	-	-	1.6 [-]	-	-	-
Belgium	1.5	1.7	1.6 [b]	1.8	2.2	2.4	2.5 [n]	-
Canada	0.8	1.0	1.1	1.4	1.5	1.6 [b]	1.4 [b,n]	1.4 [b,n]
Czech Republic	-	-	1.8 [c,q]	0.9 [a]	1.1	1.0	1.1	-
Denmark[2]	0.9	1.1	1.5	1.7	2.3	2.6	2.8	-
Finland	0.9	1.3	1.8	2.2	3.5	3.6	3.6	-
France	1.6	1.9	2.1	2.1	2.0	2.1 [a]	2.0 [n]	-
Germany	2.3	2.7	2.5 [a]	2.1	2.5 [b]	2.5	2.5 [b]	2.5 [b]
Greece[3, 2]	0.0	0.1	0.1	0.2	0.3	0.3 [b]	-	-
Hungary	-	-	0.6 [q]	0.5	0.5	0.6	0.6 [b]	-
Iceland	0.1	0.2	0.4	0.8	2.5 [b]	2.8 [b]	2.8 [b]	-
Ireland	0.4	0.5	0.8	1.3	1.1 [b]	1.1	-	-
Italy	0.6 [r]	0.8 [r]	1.0 [a]	0.7	0.8	0.8	0.8 [n]	0.8 [n]
Japan	1.7 [j]	2.3 [j]	2.6 [j]	2.4 [j]	2.8	3.0	3.1 [b]	-
Korea	-	-	-	2.2	2.4	2.8	2.7	-
Luxembourg	-	-	-	-	2.2	-	-	-
Mexico	-	-	0.1 [b,j,q]	0.1	0.2	0.2	-	-
Netherlands	1.4	1.6	1.4	1.5	1.6	1.6	1.6 [n]	-
New Zealand[2]	-	-	0.4	0.3	0.4 [b]	0.6 [a,b]	-	-
Norway[2]	0.9	1.3	1.3	1.5 [a]	1.4	1.4	1.4	-
Poland	-	-	-	0.4 [a]	0.3	0.3	0.2 [b]	-
Portugal[4, 3, 5]	0.1	0.1	0.2	0.2 [a]	0.4 [b]	0.4	0.5 [b]	-
Slovak Republic	-	-	-	0.7 [c]	0.6	0.6	0.5	-
Spain	0.2	0.4	0.6	0.5	0.7	0.7	0.8 [a]	-
Sweden[2]	2.2 [a]	2.9	3.0 [k]	3.8 [a,k]	4.3 [k]	5.2 [k]	-	-
Switzerland[3, 5, 6]	1.6 [b]	2.6 [a,b]	2.9 [b]	3.1 [b]	3.1	-	-	-
Turkey	-	-	0.1	0.1	0.3	-	-	-
United Kingdom	2.1	2.0	2.0	1.8	1.8	1.8 [a]	1.9	-
United States	2.2 [h]	2.8 [h]	2.8 [h]	2.5 [h]	2.8 [h]	2.7 [h]	2.6 [b,h,n]	2.5 [b,h,n]
Total OECD	**1.7 [b]**	**2.1 [b]**	**2.1 [a,b]**	**2.0 [a,b]**	**2.2 [b]**	**2.2 [b]**	**2.1 [b,n]**	**-**
EU-25	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
EU-15	**1.4 [b]**	**1.7 [b]**	**1.7 [a,b]**	**1.6 [b]**	**1.8 [b]**	**1.8 [b]**	**1.8 [b,n]**	**-**
China	-	-	0.3 [k,s]	0.3 [k,s]	0.7 [a]	0.7	0.9 [b]	-
Israel	-	-	-	2.5 [c]	5.4 [c]	6.0 [c,n]	5.4 [b,c,n]	5.1 [b,c,n]
Russian Federatior	-	-	0.6	0.7	1.0 [b]	1.1	1.1 [b]	-

Times series notes:

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5. 1992 instead of 1991.
6. 1996 instead of 1995.

Source: OECD, MSTI database, May 2004.

StatLink: http://dx.doi.org/10.1787/754616431240

Table 11. Business R&D expenditures by source of funds, 1981-2003

As a percentage of total national R&D expenditures

	Industry						Government					
	1981	1991	1995	2001	2002	2003	1981	1991	1995	2001	2002	2003
Australia	75.5 [b,p]	92.7	92.9	88.7	-	-	8.4 [b,p]	3.0	2.4	5.1	-	-
Austria[1]	88.4	-	-	64.4	-	-	7.4	-	-	5.5	-	-
Belgium	91.5 [a]	91.4 [b]	89.2	82.7	83.9 [n]	-	8.3 [a]	7.8 [b]	4.3	5.7	5.9 [n]	-
Canada	81.9	71.6	74.3	75.9	75.9 [n]	75.9 [n]	10.7	9.9	6.2	3.2	3.2 [n]	3.2 [n]
Czech Republic	-	-	92.2	84.3	84.0	-	-	6.6 [c,q]	4.5 [c,q]	12.2	12.1	-
Denmark	84.4 [a]	86.0	76.9	87.4	-	-	12.4	7.9	6.1	3.1	-	-
Finland	94.9 [a]	93.3	89.1	95.6	95.7	-	4.2 [a]	5.5	5.6	3.4	3.2	-
France	68.2	66.2	76.1	82.9 [a]	-	-	24.6	22.3	12.7	8.4 [a]	-	-
Germany	81.7	87.0 [a]	87.5	90.7	91.2 [b]	91.0 [b]	16.9	10.1 [a]	10.2	6.7	6.2 [b]	6.4 [b]
Greece	95.4	74.0	76.1	80.2 [b]	-	-	4.6	5.5	7.4	2.3 [b]	-	-
Hungary	-	87.0 [q,s]	78.3 [s]	75.7 [s]	69.4 [s]	-	-	8.2 [q,s]	16.2 [s]	6.1 [s]	7.2 [s]	-
Iceland	53.3	84.5	95.5	73.1	-	-	38.3	9.6	3.3	1.4	-	-
Ireland	80.5	89.6	98.2 [p]	92.8	-	-	13.7	3.7	4.9 [p]	2.7	-	-
Italy	86.9 [r]	77.2 [a]	75.2	78.2	78.0 [n]	78.2 [n]	8.8 [r]	13.2 [a]	16.7	14.9	15.0 [n]	14.4 [n]
Japan	97.9	98.4	98.2	97.8	97.9	-	1.9	1.4	1.6	0.8	1.0	-
Korea	-	-	96.3	91.2	93.0	-	-	-	3.6	8.1	6.4	-
Luxembourg[2]	-	-	-	97.8 [-]	-	-	-	-	-	1.6 [-]	-	-
Mexico	-	100.0 [b,q]	76.2	89.8	-	-	-	0.0 [b,k,q]	2.8	9.6	-	-
Netherlands	84.3	89.6	80.0	80.3	-	-	7.5	7.5	6.6	5.2	-	-
New Zealand	-	87.8	86.4	78.8 [a]	-	-	-	7.2	6.9	8.6 [a]	-	-
Norway	73.0	76.8	82.5 [a]	81.4	-	-	25.3	15.9	11.9 [a]	10.3	-	-
Poland	-	-	64.7 [a]	67.6	86.5	-	-	-	33.8 [a]	30.4	11.8	-
Portugal[3, 4]	92.9	80.5	78.6 [a]	94.4	-	-	1.6	9.1	5.1 [a]	2.1	-	-
Slovak Republic	-	88.6 [c,q]	87.7 [c]	78.3	77.5	-	-	11.4 [c,q]	10.8 [c]	20.6	21.1	-
Spain	93.6	80.4	84.4	82.5	84.0 [a]	-	4.1	11.3	9.2	9.5	9.6 [a]	-
Sweden	84.6 [a]	88.0	86.8 [a]	91.2	-	-	13.6 [a]	10.3	9.5 [a]	5.8	-	-
Switzerland[4, 5, 2]	98.7 [b]	95.5	92.5	91.4 [-]	-	-	1.3 [b]	1.7 [f]	2.4 [f]	2.3 [f]	-	-
Turkey[2]	-	99.9	91.3	92.4 [-]	-	-	-	0.0	1.7	4.3 [-]	-	-
United Kingdom	61.3	69.4	70.5	66.6 [a]	66.0	-	30.0	14.6	10.5	8.9 [a]	6.8	-
United States	68.4 [h]	77.4 [h]	82.2 [h]	90.6 [h]	90.1 [h,n]	90.0 [h,n]	31.6	22.6	17.8	9.4	9.9 [n]	10.0 [n]
Total OECD	**76.1** [b]	**82.6** [a,b]	**85.1** [a,b]	**89.2** [b]	**89.2** [b,n]	**-**	**22.3** [b]	**14.7** [a,b]	**11.7** [a,b]	**7.2** [b]	**7.1** [b,n]	**-**
EU-25	**-**	**-**	**80.5** [b]	**82.6** [b]	**-**	**-**	**-**	**-**	**10.8** [b]	**7.9** [b]	**-**	**-**
EU-15	**76.1** [b]	**78.9** [a,b]	**80.5** [b]	**82.8** [b]	**-**	**-**	**19.3** [b]	**13.4** [a,b]	**10.7** [b]	**7.7** [b]	**-**	**-**
China[2]	-	-	-	86.4 [a,s]	-	-	-	-	-	6.8 [a,s]	-	-
Israel[2]	-	74.2 [c]	78.6 [c]	90.4 [c,n]	-	-	-	25.8 [c]	21.3 [c]	9.6 [c]	-	-
Russian Federation	-	-	43.7	41.5	40.9	-	-	-	51.1	49.0	50.6	-

Times series notes:

(a) to (r): See standard statistical notes for science and technology indicators earlier in the Annex.

Year availability:

1. 1998 instead of 2001.
2. 2000 instead of 2001.
3. 1982 instead of 1981.
4. 1992 instead of 1991.
5. 1996 instead of 1995.

Source: OECD, MSTI database, May 2004.

StatLink: http://dx.doi.org/10.1787/250760635132

Table 11. Business R&D expenditures by source of funds, 1981-2003 (cont'd)

As a percentage of total national R&D expenditures

	Other national sources						Abroad					
	1981	1991	1995	2001	2002	2003	1981	1991	1995	2001	2002	2003
Australia	0.3 [b,p]	0.3	1.7	0.7	-	-	1.6 [b,p]	4.1	3.1	5.6	-	-
Austria[1]	0.1	-	-	0.1	-	-	4.1	-	-	30.1	-	-
Belgium	0.0 [a]	0.0 [b]	0.4	0.1	0.1 [n]	-	0.2 [a]	0.9 [b]	6.1	11.5	10.3 [n]	-
Canada	0.0	0.0	0.0	0.0	0.0 [n]	0.0 [n]	7.4	18.5	19.5	21.0	21.0 [n]	21.0 [n]
Czech Republic	-	-	0.2	1.6	1.6	-	-	-	3.2	1.9	2.3	-
Denmark	0.5 [a]	1.7	1.5	0.3	-	-	2.8	4.4	15.5	9.2	-	-
Finland	0.0	0.1	0.1	0.3	0.1	-	0.9	1.2	5.3	0.7	1.0	-
France	0.1	0.1	0.0	0.0 [a]	-	-	7.1	11.4	11.1	8.7 [a]	-	-
Germany	0.2	0.3 [a]	0.1	0.2	0.2 [b]	0.2 [b]	1.2	2.6 [a]	2.2	2.4	2.4 [b]	2.4 [b]
Greece	-	-	0.0	0.0 [b]	-	-	-	20.6	16.5	17.5 [b]	-	-
Hungary	-	-	-	0.1 [s]	0.1 [s]	-	-	2.8 [q,s]	4.1 [s]	16.9 [s]	22.6 [s]	-
Iceland	0.0	0.0	0.0	0.2	-	-	8.4	5.9	1.2	25.3	-	-
Ireland	0.1	0.2	0.5 [p]	-	-	-	5.7	6.6	3.8 [p]	4.5	-	-
Italy	0.0 [r]	-	-	0.3	0.3 [n]	0.3 [n]	4.3 [r]	9.6 [a]	8.2	6.6	6.8 [n]	7.1 [n]
Japan	0.0	0.1	0.1	0.8	0.6	-	0.1	0.1	0.1	0.5	0.5	-
Korea	-	-	0.2	0.2	0.1	-	-	-	0.0	0.6	0.5	-
Luxembourg[2]	-	-	-	-	-	-	-	-	-	0.6 [-]	-	-
Mexico	-	-	0.4	0.0	-	-	-	-	20.7	0.6	-	-
Netherlands	0.0	0.6	0.1	0.1	-	-	8.2	2.4	13.2	14.4	-	-
New Zealand	-	0.2	1.0	0.9 [a]	-	-	-	4.9	5.7	11.8 [a]	-	-
Norway	0.0	0.1	0.1 [a]	0.0	-	-	1.7	7.2	5.6 [a]	8.4	-	-
Poland	-	-	0.2 [a]	0.2	0.3	-	-	-	1.3 [a]	1.8	1.4	-
Portugal[3, 4]	0.0	- [-]	0.3 [a]	-	-	-	5.5	10.4	16.1 [a]	3.6	2.9 [b]	-
Slovak Republic	-	-	0.0 [c]	0.0	0.3	-	-	-	1.6 [c]	1.1	1.2	-
Spain	0.1	0.2	0.1	0.3	0.5 [a]	-	2.2	8.1	6.4	7.8	5.9 [a]	-
Sweden	0.0 [a]	0.2	0.1 [a]	0.1	-	-	1.8 [a]	1.6	3.7 [a,j]	2.9	-	-
Switzerland[4, 5, 2]	-	0.2	0.7	0.5 [-]	-	-	-	2.7	4.4	5.8 [-]	-	-
Turkey[2]	-	-	1.4	1.4 [-]	-	-	-	0.1	5.6	1.9 [-]	-	-
United Kingdom	-	-	0.0	0.0 [a]	0.0	-	8.7	16.0	19.1	24.4 [a]	27.2	-
United States	0.0	0.0	0.0	0.0	0.0 [n]	0.0 [n]	-	-	-	-	-	-
Total OECD	**0.1** [b]	**0.1** [a,b]	**0.1** [a,b]	**0.2** [b]	**0.2** [b,n]	**-**	**-**	**-**	**-**	**-**	**-**	**-**
EU-25	**-**	**-**	**0.1** [b]	**0.2** [b]	**0.1** [b,n]	**-**	**-**	**-**	**8.6** [b]	**9.2** [b]	**-**	**-**
EU-15	**0.1** [b]	**0.2** [a,b]	**0.1** [b]	**0.1** [b]	**0.1** [b,n]	**-**	**4.6** [b]	**7.5** [a,b]	**8.8** [b]	**9.3** [b]	**-**	**-**
China[2]	-	-	-	-	-	-	-	-	-	4.0 [a,s]	-	-
Israel[2]	-	0.0 [c]	0.1 [c]	0.0 [c]	-	-	-	0.0 [c]	0.0 [c]	0.0 [c]	-	-
Russian Federation	-	-	0.0	0.3	0.1	-	-	-	5.1	9.2	8.4	-

Times series notes:

(a) to (r): See standard statistical notes for science and technology indicators earlier in the Annex.

Year availability:

1. 1998 instead of 2001.
2. 2000 instead of 2001.
3. 1982 instead of 1981.
4. 1992 instead of 1991.
5. 1996 instead of 1995.

Source: OECD, MSTI database, May 2004.

Table 12. Business R&D expenditures, by two main sources of funds, 1981-2003

As a percentage of GDP

	Industry						Government					
	1981	1991	1995	2001	2002	2003	1981	1991	1995	2001	2002	2003
Australia	0.18 [b,p]	0.54	0.81	0.69	-	-	0.02 [b,p]	0.02	0.02	0.04	-	-
Austria[1]	0.56	-	-	0.73	-	-	0.05	-	-	0.06	-	-
Belgium	0.92 [a]	0.99 [b]	1.09	1.32	1.38 [n]	-	0.08 [a]	0.08 [b]	0.05	0.09	0.10 [n]	-
Canada	0.49	0.57	0.74	0.92	0.80 [n]	0.77 [b,n]	0.06	0.08	0.06	0.04	0.03 [n]	0.03 [b,n]
Czech Republic	-	- [c,q]	0.61 [c,q]	0.66	0.66	-	-	0.09 [c,q]	0.03 [c,q]	0.10	0.10	-
Denmark	0.45 [a]	0.83	0.81	1.44	-	-	0.07	0.08	0.06	0.05	-	-
Finland	0.61 [a]	1.08	1.28	2.31	2.31	-	0.03 [a]	0.06	0.08	0.08	0.08	-
France	0.78	0.97	1.07	1.17 [a]	-	-	0.28	0.33	0.18	0.12 [a]	-	-
Germany	1.36	1.52 [a]	1.30	1.59	1.60 [b]	1.57 [b]	0.28	0.18 [a]	0.15	0.12	0.11 [b]	0.11 [b]
Greece	0.04	0.07	0.11 [a]	0.17 [b]	-	-	0.00	0.00	0.01 [a]	0.00 [b]	-	-
Hungary	-	0.38 [q,s]	0.25 [a,s]	0.29 [s]	0.25 [s]	-	-	0.04 [r,s]	0.05 [a,s]	0.02 [s]	0.03 [s]	-
Iceland	0.03	0.22	0.48	1.32	- [b]	-	0.02	0.02	0.02	0.03	-	-
Ireland	0.23	0.53	0.87 [p]	0.74	-	-	0.04	0.02	0.04 [p]	0.02	-	-
Italy	0.43 [r]	0.52 [a]	0.40	0.43	0.42 [n]	0.43 [n]	0.04 [r]	0.09 [a]	0.09	0.08	0.08 [n]	0.08 [n]
Japan	1.37 [j]	2.05 [j]	1.86 [j]	2.21	2.27	-	0.03 [j]	0.03 [j]	0.03 [j]	0.02	0.02	-
Korea	-	-	1.77	2.03	2.03	-	-	-	0.07	0.18	0.14	-
Luxembourg[2]	-	-	-	1.56 [-]	-	-	-	-	-	0.02 [-]	-	-
Mexico	-	0.09 [b,j,q]	0.05	0.11	-	-	-	-	0.00	0.01	-	-
Netherlands	0.80	0.88	0.83 [a]	0.88	-	-	0.07	0.07	0.07 [a]	0.06	-	-
New Zealand	-	0.23	0.22	0.34 [a]	-	-	-	0.02	0.02	0.04 [a]	-	-
Norway	0.45	0.68	0.79 [a]	0.78	-	-	0.16	0.14	0.11 [a]	0.10	-	-
Poland	-	-	0.16 [a]	0.16	0.11 [b]	-	-	-	0.08 [a]	0.07	0.02 [b]	-
Portugal[3, 4]	0.08	0.10	0.09 [a]	0.25	-	-	0.00	0.01	0.01 [a]	0.01	-	-
Slovak Republic	-	1.41 [c,q]	0.44 [c]	0.34	0.29	-	-	0.18 [c,q]	0.05 [c]	0.09	0.08	-
Spain	0.18	0.38	0.33 [a]	0.41	0.47 [a]	-	0.01	0.05	0.04 [a]	0.05	0.05 [a]	-
Sweden	1.19 [a]	1.65 [k]	2.16 [a,k]	3.03 [k]	-	-	0.19 [a]	0.19 [k]	0.24 [a,k]	0.19 [k]	-	-
Switzerland[4, 5, 2]	1.55 [b]	1.74	1.75	1.74 [-]	-	-	0.02 [b]	0.03 [f]	0.05 [f]	0.04 [f]	-	-
Turkey[2]	-	0.11	0.08	0.19 [-]	-	-	-	0.00	0.00	0.01 [-]	-	-
United Kingdom	0.92	0.96	0.89	0.83 [a]	0.83	-	0.45	0.20	0.13	0.11 [a]	0.09	-
United States	1.14 [h]	1.53 [h]	1.48 [h]	1.81 [h]	1.68 [h,n]	1.63 [b,h,n]	0.53 [h]	0.44 [h]	0.32 [h]	0.19 [h]	0.19 [h,n]	0.18 [b,h]
Total OECD	**0.97** [b]	**1.26** [a,b]	**1.19** [a,b]	**1.41** [b]	**1.37** [b,n]	**-**	**0.28** [b]	**0.22** [a,b]	**0.16** [a,b]	**0.11** [b]	**0.11** [b,n]	**-**
EU-25	**-**	**-**	**0.85** [b]	**0.97** [b]	**-**	**-**	**-**	**-**	**0.11** [b]	**0.09** [b]	**-**	**-**
EU-15	**0.79** [b]	**0.95** [a,b]	**0.90** [b]	**1.03** [b]	**-**	**-**	**0.20** [b]	**0.16** [a,b]	**0.12** [b]	**0.10** [b]	**-**	**-**
China[2]	-	-	-	0.52 [a,s]	-	-	-	-	-	0.04 [a,s]	-	-
Israel[2]	-	1.03 [c]	1.27 [c]	3.22 [c,n]	-	-	-	0.36 [c]	0.34 [c]	0.34 [c]	-	-
Russian Federation	-	-	0.25	0.34	0.36	-	-	-	0.30	0.40	0.44	-

Times series notes:

(a) to (r): See standard statistical notes for science and technology indicators earlier in the Annex.

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5. 1996 instead of 1995.

Source: OECD, MSTI database, May 2004.

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Table 13. Intensity in business R&D expenditures by sector, 1991 and 2001 or nearest years available

As a percentage of value added in industry

		Australia		Belgium		Canada		Czech Republic		Denmark		Finland		France		Germany		Ireland		Italy	
		1991	2000	1992	2001	1991	2000	1992	2001	1991	1999	1991	2001	1991	2000	1991	2001	1991	1999	1991	2001
Total manufacturing	**(15-37)**	**2.9**	**3.3**	**5.2**	**7.7**	**3.6**	**4.1**	**2.8**	**2.1**	**4.4**	**6.0**	**5.6**	**9.4**	**7.2**	**6.9**	**6.5**	**7.7**	**2.1**	**2.2**	**2.9**	**2.4**
Food prod., beverages and tobacco	(15-37)	1.0	1.0 [1]	1.4	1.7	0.4	0.4	0.3	0.1 [1]	1.5	1.5	3.1	2.3	1.0	1.2	0.7	0.7	1.2	1.0	0.3	0.4
Textiles, textile prod., leather and footwear	(17-19)	0.3	0.8 [1]	1.2	3.6	1.1	1.1	2.5	0.4 [1]	0.5	0.8	1.8	2.6	0.5	1.0	1.1	2.3	1.3	1.0	0.0	0.1
Wood, pulp, paper, paper prod., printing & publishing	(20-22)	0.6	0.8 [1]	0.8	1.1	0.7	0.4	0.4	0.0 [1]	0.3	0.3	2.4	1.3	0.3	0.3	0.4	0.3	0.2	0.2	0.0	0.1
Chemical, rubber, plastics and fuel prod.	(23-25)	3.8	4.4 [1]	10.2	14.0	3.8	4.0	3.6	2.6 [1]	10.3	17.5	9.3	12.2	9.8	9.4	9.0	10.1	2.6	1.3	4.9	3.5
Coke, refined petroleum prod. and nuclear fuel	(23)	0.9	1.1 [1]	7.3	2.9	5.8	1.6	3.7	0.3 [1]	0.0	0.0	4.9	5.8	5.6	2.4	2.7	0.8	-	-	2.0	1.9
Chemicals and chemical prod.	(24)	5.7	6.9 [1]	12.0	17.8	4.5	6.6	3.4	4.2 [1]	15.7	23.7	13.8	17.6	14.1	13.9	12.6	15.0	2.8	1.2	7.3	4.8
....Chemicals excluding pharmaceuticals	(24ex2423)	-	-	10.3	-	2.4	2.1	-	2.9 [1]	4.4	8.1	11.6	7.0	10.7	7.1	11.4	12.1	1.1	0.4	4.4	3.2
....Pharmaceuticals	(2423)	-	-	18.6	-	11.4	23.9	-	10.3 [1]	28.2	33.6	20.5	63.7	22.1	26.3	18.3	24.1	10.5	4.5	12.0	7.0
Rubber and plastics prod.	(25)	2.2	1.5 [1]	4.3	4.4	0.6	0.8	3.8	1.1 [1]	1.0	4.4	4.1	6.0	3.7	5.1	2.2	3.4	1.2	2.6	1.5	1.3
Other non-metallic mineral prod.	(26)	1.2	0.8 [1]	1.7	2.9	0.5	0.2	0.7	0.6 [1]	2.1	1.2	2.0	1.7	1.7	2.4	1.9	2.2	1.1	1.1	0.2	0.3
Basic metals and fabricated metal prod.	(27-28)	2.5	2.2 [1]	2.2	3.3	1.9	1.1	2.5	1.0 [1]	1.6	1.0	3.8	3.6	1.7	1.4	1.3	1.5	1.3	1.4	0.8	0.3
Machinery and equipment	(29-33)	9.3	9.6 [1]	12.6	16.5	13.1	17.7	5.0	2.2 [1]	8.3	9.5	12.6	19.8	13.5	12.9	8.7	9.4	4.5	6.0	5.2	4.7
Machinery and equipment, n.e.c.	(29)	3.8	5.1 [1]	5.4	6.5	1.6	2.1	3.8	2.8 [1]	5.4	7.1	5.7	7.3	4.2	5.3	5.4	6.3	2.0	3.6	1.6	1.8
Electrical and optical equipment	(30-33)	14.9	13.6 [1]	18.4	24.7	22.0	30.5	7.2	1.8 [1]	12.9	12.4	22.8	25.9	19.8	17.5	11.7	13.0	5.1	6.3	9.1	8.5
....Office, accounting and computing machinery	(30)	-	-	-	-	61.4	38.1	-87.5	0.5 [1]	14.2	13.9	11.1	23.4	16.1	13.4	13.1	22.0	2.3	1.7	43.5	9.8
....Electrical machinery and apparatus, nec	(31)	-	-	-	-	2.2	5.6	2.9	1.2 [1]	4.8	8.1	9.4	14.6	5.8	6.8	6.1	3.8	3.8	6.4	4.1	2.4
....Radio, television and communication equip.	(32)	-	-	-	-	26.5	36.4	28.5	3.3 [1]	19.5	13.0	46.5	30.2	25.3	33.2	27.5	45.4	23.5	14.1	18.3	21.0
....Medical, precision and optical instruments	(33)	-	-	-	-	-	-	10.3	1.9 [1]	16.5	15.6	20.6	11.0	34.9	16.5	12.5	10.9	2.0	4.2	1.7	5.5
Transport equipment	(34-35)	6.2	6.7 [1]	2.7	4.8	5.4	3.8	6.8	10.3 [1]	2.0	6.4	5.4	4.4	26.1	17.1	16.0	18.0	3.0	3.1	16.4	12.1
Motor vehicles, trailers and semi-trailers	(34)	5.8	8.1 [1]	-	-	0.9	1.4	4.0	10.7 [1]	-	-	5.7	3.7	13.2	13.8	13.1	18.4	6.9	5.9	15.5	12.1
Other transport equipment	(35)	7.4	4.0 [1]	-	-	15.5	10.7	31.3	8.4 [1]	3.1	9.9	5.1	4.8	61.3	24.8	32.3	15.7	0.4	1.4	18.0	12.0
....Building and repairing of ships and boats	(351)	-	-	-	-	-	-	-	0.0 [1]	2.6	13.2	2.7	2.1	1.1	1.9	4.2	1.5	0.0	3.1	2.3	0.9
....Aircraft and spacecraft	(353)	-	-	-	-	23.7	14.0	-	18.5 [1]	-	-	0.9	8.1	112.0	32.5	51.2	20.2	-	-	32.5	24.3
....Railroad equip. and transport equip. n.e.c.	(352+359)	-	-	-	-	-	-	-	3.4 [1]	5.4	0.6	17.4	16.9	8.4	6.6	14.7	9.9	0.4	0.0	6.3	4.0
Manufacturing nec; recycling	(36-37)	-	-	3.0	2.2	-	-	1.3	0.9 [1]	4.9	1.4	1.0	2.8	0.5	2.5	1.3	1.8	0.3	0.9	0.1	0.2
Electricity, gas and water supply	(40-41)	0.4	0.2	0.1	0.7	1.1	0.7	0.0	0.0	0.1	0.2	2.6	2.0	1.2	1.6	0.3	0.2	-	-	0.7	0.1
Construction	(45)	0.0	0.1	0.3	0.4	0.0	0.1	0.1	0.1	0.2	0.1	0.2	0.6	0.2	0.2	0.1	0.1	-	-	0.0	0.0
Total services[5]	**(50-99)**	**0.3**	**0.4**	**0.2**	**0.3**	**0.3**	**0.4**	**1.1**	**0.5**	**0.4**	**0.9**	**0.2**	**0.5**	**0.1**	**0.2**	**0.1**	**0.2**	**0.2**	**0.4**	**0.1**	**0.2**
Wholesale and retail trade; restaurants and hotels	(50-55)	-	-	0.1	0.1	-	-	-	0.1	-	-	-	-	-	0.0	-	-	-	0.0	0.0	0.0
Transport and storage and communication	(60-64)	-	-	0.0	0.6	0.4	0.1	0.1	0.1	-	-	0.3	1.6	-	-	-	-	0.5	1.6	0.0	0.0
Transport and storage	(60-63)	-	-	-	-	0.1	0.1	0.1	-	-	-	0.0	0.2	0.1	1.8	-	0.6	0.0	-	0.0	0.0
Post and telecommunications	(64)	-	-	-	-	0.8	0.2	0.0	-	1.5	4.8	1.0	4.7	-	-	-	-	1.1	-	0.2	0.0
Finance, insurance, real estate and business services	(65-74)	-	-	0.6	0.6	0.6	0.9	3.1	1.3	-	1.7	-	-	-	-	-	-	-	0.8	0.3	0.4
Financial intermediation	(65-67)	-	-	0.5	0.2	0.4	0.2	0.0	0.0	-	0.7	-	-	-	-	-	-	-	0.0	0.0	0.2
Real estate, renting and business activities	(70-74)	-	-	0.6	0.7	0.7	1.2	5.0	1.7	1.2	2.0	-	-	0.3	0.3	-	0.5	-	1.0	0.4	0.5
....Real estate activities	(70)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
....Renting of m&eq and other business activities	(71-74)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
……Other business activities	(74)	-	-	-	-	-	-	3.0	-	3.4	1.7	-	0.3	-	0.5	-	-	-	-	-	0.2
Community social and personal services	(75-99)	-	-	0.0	0.0	-	-	0.0	0.2	-	-	-	0.1	-	-	-	-	-	0.0	0.0	0.0
High-technology manufactures		16.5	15.5 [1]	-	-	24.9	29.3	36.3	5.2 [1]	21.7	23.5	27.2	29.2	35.8	25.9	21.0	22.6	6.2	5.9	15.0	12.7
Medium-high technology manufactures		4.5	5.2 [1]	-	-	1.6	2.0	4.7	4.8 [1]	4.8	7.1	7.8	8.4	8.6	8.6	8.8	10.7	1.8	1.1	4.8	3.6
Medium-low technology manufactures		2.3	1.9 [1]	-	-	2.0	1.0	2.3	0.9 [1]	1.6	2.4	3.6	3.7	2.4	2.4	1.6	2.0	1.2	1.6	0.9	0.5
Low-technology manufactures		-	-	1.3	1.9	0.6	0.5	1.1	0.3 [1]	1.5	1.0	2.4	1.6	0.6	1.0	0.7	0.8	0.8	0.6	0.1	0.2
High- and medium-high technology manufactures		7.3	7.9 [1]	10.0	14.6	8.0	9.6	5.2	4.8 [1]	9.3	13.3	11.7	18.3	16.7	14.3	11.2	13.0	3.8	3.3	7.5	6.0

1. Intensity of the previous year.

2. 1998 instead of 1995.

3. EU includes the 15 EU Members before 1 May 2004 excluding Austria, Greece, Luxembourg, Portugal (for which no Anberd data are available).

4. OECD includes previous EU countries and Canada, Japan, and the United States.

5. Due to differences in data reporting methodologies, service sector R&D figures are not fully comparable across countries.

Source: OECD, STAN Indicators 2004.

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Table 13. Intensity in business R&D expenditures by sector, 1991 and 2001 or nearest years available (cont'd)

As a percentage of value added in industry

		Korea		Netherlands		Norway		Poland		Spain		Sweden		UK		US		EU[3]		OECD[4]	
		1995	2001	1991	2000	1991	1998	1994	2001	1991	2001	1991	2001	1991	2001	1991	2000	1992	1999	1991	1999
Total manufacturing	**(15-37)**	**5.2**	**6.0**	**5.1**	**5.7**	**5.1**	**4.1**	**1.2**	**1.0**	**1.9**	**1.8**	**9.8**	**15.7**	**5.7**	**6.6**	**8.5**	**8.5**	**5.3**	**5.7**	**83.9**	**76.8**
Food prod., beverages and tobacco	(17-19)	0.9	0.9	1.8	2.4	1.2	1.5	0.1	0.1 [1]	0.3	0.7	1.6	1.1	1.2	1.5	1.1	1.1	0.9	0.9	1.5	1.3
Textiles, textile prod., leather and footwear	(20-22)	0.6	1.1	0.7	1.0	0.9	1.8	0.5	0.4 [1]	0.1	0.6	0.9	1.2	0.3	0.5	0.5	0.5	0.4	0.6	0.5	0.4
Wood, pulp, paper, paper prod., printing & publishing	(23-25)	0.6	0.5	0.2	0.3	0.8	0.9	0.1	0.1 [1]	0.2	0.2	1.7	1.7	0.3	0.1	1.0	1.6	0.4	0.4	1.1	1.3
Chemical, rubber, plastics and fuel prod.	(23)	3.4	2.8	10.7	8.1	11.6	7.5	1.7	1.3 [1]	2.8	3.0	14.9	23.3	11.4	14.9	10.3	9.1	8.6	9.2	18.1	15.9
Coke, refined petroleum prod. and nuclear fuel	23	1.3	0.7	6.1	2.0	-	-	1.2	0.6 [1]	1.0	1.0	0.9	3.1	12.7	9.6	8.7	3.1	4.5	4.0	1.7	0.5
Chemicals and chemical prod.	(24)	5.2	5.3	13.9	10.6	-	-	2.3	2.3 [1]	4.3	4.7	20.8	30.7	15.8	23.1	12.9	12.6	12.5	12.9	14.9	14.0
….Chemicals excluding pharmaceuticals	(24ex2423)	6.1	5.5	12.1	7.2	-	-	-	1.8 [1]	2.7	2.0	6.9	6.5	8.4	5.6	9.2	8.0	8.9	7.3	8.1	5.9
….Pharmaceuticals	(2423)	2.9	4.8	27.5	25.4	42.7	19.6	-	3.9 [1]	7.2	10.4	39.5	45.5	32.9	50.0	22.2	20.2	21.9	25.3	6.8	8.1
Rubber and plastics prod.	(25)	2.4	2.6	1.7	1.6	1.3	3.5	1.1	0.5 [1]	1.1	1.2	2.8	2.3	0.7	0.6	3.4	2.9	1.9	2.6	1.5	1.5
Other non-metallic mineral prod.	(26)	1.4	1.1	0.4	1.0	1.9	1.6	0.2	0.2 [1]	0.4	0.4	1.3	1.2	1.2	0.8	2.0	2.2	1.1	1.3	1.0	0.7
Basic metals and fabricated metal prod.	(27-28)	1.8	1.2	1.4	1.5	4.7	3.0	0.7	0.5 [1]	0.7	0.7	1.9	2.6	0.9	0.7	1.6	1.6	1.3	1.2	2.9	2.0
Machinery and equipment	(29-33)	10.7	18.1	11.6	17.9	15.0	11.2	2.8	2.5 [1]	5.3	3.6	21.0	38.1	9.1	10.2	13.6	16.5	9.1	9.1	35.9	35.0
Machinery and equipment, n.e.c.	(29)	5.1	5.3	2.1	9.1	6.9	6.1	2.6	2.5 [1]	1.8	2.4	9.6	10.0	5.3	8.1	3.9	5.5	4.6	4.9	5.6	5.6
Electrical and optical equipment	(30-33)	12.7	22.8	18.2	25.4	23.6	16.4	3.1	2.4 [1]	8.1	4.8	35.4	89.1	11.7	11.5	18.4	21.4	13.1	12.8	30.3	29.4
….Office, accounting and computing machinery	(30)	10.1	21.5	31.3	257.7	34.5	20.8	0.3	1.4 [1]	11.4	4.6	19.1	18.3	13.4	4.2	40.0	30.7	-	15.4	7.9	5.2
….Electrical machinery and apparatus, nec	(31)	5.1	10.5	40.4	7.8	6.8	4.5	2.7	2.1 [1]	3.0	2.4	12.5	7.6	11.8	10.4	8.4	9.6	-	4.3	5.1	3.9
….Radio, television and communication equip.	(32)	15.0	29.0	14.0	0.5	71.2	54.1	5.5	5.3 [1]	16.0	12.6	82.1	-862.9	14.7	18.5	15.9	18.6	-	25.7	11.1	12.6
….Medical, precision and optical instruments	(33)	4.0	4.9	-	-	10.1	6.5	1.4	1.0 [1]	6.7	3.4	3.9	25.8	7.7	8.8	16.9	30.2	-	11.4	6.2	7.8
Transport equipment	(34-35)	11.3	6.7	7.4	3.9	2.0	2.5	3.6	3.2 [1]	4.8	4.7	17.5	24.3	14.3	14.7	25.4	16.2	15.2	15.5	22.4	19.7
Motor vehicles, trailers and semi-trailers	(34)	12.3	7.5	14.7	5.9	4.5	9.2	2.5	2.7 [1]	3.5	2.8	17.9	25.2	10.4	10.3	22.8	15.4	-	13.6	11.3	12.1
Other transport equipment	(35)	7.0	5.4	3.6	1.4	1.8	1.7	4.5	3.8 [1]	9.8	13.3	16.4	20.6	18.4	19.3	27.3	17.5	-	21.0	11.0	7.5
….Building and repairing of ships and boats	(351)	4.0	-	-	1.9	1.7	1.5	-	1.6 [1]	3.1	7.4	5.5	3.1	2.0	6.2	-	-	-	3.5	0.1	0.1
….Aircraft and spacecraft	(353)	49.9	-	-	0.6	1.8	13.5	-	9.0 [1]	35.9	27.9	25.6	29.7	22.8	21.2	31.7	20.8	-	31.6	10.5	6.8
….Railroad equip. and transport equip. n.e.c.	(352+359)	3.0	-	-	1.7	3.4	0.8	-	4.6 [1]	1.8	6.5	5.5	11.0	3.9	28.2	-	-	-	8.9	0.4	0.6
Manufacturing nec; recycling	(36-37)	0.6	3.6	-	0.4	-	-	0.2	0.3 [1]	0.3	0.6	1.5	1.2	0.7	0.5	-	1.3	-	0.9	-	0.6
Electricity, gas and water supply	(40-41)	1.8	0.9	0.1	0.4	0.0	-	0.1	0.2	0.4	0.2	1.5	0.5	1.3	0.6	0.2	0.1	-	-	-	-
Construction	(45)	1.1	0.8	0.1	0.2	0.1	-	0.2	0.1	0.0	0.1	-	0.2	0.1	0.1	-	0.1	-	-	-	-
Total services[5]	**(50-99)**	**0.3**	**0.5**	**0.1**	**0.3**	**0.6**	**0.7**	**0.1**	**0.1**	**0.1**	**0.3**	**0.3**	**0.6**	**0.3**	**0.4**	**0.7**	**0.9**	**0.2**	**0.2**	**14.4**	**20.8**
Wholesale and retail trade; restaurants and hotels	(50-55)	0.0 [2]	0.1	-	-	-	0.0 [1]	0.0	0.0	0.0	0.0	-	0.0	-	-	-	-	-	-	-	-
Transport and storage and communication	(60-64)	1.5 [2]	1.0	-	0.4	0.2	0.7 [1]	0.2	0.3	0.2	0.5	-	0.6	-	1.0	-	-	-	-	-	-
Transport and storage	(60-63)	0.0 [2]	0.0	-	0.1	0.0	0.1 [1]	-	-	0.0	-	-	0.0	-	0.0	-	0.1	-	-	-	-
Post and telecommunications	(64)	4.5 [2]	2.9	-	0.9	1.0	2.7 [1]	-	-	0.6	-	-	1.9	1.9	2.5	-	-	-	-	-	-
Finance, insurance, real estate and business services	(65-74)	0.5 [2]	1.0	-	0.6	2.0	2.0 [1]	0.2	0.1	0.4	0.7	-	1.5	-	-	-	-	-	-	-	-
Financial intermediation	(65-67)	0.0 [2]	0.0	-	0.4	0.2	0.2 [1]	0.0	0.0	0.0	0.1	-	1.1	-	-	-	0.5	-	-	-	-
Real estate, renting and business activities	(70-74)	0.7 [2]	1.6	-	0.7	2.8	2.6 [1]	0.2	0.1	0.5	1.0	-	1.5	1.0	0.7	-	-	-	-	-	-
….Real estate activities	(70)	- [2]	-	-	-	-	- [1]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
….Renting of m&eq and other business activities	(71-74)	- [2]	-	-	-	-	- [1]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
……Other business activities	(74)	- [2]	-	-	0.4	2.1	1.0 [1]	-	-	-	-	-	0.1	-	0.4	-	-	-	-	-	-
Community social and personal services	(75-99)	0.1 [2]	0.0	0.2	0.0	-	0.0 [1]	0.1	0.1	0.0	0.0	-	0.0	0.0	0.0	-	-	-	-	-	-
High-technology manufactures		12.5	-	13.2	26.1	34.4	24.6	-	3.5 [1]	11.6	10.3	39.9	81.1	18.9	23.1	23.6	22.5	-	22.0	42.4	40.4
Medium-high technology manufactures		8.3	-	11.7	7.7	-	-	-	2.3 [1]	2.8	2.5	11.6	14.5	8.2	8.7	9.7	9.8	-	7.7	30.6	28.1
Medium-low technology manufactures		1.8	-	1.8	1.5	-	-	-	0.5 [1]	0.8	0.9	2.0	2.5	2.3	1.6	2.9	2.1	-	1.7	7.3	4.8
Low-technology manufactures		0.7	1.0	-	1.2	-	-	0.2	0.2 [1]	0.3	0.5	1.6	1.5	0.7	0.7	-	1.3	-	0.7	-	3.6
High- and medium-high technology manufactures		9.7	11.3	11.9	13.1	-	-	2.9	2.6 [1]	4.9	4.2	20.0	32.0	12.1	14.5	16.0	15.6	11.3	11.6	73.2	68.6

1. Intensity of the previous year.

2. 1998 instead of 1995.

3. EU includes the 15 EU Members before 1 May 2004 excluding Austria, Greece, Luxembourg, Portugal (for which no Anberd data are available).

4. OECD includes previous EU countries and Canada, Japan, and the United States.

5. Due to differences in data reporting methodologies, service sector R&D figures are not fully comparable across countries.

Source: OECD, STAN Indicators 2004.

Table 14. Business R&D expenditures by sector, 1991 and 2001 or nearest years available

As a percentage of total R&D expenditures

	(ISIC Rev.3)	Australia		Belgium		Canada		Czech Republic		Denmark		Finland		France		Germany		Ireland		Italy	
		1991	2000	1992	2001	1991	2001	1992	2001	1991	1999	1991	2001	1991	2000	1991	2001	1991	1999	1991	2001
Total business sector	**(01-99)**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Total manufacturing	**(15-37)**	**62.8**	**50.4**	**84.9**	**82.9**	**66.7**	**69.8**	**59.3**	**68.3**	**69.4**	**60.4**	**85.3**	**84.6**	**92.1**	**85.0**	**95.4**	**90.9**	**84.7**	**74.9**	**89.8**	**79.4**
Food prod., beverages and tobacco	(15-16)	4.0	3.5	3.0	2.4	1.3	0.7	1.0	0.4	4.6	2.5	6.6	1.4	1.8	2.0	0.8	0.8	12.3	5.6	0.9	1.2
Textiles, textile prod., leather and footwear	(17-19)	0.4	0.7	1.3	2.1	1.0	0.7	6.6	0.7	0.4	0.2	1.0	0.4	0.5	0.6	0.6	0.6	2.3	0.5	0.2	0.6
Wood, pulp, paper, paper prod., printing & publishing	(20-22)	1.9	1.4	1.1	1.1	2.3	1.4	0.6	0.1	0.6	0.5	9.4	3.1	0.4	0.3	0.5	0.3	1.0	1.2	0.1	0.4
Chemical, rubber, plastics and fuel prod.	(23-25)	12.7	9.5	37.5	39.7	11.7	8.4	7.7	7.1	21.5	28.7	17.7	11.5	20.6	22.6	19.8	19.8	20.7	15.1	20.0	15.7
Coke, refined petroleum prod. and nuclear fuel	(23)	0.5	0.3	2.8	1.0	3.0	0.4	1.4	0.1	0.0	0.0	2.2	0.8	2.0	1.3	0.2	0.2	0.0	0.0	1.3	0.7
Chemicals and chemical prod.	(24)	10.1	8.4	32.0	36.8	8.2	7.3	4.1	5.9	20.8	26.5	13.7	8.9	16.5	18.6	18.1	17.7	19.1	13.6	16.9	13.2
….Chemicals excluding pharmaceuticals	(24ex2423)	5.1	1.6	21.7	16.0	3.4	1.8	3.2	3.2	3.0	3.5	8.7	2.9	8.9	6.1	13.4	10.9	6.3	3.1	6.1	5.1
….Pharmaceuticals	(2423)	5.0	6.8	10.3	20.9	4.8	5.6	0.9	2.7	17.8	23.0	4.9	6.0	7.7	12.4	4.7	6.8	12.8	10.5	10.8	8.1
Rubber and plastics prod.	(25)	2.0	0.9	2.8	1.9	0.5	0.6	2.2	1.1	0.7	2.2	1.9	1.7	2.1	2.7	1.5	2.0	1.5	1.5	1.8	1.8
Other non-metallic mineral prod.	(26)	1.3	0.6	1.5	1.7	0.3	0.1	1.0	2.6	1.5	0.6	1.3	0.5	1.1	1.3	1.0	0.9	1.7	0.9	0.5	0.6
Basic metals and fabricated metal prod.	(27-28)	10.0	4.3	5.4	4.8	4.3	2.8	8.0	4.0	2.6	1.1	6.2	3.5	2.9	2.3	2.4	2.3	2.3	1.1	3.3	1.4
Machinery and equipment	(29-33)	20.4	19.9	29.3	25.7	32.3	44.7	19.8	14.2	31.7	23.9	38.5	62.2	33.6	30.3	38.8	31.7	40.9	48.2	34.6	33.7
Machinery and equipment, n.e.c.	(29)	4.2	4.0	5.5	4.5	1.8	2.3	10.0	7.4	12.6	10.0	10.5	7.6	4.3	4.8	11.4	11.2	3.5	2.9	5.8	7.0
Electrical and optical equipment	(30-33)	16.2	15.9	23.8	21.2	30.5	42.4	9.8	6.8	19.2	13.9	28.1	54.5	29.3	25.5	27.3	20.5	37.4	45.3	28.8	26.7
….Office, accounting and computing machinery	(30)	2.1	1.9	0.3	0.3	6.1	4.1	0.2	0.0	1.5	0.8	0.9	0.2	3.5	1.5	3.9	1.9	8.3	5.1	6.8	1.1
….Electrical machinery and apparatus, nec	(31)	2.6	1.4	4.9	2.2	1.0	2.3	3.0	2.4	2.6	2.9	4.9	4.4	3.0	3.5	7.3	3.0	4.4	4.7	5.9	3.4
….Radio, television and communication equip.	(32)	9.4	9.9	16.1	17.5	22.2	33.7	5.0	2.9	7.3	4.0	16.8	47.5	8.1	13.7	10.1	10.7	21.5	30.6	14.7	18.3
….Medical, precision and optical instruments	(33)	2.2	2.7	2.5	1.2	1.2	2.3	1.5	1.4	7.9	6.1	5.4	2.4	14.7	6.8	6.0	4.9	3.3	5.0	1.3	4.0
Transport equipment	(34-35)	10.5	9.1	4.2	4.7	13.0	10.6	13.4	38.9	1.3	1.9	3.9	1.4	31.0	24.5	30.8	33.9	3.0	1.6	30.2	25.4
Motor vehicles, trailers and semi-trailers	(34)	6.7	7.9	2.3	2.6	1.4	2.6	7.1	34.8	0.0	0.5	1.5	0.4	11.5	13.8	21.4	29.8	2.7	1.2	18.3	14.0
Other transport equipment	(35)	3.8	1.2	1.9	2.1	11.5	8.0	6.3	4.2	1.3	1.5	2.4	1.0	19.5	10.7	9.4	4.1	0.2	0.4	12.0	11.4
….Building and repairing of ships and boats	(351)	1.9	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.5	0.8	0.3	0.1	0.1	0.3	0.1	0.0	0.1	0.4	0.2
….Aircraft and spacecraft	(353)	1.2	0.1	1.4	1.8	11.5	7.8	4.1	2.8	0.0	0.0	0.1	0.3	18.9	10.2	8.2	3.6	0.0	0.4	10.6	10.2
….Railroad equip. and transport equip. n.e.c.	(352+359)	0.6	0.5	0.5	0.3	0.0	0.2	2.2	1.4	0.4	0.0	1.6	0.4	0.5	0.4	1.0	0.5	0.2	0.0	1.0	1.0
Manufacturing nec; recycling	(36-37)	-	-	1.6	0.8	0.6	0.4	1.3	0.3	5.3	0.9	0.5	0.6	0.3	1.1	0.6	0.6	0.4	0.6	0.2	0.3
Electricity, gas and water supply	(40-41)	2.2	0.7	0.2	1.0	4.4	1.5	0.1	0.0	0.3	0.3	4.5	1.4	1.9	2.1	0.4	0.2	-	-	2.0	0.5
Construction	(45)	0.3	0.9	1.4	1.0	0.2	0.4	0.5	1.2	0.8	0.2	1.1	1.2	0.8	0.6	0.3	0.2	-	-	0.0	0.2
Total services[3]	**(50-99)**	**27.1**	**39.9**	**13.3**	**13.7**	**25.5**	**26.4**	**38.8**	**29.8**	**28.5**	**38.9**	**7.6**	**12.4**	**4.2**	**10.6**	**3.5**	**8.4**	**13.5**	**24.6**	**8.1**	**19.9**
Wholesale and retail trade; restaurants and hotels	(50-55)	-	-	1.3	1.0	-	-	-	1.2	-	-	-	-	-	0.0	-	-	-	0.0	0.0	0.6
Wholesale and retail trade; repairs	(50-52)	-	-	1.3	1.0	4.0	4.4	-	1.2	5.5	7.5	-	0.1	-	0.0	-	-	-	0.0	0.0	0.6
Hotels and restaurants	(55)	-	-	0.0	0.0	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	0.0	0.0	0.0
Transport and storage and communication	(60-64)	-	-	0.2	2.5	3.3	0.8	0.3	0.9	-	-	1.9	6.4	-	-	-	-	4.2	9.2	0.4	0.2
Transport and storage	(60-63)	-	-	0.1	1.0	0.4	0.3	0.3	0.8	-	-	0.1	0.5	0.3	5.2	-	1.1	0.2	0.0	0.0	0.1
Post and telecommunications	(64)	-	-	0.1	1.5	2.9	0.5	0.0	0.1	2.9	6.8	1.8	5.9	-	-	-	-	4.0	9.2	0.4	0.1
Finance, insurance, real estate and business services	(65-74)	-	-	11.6	9.8	18.3	21.3	38.5	23.8	-	24.6	-	-	-	-	-	-	-	15.3	7.5	19.1
Financial intermediation	(65-67)	-	-	2.4	0.7	2.9	1.6	0.0	0.0	-	2.2	-	-	-	-	-	-	-	0.0	0.0	2.5
Real estate, renting and business activities	(70-74)	-	-	9.2	9.1	15.3	19.7	38.5	23.8	20.0	22.5	-	-	4.0	5.5	-	6.9	-	15.3	7.5	16.6
……..Other business activities	(74)	-	-	4.5	5.0	2.4	3.1	9.2	1.8	15.9	5.6	-	0.5	-	2.9	-	-	-	1.5	0.5	2.2
Community social and personal services	(75-99)	-	-	0.1	0.4	-	-	0.0	3.9	-	-	-	1.0	-	-	-	-	-	0.0	0.2	0.0
High-technology manufactures		19.9	21.4	30.6	41.7	45.8	53.5	11.7	9.8	34.3	34.0	28.2	56.4	52.8	44.6	32.9	27.9	45.9	51.5	44.2	41.6
Medium-high technology manufactures		19.2	15.4	34.9	25.5	7.6	9.1	25.6	49.2	18.6	16.9	27.1	15.8	28.1	28.6	54.5	55.3	17.2	11.8	37.1	30.5
Medium-low technology manufactures		15.8	6.8	12.5	9.3	8.1	3.9	12.6	7.8	5.6	5.4	12.4	6.9	8.2	7.8	5.5	5.4	5.6	3.6	7.2	4.8
Low-technology manufactures		-	-	7.0	6.4	5.2	3.3	9.4	1.5	10.9	4.1	17.5	5.5	2.9	4.0	2.5	2.3	16.1	8.0	1.3	2.5
High- and medium-high technology manufactures		41.0	37.4	65.4	67.2	53.5	62.6	37.3	59.1	53.8	52.4	56.1	72.5	81.1	73.3	87.7	83.2	63.0	63.4	81.8	72.3

1. EU includes the 15 EU Members before 1May 2004 excluding Austria, Greece, Luxembourg, Portugal (for which no Anberd data are available).

2. OECD includes previous countries and Canada, Japan, and the United States.

3. Due to differences in data reporting methodologies, service sector R&D figures are not fully comparable across countries.

Source: OECD, STAN Indicators 2004.

StatLink: http://dx.doi.org/10.1787/581868456165

Table 14. Business R&D expenditures by sector, 1991 and 2001 or nearest years available (cont'd)

As a percentage of total R&D expenditures

	(ISIC Rev.3)	Korea		Netherlands		Norway		Poland		Spain		Sweden		United Kingdom		Unites States		EU[1]		OECD[2]	
		1995	2001	1991	2000	1991	1998	1994	2001	1991	2001	1991	2001	1991	2001	1991	2000	1992	1999	1991	1999
Total business sector	**(01-99)**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Total manufacturing	**(15-37)**	**83.3**	**82.8**	**89.7**	**75.9**	**63.3**	**54.4**	**71.9**	**69.4**	**78.4**	**60.0**	**87.9**	**87.4**	**79.7**	**79.2**	**75.7**	**64.9**	**87.9**	**84.3**	**83.9**	**76.8**
Food prod., beverages and tobacco	(15-16)	1.4	1.4	5.6	5.8	2.5	2.9	1.5	4.7	2.4	3.1	1.4	0.5	2.4	2.5	1.1	0.8	1.8	1.7	1.5	1.3
Textiles, textile prod., leather and footwear	(17-19)	0.7	0.7	0.4	0.3	0.3	0.4	3.7	1.8	0.5	1.5	0.1	0.1	0.3	0.2	0.2	0.1	0.5	0.5	0.5	0.4
Wood, pulp, paper, paper prod., printing & publishing	(20-22)	0.5	0.3	0.5	0.5	2.1	2.3	0.7	0.9	0.8	0.7	3.3	2.0	0.5	0.3	1.2	1.6	0.7	0.7	1.1	1.3
Chemical, rubber, plastics and fuel prod.	(23-25)	10.6	9.3	37.6	21.4	17.4	11.3	16.2	14.9	18.4	17.1	17.0	20.1	28.4	30.4	15.7	12.1	22.3	22.6	18.1	15.9
Coke, refined petroleum prod. and nuclear fuel	(23)	1.3	1.1	2.7	0.7	1.6	1.6	2.3	0.6	1.3	1.0	0.1	0.2	4.5	2.0	2.1	0.6	1.3	0.8	1.7	0.5
Chemicals and chemical prod.	(24)	8.1	7.0	33.9	20.1	15.4	8.7	11.0	12.8	15.2	14.1	16.2	19.5	23.4	28.1	12.5	10.7	19.7	20.0	14.9	14.0
....Chemicals excluding pharmaceuticals	(24ex2423)	6.7	4.8	26.2	11.2	8.4	4.3	8.8	7.0	6.3	4.3	3.1	1.6	8.7	4.1	6.5	4.2	10.1	7.8	8.1	5.9
....Pharmaceuticals	(2423)	1.4	2.2	7.7	8.9	7.0	4.4	2.3	5.8	8.8	9.8	13.1	17.9	14.7	24.0	6.0	6.5	9.5	12.2	6.8	8.1
Rubber and plastics prod.	(25)	1.3	1.3	1.1	0.7	0.4	1.0	2.9	1.5	1.9	2.0	0.7	0.4	0.4	0.4	1.1	0.8	1.4	1.8	1.5	1.5
Other non-metallic mineral prod.	(26)	1.0	0.5	0.3	0.6	0.9	0.8	0.9	0.9	1.3	1.1	0.4	0.2	0.5	0.3	0.4	0.4	0.9	0.9	1.0	0.7
Basic metals and fabricated metal prod.	(27-28)	3.6	1.8	3.2	2.3	7.3	5.6	5.4	4.3	3.2	2.8	2.3	2.0	1.4	0.9	1.4	1.3	2.6	2.2	2.9	2.0
Machinery and equipment	(29-33)	41.1	51.3	36.3	42.0	29.7	26.3	26.4	28.9	31.5	16.9	43.9	43.4	25.8	25.2	31.5	33.0	34.0	30.5	35.9	35.0
Machinery and equipment, n.e.c.	(29)	5.1	4.1	2.8	9.9	7.0	7.3	13.9	14.2	4.8	5.7	11.2	7.4	6.0	7.7	3.0	3.4	7.9	7.5	5.6	5.6
Electrical and optical equipment	(30-33)	36.0	47.2	33.5	32.1	22.7	19.0	12.5	14.7	26.7	11.2	32.7	36.0	19.7	17.5	28.5	29.6	26.0	23.0	30.3	29.4
....Office, accounting and computing machinery	(30)	1.8	7.8	4.1	25.7	1.8	1.0	0.0	0.2	5.9	1.1	2.2	0.8	4.0	0.8	9.6	5.2	3.7	2.5	7.9	5.2
....Electrical machinery and apparatus, nec	(31)	1.9	1.8	15.6	1.6	3.4	2.4	5.4	6.6	4.3	2.8	3.1	1.6	6.4	4.6	2.6	1.9	5.7	3.1	5.1	3.9
....Radio, television and communication equip.	(32)	31.6	36.2	12.8	0.3	15.6	13.5	5.8	6.0	13.1	5.7	26.6	28.9	5.9	8.2	8.8	12.9	10.8	12.6	11.1	12.6
....Medical, precision and optical instruments	(33)	0.7	1.4	1.0	4.5	2.0	2.1	1.3	1.9	3.5	1.5	1.0	4.8	3.4	3.8	7.4	9.6	5.8	4.7	6.2	7.8
Transport equipment	(34-35)	24.1	16.8	5.8	2.7	3.1	4.6	16.6	12.0	19.7	16.0	19.1	19.0	20.2	19.1	23.5	15.1	24.6	24.8	22.4	19.7
Motor vehicles, trailers and semi-trailers	(34)	21.1	11.5	4.0	2.2	0.5	1.8	5.2	5.6	11.4	7.8	13.9	15.9	7.4	6.9	8.9	9.3	13.9	16.1	11.3	12.1
Other transport equipment	(35)	3.0	5.3	1.8	0.4	2.6	2.8	11.4	6.5	8.3	8.3	5.3	3.1	12.8	12.2	14.6	5.8	10.7	8.7	11.0	7.5
....Building and repairing of ships and boats	(351)	1.4	1.0	0.1	0.3	2.1	2.4	1.1	1.6	1.2	1.9	0.3	0.1	0.2	0.7	0.0	0.0	0.3	0.3	0.1	0.1
....Aircraft and spacecraft	(353)	1.5	3.8	1.7	0.1	0.3	0.4	4.4	3.8	6.6	5.2	4.4	2.7	12.4	9.9	14.2	5.2	9.8	7.7	10.5	6.8
....Railroad equip. and transport equip. n.e.c.	(352+359)	0.1	0.4	0.0	0.1	0.3	0.0	5.9	1.1	0.5	1.2	0.5	0.3	0.2	1.6	0.4	0.6	0.6	0.7	0.4	0.6
Manufacturing nec; recycling	(36-37)	0.2	0.6	-	0.4	-	-	0.5	1.0	0.6	0.8	0.4	0.2	0.3	0.3	-	0.4	-	0.6	-	0.6
Electricity, gas and water supply	(40-41)	2.0	1.1	0.3	0.5	0.1	-	0.6	2.3	2.5	0.6	2.3	0.4	2.4	0.8	0.2	0.1	-	-	-	-
Construction	(45)	6.7	3.1	0.5	0.8	0.5	-	4.2	3.6	0.6	0.9	-	0.3	0.2	0.2	-	0.1	-	-	-	-
Total services[3]	**(50-99)**	**7.6**	**12.6**	**6.7**	**19.7**	**41.8**	**48.0**	**14.4**	**18.2**	**16.4**	**37.6**	**9.0**	**11.5**	**15.1**	**18.8**	**24.3**	**34.4**	**8.2**	**12.9**	**14.4**	**20.8**
Wholesale and retail trade; restaurants and hotels	(50-55)	-	0.4	-	-	-	-	0.3	0.3	0.0	0.8	-	0.1	-	-	-	-	-	-	-	-
Wholesale and retail trade; repairs	(50-52)	-	0.4	-	4.0	0.4	-	0.3	0.3	0.0	0.7	-	0.1	-	0.4	-	12.6	-	-	-	-
Hotels and restaurants	(55)	-	0.0	-	-	-	-	0.0	0.0	0.0	0.1	-	0.0	-	-	-	-	-	-	-	-
Transport and storage and communication	(60-64)	-	3.0	-	2.4	2.8	-	4.1	7.7	2.5	8.8	-	1.4	-	5.9	-	-	-	-	-	-
Transport and storage	(60-63)	-	0.0	-	0.6	0.4	-	1.3	2.6	0.0	0.2	-	0.0	-	0.1	-	0.1	-	-	-	-
Post and telecommunications	(64)	-	3.0	-	1.9	2.3	-	2.7	5.1	2.4	8.6	-	1.3	3.9	5.8	-	-	-	-	-	-
Finance, insurance, real estate and business services	(65-74)	-	8.9	-	13.2	38.6	-	5.5	3.5	13.4	27.4	-	10.0	-	-	-	-	-	-	-	-
Financial intermediation	(65-67)	-	0.0	-	2.2	1.1	-	0.0	0.1	0.0	0.6	-	1.1	-	-	-	2.0	-	-	-	-
Real estate, renting and business activities	(70-74)	-	8.9	-	11.0	37.5	-	5.5	3.4	13.4	26.8	-	8.9	10.9	12.3	-	-	-	-	-	-
……..Other business activities	(74)	1.3	2.1	-	3.1	7.1	-	0.0	0.1	6.8	3.9	-	0.3	1.8	2.7	-	-	-	2.2	-	-
Community social and personal services	(75-99)	-	0.3	4.7	0.1	-	-	4.5	6.8	0.4	0.6	-	0.1	0.2	0.1	-	-	-	-	-	-
High-technology manufactures		37.0	51.4	27.3	39.5	26.6	21.4	13.8	17.7	37.9	23.4	47.2	55.1	40.5	46.8	46.1	39.4	39.7	39.7	42.4	40.4
Medium-high technology manufactures		34.9	22.6	48.6	24.9	19.5	15.8	39.1	34.5	27.3	21.7	31.7	26.7	28.7	24.9	21.4	19.4	38.2	35.2	30.6	28.1
Medium-low technology manufactures		8.6	5.7	7.4	4.5	12.2	11.4	12.6	8.8	8.9	8.8	3.8	2.8	7.1	4.2	5.0	3.2	6.5	6.0	7.3	4.8
Low-technology manufactures		2.9	3.1	-	7.0	-	-	6.5	8.4	4.3	6.1	5.2	2.8	3.5	3.2	-	3.0	-	3.4	-	3.6
High- and medium-high technology manufactures		73.3	75.1	76.0	64.7	48.2	39.6	54.0	53.7	66.4	47.0	79.3	81.9	69.4	72.4	67.5	58.8	78.2	75.3	73.2	68.6

1. EU includes the 15 EU Members before 1 May 2004 excluding Austria, Greece, Luxembourg, Portugal (for which no Anberd data are available).

2. OECD includes previous countries and Canada, Japan, and the United States.

3. Due to differences in data reporting methodologies, service sector R&D figures are not fully comparable across countries.

Source: OECD, STAN Indicators 2004.

Table 15. R&D expenditures of affiliates under foreign control, 1991-2002

	As a percentage of total business R&D expenditures							As a percentage of GDP						
	1991	1995	1997	1999	2000	2001	2002	1991	1995	1997	1999	2000	2001	2002
Australia	-	31.1	-	41.8	-	-	-	-	0.27	-	0.28	-	-	-
Canada	-	29.7	34.3	32.6	32.1	31.6 n	-	-	0.30	0.35	0.35	0.37	0.38 p	- p
Czech Republic	-	-	22.1	27.4	36.9	45.3	43.4	- d,t	- a	0.16 d,t	0.21	0.30	0.35	0.34
Finland	-	-	13.3	14.9	12.7	14.3	-	-	-	0.24	0.33	0.31	0.34	-
France[1, 2]	-	17.1	16.4	16.4 -	-	21.5	-	-	0.24	0.22	0.22 -	-	0.30 a	- p
Germany	-	16.1	18.1	19.0	-	-	-	- a	0.24	0.28	0.32	- c	-	- c
Greece	7.6	3.8	3.6	4.5	-	-	-	0.01	0.01 a	0.00	0.01	-	- c	-
Hungary[2]	-	21.8	65.3	78.5 -	-	-	-	- t	0.07 a	0.20	0.20 -	-	-	-
Ireland	68.6	66.2	65.3	63.8	-	65.2	-	0.40	0.59	0.59	0.55	- c	0.52	-
Italy[3]	23.1	-	-	-	-	-	-	0.15	-	-	-	-	-	- p
Japan	0.9	1.4	1.3	3.9	3.6	-	-	0.02 l	0.03 l	0.03	0.08	0.08	-	-
Netherlands	-	-	20.6	21.5	18.7	-	-	-	- a	0.23	0.25	0.21	-	- p
Poland[4]	-	-	-	12.1	12.1	4.6	-	-	- a	-	0.03	0.03	0.01	- b
Portugal	-	-	-	18.0	-	30.8	-	-	- a	-	0.03	- c	0.08	- c
Slovak Republic[4]	-	0.8	-	20.4	20.4	19.0	-	- d,t	0.00 d	- a	0.09	0.09	0.08	-
Spain[5]	38.7 -	26.8	35.7	32.8	-	31.0	-	0.18 -	0.10 a	0.14	0.15	-	0.15	- a
Sweden	17.1	18.4	15.9	34.1	34.0	-	-	0.32 m	0.46 a,m	0.42 m	0.93 m	-	- m	-
Turkey	-	-	14.8	7.3	10.6	-	-	-	-	0.02	0.02	0.02	-	-
United Kingdom	-	29.2	32.8	31.2	31.3	40.6	38.0	-	0.37	0.39	0.39	0.38	0.50 a	0.48
United States	10.2	13.3	12.3	14.7	14.7	14.9	-	0.20 j	0.24 j	0.24 j	0.29 j	0.30 j	0.30 j	- j,p

Times series notes:

(a) to (r): See standard statistical notes for science and technology indicators earlier in the Annex.

Year availability:

1. 1998 instead of 1997. 2. 1998 instead of 1999. 3. 1992 instead of 1991. 4. 2000 instead of 1999. 5. 1990 instead of 1991.

Source: OECD, MSTI database, May 2004.

StatLink: http://dx.doi.org/10.1787/073550815144

Table 16. Share of public R&D expenditures financed by industry, 1981-2003

As a percentage of total national R&D expenditures of the sector

	Government						
	1981	1985	1991	1995	2001	2002	2003
Australia[1, 2, 3]	1.8 [p]	2.7	5.7	5.7	5.6 [-]	-	-
Austria[4]	1.5	1.3	-	-	3.1	-	-
Belgium[5]	0.0 [a]	0.0	1.2 [b]	2.1	12.4	-	-
Canada	1.0	1.0	1.7	1.8	2.6	2.6 [n]	2.6 [n]
Czech Republic	-	-	-	11.3 [a]	6.6	9.6	-
Denmark	1.6	2.2	3.6	3.5	7.5	5.4 [a]	-
Finland	9.5 [a]	-	11.2 [a]	11.9	15.2	14.2	-
France	1.8	0.7	4.8	5.4	6.3	-	-
Germany	0.8	1.4	1.3 [a]	3.4 [m]	2.3 [m]	2.3 [b,m]	2.3 [b,m]
Greece	0.0	-	1.0	2.3	1.9	-	-
Hungary	-	-	22.0 [c]	15.1 [c]	13.1 [c]	6.4 [c]	-
Iceland	0.5	22.3	10.4	7.2	5.0	-	-
Ireland[3]	3.6	9.0	13.4 [b]	21.8	10.6	8.8 [n]	-
Italy	2.3 [r]	2.0 [r]	1.9 [a]	1.8	3.5	2.2 [n]	2.9 [n]
Japan	1.3	5.4	2.2	0.7	0.7	1.2	-
Korea	-	-	-	16.5 [e]	8.1 [e]	4.6 [e]	-
Luxembourg[3]	-	-	-	-	5.8 [-]	-	-
Mexico	-	-	-	3.3	5.8	-	-
Netherlands	5.7	23.2	14.8	16.7	21.6	18.1	-
New Zealand	-	-	5.7	17.7	20.3	-	-
Norway	3.6	7.6	7.3	10.0	10.6	-	-
Poland	-	-	-	22.6 [a]	14.3	23.3	-
Portugal[6, 7, 1]	0.2	4.1	7.1	0.3	3.5	-	-
Slovak Republic	-	-	9.3 [c,q]	32.6 [c]	14.0 [c]	14.0 [c]	-
Spain	0.7	3.8	3.8	5.3	7.1	4.1	-
Sweden	5.4 [e,f]	4.8 [e,f]	4.8 [e,f]	3.0 [f]	1.6 [f]	-	-
Switzerland[7]	-	3.4 [f]	0.3 [b,f]	-	-	-	-
Turkey[3]	-	-	0.3	3.0	5.4 [-]	-	-
United Kingdom	11.0	14.6 [a]	12.0 [a]	6.9	12.5 [a]	10.7	-
United States	0.0 [f]	0.0 [f]	0.0 [f]	0.0 [f]	0.0 [f]	0.0 [f,n]	0.0 [f,n]
Total OECD	**2.1** [b]	**2.9** [b]	**3.1** [a,b]	**3.7** [a,b]	**3.6** [b]	**-**	**-**
EU-25	**-**	**-**	**-**	**6.0** [b]	**6.7** [b]	**-**	**-**
EU-15	**4.1** [b]	**5.2** [a,b]	**4.8** [a,b]	**5.1** [b]	**6.3** [b]	**-**	**-**
China[3]	-	-	-	-	9.6 [s]	-	-
Israel[3]	-	-	1.4 [c]	0.2 [c]	7.5 [c,n]	-	-
Russian Federation	-	-	-	8.1	12.4	12.2	-

Times series notes:

(a) to (r): See standard statistical notes for science and technology indicators earlier in the Annex.

Year availability:

1. 1992 instead of 1991.
2. 1996 instead of 1995.
3. 2000 instead of 2001.
4. 1998 instead of 2001.
5. 1983 instead of 1981.
6. 1982 instead of 1981.
7. 1986 instead of 1985.

Source: OECD, MSTI database, May 2004.

StatLink: http://dx.doi.org/10.1787/702620165887

Table 16. Share of public R&D expenditures financed by industry, 1981-2003 (cont'd)

As a percentage of total national R&D expenditures of the sector

	Higher education						
	1981	1985	1991	1995	2001	2002	2003
Australia[1, 2, 3]	1.4	2.1	2.5	4.7	4.9 [-]	-	-
Austria[4]	1.0	1.7	-	-	1.8	-	-
Belgium[5]	9.4 [a]	8.7	15.4 [b]	13.2	12.7	-	-
Canada	4.1	4.3	7.0	8.1	9.3	9.3 [n]	9.3 [n]
Czech Republic	-	-	-	2.0 [a]	0.7	0.9	-
Denmark	0.7	1.0	1.6	1.9	3.0	4.2 [a]	-
Finland	2.1 [a]	-	3.6 [a]	5.7	6.7	6.2	-
France	1.3 [a]	1.9	4.2	3.3	3.1	-	-
Germany	1.8	5.4	7.0 [a]	8.2	12.2	12.2 [b]	11.3 [b]
Greece	0.0 [a]	-	6.1	5.6 [a]	6.9	-	-
Hungary	-	-	14.4	2.1	4.4	11.8	-
Iceland	1.2	0.6	5.0	5.4	10.9	-	-
Ireland[3]	7.1	6.9	8.6 [b]	6.9 [b]	5.3 [-]	-	-
Italy	2.7	1.5	4.0	4.7	-	-	-
Japan	1.5 [b]	2.4 [b]	3.7 [b]	3.6 [b]	2.3	2.6	-
Korea	-	-	-	22.4 [e]	14.3 [e]	13.9 [e]	-
Luxembourg[3]	-	-	-	-	-	-	-
Mexico	-	-	-	1.4	1.1	-	-
Netherlands	0.3	1.0	1.2	4.0	7.1	-	-
New Zealand	-	-	4.6	9.4	5.3	-	-
Norway	2.9	5.0	4.7	5.3	5.8	-	-
Poland	-	-	-	11.4	6.3	5.8	-
Portugal[6, 1, 2]	0.0	0.9	0.5	0.9 [a]	0.8	-	-
Slovak Republic	-	-	6.1 [q]	1.0 [m]	0.3	0.0	-
Spain	0.0	1.1	10.0	8.3	8.7 [b]	7.6	-
Sweden	2.3 [a]	5.5	5.2	4.6 [a,h]	5.5	-	-
Switzerland[1, 2, 7, 3]	9.5 [b]	3.3 [a,b]	1.8	6.2	5.1 [-]	-	-
Turkey[3]	-	-	10.4	16.1	19.4 [-]	-	-
United Kingdom	2.8 [a]	5.2 [a]	7.8	6.3	6.2	5.8	-
United States	3.3 [h]	4.5 [h]	5.3 [h]	5.5 [h]	5.5 [h]	4.9 [h,n]	4.5 [h,n]
Total OECD	**2.6** [b]	**3.8** [b]	**5.5** [a,b]	**5.8** [a,b]	**6.0** [b]	**5.8** [b,n]	**-**
EU-25	**-**	**-**	**-**	**6.0** [b]	**6.7** [b]	**-**	**-**
EU-15	**2.0** [a,b]	**3.7** [a,b]	**5.8** [a,b]	**5.9** [a,b]	**6.8** [b]	**-**	**-**
China[3]	-	-	-	-	32.4 [s]	-	-
Israel[3]	-	-	7.4 [e]	2.3 [e]	3.7 [e]	-	-
Russian Federation	-	-	-	27.5	26.5	27.2	-

Times series notes:

(a) to (r): See standard statistical notes for science and technology indicators earlier in the Annex.

Year availability:

1. 1986 instead of 1985.
2. 1992 instead of 1991.
3. 2000 instead of 2001.
4. 1998 instead of 2001.
5. 1983 instead of 1981.
6. 1982 instead of 1981.
7. 1996 instead of 1995.

Source: OECD, MSTI database, May 2004.

Table 17. Basic research expenditures, 1981-2003

	As a percentage of GDP						As a percentage of GERD					
	1981	1991	1995	2001	2002	2003	1981	1991	1995	2001	2002	2003
Australia[1, 2, 3]	0.33 [i,p]	0.43 [i]	0.43 [i]	0.40 [i]	-	-	35.1 [i,p]	28.3 [i]	25.9 [i]	26.0 [i]	-	-
Austria[4]	-	-	-	0.27 [a, k]	-	-	-	-	-	15.2 [a, k]	-	-
Czech Republic	-	-	0.17	0.53 [i]	0.49 [i]	-	-	- [c,q]	16.8 [c,q]	40.8 [i]	37.7 [i]	-
Denmark	-	-	-	0.44 [a]	-	-	-	-	-	18.3 [a]	-	-
France	-	0.48 [i]	0.51 [i]	0.52 [i]	-	-	- [a]	20.3 [i]	22.1 [i]	23.3 [i]	- [n]	-
Germany	0.46 [s]	0.47 [a]	-	-	-	-	18.9 [s]	18.7 [a]	-	-	-	-
Hungary[1]	-	0.23 [q]	0.18 [a]	0.24	0.25	-	-	22.1 [c,q]	24.7 [a,c]	25.3 [c]	24.5 [c]	-
Iceland	0.16	0.29 [i]	0.38 [i]	0.47 [i]	0.49 [b,i]	-	25.0	24.8 [i]	24.2 [i]	15.4 [i]	15.9 [i,b]	-
Ireland[3]	0.07	0.08	-	0.14 [i]	-	-	10.3	8.6 [b]	-	12.2 [i,b]	-	-
Italy	0.11 [r]	0.25 [a,i]	0.22 [i]	-	-	-	12.5 [r]	20.3 [a,i,a]	22.0 [i]	-	-	-
Japan	0.28 [e,i,j]	0.36 [i,j]	0.41 [i,j]	0.37 [i,k]	0.39 [i,k]	-	12.1 [e,i,j]	12.2 [i,j]	14.1 [i,j]	12.1 [i,k]	12.5 [i,k]	-
Korea	-	-	0.31	0.37 [e,i]	0.40 [e,i]	-	-	-	12.4 [e]	12.7 [e,i]	13.7 [e,i]	-
Mexico	-	-	0.09	0.12	-	-	-	-	29.0	30.8	-	-
Netherlands[4]	0.48 [a]	0.27 [i]	0.19 [a,i]	-	-	-	25.0 [a]	13.7 [i]	9.5 [a,i]	-	-	-
New Zealand	-	-	-	0.53 [i]	-	-	-	-	-	44.9 [a,i]	-	-
Norway	0.19	0.22	0.25	0.24	-	-	16.1	13.4	14.7 [a]	15.0	-	-
Poland	-	-	0.20 [a,m]	0.19 [m]	0.19 [b,m]	-	-	-	30.8 [a,m]	29.7 [m]	32.2 [b,m]	-
Portugal[5, 1]	0.05 [i]	0.15 [i]	0.14 [a,i,p]	0.19	-	-	16.7 [i]	24.6 [i]	24.6 [a,i,p,a]	22.4	- [b]	-
Slovak Republic	-	-	0.20 [c]	0.15	0.15	-	-	- [c,q]	21.5 [c]	23.4 [k]	25.9 [k]	-
Spain	0.06	0.13	0.17 [a]	0.15	0.16	-	14.6	15.5	21.0 [a]	15.8	15.5	-
Sweden	0.50 [a,k]	0.50 [k,p]	-	-	-	-	22.5 [a,k]	18.4 [k,p]	- [a,k]	- [k]	-	-
Switzerland[2, 3]	-	-	0.80 [i]	0.72 [i]	-	-	-	-	30.0 [i]	28.0 [i]	-	-
United States	0.32	0.46	0.40	0.47	0.49 [n]	0.50 [b,n]	13.7 [h]	16.9 [h]	15.9 [h]	17.2 [h]	18.4 [h,n]	19.1 [b,h,n]
China	-	0.03 [i,k]	0.03 [i,k]	0.06 [i]	0.07 [i]	-	-	4.1 [i,k]	5.0 [i,k]	5.6 [i]	5.7 [i]	-
Israel	-	-	-	0.89 [c,i,n]	0.89 [c,i,n]	-	-	-	-	17.7 [c,i,n]	18.9 [c,i,n]	-
Russian Federation[1]	-	0.07	0.13	0.15	0.17	-	-	9.5	15.3	12.9	13.7	-

Times series notes:

(a) to (r): See standard statistical notes for science and technology indicators earlier in the Annex.

Year availability:

1. 1992 instead of 1991.
2. 1996 instead of 1995.
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5. 1983 instead of 1981.
6. 1982 instead of 1981.

Source: OECD, MSTI database, May 2004.

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Table 18. Basic research by performer, 1991-2003

As a percentage of GDP

	Business enterprise					Government					Higher education					Private non-profit				
	1991	1995	2001	2002	2003	1991	1995	2001	2002	2003	1991	1995	2001	2002	2003	1991	1995	2001	2002	2003
Australia[1, 2, 3]	0.04	0.04	0.05 -	-	-	0.12	0.11	0.10 -	-	-	0.25	0.25 i	0.23 -	-	-	0.02	0.02	0.03 -	-	-
Austria[4]	-	-	0.04 a	-	-	-	-	0.02 a,k	-	-	-	-	0.21 a	-	-	-	-	0.00	-	-
Czech Republic	-	0.01 i	0.22 i	0.19 i	-	-	0.13 i	0.20 i	0.19 i	-	-	0.04 i	0.10 i	0.11 i	-	-	0.00	0.00	0.00	-
Denmark	-	-	0.08	-	-	0.05	0.08	0.07 a	0.03	-	0.20	0.25	0.28 a	0.34	-	0.01	0.01	0.01	0.01	-
France	0.06 i	0.06 i	0.05 a,i	-	-	0.09 i	0.11 i	0.09 i	-	-	0.32 i	0.33 i	0.37 i	-	-	0.01	0.01	0.01	-	-
Germany	0.09 a	0.07	0.08	-	-	0.12 a	-	-	-	-	0.26 a	-	-	-	-	-	-	-	-	-
Hungary[1]	0.02 c,q	0.01 a	0.01	0.02	-	0.13 c,q	0.10 a	0.11	0.13	-	0.09 c,q	0.07 a	0.11	0.10	-	-	-	-	-	-
Iceland	-	-	0.00	0.00	-	0.10 i	0.12 i,p	0.15 i	0.19 b,i	-	0.16 i	0.24 i,p	0.27 i	0.23 b,i	-	0.03	0.02	0.05	0.05 b	-
Ireland	0.02	-	0.04 i	-	-	0.00	0.00 b	-	-	-	0.06 b	0.08 b	0.10 b	-	-	0.00 b	0.00 b	-	-	-
Italy	0.02 a,i	0.02 i	0.03 i	0.03 i,n	0.03 i,n	0.09 a,i	0.08 i	0.06 i	0.09 i,n	0.08 i,n	0.14 i	0.13 i	-	-	-	-	-	-	-	-
Japan	0.14 i,j	0.13 i,j	0.13 i,k	0.14 i,k	-	0.04 j	0.05 a	0.09	0.09 i,k	-	0.18 j	0.14 a	0.16	0.16 i,k	-	0.02 j	0.02 a	0.01	0.01	-
Korea[2]	-	0.15 e	0.16 i	0.20 i	-	-	0.07 e	0.08 e,i	0.09 e,i	-	-	0.10 ei	0.12 ei	0.11 ei	-	-	0.01 e	0.00 e	0.00 e	-
Mexico	-	0.00	0.01	-	-	-	0.04	0.06	-	-	-	0.05	0.06	-	-	-	0.00	0.00	-	-
Netherlands	0.13 i	-	-	-	-	0.13 i	-	-	-	-	0.01 i	-	-	-	-	0.01	-	-	-	-
New Zealand	-	-	0.09 i	-	-	-	-	0.20 i	-	-	-	-	0.24 i	-	-	-	-	-	-	-
Norway	0.01	0.02 a	0.03	-	-	0.03	0.04	0.04	-	-	0.17	0.19	0.18	-	-	-	-	-	-	-
Poland	-	0.01 a,m	0.01 m	0.01 b,m	-	-	0.10 a,m	0.09 m	0.09 b,m	-	-	0.09 m	0.10 m	0.10 b,m	-	-	0.00	0.00	0.00	-
Portugal[1]	0.00	0.00 a,i,p	0.01	-	-	0.01	0.01 a,i,p	0.01	-	-	0.11	0.10 aip	0.14	-	-	0.02	0.03	0.03	-	-
Slovak Republic	-	0.03 c	0.03	0.03	-	-	0.13 c	0.08 c	0.09 c	-	-	0.04	0.04	0.03	-	-	-	0.00 k	0.00 k	-
Spain	0.02	0.02 a	0.02	0.02 a	-	0.03	0.03 a	0.03	0.03	-	0.08	0.11 a	0.10	0.11	-	0.00	0.00	0.00	0.00	-
Sweden	0.03 p	-	-	-	-	0.01 e,f	0.08 f	0.09 f	-	-	0.46	-	-	-	-	0.00 k	-	-	-	-
Switzerland[1, 2, 3]	0.16	0.19	0.20 -	-	-	0.00	0.00	0.00	0.00 f,i	-	-	0.55	0.47 -	-	-	0.00	0.06	0.04 -	-	-
Turkey	0.01	0.01 i	-	-	-	0.01	0.00 i	-	-	-	-	-	-	-	-	-	-	-	-	-
United Kingdom	0.04 p	0.05 p	0.05 a	0.08	-	0.03 s	0.04	0.03 a	0.03	-	-	-	-	-	-	-	-	-	-	-
United States	0.13	0.08	0.08	0.08 n	0.08 b,n	0.04 f	0.04 f	0.04 f	0.04 f,n	0.04 b,f,n	0.25	0.24	0.28	0.30 n	0.31 b,n	0.04 h	0.04 h	0.06 h	0.07 h,n	0.07 b,h,n
China	0.00 i,k	0.00 i,k	0.00 i	0.00 i	-	0.02 i	0.02 i	0.04 i	0.04 i	-	0.01 i	0.01 i	0.02 i	0.03 i	-	-	-	-	-	-
Israel	-	-	0.19 c,i,n	0.17 c,i,n	0.17 c,i,n	-	-	0.05 c,i,n	0.05 c,i,n	-	-	-	0.61 e,i,n	0.62 e,i,n	-	-	-	0.04 c,n	0.05 c,n	-
Russian Federation[1]	0.01	0.02	0.02	0.02	-	0.05	0.09	0.11	0.13	-	0.02	0.02	0.02	0.02	-	0.00	0.00	0.00	0.00	-

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Source: OECD, MSTI database, May 2004.

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Table 19. Government budget appropriations and outlays for R&D by socio-economic objectives, 1991-2003

As a percentage of total R&D budget

	Defense			Civil														
				Economic development			Health			Space			Non-oriented programs			General university funds		
	1991	2001	2003	1991	2001	2003	1991	2001	2003	1991	2001	2003	1991	2001	2003	1991	2001	2003
Australia	10.3 f	5.8 f	5.7 f,n	25.8 f	36.8 f	34.3 f,n	14.6 f	16.4 f	19.9 f,n	-	0.0 f	0.0 f,n	15.0 f	3.1 f	3.7 f,n	34.4 f	37.9 f	36.4 f,n
Austria	0.0 f	0.0 f	0.0 f,n	14.6 f	15.8 f	12.7 f,n	8.6 f	8.8 f	8.5 f,n	0.4 f	0.1 f	0.1 f,n	12.4 f	13.7 f	13.1 f,n	64.0 f	61.5 f	65.5 f,n
Belgium	0.2	0.2	0.4 n	25.6	32.9	36.9 n	10.1	9.7	9.6 n	12.4	11.2	8.9 n	22.7	23.3	22.9 n	23.9	18.6	18.2 n
Canada	5.1 f	4.3 f	-	33.8 f	32.0 f	-	13.8 f	23.5 f	-	7.2 f	6.2 f	-	12.5 f	7.2 f	-	27.6 b,f	25.7 b,f	-
Czech Republic[1]	-	-	3.3 c	-	-	19.8 c	-	-	16.7 c	-	-	0.9 c	-	-	25.7 c	-	-	27.6 c
Denmark	0.6	0.5 a	1.1	26.3	21.1 a	16.5	14.1	19.8 a	16.7	2.7	2.4 a	2.2	23.3	18.0 a	20.6	33.0	37.4 a	42.1
Finland	1.4 a	1.6	2.9 n	40.4 a	41.1	39.1 n	16.3 a	15.4	15.2 n	3.1 a	1.9	1.9 n	10.5 a	14.2	13.7 n	28.3 a	25.9	27.2 n
France[1]	36.1	22.8 a	24.3 n	21.0	12.7	12.3 n	6.3	10.1	10.2 n	8.6	9.6	8.9 n	15.3	19.3	19.7 n	12.4	23.2	23.0 n
Germany	11.0 a	7.4	6.7 n	22.7 a	18.8 s	19.1 n,s	11.6 a	13.4 s	13.7 n,s	5.4 a	4.9 s	4.9 n,s	15.2 a	17.2 s	16.6 n,s	33.2 a	38.4 s	39.3 n,s
Greece[1]	1.5	0.8	0.9 n	29.7	20.8	18.0 n	17.5	19.8	19.0 n	0.3	0.2	0.1 n	3.4	12.5	10.9 n	46.1	45.6	50.7 n
Iceland	0.0	0.0	0.0 n	51.4	36.7	33.0 n	7.2	10.6	10.0 n	-	-	-	16.6	17.5	- n	24.9	35.2	38.4 n
Ireland	0.0	0.0	-	48.5	41.4	-	12.7	12.8	-	3.8	0.0	-	5.1	27.6	-	29.9	18.3	-
Italy	7.9	4.0 n	-	21.8	16.1 n	-	18.2	15.5 n	-	7.0	7.3 n	-	10.6	13.3 n	-	31.3	43.7 n	-
Japan	5.7 e,f,k	4.3 f,k	4.5	31.6 e,f	32.8 f	31.9 f,n	5.4 e,f	7.5 f	7.3 f,n	6.8 e,f	6.7 f	6.7	8.0 e,f	13.8 f	15.3 f,n	42.5 e,f	34.8 f	34.4 f,n
Korea	-	15.8	14.2	-	46.7	44.7	-	15.7	16.7	-	3.2	2.8	-	18.5 m	21.6	-	- l	-
Mexico	0.0 f	0.0	-	32.6 f	33.5	-	14.2 f	12.5	-	0.0 f	0.0	-	20.4 f	- l	-	32.8 f	53.9 m	-
Netherlands	3.0	1.9	-	28.1	25.3	-	8.7	8.7	-	2.6	2.6	-	10.6	10.7	-	43.0	46.3	-
New Zealand	1.5	-	-	46.7	-	-	25.3	-	-	-	-	-	1.2	-	-	24.1	-	-
Norway	6.2	7.5	6.9 n	31.5	26.1	21.2 n	18.3	18.8	18.8 n	2.7	2.2	1.9 n	10.5	8.9	12.2 n	30.8	36.4	39.0 n
Portugal	0.7	2.1	2.0 n	38.5	31.4	35.4 n	18.0	17.8	16.7 n	0.2	0.5	0.5 n	8.4	10.5	9.9 n	30.3	35.6	33.5 n
Slovak Republic[2]	-	9.3 m	7.2 m	-	29.2	21.3	-	10.9	10.2	-	- l	- l	-	32.4 m	- a,m	-	16.6	- l
Spain	16.8	37.3 b	-	27.5	22.7 b	-	15.1	9.7 b	-	7.0	2.4 b	-	10.8	2.1 b	-	20.0	25.8 b	-
Sweden	27.3	14.6	22.2	17.8	12.2	13.6	8.3	10.8	8.9	1.7	2.7	0.6	14.6	16.7	16.7	30.4	43.1	38.0
Switzerland[3, 4]	4.6 f	0.7 f	-	3.7 f,k	4.6 f,k	-	3.5 f,k	2.4 f,k	-	-	-	-	- l	- l	-	59.3 f,m	61.1 f,m	-
United Kingdom[1]	43.9	30.5	34.1 c	16.2	9.4	9.8 c	12.5	22.4	20.1 c	2.7	2.1	1.9 c	5.1	13.6	13.3 c	18.9	21.8	20.2 c
United States	59.7 f,g,h	50.5 f,g	53.7 b,f,g	8.9 f,g,h	6.5 f,g,l	5.6 b,f,g	17.5 f,g,h	26.2 f,g,l	26.3 b,f,g	9.9 f,g,h	9.8 f,g	8.4 b,f,g	4.0 f,g,h	6.9 f,g	6.0 b,f,g	-	-	-
Total OECD	**36.4 a**	**28.8 n**	**-**	**17.9 a**	**15.9 n**	**-**	**13.8 a**	**18.8 n**	**-**	**7.5 a**	**7.2 n**	**-**	**8.2 a**	**10.7 n**	**-**	**15.5 a**	**17.4 n**	**-**
EU-25	**-**	**14.9 a,n**	**-**	**-**	**16.8 a,n**	**-**	**-**	**13.5 a,n**	**-**	**-**	**5.2 a,n**	**-**	**-**	**14.8 a,n**	**-**	**-**	**31.6 a,n**	**-**
EU-15	**20.6 a**	**15.4 a,n**	**-**	**23.8 a**	**17.2 a,n**	**-**	**11.3 a**	**13.8 a,n**	**-**	**5.6 a**	**5.3 a,n**	**-**	**12.4 a**	**15.0 a,n**	**-**	**24.9 a**	**32.5 a,n**	**-**
Russian Federation	-	43.5	-	-	24.4	-	-	7.0	-	-	10.1	-	-	14.0	-	-	0.0	-

Times series notes:

(a) to (r): See standard statistical notes for science and technology indicators earlier in the Annex.

Year availability:

1. 2002 instead of 2003. 2. 2002 instead of 2001. 3. 1992 instead of 1991. 4. 2000 instead of 2001.

Source: OECD, MSTI database, May 2004.

StatLink: http://dx.doi.org/10.1787/147403505165

Table 20. Tax treatment of R&D, 1990-2004

Rate of tax subsidies for 1 USD of R&D[1], large firms and SMEs

	SMEs			Large firms				
	1999	2001	2004	1990	1995	1999	2001	2004
Australia[2]	0.11	0.20	0.12	0.28	0.21	0.11	0.20	0.12
Austria	0.12	0.12	0.11	0.02	0.07	0.12	0.12	0.11
Belgium	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Canada	0.32	0.32	0.32	0.17	0.17	0.17	0.17	0.17
Denmark[3]	-	0.11	0.18	0.00	0.13	-0.02 [4]	0.11	0.18
Finland	-0.01	-0.01	-0.01	-0.02	-0.01	-0.01	-0.01	-0.01
France	0.09	0.06	0.13	0.09	0.08	0.09	0.06	0.13
Germany	-0.04	-0.02	-0.02	-0.05	-0.05	-0.04	-0.02	-0.02
Greece	-0.01	-0.01	-0.01	-	-	-0.01	-0.01	-0.01
Hungary[5]	-	-	0.16	-	-	-	-	0.16
Iceland	-0.03	-0.01	-0.01	-0.03	-	-0.03	-0.01	-0.01
Ireland	0.06	-	0.05	0.00	-	0.06	-	0.05
Italy	0.45	0.44	0.45	-0.04	-0.05	-0.03	-0.03	-0.03
Japan[6]	0.06	0.12	0.19	-0.02	-0.01	0.02	0.01	0.14
Mexico	0.03	0.03	0.39	-0.02	-0.02	0.03	0.03	0.39
Netherlands[7]	-	0.35	0.11	-0.02	0.10	0.10	0.10	0.02
New Zealand	-0.13	-0.02	-0.02	-	-	-0.13	-0.02	-0.02
Norway	-0.02	0.23	0.23	-0.04	-0.02	-0.02	-0.02	0.21
Portugal	0.15	0.34	0.28	-0.02	-0.02	0.15	0.34	0.28
Spain	0.31	0.44	0.44	0.25	0.28	0.31	0.44	0.44
Sweden	-0.01	-0.01	-0.01	-0.02	-0.02	-0.01	-0.01	-0.01
Switzerland	-0.01	-0.01	-0.01	-0.01	-0.02	-0.01	-0.01	-0.01
United Kingdom	0.11	0.11	0.11	0.00	0.00	0.00	0.10	0.10
United States	0.07	0.07	0.07	0.09	-0.02	0.07	0.07	0.07

1. Tax subsidies are calculated as 1 minus the B-index. For example, in Australia in 2001, 1 dollar of R&D expenditure by large firms results in 20 cents of tax relief.

2. Calculation of Australia's B-index was adjusted to show the correct weights of the volume-based, 125% tax concession and the 175% incremental tax concession for R&D.

3. The 2004 calculation for Denmark applies to the 150% allowance on collaborative research at universities or public research institutions. Without this incentive, the B-index is 1.015.

4. 1998 instead of 1999.

5. The B-index for Hungary is based on the 100% R&D tax allowance for research and technology development (which also applies to subcontracted R&D if the partner is a public or non-profit research organization). A 300% allowance is available if the company's R&D laboratory is located at a university or public research site; the B-index in this situation equals 0.666.

6. The 2004 B-index for large firms in Japan applies to firms with a ratio of R&D to sales of less than 10%. The B-index for large firms with a R&D-to-sales ratio above 10% is 0.831. The B-index for research conducted in collaboration with universities is 0.782.

7. Calculations for the Netherlands were revised to reflect the taxability of the savings from the tax credit.

Source: OECD, 2004.

StatLink: http://dx.doi.org/10.1787/486405683434

Table 21. Total researchers per thousand employment, 1981-2002

	1981	1985	1991	1995	2001	2002
Australia[1, 2, 3]	3.6 [b]	4.3	6.8	7.2	7.3 [-]	-
Austria[4]	1.8	2.0 [k]	-	-	4.7 [k]	-
Belgium	3.5 [b,r]	4.1 [b,r]	4.8 [b,r]	6.1	7.8	-
Canada[3]	3.5	4.4	5.1	6.4	7.1 [b,n]	-
Czech Republic[1]	-	-	3.8 [b,c,j,q,r]	2.2 [b]	2.9 [b]	2.9 [b]
Denmark	2.8 [b,r]	3.4 [b,r]	4.6 [r]	6.1 [r]	7.0 [r]	-
Finland[5]	3.9 [r]	-	6.0 [r]	8.2 [r]	15.8 [r]	16.4 [r]
France	3.9 [a]	4.7	5.7	6.7	7.2	-
Germany	4.6	5.2	6.3 [a]	6.2	6.8	6.8 [b]
Greece	-	-	1.8 [b]	2.6 [a]	-	-
Hungary	-	-	3.2 [b,c]	2.9 [c]	3.8 [c]	3.9 [c]
Iceland	-	-	-	-	-	-
Ireland[3]	1.8 [b]	2.5 [b]	4.4 [b]	4.5 [b]	5.0 [a,b]	-
Italy	2.4	2.9	3.3	3.4	2.8	-
Japan	5.3 [j]	6.2 [j]	7.5 [j]	8.3 [j]	10.2	9.9 [b]
Korea	-	-	-	4.9 [e]	6.3 [e]	6.4 [e]
Luxembourg[3]	-	-	-	-	6.2 [-]	-
Mexico	-	-	-	0.6	-	-
Netherlands	3.4	4.3	-	4.8	5.5	-
New Zealand	-	-	4.0	4.7	6.9 [a]	-
Norway	3.8 [r]	4.8 [r]	6.6 [r]	7.5 [a,r]	8.7 [r]	-
Poland	-	-	-	3.4	3.8	3.9 [b]
Portugal[6, 7, 1]	0.8 [b]	1.1 [b]	2.1 [a,b,r]	2.6 [r]	3.5 [b,r]	-
Slovak Republic	-	-	-	4.6 [c]	4.7	4.6
Spain	1.6 [b]	1.8	2.9	3.5	5.0	5.1
Sweden	4.2 [a,k]	5.0 [k,r]	5.9 [k,r]	8.2	10.6	-
Switzerland[7, 1, 2, 3]	-	4.2 [a,b,r]	4.4	5.5	6.3 [-]	-
Turkey[3]	-	-	0.6	0.8 [b]	1.1 [b]	-
United Kingdom	4.9	5.0	4.6 [a]	5.4	-	-
United States	6.3	7.0 [a]	7.7	7.6	-	-
Total OECD[3]	**4.5 [b]**	**5.2 [a,b]**	**5.6 [a,b]**	**5.8 [a,b]**	**6.5 [b,n]**	**-**
EU-25	**-**	**-**	**-**	**4.9 [b]**	**5.6 [b]**	**-**
EU-15	**3.5 [b]**	**4.0 [b]**	**4.7 [a,b]**	**5.2 [b]**	**5.9 [b]**	**-**
China	-	-	0.7 [k]	0.8 [k]	1.0	1.1
Israel	-	-	-	-	-	-
Russian Federation	-	-	-	9.2	7.9	7.5

Times series notes:

(a) to (r): See standard statistical notes for science and technology indicators earlier in the Annex.

Year availability:

1. 1992 instead of 1991.
2. 1996 instead of 1995.
3. 2000 instead of 2001.
4. 1998 instead of 2001.
5. 1983 instead of 1981.
6. 1982 instead of 1981.
7. 1986 instead of 1985.

Source: OECD, MSTI database, May 2004.

StatLink: http://dx.doi.org/10.1787/730776281328

Table 22. Researchers by sector of performance, 1991-2002

Per thousand labour force

	Business sector				Government				Higher education				Private non-profit			
	1991	1995	2001	2002	1991	1995	2001	2002	1991	1995	2001	2002	1991	1995	2001	2002
Australia[1, 2, 3]	1.62	1.67	1.66	-	1.12	0.99	0.92 [-]	-	3.25	3.88	4.07	-	0.08	0.14	0.15	-
Austria[4]	-	-	3.01	-	-	-	0.25	-	-	-	1.53	-	-	-	0.02	-
Belgium	2.08 [b,r]	2.82	4.06 [b]	4.08 [b]	0.19 [b]	0.23	0.44	-	2.00 [b,r]	2.32 [r]	2.72 [b]	-	0.04 [b,r]	0.06 [r]	0.06 [b]	-
Canada	2.09	3.30	3.99	-	0.58	0.52	0.44	- [n]	1.99	2.08	2.12 [b,n]	-	0.04	0.03	0.02	-
Czech Republic	-	0.95	1.11	1.20	- [c,q]	0.83 [a]	0.94	0.86	-	0.52	0.82	0.83	-	0.00	0.03	0.01
Denmark	1.77	2.39	3.37	-	0.88	1.28	1.26	0.77	1.42	1.97	2.10	2.75 [a,r]	0.06	0.07	0.06	0.05
Finland	-	-	-	-	- [a]	-	-	-	-	-	-	-	-	-	-	-
France	2.37	2.61	3.28 [a]	-	1.03	1.07	0.85	- [n]	1.68	2.11	2.31	-	0.08	0.15	0.13	-
Germany	3.56 [a]	3.29	3.98	-	0.94 [a]	0.95 [b]	0.97	0.99 [b]	1.57 [a]	1.64	1.71	1.76 [b]	0.03 [a]	-	-	-
Greece	0.26	0.37	-	-	0.49	0.47 [a]	0.45 [b]	-	0.83	1.43 [a]	1.96	-	-	0.02	0.01	-
Hungary[1]	0.82	0.71	0.99	1.06	0.85 [c,q]	0.86 [c]	1.14 [c]	1.12 [c]	1.05	0.99	1.45	1.46	-	-	-	-
Iceland	1.19 [a]	2.41	5.24	-	2.06	2.17	2.61	-	1.53 [a]	2.55	3.16	-	0.11 [a]	0.09	0.42	-
Ireland	1.57	2.32	3.35	-	0.26 [b]	0.19 [b]	0.28	0.31	1.83 [b]	1.32 [b]	1.23	-	0.15 [b]	0.12 [b]	-	-
Italy	1.20	1.19	1.11	-	0.51 [a]	0.61	0.54	-	1.34	1.51	1.14	-	-	-	-	-
Japan	5.24	5.76	6.38	6.45	0.46 [b,j]	0.46 [b,j]	0.50	0.51	1.65	1.82	2.97	2.55	0.21	0.24	0.16	0.16
Korea	-	3.23	4.47	4.55	- [e]	0.61 [e]	0.54 [e]	0.50 [e]	-	0.93 [e]	1.03 [e]	1.09 [e]	-	0.05 [e]	0.05 [e]	0.06
Luxembourg[3]	-	-	5.24	-	-	-	0.76 [-]	-	-	-	0.08	-	-	-	-	-
Mexico	-	0.06	-	-	-	0.17	-	-	-	0.32	-	-	-	0.01	-	-
Netherlands	-	1.79	2.75	-	-	1.06	0.83	0.82	1.78	1.68	1.93	-	-	0.06	0.04	0.03
New Zealand	0.83	0.88	1.30 [a]	-	0.93	0.84	1.02 [a]	-	1.14	1.69	2.89 [a]	-	-	-	-	-
Norway	-	-	4.78	-	-	-	1.31	-	1.95	2.28	2.40	-	-	-	-	-
Poland	-	0.65	0.55	0.27	-	0.65 [a]	0.61	0.85	-	1.63	2.10	2.16	-	0.00	0.00	0.00
Portugal[1]	0.21 [a]	0.23 [a]	0.51	-	0.42	0.58	0.68	-	1.13 [a]	1.23 [a]	1.68	-	0.24 [a]	0.41 [a]	0.45	-
Slovak Republic	-	0.85 [c]	0.85	0.83	- [b,c,q]	1.48 [c]	0.92 [k]	0.91 [k]	-	1.60	1.84	1.76	-	-	0.00	0.00
Spain	0.73	0.66	1.06	1.34 [a]	0.51	0.51	0.75	0.69	1.31	1.69	2.63	2.49	0.01	0.03	0.05	0.02
Sweden	2.93 [k]	4.34 [a]	6.25	-	0.38 [k]	0.62 [a,k]	0.51 [k]	-	2.52	2.70	3.55	-	0.01 [e]	-	-	-
Switzerland[1, 2, 3]	2.37	3.04	3.86	-	0.15	0.14	-	0.11	1.76 [a]	2.09	2.18	-	-	-	-	-
Turkey[3]	0.06	0.10	0.16 [a]	-	0.09	0.08	0.11 [-]	-	0.41	0.54	0.75 [a]	-	-	-	-	-
United Kingdom	2.78	2.88	3.16 [a]	3.50	0.52	0.48	0.34	0.31	1.01	1.65	-	-	0.10	0.11	0.13	0.14
United States[3]	6.04	5.89	7.20 [n]	-	0.45 [h]	0.40 [h]	-	-	1.08	1.35	-	-	0.07	0.08 [k]	-	-
Total OECD	**3.51**	**3.44**	**-**	**-**	**0.54** [a,b]	**0.43** [a,b]	**-**	**-**	**1.24**	**1.14**	**-**	**-**	**0.07**	**0.06**	**-**	**-**
EU-25	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
EU-15	**2.22**	**2.32**	**-**	**-**	**0.71** [a,b]	**0.74**	**-**	**-**	**1.45**	**1.75**	**-**	**-**	**0.05**	**0.08**	**-**	**-**
China	0.19 [k,s]	0.28 [k,s]	0.53	0.59	0.31 [k]	0.27 [k]	0.25	0.25	0.20 [s]	0.19 [s]	0.23	0.24	-	-	-	-
Israel	-	5.05	4.02	3.81	-	2.16	2.05	2.01	-	1.15	1.06	0.96	-	0.00	0.03	0.02

Times series notes:

(a) to (r): See standard statistical notes for science and technology indicators earlier in the Annex.

Year availability:

1. 1992 instead of 1991. 2. 1996 instead of 1995. 3. 2000 instead of 2001. 4. 1998 instead of 2001.

Source: OECD, MSTI database, May 2004.

StatLink: http://dx.doi.org/10.1787/178788378577

Table 23. Human resources in science and technology, 1995-2002

	HRST	
	Average annual growth rate, 1995-2002	As a percentage of total employment, 2002
Australia	3.07 [1]	35.6 [2]
Austria	2.08 [3]	24.7 [2]
Belgium	2.23 [3]	30.1 [2]
Canada	3.00	29.0
Czech Republic	1.69	29.7
Denmark	3.46	35.3
Finland	2.32 [4]	32.5
France	2.11	29.2
Germany	2.04 [3]	33.5 [2]
Greece	2.65	19.7
Hungary	-1.03 [5]	23.9 [2]
Iceland	5.60 [5]	29.0 [2]
Ireland	7.05	22.4
Italy	4.26	28.4
Japan[6]	-	15.7
Korea	3.40	16.2
Luxembourg	5.43 [3]	31.6 [2]
Netherlands	3.90	34.3
New Zealand	3.06 [1]	26.0 [2]
Norway	7.64 [5]	34.7 [2]
Poland	-1.14 [5]	23.5 [2]
Portugal	-0.64	14.8
Slovak Republic	1.03 [7]	28.8
Spain	8.36	23.1
Sweden	3.37 [4]	37.7
Switzerland	1.04 [7]	36.1
United Kingdom	2.49	25.3
United States	2.00	32.7

1. 1996-2001 instead of 1995-2002.

2. 2001 instead of 2002.

3. 1995-2001 instead of 1995-2002.

4. 1997-2001 instead of 1995-2002.

5. 1999-2001 instead of 1995-2002.

6. Data for Japan are national estimates.

7. 1999-2002 instead of 1995-2002.

Source: OECD, *Science, Technology and Industry Scoreboard 2003* .

StatLink: http://dx.doi.org/10.1787/053853630826

Table 24. University graduates in science and engineering, 1988-2001

Tertiary A level and advanced research programmes

	Thousand of graduates						As a percentage of total graduates						Share of women					
	Science			Engineering			Science			Engineering			Science			Engineering		
	1998	2000	2001	1998	2000	2001	1998	2000	2001	1998	2000	2001	1998	2000	2001	1998	2000	2001
Australia	17.2	17.5	19.7	11.8	11.8	12.4	11.5	11.8	11.9	7.9	7.9	7.5	8.4	8.6	8.5	2.9	3.0	2.9
Austria	2.2	1.7	1.7	2.4	3.0	3.5	13.7	9.9	9.1	14.7	17.3	18.7	9.3	7.0	7.4	5.0	6.7	6.7
Belgium[1]	1.5	3.2	3.7	2.6	4.0	4.3	8.3	9.9	10.9	14.6	12.5	12.5	6.9	7.5	8.2	6.3	5.3	5.1
Canada	17.5	18.9	-	12.0	12.6	-	11.7	12.2	-	8.0	8.2	-	8.9	9.6	-	3.1	3.2	-
Czech Republic	1.3	3.8	4.2	5.0	4.6	4.5	5.9	12.7	11.9	22.3	15.5	12.8	3.2	6.3	5.3	9.9	8.3	7.5
Denmark[2]	1.6	1.9	2.2	1.2	1.4	3.0	12.9	12.6	6.7	9.8	8.9	9.0	10.9	10.7	4.5	5.8	4.7	3.4
Finland	1.8	2.2	2.2	5.5	6.7	6.4	8.0	7.9	7.2	24.2	24.0	20.8	6.5	6.2	5.3	7.9	7.7	6.5
France	56.8	65.2	67.0	46.1	40.6	41.3	15.9	18.0	18.2	12.9	11.2	11.2	13.8	13.8	14.2	5.0	4.8	4.7
Germany	31.5	27.6	26.2	43.0	38.8	36.4	14.7	13.5	13.2	20.1	19.0	18.4	10.6	9.5	9.5	7.6	8.3	8.2
Hungary	2.0	1.4	1.4	5.9	5.8	4.2	4.5	2.3	2.5	13.5	9.8	7.4	3.6	1.3	1.3	5.5	3.6	3.3
Iceland	0.1	0.2	0.2	0.1	0.1	0.1	13.1	10.7	11.0	5.9	7.1	6.5	8.1	7.8	8.2	2.3	2.6	2.1
Ireland	3.9	5.4	5.5	2.3	2.5	2.2	16.9	19.7	19.4	10.0	9.3	7.9	14.9	16.8	15.9	3.9	3.9	3.5
Italy	18.3	15.8	15.6	25.1	29.7	31.0	11.1	8.5	8.0	15.2	16.0	15.9	11.6	8.4	7.8	7.6	7.9	7.8
Japan	26.3	26.7	28.8	127.7	129.7	133.5	4.4	4.4	4.6	21.6	21.3	21.2	3.0	3.0	3.1	4.9	5.3	5.8
Korea	24.4	27.2	33.3	62.7	67.4	74.3	11.0	11.1	12.2	28.2	27.4	27.2	11.6	11.7	12.3	14.4	14.3	13.6
Luxembourg	-	0.1	-	-	-	-	-	31.5	-	-	-	-	-	-	-	-	-	-
Mexico	6.5	25.8	29.0	51.8	40.4	41.1	2.8	9.0	9.7	22.0	14.0	13.8	2.8	8.0	8.4	14.5	6.0	6.2
Netherlands	4.8	3.6	4.1	10.1	7.8	8.3	5.7	4.8	5.2	12.1	10.4	10.5	3.0	2.5	2.7	2.8	2.4	2.4
New Zealand	3.6	4.1	4.5	1.8	1.8	1.8	13.3	13.0	14.1	6.9	5.6	5.5	10.2	9.7	10.4	3.7	3.0	2.9
Norway	1.3	1.6	1.9	3.1	1.8	2.4	3.8	6.3	6.8	9.0	6.8	8.3	1.9	2.9	3.2	3.7	2.9	3.0
Poland	3.4	11.7	15.0	23.5	27.6	29.8	1.5	3.4	3.5	10.4	8.0	7.0	0.3	3.4	3.1	0.8	3.0	2.6
Portugal	-	3.0	-	-	6.6	-	-	5.7	-	-	12.4	-	-	4.1	-	-	6.6	-
Slovak Republic[2]	1.6	1.4	2.3	2.8	3.2	4.3	8.5	6.8	9.4	14.8	15.4	17.8	4.8	4.0	6.2	7.6	8.8	10.8
Spain	20.1	21.7	22.8	24.0	27.6	30.8	9.4	10.2	10.4	11.2	12.9	14.2	7.3	8.1	8.1	4.9	6.0	6.9
Sweden	3.0	3.2	3.6	5.4	7.8	8.3	9.0	8.5	9.4	16.2	20.5	21.5	5.4	6.7	7.5	6.2	8.6	10.1
Switzerland	2.6	3.9	4.0	3.8	4.2	3.7	11.4	14.5	15.0	17.0	15.7	14.1	8.2	9.3	9.0	5.1	4.6	4.3
Turkey	13.5	14.3	16.3	14.3	17.5	18.1	10.5	10.9	10.4	11.1	13.3	11.6	12.2	12.5	12.1	6.6	7.8	6.7
United Kingdom	54.2	64.7	77.0	46.5	39.0	44.7	14.5	16.5	18.1	12.4	9.9	10.5	11.4	13.3	14.6	4.3	3.6	3.7
United States	158.3	169.7	173.4	120.6	117.7	118.3	9.2	9.3	9.4	7.0	6.5	6.4	7.2	7.3	7.3	2.4	2.4	2.4
Total OECD[1, 2, 3]	**510.9**	**544.3**	**565.5**	**657.4**	**654.9**	**668.6**	**9.6**	**9.8**	**10.0**	**12.4**	**11.8**	**11.8**	**7.7**	**8.0**	**8.0**	**4.2**	**4.4**	**4.5**
EU-25[1, 2, 3]	**211.6**	**234.4**	**254.5**	**258.2**	**250.0**	**263.0**	**11.1**	**11.6**	**11.6**	**13.6**	**12.3**	**12.0**	**9.4**	**9.0**	**8.9**	**5.4**	**5.0**	**4.9**
EU-15[1, 2, 3]	**198.6**	**216.2**	**231.7**	**220.1**	**208.8**	**220.2**	**12.9**	**13.7**	**14.1**	**14.3**	**13.3**	**13.4**	**10.4**	**10.8**	**11.1**	**5.6**	**5.5**	**5.6**
Israel	-	4.0	4.6	-	3.3	3.8	-	10.3	11.5	-	8.5	9.6	-	7.3	8.4	-	3.3	3.7

1. Flemish Community only instead of Belgium in 1998.

2. 1999 instead of 1998.

3. Do not include Greece, Luxembourg, Portugal and Spain.

Source: OECD, Education database, July 2004.

StatLink: http://dx.doi.org/10.1787/831562532438

Table 25. Triadic[1] patent families by priority year, 1991-2000

	Number of triadic patent families					Average annual growth rate 1991-2000	As a percentage of total world triadic patent families				
	1991	1995	1997	1999	2000		1991	1995	1997	1999	2000
Australia	156	226	299	304 b,n	321 b,n	8.0	0.5	0.6	0.7	0.7 b,n	0.7 b,n
Austria	174	217	248	262 b,n	274 b,n	5.0	0.6	0.6	0.6	0.6 b,n	0.6 b,n
Belgium	239	369	395	366 b,n	359 b,n	4.5	0.8	1.0	0.9	0.8 b,n	0.8 b,n
Canada	275	382	525	539 b,n	519 b,n	7.1	0.9	1.1	1.2	1.2 b,n	1.2 b,n
Czech Republic	9	3	10	9 b,n	9 b,n	-0.6	0.0	0.0	0.0	0.0 b,n	0.0 b,n
Denmark	105	188	221	250 b,n	254 b,n	9.8	0.4	0.5	0.5	0.6 b,n	0.6 b,n
Finland	161	312	416	419 b,n	489 b,n	12.4	0.5	0.9	1.0	1.0 b,n	1.1 b,n
France	1 783	1 905	2 200	2 081 b,n	2 127 b,n	2.0	6.0	5.4	5.2	4.8 b,n	4.9 b,n
Germany	3 676	4 815	5 634	5 867 b,n	5 777 b,n	5.0	12.3	13.6	13.4	13.4 b,n	13.2 b,n
Greece	5	1	9	4 b,n	6 b,n	2.0	0.0	0.0	0.0	0.0 b,n	0.0 b,n
Hungary	22	25	31	30 b,n	33 b,n	4.6	0.1	0.1	0.1	0.1 b,n	0.1 b,n
Iceland	3	6	4	5 b,n	4 b,n	3.7	0.0	0.0	0.0	0.0 b,n	0.0 b,n
Ireland	27	31	37	56 b,n	45 b,n	5.8	0.1	0.1	0.1	0.1 b,n	0.1 b,n
Italy	659	610	711	740 b,n	767 b,n	1.7	2.2	1.7	1.7	1.7 b,n	1.8 b,n
Japan	8 895	9 428	11 207	11 726 b,n	11 757 b,n	3.1	29.7	26.6	26.6	26.9 b,n	26.9 b,n
Korea	93	327	387	459 b,n	478 b,n	18.2	0.3	0.9	0.9	1.1 b,n	1.1 b,n
Luxembourg	9	13	16	19 b,n	17 b,n	6.4	0.0	0.0	0.0	0.0 b,n	0.0 b,n
Mexico	6	12	11	11 b,n	15 b,n	10.2	0.0	0.0	0.0	0.0 b,n	0.0 b,n
Netherlands	568	724	840	833 b,n	857 b,n	4.6	1.9	2.0	2.0	1.9 b,n	2.0 b,n
New Zealand	19	20	39	33 b,n	36 b,n	7.1	0.1	0.1	0.1	0.1 b,n	0.1 b,n
Norway	58	86	94	108 b,n	109 b,n	7.0	0.2	0.2	0.2	0.2 b,n	0.2 b,n
Poland	9	5	9	8 b,n	10 b,n	0.5	0.0	0.0	0.0	0.0 b,n	0.0 b,n
Portugal	3	2	6	5 b,n	8 b,n	10.2	0.0	0.0	0.0	0.0 b,n	0.0 b,n
Slovak Republic[2]	1	2	4	3 b,n	4 b,n	23.2	-	0.0	0.0	0.0 b,n	0.0 b,n
Spain	70	87	108	120 b,n	113 b,n	5.3	0.2	0.2	0.3	0.3 b,n	0.3 b,n
Sweden	391	700	853	838 b,n	811 b,n	8.1	1.3	2.0	2.0	1.9 b,n	1.9 b,n
Switzerland	723	746	790	792 b,n	753 b,n	0.5	2.4	2.1	1.9	1.8 b,n	1.7 b,n
Turkey	0	2	3	5 b,n	6 b,n	34.5	0.0	0.0	0.0	0.0 b,n	0.0 b,n
United Kingdom	1 250	1 516	1 589	1 767 b,n	1 794 b,n	4.0	4.2	4.3	3.8	4.0 b,n	4.1 b,n
United States	10 217	12 312	14 763	15 079 b,n	14 985 b,k,n	4.3	34.1	34.7	35.1	34.6 b,n	34.3 b,n
Total OECD	**29 607**	**35 070**	**41 459**	**42 738 b,n**	**42 739 b,k,n**	**4.1**	**98.9**	**98.8**	**98.5**	**97.9 b,n**	**97.9 b,n**
EU-25	**9 168**	**11 533**	**13 343**	**13 687 b,n**	**13 770 b,n**	**4.5**	**30.6**	**32.5**	**31.7**	**31.4 b,n**	**31.5 b,n**
EU-15	**9 122**	**11 489**	**13 283**	**13 627 b,n**	**13 699 b,n**	**4.5**	**30.5**	**32.4**	**31.6**	**31.2 b,n**	**31.4 b,n**
Total world	**29 923**	**35 501**	**42 097**	**43 635 b,n**	**43 664 b,n**	**4.2**	**100**	**100**	**100**	**100 b,n**	**100 b,n**
China	12	19	41	66 b,n	93 b,n	22.9	0.0	0.1	0.1	0.2 b,n	0.2 b,n
Israel	104	158	284	347 b,n	342 b,n	13.2	0.3	0.4	0.7	0.8 b,n	0.8 b,n
Russian Federation	37	62	65	71 b,n	76 b,n	7.9	0.1	0.2	0.2	0.2 b,n	0.2 b,n

Times series notes:

(a) to (r): See standard statistical notes for science and technology indicators earlier in the Annex.

Year availability:

1. Patent filed at the European Patent Office (EPO), the US Patent & Trademark Office (USPTO) and the Japanese Patent Office (JPO).

2. 1992 instead of 1991.

Source: OECD, MSTI database, May 2004.

StatLink: http://dx.doi.org/10.1787/482445177814

Table 26. Number of triadic[1] patent families by priority year, 1991-2000

Per million inhabitants

	1991	1993	1995	1997	1999	2000
Australia	9.0	10.8	12.4	16.0	16.0 b,n	16.7 b,n
Austria	22.3	21.7	27.3	31.1	32.7 b,n	34.2 b,n
Belgium	23.9	32.6	36.4	38.8	35.8 b,n	35.1 b,n
Canada	9.8	10.5	13.0	17.5	17.7 b,n	16.9 b,n
Czech Republic	0.9	0.7	0.3	0.9	0.9 b,n	0.9 b,n
Denmark	20.4	30.7	35.9	41.9	47.0 b,n	47.7 b,n
Finland	32.1	48.3	61.0	80.9	81.1 b,n	94.5 b,n
France	30.5	28.7	32.1	36.8	34.5 b,n	35.1 b,n
Germany	46.0 a	49.1	59.0	68.7	71.5 b,n	70.3 b,n
Greece	0.5	0.3	0.1	0.8	0.4 b,n	0.6 b,n
Hungary	2.1	2.2	2.4	3.0	2.9 b,n	3.3 b,n
Iceland	11.6	3.8	22.4	12.9	17.2 b,n	14.9 b,n
Ireland	7.6	5.2	8.6	10.1	14.8 b,n	11.9 b,n
Italy	11.6	11.0 a	10.6	12.4	12.8 b,n	13.3 b,n
Japan	71.8	67.8	75.1	88.8	92.6 b,n	92.6 b,n
Korea	2.1	3.8	7.2	8.4	9.8 b,n	10.2 b,n
Luxembourg	24.1	36.1	31.8	37.8	44.2 b,n	37.8 b,n
Mexico	0.1	0.1	0.1	0.1	0.1 b,n	0.1 b,n
Netherlands	37.7	39.0	46.8	53.9	52.7 b,n	53.8 b,n
New Zealand	5.3	3.1	5.5	10.2	8.5 b,n	9.2 b,n
Norway	13.6	16.3	19.7	21.4	24.2 b,n	24.2 b,n
Poland	0.2	0.3	0.1	0.2	0.2 b,n	0.3 b,n
Portugal	0.3	0.4	0.2	0.6	0.5 b,n	0.8 b,n
Slovak Republic[2]	0.1	0.2	0.4	0.8	0.6 b,n	0.8 b,n
Spain	1.8	1.9	2.2	2.8	3.0 b,n	2.8 b,n
Sweden	45.4	57.5	79.3	96.5	94.6 b,n	91.4 b,n
Switzerland	105.0	101.0	105.4	111.1	110.5 b,n	104.5 b,n
Turkey	0.0	0.0	0.0	0.1	0.1 b,n	0.1 b,n
United Kingdom	21.8	23.5	26.2	27.3	30.2 b,n	30.6 b,n
United States	40.3	40.5	46.2	54.1	54.0 b,n	53.1 b,k,n
Total OECD	**31.3** a	**31.4**	**32.2** a	**37.5**	**38.1** b,n	**37.8** b,k,n
EU-25	**-**	**-**	**25.8**	**29.7**	**30.4** b,n	**30.4** b,n
EU-15	**24.9** a	**26.4** a	**30.8**	**35.5**	**36.2** b,n	**36.2** b,n
China	0.0	0.0	0.0	0.0	0.1 b,n	0.1 b,n
Israel	21.1	23.3	28.5	48.8	56.7 b,n	54.5 b,n
Russian Federation	0.2	0.2	0.4	0.4	0.5 b,n	0.5 b,n

Times series notes:

(a) to (r): See standard statistical notes for science and technology indicators earlier in the Annex.

Year availability:

1. Patent filed at the EPO, the USPTO and the JPO.

2. 1992 instead of 1991.

Source: OECD, MSTI database, May 2004.

StatLink: http://dx.doi.org/10.1787/366528340153

Table 27. Science and engineering articles by country, 1988-2001

Per million inhabitants

	1988	1991	1995	1999	2000	2001
Australia	593	618	736	797	763	758
Austria	294	353	437	527	532	564
Belgium	362	416	519	580	560	582
Canada	798	817	836	768	743	727
Czech Republic[1]	265	279	193	231	239	256
Denmark	672	733	843	923	923	931
Finland	564	640	809	943	942	983
France	372	402	493	532	511	514
Germany[2]	477	412	467	531	529	530
Greece	121	153	194	249	265	304
Hungary	164	175	177	226	224	243
Iceland	276	403	591	491	548	610
Ireland	224	260	336	406	420	432
Italy	198	243	312	361	364	385
Japan	-	-	-	-	437	451
Korea	18	31	84	180	200	233
Mexico	11	13	21	30	30	32
Netherlands	581	671	798	800	783	786
New Zealand	620	598	665	760	784	742
Norway	521	564	678	701	711	721
Poland	106	102	117	134	138	147
Portugal	43	65	99	174	177	208
Slovak Republic	-	-	212	185	186	177
Spain	140	187	289	375	370	387
Sweden	898	945	1 052	1 143	1 106	1 159
Switzerland	797	886	1 040	1 158	1 173	1 117
Turkey	9	15	28	49	52	60
United Kingdom	641	696	794	837	844	807
United States	725	766	762	711	696	705
Total OECD	**468**	**454**	**447**	**466**	**461**	**468**
EU-25	**-**	**-**	**432**	**482**	**479**	**485**
EU-15	**389**	**416**	**499**	**555**	**550**	**556**
China[3]	-	5	8	13	14	16
Israel	-	985	1 068	994	1 004	1 007
Russian Federation[4]	-	-	135	118	126	110

1. Includes articles from the former Czechoslavakia before 1996.
2. Includes articles from the former East Germany before 1992.
3. Includes articles from the Hong Kong economy before 2000.
4. Includes articles from the former USSR.

Source: NSF, *Science and Engineering Indicators* 2004. Population from OECD, MSTI database, May 2004.

StatLink: http://dx.doi.org/10.1787/871586367658

Table 28. Portfolio of S&E articles by field, 1988-2001

As a percentage of total publications

	All fields (total number)		Clinical medicine		Biomedical research		Biology		Chemistry		Physics		Earth & space sciences		Engineering & technology		Mathematics		Psychology		Social sciences		Other[1]	
	1988	2001	1988	2001	1988	2001	1988	2001	1988	2001	1988	2001	1988	2001	1988	2001	1988	2001	1988	2001	1988	2001	1988	2001
Australia	9 896	14 788	29.9	28.7	13.8	13.1	16.1	14.7	8.2	6.8	7.1	6.9	6.3	7.8	4.5	6.6	2.2	1.7	5.2	4.8	3.3	3.7	3.4	5.3
Austria	2 241	4 526	42.1	42.5	10.6	13.0	6.3	5.6	13.8	10.0	12.4	11.3	2.5	4.6	4.4	6.1	2.4	2.7	2.8	2.2	1.4	1.2	1.3	0.9
Belgium	3 586	5 984	38.4	32.9	17.1	14.6	5.4	8.0	10.4	11.0	11.9	12.5	3.0	4.5	5.5	7.8	2.3	2.1	2.8	2.7	1.7	2.0	1.6	2.0
Canada	21 391	22 626	25.9	29.3	14.3	15.2	14.6	10.3	8.1	7.8	8.0	6.6	5.8	7.3	8.1	7.9	2.3	1.9	4.6	4.7	4.4	4.4	3.9	4.6
Czech Republic[2]	2 746	2 622	16.5	14.5	13.9	16.0	4.6	7.7	29.0	22.9	14.5	16.2	3.6	4.5	5.3	8.2	1.5	3.9	7.9	3.1	2.9	1.5	0.4	1.3
Denmark	3 445	4 988	54.6	34.2	15.9	17.9	6.0	11.7	4.8	7.8	8.6	9.3	2.6	6.2	2.3	5.3	1.7	1.4	1.7	3.3	1.1	1.0	0.8	1.9
Finland	2 789	5 098	51.1	37.8	14.3	14.1	7.1	10.1	6.1	7.5	7.0	8.5	3.7	5.5	4.3	7.3	1.8	1.3	1.6	1.8	1.4	1.8	1.7	3.9
France	21 409	31 317	29.1	27.1	16.6	15.2	5.9	5.7	15.3	12.9	17.2	16.1	4.7	6.6	4.7	9.0	3.0	4.4	1.8	1.4	1.1	0.9	0.5	0.7
Germany[3]	25 666	43 623	29.0	30.9	15.4	14.1	6.2	5.2	15.7	12.7	16.5	16.3	3.3	5.0	6.7	8.5	2.2	2.2	1.8	1.8	2.3	2.0	1.0	1.3
Greece	1 239	3 329	20.4	31.3	8.1	8.1	9.3	9.2	14.7	12.5	16.3	14.1	7.9	6.3	14.7	11.4	4.3	3.0	2.4	2.1	0.6	0.5	1.1	1.5
Hungary	1 714	2 479	21.2	26.7	19.5	13.1	3.7	5.2	27.3	23.5	12.0	15.0	1.7	2.8	4.3	7.0	6.2	3.9	2.2	1.6	0.7	0.8	1.2	0.4
Iceland	69	174	45.0	31.9	12.3	10.2	6.2	16.2	0.0	3.3	3.4	4.6	17.6	16.2	2.2	2.9	2.2	2.1	1.5	5.8	3.6	3.9	6.1	3.0
Ireland	790	1 665	35.8	30.7	11.9	14.6	11.9	14.0	9.2	8.4	8.7	10.3	4.7	3.0	3.9	6.9	4.5	2.4	5.8	4.1	1.5	1.7	2.2	4.1
Italy	11 229	22 313	38.0	35.1	13.4	12.0	3.8	4.5	15.4	11.9	16.2	16.2	3.6	6.0	5.2	8.8	2.3	2.9	1.0	1.3	0.8	0.7	0.4	0.6
Japan	34 435	57 420	25.6	28.7	15.2	14.0	6.9	6.1	17.7	14.9	19.1	19.1	1.9	3.0	11.1	11.6	1.4	1.4	0.5	0.5	0.5	0.5	0.1	0.2
Korea	771	11 037	10.0	17.9	4.6	11.3	3.7	3.3	30.5	17.7	18.2	22.4	1.5	3.0	24.9	20.7	2.7	1.7	2.5	1.0	0.1	0.3	1.3	0.8
Mexico	884	3 209	24.5	18.7	14.9	12.0	15.7	14.8	11.1	10.5	15.7	21.2	6.5	7.6	4.0	7.7	3.4	2.1	2.7	1.7	1.2	1.5	0.5	2.3
Netherlands	8 581	12 602	36.6	37.5	15.5	14.2	8.2	6.0	10.8	8.6	11.9	8.8	4.1	5.5	4.3	6.4	1.5	1.4	2.7	3.9	2.7	3.6	1.6	4.0
New Zealand	2 075	2 903	28.4	25.9	10.1	10.5	28.6	23.6	6.1	5.7	4.6	4.2	6.1	9.3	3.8	5.2	1.5	1.8	3.2	4.4	4.6	4.4	2.9	5.0
Norway	2 192	3 252	40.3	33.4	13.8	12.7	12.8	12.9	8.0	6.3	4.9	5.0	6.4	10.1	4.4	6.2	2.1	2.3	3.9	4.4	2.2	3.1	1.2	3.7
Poland	4 030	5 686	12.4	13.2	9.3	8.6	5.3	4.8	27.1	26.7	28.4	26.5	1.9	4.1	9.1	11.0	4.4	3.9	1.0	0.5	0.6	0.3	0.7	0.5
Portugal	429	2 142	15.7	14.5	11.4	12.5	6.4	11.0	17.6	20.5	20.1	16.8	5.0	4.7	16.0	13.1	2.4	3.5	2.2	1.4	0.9	0.9	2.4	1.1
Slovak Republic	-	955	-	12.2	-	17.5	-	4.8	-	22.5	-	15.9	-	3.4	-	8.5	-	3.4	-	8.2	-	3.2	0.0	0.4
Spain	5 432	15 570	23.3	24.7	18.8	13.9	8.9	10.7	23.8	18.5	12.4	11.7	3.3	5.7	4.2	7.8	3.1	3.3	1.1	1.7	0.7	0.9	0.4	1.0
Sweden	7 573	10 314	48.2	36.7	17.2	15.5	6.9	7.4	7.5	8.3	7.5	10.5	3.2	4.4	3.9	8.1	1.2	1.2	1.8	1.9	1.2	1.7	1.4	4.2
Switzerland	5 316	8 107	36.3	32.7	18.5	16.1	4.1	5.8	11.9	12.8	16.5	13.4	2.7	6.4	4.2	6.6	1.6	1.4	1.7	2.1	1.7	1.4	0.9	1.3
Turkey	507	4 098	33.1	44.3	6.0	6.3	5.4	5.2	15.8	14.2	12.4	8.9	6.2	4.6	13.4	11.2	3.3	1.3	2.6	1.9	0.9	1.1	1.1	1.1
United Kingdom	36 509	47 660	36.6	32.8	14.8	14.2	7.4	6.2	9.9	8.5	9.1	9.0	4.0	5.9	6.3	7.4	1.5	1.6	4.5	5.7	2.4	3.0	3.7	5.7
United States	177 662	200 870	31.0	31.7	15.5	16.9	7.2	6.2	7.4	7.1	10.1	8.7	4.5	5.6	6.7	6.9	2.2	1.8	4.9	4.7	4.0	3.9	6.4	6.4
Total OECD	**398 238**	**551 402**	**31.1**	**30.7**	**15.2**	**15.0**	**7.7**	**6.8**	**10.8**	**10.3**	**12.0**	**11.9**	**4.1**	**5.4**	**6.7**	**8.2**	**2.1**	**2.0**	**3.7**	**3.3**	**2.8**	**2.6**	**3.8**	**3.8**
EU-25[4]	**143 034**	**138 116**	**21.2**	**10.6**	**14.2**	**7.0**	**5.2**	**3.3**	**24.2**	**26.7**	**16.9**	**32.6**	**2.8**	**4.9**	**6.2**	**8.9**	**3.6**	**3.8**	**3.4**	**0.9**	**1.4**	**0.5**	**0.9**	**0.7**
EU-15[4]	**134 544**	**137 368**	**34.8**	**28.2**	**14.3**	**12.7**	**7.2**	**7.6**	**13.4**	**14.3**	**12.7**	**12.6**	**3.8**	**5.1**	**6.2**	**10.0**	**2.4**	**2.9**	**2.3**	**3.0**	**1.4**	**1.3**	**1.4**	**2.4**
China	4 001	20 978	13.8	10.7	6.7	8.0	2.9	3.8	13.0	26.3	39.1	23.4	5.1	4.4	13.0	16.3	3.9	3.9	0.1	1.1	1.7	0.5	0.6	1.7
Israel	4 916	6 487	33.6	32.9	13.6	12.7	8.8	6.9	5.8	7.6	13.7	13.6	3.4	3.4	6.2	8.3	3.5	4.0	4.7	3.5	3.1	3.3	3.7	3.9
Russian Federation[5]	31 625	15 846	14.3	3.2	17.7	7.5	2.6	4.0	27.1	27.1	27.6	35.6	4.1	8.1	4.1	8.9	0.9	3.4	0.6	1.3	0.6	0.6	0.4	0.3

1. Other: Health sciences and professional fields.

2. Czechoslavakia instead of the Czech Republic in 1988.

3. Western Germany only in 1988.

4. Average for countries available.

5. Former USSR instead of Russian Federation in 1988.

Source: US National Science Foundation, *Science and Engineering Indicators* 2004.

StatLink: http://dx.doi.org/10.1787/581733703880

Table 29. Technology balance of payments, 1981-2002

Millions current USD

	Receipts						Payments						Balance					
	1981	1985	1991	1995	2001	2002	1981	1985	1991	1995	2001	2002	1981	1985	1991	1995	2001	2002
Australia[1,2,3]	14	68	200	128	-	-	142	188	370	344	-	-	- 129	- 120	- 170	- 215	-	-
Austria[4]	24 [k]	30 [k]	79 [k]	1 907	2 430 [-]	-	99 [k]	114 [k]	301 [k]	2 140	2 426 [-]	-	- 75	- 84	- 222	- 233	4	-
Belgium	622 [a]	694	1 945	3 758 [a]	5 709	-	727 [a]	800	2 380	3 080 [a]	4 641	-	- 105	- 106	- 435	677	1 068	-
Canada	157	399	929	1 283	2 034	-	416	550	928	1 008	1 051	-	- 259	- 151	1	275	983	-
Czech Republic	-	-	-	-	487	451	-	-	-	-	554	781	-	-	-	-	- 67	- 330
Denmark	107	184	-	-	-	-	71	161	-	-	-	-	36	23	-	-	-	-
Finland	5	4	54	58	1 303	1 468	87 [k]	107 [k]	311 [k]	390 [k]	1 060	1 231	- 82	- 102	- 257	- 332	243	237
France	906	894	1 742	2 170	3 196	-	991	1 064	2 451	2 988	2 695	-	- 85	- 170	- 709	- 818	501	-
Germany	934	1 171	6 282	10 633	14 306	15 756 [n]	1 479	1 650	7 979	13 170	20 942	21 295 [n]	- 545	- 479	-1 697	-2 537	-6 636	-5 539
Hungary[3]	-	-	-	181	-	-	-	-	-	215	-	-	-	-	-	- 35	-	-
Italy	198	144	1 410	3 051	2 684	2 978	570	546	2 366	3 437	3 440	2 993	- 372	- 402	- 956	- 386	- 756	- 15
Japan	794	982	2 751	5 976	10 259	-	1 177	1 229	2 930	4 165	4 512	-	- 383	- 247	- 179	1 811	5 747	-
Mexico	33	14	79	118	41	48 [n]	273	163	420	487	419	664 [n]	- 241	- 149	- 341	- 369	- 378	- 616
Netherlands	387	1 196	4 876	-	-	-	593	1 503	5 933	-	-	-	- 206	- 308	-1 057	-	-	-
New Zealand	-	-	21	20	-	-	-	-	15	8	-	-	-	-	5	12	-	-
Norway	44 [k]	28 [k]	348	496	1 382	1 379	76 [k]	77 [k]	438	928	1 246	1 189	- 33	- 48	- 90	- 431	136	190
Poland	-	-	-	231	177	-	-	-	-	234	795	-	-	-	-	- 3	- 618	-
Portugal	-	-	-	139	282	385	-	-	-	537	597	693	-	-	-	- 398	- 316	- 308
Slovak Republic	-	-	-	9 [q]	30 [n,q]	-	-	-	-	27 [q]	65 [n,q]	-	-	-	-	- 17	- 34	-
Spain	181	137	641	79	-	-	567	552	2 276	1 110	-	-	- 387	- 414	-1 635	-1 031	-	-
Sweden	68	87	217 [a]	-	-	-	64	49	116 [a]	-	-	-	4	38	102	-	-	-
Switzerland	-	870	1 941	2 778	3 233	4 334	-	233	745	1 262	3 251	4 250	-	637	1 196	1 516	- 18	84
United Kingdom	965	1 038	2 333	4 218	17 105 [n]	-	798	923	2 302	3 530	7 713 [n]	-	167	115	32	688	9 392	-
United States	7 284	6 678	17 819	30 289	41 098	44 142 [n]	650	1 170	4 035	6 919	16 713	19 258 [n]	6 634	5 508	13 784	23 370	24 385	24 884
Russian Federation	-	-	-	-	242	211	-	-	-	-	398	577	-	-	-	-	- 157	- 366

Times series notes:

(a) to (r): See standard statistical notes for science and technology indicators earlier in the Annex.

Year availability:

1. 1986 instead of 1985. 2. 1992 instead of 1991. 3. 1996 instead of 1995. 4. 2000 instead of 2001.

Source: OECD, MSTI database, May 2004.

StatLink: http://dx.doi.org/10.1787/525456707887

Table 30. Technology balance of payments, 1981-2002

Payments as a percentage of GERD

	1981	1985	1991	1995	2001	2002
Australia[1, 2, 3]	7.8	8.3	7.8	5.0	-	-
Austria[4]	12.8 [k]	13.7 [k]	12.1 [b,k]	58.5 [b]	68.5 [b]	-
Belgium[5]	53.2 [a]	59.5	72.5 [b]	64.9 [a]	94.0	-
Canada	11.3	10.9	9.9	10.1	7.4	-
Czech Republic	-	-	-	-	74.4	86.6
Denmark	11.4	22.2	-	-	-	-
Finland	14.4 [a,k]	12.6 [b,k]	12.4 [a,k]	13.2 [k]	25.6	27.1
France	8.6 [a]	9.0	8.5	8.3	9.2	-
Germany	8.8	9.7	17.9 [a]	23.9 [b]	45.0	42.5 [n]
Hungary[3]	-	-	-	73.3 [c]	-	-
Italy	16.0 [r]	11.4 [r]	16.6 [a]	31.3	28.3	-
Japan	4.3 [k]	3.3 [k]	2.9 [k]	2.7 [k]	3.5	-
Mexico	-	-	-	55.0	17.1	-
Netherlands	22.3	57.1	99.8	-	-	-
New Zealand	-	-	3.7	1.4	-	-
Norway	10.4 [k]	8.1 [k]	22.5	36.9 [a]	45.8	37.3
Poland	-	-	-	26.7 [a]	67.0	-
Portugal	-	-	-	88.1	64.3	61.2
Slovak Republic	-	-	-	14.8 [c,q]	48.5 [j,n,q]	-
Spain	71.9	60.4	49.3	23.4	-	-
Sweden	2.4 [a,j]	1.7 [j]	1.7 [a,j]	-	-	-
Switzerland[1, 2, 3, 4]	-	8.6 [a]	13.9	17.7	30.4 [-]	-
Turkey	-	-	-	-	-	-
United Kingdom	6.6 [a]	9.0 [a]	10.8	15.9	29.0 [n]	-
United States	0.9 [h]	1.0 [h]	2.5 [h]	3.8 [h]	6.1 [h]	7.0 [h,n]
Russian Federation	-	-	-	-	11.1	13.4

Times series notes:

(a) to (r): See standard statistical notes for science and technology indicators earlier in the Annex.

Year availability:

1. 1986 instead of 1985.
2. 1992 instead of 1991.
3. 1996 instead of 1995.
4. 2000 instead of 2001.
5. 1983 instead of 1981.

Source: OECD, MSTI database, May 2004.

StatLink: http://dx.doi.org/10.1787/507503146810

Table 31. Share of value added in total gross value added, 1991-2001

	(ISIC Rev.3)	Australia		Austria		Belgium		Canada		Czech Republic		Denmark		Finland		France		Germany		Greece		Iceland		Ireland	
		1991	2000	1991	2001	1992	2001	1991	2000	1992	2001	1991	1999	1991	2001	1991	2000	1991	2001	1991	2001	1991	2001	1991	1999
Total manufacturing	**(15-37)**	**13.5**	**12.0**	**21.6**	**20.6**	**20.1**	**18.7**	**15.8**	**19.9**	**29.1**	**27.5**	**17.0**	**16.3**	**19.6**	**24.5**	**19.9**	**18.1**	**27.4**	**22.4**	**14.8**	**11.9**	**15.9**	**-**	**26.6**	**33.7**
Food prod., beverages and tobacco	(15-16)	2.4	2.6 [1]	2.9	2.3	2.7	2.5	2.6	2.1	4.7	3.8 [1]	3.2	2.7	2.7	1.6	2.9	2.4	2.3	2.0	2.8	2.6	7.9	-	6.9	5.4
Textiles, textile prod., leather and footwear	(17-19)	0.8	0.6 [1]	1.4	0.8	1.4	1.0	0.8	0.8	3.6	1.6 [1]	0.8	0.5	0.8	0.4	1.3	0.8	1.0	0.5	4.1	1.9	0.6	-	1.2	0.5
Wood, pulp, paper, paper prod., printing & publishing	(20-22)	2.1	2.1 [1]	2.8	3.0	1.8	1.8	2.8	4.2	2.0	2.6 [1]	2.3	2.2	5.1	6.5	2.1	1.8	2.5	2.1	1.4	1.2	1.9	0.0	3.4	6.0
Chemical, rubber, plastics and fuel prod.	(23-25)	2.1	1.8 [1]	2.4	2.7	4.5	4.9	2.6	2.5	3.0	2.8 [1]	2.2	2.7	2.5	2.6	3.3	3.6	4.1	3.7	1.7	2.0	1.1	-	5.3	11.3
….Coke, refined petroleum prod. and nuclear fuel	(23)	0.4	0.2 [1]	0.3	0.8	0.5	0.6	0.4	0.3	0.5	0.2 [1]	0.0	0.0	0.6	0.4	0.6	0.8	0.2	0.4	0.5	0.9	-	-	0.0	0.0
….Chemicals and chemical prod.	(24)	1.1	1.0 [1]	1.3	1.1	3.3	3.6	1.5	1.4	1.6	1.4 [1]	1.4	1.8	1.3	1.4	1.8	2.0	2.7	2.2	0.8	0.7	0.6	-	4.5	10.7
……..Chemicals excluding pharmaceuticals	(24ex2423)	-	-	0.9	0.8	2.6	-	1.2	1.1	-	1.2 [1]	0.7	0.7	1.0	1.1	1.3	1.3	2.2	1.7	0.6	-	-	-	3.7	8.4
……..Pharmaceuticals	(2423)	-	-	0.5	0.4	0.7	-	0.4	0.3	-	0.2 [1]	0.7	1.1	0.3	0.3	0.5	0.7	0.5	0.5	0.2	-	-	-	0.8	2.3
….Rubber and plastics prod.	(25)	0.6	0.6 [1]	0.8	0.8	0.8	0.7	0.6	0.9	0.8	1.1 [1]	0.8	0.8	0.6	0.8	0.9	0.8	1.3	1.1	0.4	0.3	0.5	-	0.8	0.6
Other non-metallic mineral prod.	(26)	0.7	0.7 [1]	1.5	1.2	1.1	1.0	0.4	0.5	1.8	1.9 [1]	0.7	0.8	0.9	0.8	1.0	0.8	1.0	0.8	0.9	0.9	0.9	-	1.1	0.8
Basic metals and fabricated metal prod.	(27-28)	2.6	1.9 [1]	3.2	3.3	3.1	2.5	1.8	2.6	4.4	4.4 [1]	1.8	1.7	2.1	2.7	2.7	2.4	3.6	2.9	1.4	1.1	1.4	-	1.2	0.8
Machinery and equipment	(29-33)	1.4	1.3 [1]	5.1	4.9	2.9	2.7	2.1	2.9	5.4	5.7 [1]	4.1	4.1	4.0	8.5	3.9	3.5	8.4	6.3	0.9	0.9	0.8	-	5.9	7.8
….Machinery and equip., n.e.c.	(29)	0.7	0.6 [1]	2.5	2.3	1.3	1.2	0.9	1.3	3.6	2.7 [1]	2.5	2.3	2.4	2.8	1.6	1.3	4.0	3.4	0.3	0.4	-	-	1.1	0.8
….Electrical and optical equipment	(30-33)	0.7	0.7 [1]	2.6	2.5	1.6	1.5	1.2	1.6	1.9	3.0 [1]	1.6	1.8	1.6	5.7	2.3	2.2	4.4	3.0	0.5	0.5	-	-	4.8	7.0
……..Office, accounting and computing machinery	(30)	-	-	0.0	0.1	-	-	0.1	0.1	0.0	0.1 [1]	0.1	0.1	0.1	0.0	0.3	0.2	0.6	0.2	0.0	0.0	-	-	2.3	3.0
……..Electrical machinery and apparatus, nec	(31)	-	-	0.9	1.0	-	-	0.4	0.4	1.4	1.7 [1]	0.6	0.6	0.7	0.8	0.8	0.8	2.2	1.5	0.1	0.2	-	-	0.8	0.7
……..Radio, television and communication equipment	(32)	-	-	1.2	1.1	-	-	0.7	1.1	0.2	0.6 [1]	0.4	0.5	0.5	4.3	0.5	0.6	0.7	0.4	0.3	0.2	-	-	0.6	2.1
……..Medical, precision and optical instruments	(33)	-	-	0.4	0.4	-	-	-	-	0.2	0.6 [1]	0.5	0.6	0.3	0.6	0.7	0.6	0.9	0.9	0.1	0.0	-	-	1.1	1.2
Transport equipment	(34-35)	1.1	1.1 [1]	1.0	1.3	1.9	1.7	2.0	3.4	2.7	2.9 [1]	0.7	0.5	0.9	0.9	1.9	2.1	3.6	3.6	0.7	0.6	0.8	-	0.7	0.5
….Motor vehicles, trailers and semi-trailers	(34)	0.7	0.7 [1]	0.8	1.1	-	-	1.4	2.5	2.4	2.4 [1]	0.3	0.2	0.3	0.3	1.4	1.5	3.1	3.1	0.1	0.1	-	-	0.3	0.2
….Other transport equipment	(35)	0.3	0.4 [1]	0.2	0.2	-	-	0.6	0.9	0.3	0.5 [1]	0.4	0.2	0.6	0.6	0.5	0.6	0.5	0.5	0.6	0.5	-	-	0.4	0.3
……..Building and repairing of ships and boats	(351)	-	-	0.0	0.0	-	-	0.1	0.1	-	0.0 [1]	0.4	0.2	0.4	0.4	0.1	0.1	0.1	0.1	-	-	-	-	0.1	0.0
……..Aircraft and spacecraft	(353)	-	-	-	-	-	-	0.4	0.6	-	0.2 [1]	-	-	0.1	0.1	0.3	0.5	0.3	0.3	-	-	-	-	0.0	0.0
……..Railroad equip. and transport equip. n.e.c.	(352+359)	-	-	0.2	0.2	-	-	0.1	0.2	-	0.3 [1]	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-	-	-	-	0.3	0.3
Manufacturing nec; recycling	(36-37)	0.5	0.4	1.2	1.1	0.7	0.6	0.6	0.9	1.3	1.3 [1]	1.2	1.0	0.7	0.6	0.9	0.7	0.8	0.6	1.0	0.8	0.7	-	1.0	0.7
Electricity, gas and water supply	(40-41)	3.6	2.5	2.8	2.2	2.9	2.6	3.3	2.8	6.3	4.0	2.3	2.2	2.3	1.8	2.4	2.0	2.3	1.9	2.6	1.8	3.5	-	2.4	1.3
Construction	(45)	6.1	5.7	7.3	7.4	5.5	4.9	6.3	5.0	6.9	7.1	4.8	5.3	7.5	5.7	6.0	4.6	5.9	4.8	7.5	8.3	8.8	-	5.4	6.6
Total services	**(50-99)**	**68.2**	**70.6**	**64.6**	**67.1**	**69.3**	**72.3**	**68.3**	**64.1**	**49.1**	**55.8**	**71.0**	**72.1**	**64.8**	**64.2**	**68.4**	**72.5**	**62.2**	**69.4**	**62.8**	**70.4**	**60.0**	**-**	**56.3**	**53.9**
Wholesale and retail trade; restaurants and hotels	**(50-55)**	13.6	13.3	17.7	16.6	14.9	13.4	14.0	13.3	14.2	17.0	14.6	14.5	12.3	11.4	13.7	12.8	11.9	12.0	18.5	20.7	14.8	-	14.7	12.2
Transport and storage and communication	**(60-64)**	9.0	8.4	7.8	7.1	6.9	6.9	7.3	6.8	6.1	8.2	7.5	7.6	9.4	10.5	6.4	6.3	5.8	6.2	6.6	8.4	7.2	-	5.9	5.5
Transport and storage	(60-63)	5.9	5.3	5.4	4.8	-	-	4.2	4.1	4.7	-	5.5	5.3	7.1	7.1	4.1	4.2	3.5	3.8	-	5.2	5.7	-	3.4	-
Post and telecommunications	(64)	3.0	3.2	2.5	2.2	-	-	3.1	2.7	1.5	-	2.1	2.3	2.3	3.4	2.3	2.1	2.4	2.4	-	3.2	1.5	-	2.5	-
Finance, insurance, real estate and business services	**(65-74)**	25.9	29.3	18.4	23.5	24.6	28.0	23.9	24.7	17.2	15.7	22.8	23.2	18.0	21.0	27.1	30.4	24.2	29.8	19.5	21.2	17.2	-	15.8	20.0
Financial intermediation	(65-67)	6.5	7.4	6.8	6.6	6.2	5.3	6.3	7.1	6.6	3.6	4.8	5.0	4.3	3.8	5.0	5.1	5.0	3.8	-	5.7	5.3	-	3.3	4.5
Real estate, renting and business activities	(70-74)	19.4	21.9	11.6	16.8	18.4	22.7	17.6	17.6	10.5	12.1	18.0	18.2	13.7	17.2	22.1	25.3	19.2	26.0	-	15.5	11.9	-	12.5	15.5
….Real estate activities	(70)	9.9	9.8	6.6	8.3	-	-	12.2	10.8	4.6	-	11.1	10.7	9.1	10.4	11.0	11.9	9.3	12.4	-	12.2	7.9	-	-	-
….Renting of m&eq and other business activities	(71-74)	9.6	12.1	5.0	8.5	-	-	5.4	6.8	5.9	-	6.9	7.5	4.6	6.8	11.1	13.4	9.9	13.6	-	3.3	4.0	-	-	-
……..Other business activities	(74)	-	-	3.6	5.6	-	-	-	-	4.3	-	5.0	5.4	2.9	4.2	7.3	9.2	7.3	9.5	-	2.7	-	-	-	-
Community social and personal services	**(75-99)**	19.7	19.6	20.7	20.0	23.0	24.1	23.1	19.3	11.6	15.0	26.0	26.7	25.1	21.2	21.2	23.1	20.3	21.4	18.2	20.2	20.8	-	19.9	16.1
High technology manufactures		0.8	0.9 [1]	2.1	1.9	-	-	1.6	2.1	0.4	1.7 [1]	1.7	2.3	1.3	5.2	2.3	2.5	2.9	2.3	-	-	-	-	4.8	8.6
Medium-high technology manufactures		2.7	2.3 [1]	5.3	5.4	-	-	4.0	5.5	7.4	8.3 [1]	4.1	3.9	4.5	5.1	5.1	5.0	11.6	9.7	-	-	-	-	6.1	10.4
Medium-low technology manufactures		4.3	3.6 [1]	5.8	6.1	-	-	3.5	4.3	7.6	7.7 [1]	3.7	3.6	4.5	5.0	5.3	4.9	6.2	5.2	3.5	-	-	-	3.1	2.2
Low technology manufactures		5.7	5.6	8.3	7.2	6.6	5.9	6.8	8.0	11.7	9.2 [1]	7.6	6.5	9.3	9.2	7.1	5.7	6.6	5.2	9.3	6.4	11.0	-	12.5	12.5
High and medium-high technology manufactures		3.6	3.3 [1]	7.4	7.3	8.0	8.0	5.6	7.7	9.8	10.0 [1]	6.2	6.4	6.2	10.8	7.6	7.6	14.6	12.1	2.4	2.2	2.1	-	11.0	19.0

1. Intensity of the previous year.

2. 1998 instead of 1995.

3. EU includes the 15 EU Members before 1 May 2004 excluding Austria, Greece, Luxembourg, Portugal (for which no Anberd data are available).

4. OECD includes previous EU countries and Canada, Japan, and the United States.

Source: OECD, STAN Indicators 2004.

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Table 31. Share of value added in total gross value added, 1991-2001 (cont'd)

	(ISIC Rev.3)	Italy		Japan		Korea		Netherlands		Norway		Poland		Spain		Sweden		United Kingdom		Unites States		EU[3]		OECD[4]	
		1991	2001	1991	2001	1995	2001	1991	2000	1991	1998	1994	2001	1991	2001	1991	2001	1991	2001	1991	2000	1992	1999	1991	1999
Total manufacturing	**(15-37)**	**22.5**	**20.1**	**25.8**	**20.1**	**29.2**	**30.3**	**18.2**	**16.0**	**12.1**	**13.0**	**21.7**	**17.9**	**19.9**	**17.4**	**18.9**	**20.6**	**21.0**	**16.5**	**17.4**	**15.5**	**21.8**	**20.1**	**21.0**	**18.7**
Food prod., beverages and tobacco	(15-16)	2.4	2.0	2.5	2.4	3.0	3.4	3.2	3.0	2.1	1.9	3.5	3.8 [1]	3.4	2.5	1.8	1.7	3.1	2.3	1.9	1.5	2.7	2.4	2.4	2.1
Textiles, textile prod., leather and footwear	(17-19)	3.4	2.9	1.3	0.6	2.1	1.4	0.6	0.4	0.3	0.2	2.6	1.5 [1]	1.9	1.3	0.3	0.3	1.3	0.7	0.9	0.5	1.6	1.2	1.3	0.8
Wood, pulp, paper, paper prod., printing & publishing	(20-22)	2.1	2.0	2.3	1.9	1.7	1.4	2.5	2.3	2.5	2.5	2.3	2.5 [1]	2.1	1.9	4.0	4.4	2.8	2.5	2.5	2.1	2.4	2.3	2.4	2.3
Chemical, rubber, plastics and fuel prod.	(23-25)	2.9	2.7	3.4	3.3	5.7	7.5	3.6	3.2	1.5	1.5	3.4	3.1 [1]	3.1	3.0	2.4	3.2	3.8	2.8	3.0	2.7	3.3	3.2	3.2	3.1
….Coke, refined petroleum prod. and nuclear fuel	(23)	0.5	0.2	1.0	1.3	1.8	3.4	0.5	0.4	-	-	0.7	0.6 [1]	0.6	0.5	0.3	0.2	0.5	0.3	0.5	0.4	-	0.3	-	0.5
….Chemicals and chemical prod.	(24)	1.7	1.6	2.0	1.7	2.9	2.9	2.5	2.3	-	-	1.7	1.4 [1]	1.7	1.6	1.6	2.4	2.2	1.7	1.9	1.7	2.0	2.0	2.0	1.9
……..Chemicals excluding pharmaceuticals	(24ex2423)	1.0	0.9	1.4	1.0	2.0	1.9	2.2	1.9	-	-	-	1.1 [1]	1.1	1.1	0.9	0.9	1.6	1.0	1.4	1.1	1.4	1.3	1.4	1.2
……..Pharmaceuticals	(2423)	0.6	0.7	0.6	0.7	0.9	1.0	0.3	0.4	0.2	0.2	-	0.3 [1]	0.6	0.5	0.7	1.5	0.7	0.7	0.5	0.7	0.6	0.6	0.6	0.6
….Rubber and plastics prod.	(25)	0.8	0.8	0.3	0.2	1.0	1.1	0.6	0.5	0.3	0.3	1.0	1.0 [1]	0.8	0.8	0.5	0.6	1.0	0.9	0.6	0.6	-	0.9	-	0.7
Other non-metallic mineral prod.	(26)	1.4	1.4	0.9	0.7	1.3	1.0	0.7	0.7	0.5	0.5	1.4	1.4 [1]	1.5	1.4	0.6	0.5	0.7	0.5	0.4	0.4	1.1	1.0	0.8	0.7
Basic metals and fabricated metal prod.	(27-28)	3.1	2.7	3.6	2.3	3.8	3.4	2.3	1.8	1.5	1.9	2.6	2.2 [1]	2.2	2.3	2.5	2.8	2.4	1.7	1.8	1.6	2.7	2.5	2.6	2.2
Machinery and equipment	(29-33)	4.8	4.3	7.7	5.5	7.0	6.3	3.2	2.8	1.9	2.3	3.3	3.1 [1]	2.8	2.5	4.4	4.2	4.3	3.4	4.5	4.1	5.0	4.6	5.3	4.6
….Machinery and equip., n.e.c.	(29)	2.5	2.4	3.0	1.9	1.8	1.7	1.3	1.3	1.0	1.2	1.9	1.5 [1]	1.3	1.2	2.4	2.7	1.7	1.3	1.5	1.2	2.3	2.1	2.1	1.6
….Electrical and optical equipment	(30-33)	2.3	1.9	4.8	3.6	5.2	4.6	1.9	1.5	0.9	1.1	1.4	1.6 [1]	1.6	1.2	1.9	1.5	2.5	2.1	3.0	2.8	2.6	2.5	3.2	2.9
……..Office, accounting and computing machinery	(30)	0.1	0.1	0.7	0.5	0.3	0.8	0.1	0.1	0.0	0.0	0.1	0.1 [1]	0.2	0.1	0.2	0.2	0.5	0.3	0.5	0.3	0.3	0.2	0.5	0.4
……..Electrical machinery and apparatus, nec	(31)	1.0	0.9	1.3	1.0	0.7	0.4	0.4	0.2	0.5	0.5	0.7	0.7 [1]	0.7	0.6	0.5	0.8	0.8	0.6	0.6	0.4	1.2	1.0	0.9	0.7
……..Radio, television and communication equipment	(32)	0.6	0.5	2.3	1.8	3.9	2.8	0.9	0.8	0.2	0.2	0.4	0.3 [1]	0.4	0.2	0.7	-0.1	0.6	0.6	1.1	1.4	0.6	0.7	1.1	1.3
……..Medical, precision and optical instruments	(33)	0.5	0.4	0.5	0.3	0.3	0.6	-	-	0.2	0.3	0.3	0.4 [1]	0.3	0.2	0.5	0.7	0.7	0.6	0.9	0.6	0.6	0.6	0.7	0.5
Transport equipment	(34-35)	1.3	1.3	2.4	2.3	3.9	5.5	0.8	0.8	1.5	1.8	1.6	1.3 [1]	2.0	1.8	2.3	2.9	2.1	1.8	1.8	1.9	2.1	2.2	2.1	2.2
….Motor vehicles, trailers and semi-trailers	(34)	0.8	0.7	2.2	2.0	3.1	3.4	0.3	0.4	0.1	0.2	0.7	0.7 [1]	1.6	1.5	1.6	2.3	1.1	0.9	0.8	1.2	1.6	1.6	1.4	1.6
….Other transport equipment	(35)	0.5	0.6	0.2	0.3	0.8	2.2	0.5	0.4	1.4	1.6	0.9	0.6 [1]	0.4	0.3	0.7	0.6	1.0	0.9	1.0	0.7	0.5	0.6	0.7	0.6
……..Building and repairing of ships and boats	(351)	0.1	0.2	0.1	0.1	0.7	-	-	0.2	1.2	1.6	-	0.3 [1]	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
……..Aircraft and spacecraft	(353)	0.2	0.3	0.1	0.1	0.1	-	-	0.1	0.1	0.0	-	0.1 [1]	0.1	0.1	0.4	0.3	0.8	0.6	0.9	0.5	0.3	0.3	0.5	0.4
……..Railroad equip. and transport equip. n.e.c.	(352+359)	0.1	0.2	0.1	0.1	0.1	-	-	0.1	0.1	0.0	-	0.1 [1]	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Manufacturing nec; recycling	(36-37)	1.1	1.0	1.6	1.1	0.6	0.4	1.2	1.1	0.4	0.5	1.0	1.0 [1]	0.9	0.8	0.5	0.6	0.6	0.7	0.6	0.6	0.8	0.8	0.9	0.8
Electricity, gas and water supply	(40-41)	2.2	2.3	3.1	3.7	2.1	2.8	2.0	1.5	3.4	2.6	3.8	3.7	3.3	2.1	3.3	2.7	2.7	1.8	2.9	2.2	2.5	2.2	2.8	2.5
Construction	(45)	6.2	4.9	9.3	6.9	11.2	8.3	5.8	5.8	4.1	5.1	7.3	7.2	8.7	8.7	6.6	4.4	5.9	5.5	3.9	4.7	6.3	5.4	6.0	5.4
Total services	**(50-99)**	**65.2**	**69.5**	**59.3**	**67.9**	**51.0**	**53.9**	**66.1**	**71.4**	**63.7**	**64.6**	**56.1**	**65.0**	**62.4**	**67.9**	**68.0**	**70.2**	**66.0**	**72.8**	**72.1**	**76.2**	**66.0**	**69.4**	**66.6**	**70.8**
Wholesale and retail trade; restaurants and hotels	**(50-55)**	17.0	16.6	13.6	13.2	10.2 #	12.2	15.4	15.2	12.3	11.8 [1]	20.5	21.8	18.0	19.0	12.0	12.1	14.0	15.1	17.3	18.3	14.3	14.5	15.4	15.8
Transport and storage and communication	**(60-64)**	7.1	7.4	6.5	6.2	7.0 #	6.6	7.0	7.3	11.4	9.6 [1]	7.5	7.3	7.2	8.7	8.7	8.2	8.1	7.9	6.5	6.7	6.9	7.0	6.7	6.8
Transport and storage	(60-63)	5.3	5.0	5.0	4.5	4.6 #	4.3	5.0	4.8	9.1	7.4 [1]	-	-	5.2	-	6.4	5.6	5.0	4.7	3.1	3.2	4.5	-	4.0	-
Post and telecommunications	(64)	1.8	2.3	1.5	1.7	2.4 #	2.3	2.0	2.6	2.3	2.2 [1]	-	-	2.0	-	2.3	2.6	3.1	3.1	3.4	3.5	2.4	-	2.6	-
Finance, insurance, real estate and business services	**(65-74)**	21.2	26.0	21.2	26.9	19.3 #	19.0	20.3	26.4	18.3	17.5 [1]	9.1	15.3	18.1	20.0	21.8	25.0	22.2	27.9	25.3	30.0	23.5	26.4	23.4	27.2
Financial intermediation	(65-67)	6.1	5.9	5.1	6.3	6.8 #	6.9	4.8	6.3	5.1	4.0 [1]	1.1	2.2	6.3	5.8	4.9	3.6	5.4	5.3	6.4	8.7	5.5	5.1	5.8	6.6
Real estate, renting and business activities	(70-74)	15.1	20.1	16.1	20.6	12.5 #	12.2	15.5	20.0	13.2	13.5 [1]	8.0	13.1	11.8	14.2	17.0	21.4	16.8	22.7	18.9	21.3	18.0	21.3	17.6	20.5
….Real estate activities	(70)	-	10.8	10.3	12.8	8.5 #	8.5	7.3	8.0	8.7	7.7 [1]	-	-	7.4	-	11.0	10.7	-	9.5	11.5	11.4	-	-	-	-
….Renting of m&eq and other business activities	(71-74)	-	9.4	5.8	7.7	4.0 #	3.7	8.2	12.0	4.5	5.8 [1]	-	-	4.4	-	6.0	10.6	-	13.1	7.4	9.9	-	-	-	-
……..Other business activities	(74)	-	7.5	-	-	- #	-	6.2	8.7	3.3	4.1 [1]	-	-	-	-	-	7.4	-	9.1	-	-	-	-	-	-
Community social and personal services	**(75-99)**	19.8	19.5	18.0	21.6	15.3 #	16.1	23.4	22.5	21.7	21.5 [1]	19.0	20.6	19.1	20.2	25.5	24.9	21.7	21.8	23.0	21.3	21.3	21.6	21.1	21.1
High technology manufactures		2.1	2.0	4.2	3.4	5.4	-	2.1	1.8	0.8	0.9	-	1.4 [1]	1.6	1.2	2.5	2.5	3.2	2.8	3.8	3.6	2.3	2.4	3.3	3.2
Medium-high technology manufactures		5.6	5.1	7.9	6.0	7.7	-	4.3	3.9	-	-	-	4.1 [1]	4.8	4.5	5.7	6.9	5.3	3.9	4.3	4.0	6.6	6.2	5.9	5.3
Medium-low technology manufactures		5.9	5.3	6.0	4.7	8.6	-	4.2	3.6	-	-	-	5.6 [1]	5.3	5.2	4.0	4.2	4.7	3.5	3.4	3.1	5.2	4.8	4.7	4.2
Low technology manufactures		8.9	7.8	7.7	6.0	7.5	6.6	7.6	6.7	5.2	5.1	9.4	8.8 [1]	8.3	6.5	6.6	7.0	7.8	6.2	5.9	4.8	7.6	6.7	7.0	6.0
High and medium-high technology manufactures		7.8	7.2	12.2	9.5	13.8	14.8	6.6	5.9	-	-	6.6	5.8 [1]	6.5	5.9	8.3	9.5	8.6	6.9	8.2	7.7	9.1	8.7	9.4	8.7

1. Intensity of the previous year.

2. 1998 instead of 1995.

3. EU includes the 15 EU Members before 1 May 2004 excluding Austria, Greece, Luxembourg, Portugal (for which no Anberd data are available).

4. OECD includes previous EU countries and Canada, Japan, and the United States.

Source: OECD, STAN Indicators 2004.

Table 32. Trade-to-GDP ratio for goods and services, 1991-2003[1]

Average imports and exports, as a percentage of nominal GDP, and average annual growth rates (%)

	Goods							Services							Goods and services						
	Trade-to-GDP ratio				Average growth			Trade-to-GDP ratio				Average growth			Trade-to-GDP ratio				Average growth		
	1991	1995	2001	2003	1991-2003	1991-2001	2001-03	1991	1995	2001	2003	1991-2003	1991-2001	2001-03	1991	1995	2001	2003	1991-2003	1991-2001	2001-03
Australia[2]	13.1	15.3	17.0	16.6	2.1	2.6	-2.4	4.0	4.6	4.5	4.3	0.8	1.3	-4.5	17.1	19.9	21.6	20.9	1.8	2.3	-2.9
Austria	26.7	25.8	35.4	34.7	2.2	2.8	-1.0	12.1	11.4	17.0	16.3	2.5	3.4	-1.9	38.8	37.2	52.4	51.0	2.3	3.0	-1.3
Belgium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	68.2	66.9	84.2	80.9	1.4	2.1	-2.0
Canada	21.4	31.0	35.3	30.9	3.1	5.0	-6.7	4.3	5.1	5.9	5.5	2.0	3.1	-3.9	25.7	36.1	41.2	36.4	2.9	4.7	-6.3
Czech Republic	41.3	44.0	61.0	58.4	2.9	3.9	-2.3	8.0	12.0	11.1	8.8	0.8	3.3	-11.3	49.3	56.0	72.1	67.2	2.6	3.8	-3.5
Denmark	26.6	26.4	29.4	28.3	0.5	1.0	-1.8	7.7	7.0	12.1	11.7	3.5	4.5	-1.5	34.3	33.4	41.4	40.0	1.3	1.9	-1.7
Finland	17.7	26.4	30.2	28.7	4.0	5.4	-2.6	4.7	6.4	5.5	5.3	0.9	1.6	-2.4	22.4	32.8	35.7	34.0	3.5	4.7	-2.6
France	18.0	18.1	22.5	20.8	1.2	2.2	-4.0	3.7	3.7	4.6	4.4	1.5	2.3	-2.5	21.7	21.8	27.1	25.2	1.2	2.2	-3.7
Germany	22.3	20.0	28.3	28.0	1.9	2.4	-0.5	4.1	4.1	5.9	5.9	3.0	3.6	0.1	26.4	24.2	34.2	34.0	2.1	2.6	-0.4
Greece	17.8	16.5	17.9	16.7	-0.5	0.1	-3.5	4.3	4.7	10.1	7.7	4.8	8.5	-13.9	22.1	21.3	28.0	24.4	0.8	2.4	-7.0
Hungary	-	34.5	62.1	54.3	5.7	9.8	-6.7	-	10.1	11.4	9.7	-0.5	2.0	-7.9	41.8	44.6	73.5	64.1	3.6	5.6	-6.9
Iceland	23.6	24.8	26.8	23.5	0.0	1.3	-6.6	8.9	9.7	14.2	13.5	3.5	4.7	-2.7	32.5	34.5	41.0	37.0	1.1	2.3	-5.2
Ireland	45.0	57.9	63.4	47.2	0.4	3.4	-14.7	10.4	12.9	27.6	28.7	8.4	9.7	2.1	55.4	70.8	90.9	75.9	2.6	5.0	-9.0
Italy	14.7	19.4	21.6	19.5	2.3	3.9	-5.2	3.9	5.6	6.1	5.7	3.2	4.5	-3.4	18.6	25.0	27.7	25.1	2.5	4.0	-4.8
Japan[3]	7.5	6.9	8.4	8.8	1.4	1.1	4.6	1.7	1.5	1.7	1.8	0.6	0.2	5.5	9.2	8.4	10.1	11.0	1.5	1.0	4.4
Korea	23.7	24.5	29.9	30.7	2.2	2.3	1.3	3.7	4.9	6.7	6.2	4.3	6.0	-4.4	27.4	29.4	36.7	36.9	2.5	2.9	0.3
Luxembourg	62.4	53.3	53.5	46.8	-2.4	-1.5	-6.7	40.3	49.6	90.9	81.3	5.8	8.1	-5.6	102.7	103.0	144.4	128.1	1.8	3.4	-6.0
Mexico[2]	14.7	25.7	26.3	25.5	5.0	5.8	-3.1	3.1	3.4	2.4	2.3	-2.7	-2.7	-3.4	17.8	29.1	28.6	27.8	4.0	4.7	-3.2
Netherlands	43.5	44.9	51.1	48.4	0.7	1.6	-3.7	9.2	9.5	11.5	11.8	1.9	2.2	0.4	52.7	54.5	62.6	59.0	0.9	1.7	-2.9
New Zealand[2]	20.8	21.3	25.4	23.4	1.1	2.0	-8.3	7.2	7.6	8.4	8.2	1.2	1.5	-2.2	27.9	28.9	33.7	31.5	1.1	1.9	-6.7
Norway	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36.0	34.9	37.2	34.5	-0.3	0.3	-3.7
Poland[3]	19.8	19.5	24.5	26.3	2.6	2.1	7.1	3.1	3.1	5.0	5.0	4.3	4.8	-0.5	22.9	22.6	29.5	35.7	3.7	2.5	9.5
Portugal[3]	-	27.4	29.6	28.0	0.3	1.3	-5.7	-	5.9	6.1	5.9	0.1	0.6	-2.5	33.6	33.3	35.7	33.4	0.0	0.6	-3.2
Slovak Republic	-	45.4	66.2	68.6	4.3	4.9	1.8	-	11.6	11.3	10.2	-3.3	-2.8	-5.2	46.1	57.0	77.5	78.8	4.5	5.2	0.9
Spain	13.8	17.5	23.1	21.7	3.8	5.2	-3.0	4.2	5.2	7.7	7.1	4.4	6.0	-3.8	18.0	22.7	30.7	28.8	4.0	5.4	-3.2
Sweden	20.8	29.1	32.1	30.5	3.2	4.3	-2.6	5.8	6.8	10.6	9.9	4.5	6.0	-3.3	26.6	35.9	42.7	40.4	3.5	4.7	-2.8
Switzerland[2]	27.1	26.0	33.7	31.4	1.2	2.2	-4.0	6.5	6.8	9.3	9.3	3.1	3.5	1.1	33.6	32.9	43.0	40.6	1.6	2.5	-2.9
Turkey	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.2	22.1	32.5	29.0	5.4	7.6	-5.7
United Kingdom	18.6	22.2	21.2	19.2	0.3	1.3	-4.9	5.1	6.4	7.6	7.4	3.1	3.9	-1.1	23.7	28.5	28.7	26.6	1.0	1.9	-3.9
United States[2]	7.8	9.1	9.5	9.1	1.4	2.0	-4.3	2.5	2.6	2.7	2.6	0.5	0.7	-1.0	10.3	11.7	12.1	11.7	1.2	1.7	-3.6
Total OECD[2, 4]	**13.4**	**14.7**	**16.8**	**16.5**	**1.9**	**2.3**	**-1.7**	**3.3**	**3.6**	**4.3**	**4.4**	**2.5**	**2.6**	**1.4**	**18.0**	**19.4**	**22.3**	**22.1**	**1.9**	**2.1**	**-0.9**
EU-15[2, 4]	**19.4**	**21.3**	**25.7**	**24.7**	**1.6**	**2.7**	**-3.9**	**4.6**	**5.3**	**7.3**	**7.3**	**4.1**	**4.6**	**-0.4**	**26.3**	**28.8**	**35.5**	**34.3**	**1.9**	**2.8**	**-2.7**
EU-25[2, 4]	**19.4**	**21.6**	**26.3**	**25.3**	**1.8**	**3.1**	**-4.7**	**4.6**	**5.3**	**7.3**	**7.3**	**4.2**	**4.6**	**-0.6**	**26.4**	**29.0**	**35.9**	**34.9**	**2.2**	**3.1**	**-2.4**

1. Or nearest years available. 2. 2002 instead of 2003. 3. 2002 instead of 2003 for Goods and for Services. 4. Aggregates of countries for which data are available.

Source: OECD, National Accounts database, November 2004.

StatLink: http://dx.doi.org/10.1787/534761537201

Table 33. Export ratio by industry and technology level, 1992-2002

Exports as a percentage of production

	(ISIC Rev.3)	Australia		Austria		Belgium		Canada		Czech Rep.		Denmark		Finland		France		Germany		Greece	
		1992	1999	1992	2002	1992	2002	1992	2000	1993	2001	1992	2002	1992	2002	1992	2002	1992	2001	1995	2002
Total manufacturing	**(15-37)**	**17**	**21**	**45**	**67**	**46**	**115**	**42**	**53**	**33**	**53**	**57**	**70**	**38**	**48**	**29**	**38**	**32**	**47**	**20**	**22**
High technology manufactures		**31**	**41**	**56**	**107** [1]	**-**	**155** [2]	**57**	**84**	**76**	**68** [1]	**101**	**130**	**59**	**-**	**42**	**62** [1]	**54**	**101**	**26**	**-**
Pharmaceuticals	(2423)	16	26	58	111 [1]	59	135 [2]	10	25	-	67 [1]	85	101	36	-	24	53 [1]	46	90	11	-
Office, accounting and computing machinery	(30)	99	116	1,044	208	-	2,804 [2]	117	120	180	114 [1]	206	406	69	310	62	102 [1]	46	117	156	895
Radio, television and communication equip.	(32)	16	25	32	90	-	110 [2]	40	69	72	73 [1]	95	185	62	58	39	66 [1]	51	108	20	38
Medical, precision and optical instruments	(33)	42	67	71	102	-	232 [2]	-	-	29	42 [1]	102	96	71	62	29	45 [1]	47	74	50	68
Aircraft and spacecraft	(353)	42	40	-	- [1]	-	78 [2]	74	87	-	38 [1]	-	-	9	-	68	66 [1]	100	142	-	-
Medium-high technology manufactures		**14**	**20**	**73**	**92** [1]	**-**	**129** [2]	**62**	**72**	**63**	**69** [1]	**75**	**86**	**50**	**-**	**41**	**51** [1]	**42**	**54**	**24**	**-**
Chemicals excluding pharmaceuticals	(24ex2423)	13	18	54	79 [1]	56	118 [2]	38	53	-	59 [1]	63	90	38	-	47	61 [1]	46	60	21	-
Machinery and equipment, nec	(29)	19	26	71	81	-	160 [2]	47	67	43	80 [1]	76	77	46	48	39	55 [1]	43	57	23	38
Electrical machinery and apparatus, nec	(31)	14	25	81	90	-	97 [2]	41	66	31	71 [1]	58	77	49	77	37	53 [1]	24	38	29	42
Motor vehicles, trailers and semi-trailers	(34)	11	17	96	123	-	141 [2]	81	81	56	66 [1]	113	156	137	165	40	44	48	55	36	33
Railroad equip. and transport equip. nec	(352+359)	5	5	32	68 [1]	-	89 [2]	32	34	-	60 [1]	118	165	9	-	39	36 [1]	42	38	-	-
Medium-low technology manufactures		**21**	**23**	**40**	**44** [1]	**-**	**66** [2]	**33**	**35**	**31**	**46** [1]	**43**	**41**	**34**	**41**	**21**	**24** [1]	**22**	**31**	**23**	**-**
Coke, refined petroleum prod. and nuclear fuel	(23)	17	26	6	13	34	55	21	25	12	23 [1]	42	28	30	38	14	15	15	21	22	18
Rubber and plastics prod.	(25)	5	7	68	66	46	102	27	40	31	58 [1]	54	58	34	38	26	31 [1]	26	39	18	31
Other non-metallic mineral prod.	(26)	3	4	26	28	30	52	18	28	48	50 [1]	32	28	18	26	16	19	15	23	22	11
Basic metals	(27)	47	46	56	65	47	90 [2]	60	53	32	44 [1]	54	67	47	58	42	45 [1]	36	47	37	35
Fabricated metal prod., except mach. & equip.	(28)	5	4	37	40	21	42 [2]	15	24	34	48 [1]	35	34	22	19	12	14 [1]	15	22	12	16
Building and repairing of ships and boats	(351)	19	49	58	394 [1]	-	38 [2]	15	51	-	90 [1]	54	60	44	75	24	49 [1]	46	66	-	-
Low technology manufactures		**14**	**16**	**29**	**48**	**39**	**83**	**29**	**38**	**24**	**34** [1]	**48**	**59**	**32**	**41**	**20**	**26** [1]	**20**	**27**	**18**	**18**
Food prod., beverages and tobacco	(15-16)	19	22	8	27	30	56	14	21	14	13 [1]	51	59	5	10	20	23	13	18	15	13
Textiles, textile prod., leather and footwear	(17-19)	20	26	64	95	58	153	13	35	42	71 [1]	82	193	38	54	31	52	49	77	32	38
Wood and prod. of wood and cork	(20)	8	10	35	47	30	65	60	58	27	38 [1]	42	43	48	45	12	18 [1]	9	18	6	5
Pulp, paper, paper prod., printing & publishing	(21-22)	3	4	41	50	24	49	45	44	21	37 [1]	18	22	51	54	13	17 [1]	16	23	7	6
Manufacturing nec; recycling	(36-37)	9	12	32	60	70	186	25	51	37	53 [1]	61	59	23	26	19	26 [1]	25	37	6	8

1. Intensity of the previous year.

2. 2000 instead of 2002.

3. EU includes the 15 EU Members before 1 May 2004 excluding Belgium, Greece, Luxembourg, Netherlands.

4. OECD includes previous EU countries and Australia, Canada, Japan, Norway and the United States.

Source: OECD, STAN Indicators 2004.

StatLink: http://dx.doi.org/10.1787/442804674716

Table 33. Export ratio by industry and technology level, 1992-2002 (cont'd)

Exports as a percentage of production

	(ISIC Rev.3)	Hungary		Iceland		Ireland		Italy		Japan		Korea		Mexico		Netherlands		New Zealand		Norway	
		1992	2002	1992	2000	1992	1999	1992	2002	1992	2002	1994	2001	1992	2001	1992	2002	1992	1998	1992	2002
Total manufacturing	**(15-37)**	**39**	**63**	**50**	**54**	**70**	**84**	**23**	**34**	**13**	**18**	**23**	**31**	**19**	**42**	**64**	**82**	**36**	**40**	**37**	**40**
High technology manufactures		**-**	**94** [1]	**-**	**36** [1]	**123**	**120**	**31**	**56** [1]	**27**	**30** [1]	**39**	**-**	**-**	**84**	**93**	**223** [1]	**-**	**-**	**67**	**78** [1]
Pharmaceuticals	(2423)	-	48 [1]	-	15 [1]	248	168	15	50 [1]	4	6 [1]	4	6	8	15	61	101 [1]	-	-	64	62 [1]
Office, accounting and computing machinery	(30)	35	108 [1]	-	187 [1]	106	106	76	83 [1]	34	33 [1]	59	53	89	141	392	1,625 [1]	-	-	179	259 [1]
Radio, television and communication equip.	(32)	67	98 [1]	-	8 [1]	103	124	26	51 [1]	27	28 [1]	44	58	76	68	46	84 [1]	-	-	57	64 [1]
Medical, precision and optical instruments	(33)	24	91 [1]	-	49 [1]	95	92	32	55 [1]	43	86	33	20	-	-	-	- [1]	-	-	55	54 [1]
Aircraft and spacecraft	(353)	229	5 [1]	-	47 [1]	-	-	48	70 [1]	13	31 [1]	96	-	-	140	-	76 [1]	-	-	55	237 [1]
Medium-high technology manufactures		**-**	**77** [1]	**-**	**22** [1]	**77**	**99**	**33**	**50** [1]	**20**	**25** [1]	**24**	**-**	**34**	**69**	**82**	**95** [1]	**-**	**-**	**-**	**-**
Chemicals excluding pharmaceuticals	(24ex2423)	-	69 [1]	-	4 [1]	79	101	22	37 [1]	14	21 [1]	27	36	21	31	76	90 [1]	-	-	-	-
Machinery and equipment, nec	(29)	40	85 [1]	-	47	96	96	42	59	19	29	28	45	42	94	82	74	-	-	40	47 [1]
Electrical machinery and apparatus, nec	(31)	76	56 [1]	-	4 [1]	70	115	19	31 [1]	16	24 [1]	39	45	89	159	102	160 [1]	-	-	26	52 [1]
Motor vehicles, trailers and semi-trailers	(34)	78	94 [1]	-	42 [1]	60	87	39	53 [1]	23	26 [1]	16	31	26	55	99	122 [1]	-	-	96	82 [1]
Railroad equip. and transport equip. nec	(352+359)	36	77 [1]	-	0 [1]	2	8	35	50 [1]	74	95 [1]	8	-	-	61	-	130 [1]	-	-	11	23 [1]
Medium-low technology manufactures		**28**	**36** [1]	**-**	**54** [1]	**61**	**46**	**17**	**24** [1]	**6**	**8** [1]	**16**	**-**	**12**	**20**	**56**	**60** [1]	**-**	**-**	**-**	**-**
Coke, refined petroleum prod. and nuclear fuel	(23)	15	22 [1]	-	-	-	-	14	17	2	1	8	17	8	1	76	78	-	-	-	-
Rubber and plastics prod.	(25)	32	45 [1]	4	9	72	53	23	32	15	21 [1]	18	26	17	30	76	79	-	-	30	34 [1]
Other non-metallic mineral prod.	(26)	27	30 [1]	1	1	31	26	17	21	5	8	4	7	8	15	31	20	6	4	13	13 [1]
Basic metals	(27)	53	53 [1]	94	98 [1]	94	94	22	30 [1]	6	11	16	19	16	20	94	105	76	85	75	75
Fabricated metal prod., except mach. & equip.	(28)	26	34 [1]	9	5 [1]	54	33	12	17 [1]	4	6	17	19	14	39	32	25	10	12	26	21 [1]
Building and repairing of ships and boats	(351)	29	50 [1]	-	99 [1]	63	9	11	56 [1]	54	53 [1]	49	-	-	9	-	34 [1]	-	-	51	20
Low technology manufactures		**37**	**42** [1]	**59**	**59**	**51**	**43**	**19**	**28**	**3**	**3** [1]	**21**	**23**	**6**	**16**	**50**	**53**	**-**	**-**	**18**	**21**
Food prod., beverages and tobacco	(15-16)	25	24 [1]	72	73	50	41	9	16	1	1	4	4	2	5	52	58	51	52	16	20
Textiles, textile prod., leather and footwear	(17-19)	111	76 [1]	30	35	85	85	30	44	6	10 [1]	48	58	13	44	121	158	56	58	32	44
Wood and prod. of wood and cork	(20)	26	42 [1]	0	3	33	23	5	8	0	0 [1]	4	3	6	5	33	21	37	36	19	13
Pulp, paper, paper prod., printing & publishing	(21-22)	10	21 [1]	1	2	52	44	9	14	2	2 [1]	6	12	7	11	31	31	16	18	21	22
Manufacturing nec; recycling	(36-37)	33	151 [1]	0	1	31	34	33	44	5	7 [1]	26	43	24	53	33	28	14	12	23	28

1. Intensity of the previous year.
2. 2000 instead of 2002.
3. EU includes the 15 EU Members before 1 May 2004 excluding Belgium, Greece, Luxembourg, Netherlands.
4. OECD includes previous EU countries and Australia, Canada, Japan, Norway and the United States.

Source: OECD, STAN Indicators 2004.

Table 33. Export ratio by industry and technology level, 1992-2002 (cont'd)

Exports as a percentage of production

	(ISIC Rev.3)	Poland		Portugal		Slovak Rep.		Spain		Sweden		Switzerland		UK		Unites States		EU[3]		OECD[4]	
		1994	2001	1992	1999	1997	1999	1992	2001	1992	2001	1997	2000	1992	2001	1992	2001	1992	1999	1992	1999
Total manufacturing	**(15-37)**	**1**	**1**	**29**	**38**	**54**	**63**	**19**	**31**	**41**	**51**	**54**	**66**	**31**	**43**	**13**	**17**	**30**	**39**	**21**	**26**
High technology manufactures		**-**	**4** [1]	**42**	**62**	**-**	**-**	**28**	**49**	**66**	**67**	**-**	**-**	**57**	**100**	**26**	**35**	**49**	**71**	**34**	**43**
Pharmaceuticals	(2423)	-	4 [1]	11	23	-	-	10	32	67	79	-	-	40	76	10	15	33	56	19	28
Office, accounting and computing machinery	(30)	0	1 [1]	175	128	78	461	52	50	97	136	-	-	69	101	47	58	65	104	48	57
Radio, television and communication equip.	(32)	5	5 [1]	52	75	77	140	33	66	65	55	40	52	52	123	24	37	45	74	31	40
Medical, precision and optical instruments	(33)	1	1 [1]	61	60	34	30	24	47	65	72	76	88	51	63	16	26	44	56	30	41
Aircraft and spacecraft	(353)	-	9 [1]	-	-	-	-	121	86	46	103	-	-	70	123	35	44	73	77	47	57
Medium-high technology manufactures		**-**	**2** [1]	**39**	**66**	**-**	**-**	**36**	**51**	**50**	**58**	**-**	**-**	**45**	**53**	**20**	**24**	**42**	**51**	**-**	**-**
Chemicals excluding pharmaceuticals	(24ex2423)	-	2 [1]	20	34	-	-	22	38	43	66	-	-	46	60	17	22	41	54	-	-
Machinery and equipment, nec	(29)	3	3 [1]	36	51	58	81	34	42	52	64	70	82	51	55	24	27	45	54	32	38
Electrical machinery and apparatus, nec	(31)	3	2 [1]	57	94	64	82	25	36	49	66	44	51	36	52	24	38	29	41	24	34
Motor vehicles, trailers and semi-trailers	(34)	3	3 [1]	57	85	112	103	49	67	54	50	104	126	45	48	18	19	47	52	33	35
Railroad equip. and transport equip. nec	(352+359)	-	5 [1]	28	27	-	-	15	45	18	23	-	-	17	20	11	11	33	38	33	32
Medium-low technology manufactures		**-**	**1** [1]	**19**	**24**	**-**	**-**	**17**	**21**	**39**	**44**	**-**	**-**	**21**	**24**	**7**	**8**	**22**	**25**	**-**	**-**
Coke, refined petroleum prod. and nuclear fuel	(23)	1	1 [1]	24	18	34	45	24	20	48	49	-	-	24	29	5	5	18	20	-	-
Rubber and plastics prod.	(25)	1	1 [1]	14	33	67	75	18	29	45	56	48	53	21	22	8	11	26	32	18	21
Other non-metallic mineral prod.	(26)	0	0 [1]	18	19	47	45	11	18	17	26	21	27	16	17	6	7	16	20	11	13
Basic metals	(27)	1	1 [1]	17	47	62	54	27	29	52	61	94	174	33	44	10	13	35	39	19	22
Fabricated metal prod., except mach. & equip.	(28)	0	0 [1]	18	26	34	47	10	13	25	27	27	31	13	15	5	6	15	18	9	11
Building and repairing of ships and boats	(351)	-	2 [1]	29	10	-	-	47	26	71	57	-	-	15	15	10	9	31	39	33	34
Low technology manufactures		**0**	**0** [1]	**29**	**31**	**39**	**45**	**9**	**19**	**28**	**39**	**-**	**-**	**16**	**17**	**6**	**7**	**20**	**25**	**12**	**15**
Food prod., beverages and tobacco	(15-16)	0	0 [1]	9	12	14	13	7	16	6	15	12	13	14	15	6	6	15	19	9	11
Textiles, textile prod., leather and footwear	(17-19)	1	0 [1]	49	53	96	125	15	36	58	107	72	78	30	43	7	13	35	46	21	29
Wood and prod. of wood and cork	(20)	0	0 [1]	38	39	45	53	7	11	36	42	8	10	3	5	6	4	14	19	11	14
Pulp, paper, paper prod., printing & publishing	(21-22)	0	0 [1]	20	24	43	52	9	16	40	50	21	26	11	12	5	6	17	21	11	12
Manufacturing nec; recycling	(36-37)	0	0 [1]	19	21	45	53	10	21	34	41	88	95	26	24	12	15	26	32	14	19

1. Intensity of the previous year.

2. 2000 instead of 2002.

3. EU includes the 15 EU Members before 1 May 2004 excluding Belgium, Greece, Luxembourg, Netherlands.

4. OECD includes previous EU countries and Australia, Canada, Japan, Norway and the United States.

Source: OECD, STAN Indicators 2004.

Table 34. Import penetration by industry and technology level, 1992-2002

Imports as a percentage of domestic demand

	(ISIC Rev.3)	Australia		Austria		Belgium		Canada		Czech Republic		Denmark		Finland		France		Germany		Greece	
		1992	1999	1992	2002	1995	2002	1992	2000	1993	2001	1992	2002	1992	2002	1992	2002	1992	2001	1995	2002
Total manufacturing	**(15-37)**	**26**	**34**	**49**	**66**	**76**	**117**	**43**	**53**	**32**	**53**	**53**	**68**	**31**	**37**	**29**	**37**	**29**	**40**	**40**	**46**
High technology manufactures		**65**	**75**	**68**	**106** [1]	**129**	**152**	**72**	**88**	**92**	**81** [1]	**101**	**137**	**67**	**52** [1]	**42**	**59** [1]	**56**	**101**	**72**	**-**
Pharmaceuticals	(2423)	36	49	65	109 [1]	91	145 [2]	32	53	-	86 [1]	73	103	58	74 [1]	19	47 [1]	36	84	58	-
Office, accounting and computing machinery	(30)	100	103	152	146	253	474 [2]	107	108	106	106 [1]	126	155	78	119	72	101 [1]	62	109	102	109
Radio, television and communication equipment	(32)	50	70	42	90	119	110 [2]	56	74	83	82 [1]	95	172	63	37	45	64 [1]	57	107	71	73
Medical, precision and optical instruments	(33)	75	85	79	102	151	169 [2]	-	-	66	62 [1]	103	94	75	54	33	48 [1]	38	65	91	95
Aircraft and spacecraft	(353)	71	76	-	-	86	78 [2]	73	83	-	71 [1]	-	-	50	84 [1]	55	49 [1]	100	156	-	-
Medium-high technology manufactures		**39**	**49**	**76**	**92** [1]	**102**	**135** [2]	**66**	**73**	**66**	**67** [1]	**77**	**88**	**54**	**56** [1]	**38**	**48** [1]	**29**	**39**	**71**	**-**
Chemicals excluding pharmaceuticals	(24ex2423)	32	40	66	84 [1]	109	125 [2]	42	59	-	69 [1]	76	93	50	54 [1]	44	57 [1]	36	53	65	-
Machinery and equipment, nec	(29)	51	63	71	77	100	161 [2]	69	79	55	81 [1]	68	72	45	39	41	56 [1]	26	37	70	75
Electrical machinery and apparatus, nec	(31)	39	54	76	88	64	97 [2]	65	82	33	68 [1]	62	71	49	74	30	48 [1]	17	32	48	65
Motor vehicles, trailers and semi-trailers	(34)	37	46	97	123	111	150 [2]	79	76	42	53 [1]	106	120	128	130	35	38	34	35	92	93
Railroad equip. and transport equip. nec	(352+359)	32	44	37	60 [1]	80	94 [2]	31	38	-	45 [1]	111	111	25	50 [1]	40	43 [1]	39	42	-	-
Medium-low technology manufactures		**15**	**20**	**38**	**45** [1]	**53**	**60** [2]	**28**	**33**	**22**	**47** [1]	**45**	**46**	**28**	**27**	**22**	**25** [1]	**22**	**27**	**34**	**-**
Coke, refined petroleum prod. and nuclear fuel	(23)	16	15	23	39	39	48	11	11	18	45 [1]	47	35	31	26	22	20	28	27	16	16
Rubber and plastics prod.	(25)	24	29	64	67	81	102	36	43	38	64 [1]	52	57	40	38	27	32 [1]	22	29	41	51
Other non-metallic mineral prod.	(26)	10	12	21	27	36	42	30	37	20	30 [1]	26	30	19	20	15	19	16	20	25	17
Basic metals	(27)	18	23	53	58	76	87 [2]	39	45	19	53 [1]	78	82	31	42	42	47 [1]	37	45	46	42
Fabricated metal prod., except mach.&equip.	(28)	11	13	35	39	34	43 [2]	27	33	21	37 [1]	31	35	21	16	12	15 [1]	12	15	33	35
Building and repairing of ships and boats	(351)	3	50	71	239 [1]	36	29 [2]	16	59	-	82 [1]	25	48	25	17	14	29 [1]	16	50	-	-
Low technology manufactures		**15**	**19**	**31**	**44**	**59**	**81**	**22**	**27**	**17**	**32** [1]	**38**	**52**	**14**	**20**	**22**	**28** [1]	**27**	**31**	**26**	**29**
Food prod., beverages and tobacco	(15-16)	7	9	11	27	42	50	13	17	10	15 [1]	29	40	7	17	16	19	17	20	22	24
Textiles, textile prod., leather and footwear	(17-19)	35	48	71	96	91	180	41	54	25	69 [1]	85	169	59	73	39	61	64	85	31	41
Wood and prod. of wood and cork	(20)	13	12	20	24	55	62	17	16	10	22 [1]	50	54	8	9	16	23 [1]	20	19	27	36
Pulp, paper, paper prod., printing & publishing	(21-22)	15	16	33	36	45	51	23	23	27	41 [1]	28	31	9	10	17	21 [1]	16	21	32	25
Manufacturing nec; recycling	(36-37)	28	36	38	60	119	189	39	48	27	38 [1]	38	46	30	36	27	35 [1]	30	40	29	36

1. For comparison: intensity of the previous year.

2. 2000 instead of 2002.

3. EU includes the 15 EU Members before 1 May 2004 excluding Belgium, Greece, Luxembourg, Netherlands.

4. OECD includes previous EU countries and Australia, Canada, Japan, Norway and the United States.

Source: OECD, STAN Indicators 2004.

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Table 34. Import penetration by industry and technology level, 1992-2002 (cont'd)

Imports as a percentage of domestic demand

	(ISIC Rev.3)	Hungary		Iceland		Ireland		Italy		Korea		Mexico		Netherlands		New Zealand		Norway	
		1992	2001	1992	2000	1992	1999	1992	2001	1994	2001	1992	2001	1992	2002	1992	1998	1992	2002
Total manufacturing	**(15-37)**	**38**	**63**	**55**	**63**	**64**	**76**	**21**	**31**	**21**	**24**	**25**	**45**	**63**	**80**	**38**	**43**	**44**	**47**
High technology manufactures		**-**	**94**	**-**	**81** [1]	**147**	**140**	**40**	**63**	**33**	**-**	**-**	**84**	**93**	**211** [1]	**-**	**-**	**84**	**177** [1]
Pharmaceuticals	(2423)	-	55	-	62 [1]	-125	-139	20	49	7	11	17	23	62	101 [1]	-	-	70	84 [1]
Office, accounting and computing machinery	(30)	88	110	-	100 [1]	112	111	83	93	51	32	91	192	296	-	-	-	114	693 [1]
Radio, television and communication equipment	(32)	78	98	-	97 [1]	102	135	41	61	27	48	77	72	52	90 [1]	-	-	77	90 [1]
Medical, precision and optical instruments	(33)	47	94	-	80 [1]	91	87	43	61	63	43	-	-	-	- [1]	-	-	75	- [1]
Aircraft and spacecraft	(353)	200	32	-	66 [1]	184	152	46	74	99	-	-	205	-	82 [1]	-	-	80	79 [1]
Medium-high technology manufactures		**-**	**77**	**-**	**82** [1]	**78**	**98**	**32**	**45**	**28**	**-**	**37**	**69**	**83**	**94** [1]	**-**	**-**	**-**	**96** [1]
Chemicals excluding pharmaceuticals	(24ex2423)	-	80	-	64 [1]	69	104	36	48	33	35	32	52	70	85 [1]	-	-	-	95 [1]
Machinery and equipment, nec	(29)	54	91	-	82	98	98	23	38	48	45	72	96	85	72	-	-	64	76 [1]
Electrical machinery and apparatus, nec	(31)	69	51	-	82 [1]	77	116	16	27	32	54	87	192	102	148 [1]	-	-	50	128 [1]
Motor vehicles, trailers and semi-trailers	(34)	80	92	-	98 [1]	90	98	52	62	6	6	10	45	99	114 [1]	-	-	99	110 [1]
Railroad equip. and transport equip. nec	(352+359)	51	74	-	84 [1]	11	13	25	41	10	-	-	56	-	123 [1]	-	-	37	123 [1]
Medium-low technology manufactures		**25**	**46**	**-**	**60** [1]	**71**	**63**	**16**	**20**	**15**	**-**	**24**	**37**	**52**	**53** [1]	**-**	**-**	**-**	**53** [1]
Coke, refined petroleum prod. and nuclear fuel	(23)	11	19	-	- [1]	121	121	18	16	17	14	18	11	47	63	-	-	-	61 [1]
Rubber and plastics prod.	(25)	36	59	49	53	76	66	16	22	8	12	42	60	80	80	-	-	60	81 [1]
Other non-metallic mineral prod.	(26)	21	36	21	20	36	34	7	9	6	11	7	13	39	27	20	21	25	33 [1]
Basic metals	(27)	48	65	89	94 [1]	96	97	36	44	20	21	27	40	94	104	69	80	70	68
Fabricated metal prod., except mach.&equip.	(28)	24	45	47	41 [1]	60	50	5	7	10	10	32	54	34	26	19	18	42	29 [1]
Building and repairing of ships and boats	(351)	21	55	-	99 [1]	65	62	11	34	22	-	-	42	-	14 [1]	-	-	37	19
Low technology manufactures		**27**	**37**	**37**	**42**	**37**	**32**	**14**	**21**	**13**	**18**	**12**	**18**	**46**	**47**	**-**	**-**	**24**	**27**
Food prod., beverages and tobacco	(15-16)	9	13	24	33	23	24	15	20	9	12	7	8	34	40	11	15	10	14
Textiles, textile prod., leather and footwear	(17-19)	118	75	71	75	90	94	14	27	18	32	18	42	112	138	52	60	79	85
Wood and prod. of wood and cork	(20)	20	41	61	54	47	42	15	17	27	28	9	11	58	47	6	7	20	24
Pulp, paper, paper prod., printing & publishing	(21-22)	25	36	30	30	45	24	11	16	11	14	21	31	33	31	20	23	21	22
Manufacturing nec; recycling	(36-37)	40	346	45	56	32	41	11	18	15	29	25	39	45	39	30	34	48	52

1. For comparison: intensity of the previous year.

2. 2000 instead of 2002.

3. EU includes the 15 EU Members before 1 May 2004 excluding Belgium, Greece, Luxembourg, Netherlands.

4. OECD includes previous EU countries and Australia, Canada, Japan, Norway and the United States.

Source: OECD, STAN Indicators 2004.

Table 34. Import penetration by industry and technology level, 1992-2002 (cont'd)

Imports as a percentage of domestic demand

	(ISIC Rev.3)	Poland		Portugal		Spain		Slovak Rep.		Sweden		Switzerland		United Kingdom		United States		EU[3]		OECD[4]	
		1992	2001	1992	1999	1992	2001	1997	1999	1992	2001	1997	2000	1992	2001	1992	2001	1992	1999	1992	1999
Total manufacturing	**(15-37)**	**21**	**38**	**38**	**47**	**25**	**35**	**55**	**63**	**37**	**45**	**53**	**65**	**34**	**48**	**15**	**23**	**30**	**37**	**20**	**26**
High technology manufactures		**-**	**70** [1]	**69**	**74** [1]	**51**	**68**	**-**	**-**	**65**	**62**	**-**	**-**	**57**	**100**	**23**	**36**	**52**	**71**	**31**	**43**
Pharmaceuticals	(2423)	-	65 [1]	36	53 [1]	19	46	-	-	48	57	-	-	29	72	8	19	28	48	17	27
Office, accounting and computing machinery	(30)	88	83 [1]	104	108 [1]	76	74	97	157	98	109	139	142	75	101	51	68	74	103	50	65
Radio, television and communication equipment	(32)	50	74 [1]	66	64 [1]	58	80	89	117	58	45	57	69	59	126	32	42	53	73	29	38
Medical, precision and optical instruments	(33)	50	49 [1]	89	87 [1]	58	71	59	64	64	70	49	71	50	64	12	23	44	55	27	38
Aircraft and spacecraft	(353)	-	93 [1]	-	- [1]	114	90	-	-	50	103	-	-	60	124	14	30	69	74	36	49
Medium-high technology manufactures		**-**	**59** [1]	**66**	**73** [1]	**43**	**55**	**-**	**-**	**46**	**52**	**-**	**-**	**47**	**58**	**21**	**31**	**38**	**46**	**-**	**-**
Chemicals excluding pharmaceuticals	(24ex2423)	-	55 [1]	47	59 [1]	37	47	-	-	55	73	-	-	43	58	11	20	41	51	-	-
Machinery and equipment, nec	(29)	44	63 [1]	70	69 [1]	52	56	71	87	45	54	50	68	49	56	19	26	36	44	24	31
Electrical machinery and apparatus, nec	(31)	28	56 [1]	60	80 [1]	33	41	70	83	54	66	35	43	39	53	27	47	25	38	21	34
Motor vehicles, trailers and semi-trailers	(34)	35	61 [1]	83	87 [1]	45	66	110	105	41	40	101	103	52	62	29	36	43	48	29	34
Railroad equip. and transport equip. nec	(352+359)	-	39 [1]	65	40 [1]	36	42	-	-	23	27	-	-	31	41	17	21	36	43	28	32
Medium-low technology manufactures		**-**	**28** [1]	**29**	**34** [1]	**17**	**22**	**-**	**-**	**37**	**39**	**-**	**-**	**24**	**26**	**9**	**13**	**22**	**24**	**-**	**-**
Coke, refined petroleum prod. and nuclear fuel	(23)	11	14 [1]	30	26 [1]	23	23	18	26	50	42	109	113	18	26	9	13	24	22	-	-
Rubber and plastics prod.	(25)	24	37 [1]	35	47 [1]	22	30	64	78	50	57	52	56	25	26	9	12	25	29	18	20
Other non-metallic mineral prod.	(26)	11	19 [1]	10	13 [1]	8	10	31	33	27	30	34	40	18	19	9	14	14	15	10	13
Basic metals	(27)	16	43 [1]	63	76 [1]	27	36	39	35	42	53	95	155	43	50	14	22	39	43	20	24
Fabricated metal prod., except mach.&equip.	(28)	16	33 [1]	24	31 [1]	13	14	36	48	22	22	22	26	14	18	6	9	12	14	9	11
Building and repairing of ships and boats	(351)	-	19 [1]	17	10 [1]	18	26	-	-	69	24	-	-	13	8	2	6	17	20	12	15
Low technology manufactures		**11**	**21** [1]	**22**	**27** [1]	**14**	**21**	**36**	**44**	**23**	**30**	**-**	**-**	**25**	**30**	**11**	**16**	**22**	**26**	**15**	**19**
Food prod., beverages and tobacco	(15-16)	8	9 [1]	16	22 [1]	10	17	22	23	14	25	18	19	19	22	5	6	16	19	11	13
Textiles, textile prod., leather and footwear	(17-19)	12	59 [1]	31	36 [1]	22	39	96	128	84	103	86	90	45	67	27	44	39	50	31	42
Wood and prod. of wood and cork	(20)	4	12 [1]	11	16 [1]	14	19	20	31	9	15	17	19	29	31	8	13	19	21	14	17
Pulp, paper, paper prod., printing & publishing	(21-22)	22	26 [2]	19	23 [2]	14	17	35	43	13	16	31	37	18	18	4	6	16	18	9	10
Manufacturing nec; recycling	(36-37)	17	29 [1]	30	29 [1]	18	22	39	51	39	41	91	96	37	39	27	39	26	31	19	26

1. For comparison: intensity of the previous year.

2. 2000 instead of 2002.

3. EU includes the 15 EU Members before 1 May 2004 excluding Belgium, Greece, Luxembourg, Netherlands.

4. OECD includes previous EU countries and Australia, Canada, Japan, Norway and the United States.

Source: OECD, STAN Indicators 2004.

Table 35. Outward and inward foreign direct investment flows, 1990-2001

Billion USD

	Outward flows						Inward flows						Cumulative
	1990	1995	1998	1999	2000	2001	1990	1995	1998	1999	2000	2001	net outflow
Australia	2	2	5	2	1	6	6	5	6	7	7	6	- 39
Austria	2	1	3	3	6	3	-	-	-	3	9	6	10
Belgium-Luxembourg	6	12	28	133	218	86	8	11	23	149	226	77	- 38
Canada	5	11	34	16	48	35	8	9	23	24	67	27	10
Czech Republic	-	0	0	0	0	0	-	3	4	6	5	5	- 26
Denmark	2	3	4	13	24	9	1	4	6	11	32	7	- 4
Finland	3	1	19	7	24	8	1	1	12	5	9	3	40
France	36	16	43	127	176	83	16	24	29	47	43	53	326
Germany[1]	24	39	89	110	50	43	2	14	25	55	195	32	171
Greece	-	-	-	-	-	1	2	-	-	-	-	2	- 7
Hungary	-	-	-	0	1	0	-	-	-	2	2	2	- 5
Iceland	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland	-	-	4	5	5	6	0	0	9	19	26	16	- 53
Italy	7	6	12	7	12	21	6	5	3	7	13	15	40
Japan	57	53	40	65	50	33	3	4	10	21	29	18	441
Korea	1	3	3	2	3	2	1	1	5	11	10	3	- 13
Mexico	-	-	-	-	-	-	3	10	12	12	15	24	- 132
Netherlands	13	19	39	41	72	40	9	11	38	32	54	51	92
New Zealand	2	2	0	1	1	1	2	3	2	1	1	3	- 19
Norway	1	3	3	6	8	2	1	2	4	8	6	3	3
Poland	-	0	0	0	0	0	0	4	6	7	9	6	- 46
Portugal	0	1	4	3	8	8	2	1	3	1	6	6	- 3
Slovak Republic	-	-	-	-	0	0	-	-	-	-	2	1	- 4
Spain	3	4	19	42	55	28	14	6	12	16	38	22	18
Sweden	15	11	24	22	41	-	2	14	20	61	23	13	- 20
Switzerland	7	12	19	33	43	11	5	2	9	12	19	8	119
Turkey	-	-	-	1	1	0	1	1	1	1	1	3	- 11
United Kingdom	18	44	122	201	254	39	30	20	71	88	117	53	372
United States	31	92	131	175	165	114	48	59	174	283	301	124	- 201
Total OECD[2]	**236**	**335**	**645**	**1 015**	**1 263**	**580**	**171**	**214**	**506**	**888**	**1 267**	**590**	**1 020**
EU-25[2]	**129**	**157**	**410**	**715**	**944**	**375**	**93**	**118**	**259**	**508**	**811**	**370**	**862**
EU-15[2]	**129**	**157**	**410**	**715**	**943**	**375**	**93**	**111**	**249**	**493**	**793**	**355**	**943**

1. The statistics cover unified Germany as from 1990.

2. Excluding missing countries for respective years.

Source: OECD, FDI database, May 2004.

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