Chapter 3

PUBLIC/PRIVATE PARTNERSHIPS FOR INNOVATION

Public/private partnerships (P/PPs) *offer a framework for the public and the private sectors to join forces in areas in which they have complementary interests but cannot act as efficiently alone. They are increasingly popular in research and development* (R&D) *because they can effectively fill gaps in innovation systems, increase the efficiency of government policy in addressing market failures that affect innovation processes and address new social needs, especially when this requires long-term multidisciplinary research. Deriving such potential benefits challenges governments' ability to use* P/PPs *for the right purposes and manage them efficiently. This chapter draws the main lessons regarding the optimal implementation of* P/PP *programmes from peer reviews of four countries: Australia, Austria, France and the Netherlands.*

Introduction

A major conclusion of recent OECD work on economic growth was that governments need to be more responsive to the rapid transformation of innovation processes and related business needs and strategies, and that greater use of public-private partnerships (P/PPs) can increase this responsiveness and therefore enhance the efficiency and cost-effectiveness of technology and innovation policy (OECD, 2001).

P/PPs for research offer a framework for the public and the private sectors to join forces in areas in which they have complementary interests but cannot act as efficiently alone. Traditional in building physical infrastructures, they are increasingly popular in research and development (R&D) because they can effectively fill certain gaps in innovation systems (*e.g.* the lack of interaction between industry and public research), increase the efficiency of government policy in addressing certain market failures that affect innovation processes (*e.g.* the high costs and risks of pre-competitive research), and address new social needs, especially when this requires long-term multidisciplinary research. Deriving such potential benefits challenges governments' ability to use P/PPs for the right purposes and manage them efficiently. This chapter draws the main lessons regarding the optimal implementation of P/PP programmes from peer reviews of four countries: Australia, Austria, France and the Netherlands (Table 3.A.1.1).

P/PPs for innovation: definition and typology

The P/PP concept can encompass a broad range of co-operative relations or activities and a broad variety of programmes in terms of size, objectives and design. This can severely hamper the search for good policy practices in the absence of an agreed definition and typology. To decide what degree, form and content of interaction between the state and industry constitute a partnership – as opposed to more casual, arms-length or hierarchical relationships – the following criteria should apply:

- *Institutionalisation*. P/PPs involve *formal* relations or arrangements between the public and private sectors. This does not diminish the importance of informal relations, which are often a very fruitful form of collaboration. Formal relations develop very often out of existing informal relations.
- *Government as partner*. Government is unambiguously a partner of the private sector rather than a catalyst or regulator of private sector activities. Public actors in P/PPs may include federal and local government, government laboratories, public research institutes, publicly funded universities, research councils, public corporations or other public bodies, as well as international organisations. Private actors may include individual firms and other private organisations such as firm consortia and trade associations. P/PPs fit within a policy framework. Quite often, a national P/PP programme is composed of several sub-programmes, each of which comprises smaller projects involving collaboration between public and private actors in specific fields and/or regions, and the characteristics of P/PPs vary widely depending on their position within the hierarchy. For instance, governments are typically very active in creating an overarching P/PP programme but sub-programmes usually requires active involvement and initiative on the part of other public and private actors such as universities, public labs and companies.
- *Shared objectives and a clearly defined public interest*. The shared objectives and interests of both partners are clearly identifiable and, from a public perspective, are linked to specific government goals and missions such as health, environment, defence or industrial competitiveness.
- *Active involvement and co-investment of resources*. Active involvement of all partners in the decision-making and management process and co-investment of resources are core elements of any P/PP.

Co-invested resources include money, facilities, people and intangible assets such as knowledge, technology, expertise, information and networks. Some P/PPs involve joint contribution and sharing of each of these types of resources, but others require a varying mixture of co-investment that reflects the division of labour among partners. The role and degree of involvement of each partner may well vary in the course of the partnership process.[1] The intensity of a partnership is stronger as the intensity of co-investment across all types of relevant resources increases.

Given these criteria, the definition clearly excludes R&D contracting and other arrangements whereby the private or public sector mainly purchases services or equipment from the other. It also excludes mere public support to business R&D, when this involves only the flow of funds in one direction.[2] It is important to recognise that whereas too loose a definition might encourage re-labelling conventional programmes as P/PPs as the concept gains political visibility and recognition, sticking to too strict a definition would mask the changing role and emerging forms of P/PPs for innovation in different, country-specific institutional environments. Some programmes may therefore be categorised as P/PPs in a strong sense, while others, with a lesser intensity of interaction among partners, may still be P/PPs, but in a weaker sense.

P/PPs need also to be differentiated according to their objectives and goals. Public and private actors enter into partnerships for innovation for their own reasons. The fundamental interest of the private sector may simply be profit and new business opportunities through research, but firms may also have other motivations, such as access to public funding, access to the expertise and knowledge of the public sector, access to public infrastructure, access to information, building reputation and network. In fact, the stated objectives of a P/PP very often largely reflect those of the public sector (Box 3.1). The motivations of the public sector are manifold and can be general or more specific. The

Box 3.1. **Stated objectives of two selected P/PP programmes**

Research and technological innovation networks (France)

- Develop new forms of partnership between public research and the business community.
- Contribute to the creation and/or growth of innovative technology-based firms.
- Encourage research that could remove the technological obstacles to joint development of products and services based on new technologies.
- Gear research to demand, so as to satisfy medium- and long-term economic or societal needs.
- Help advance knowledge in response to societal demands.
- Position French innovation networks in the European Research Area (ERA).

Co-operative Research Centres (CRC) Programme (Australia)*

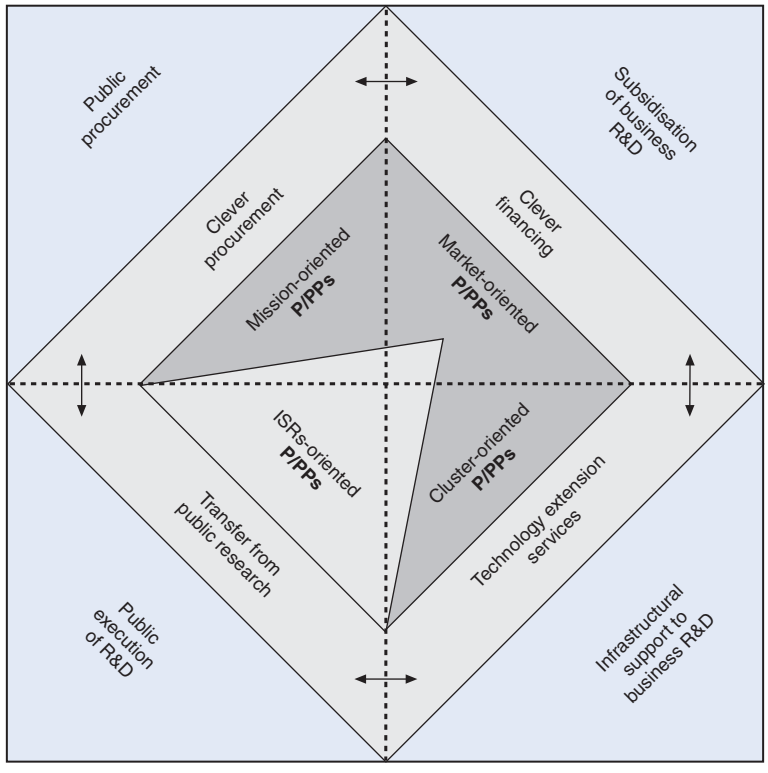
- Enhance Australia's industrial, commercial and economic growth through the development of sustained, user-driven, co-operative public-private research centres that achieve high levels of outcomes in adoption and commercialisation
- Enhance the contribution of long-term scientific and technological research and innovation to Australia's sustainable economic and social development.
- Facilitate the transfer of research outputs into commercial or other outcomes of economic, environmental or social benefit to Australia.
- Enhance the value to Australia of graduate researchers.
- Promote collaboration among researchers, between researchers and industry or other users, and improve efficiency in the use of intellectual and other research resources.

* As stated in the 2002 round.

general goals typically include: *i*) innovation-driven economic growth and industrial competitiveness; *ii*) strengthening of the national innovation system; *iii*) creating new technology-based firms and supporting innovative small and medium-sized enterprises (SMEs); *iv*) promoting private investment in R&D and innovation; and *v*) increasing the efficiency and effectiveness of public spending on R&D and innovation. More specific goals include: *i*) development of key technologies and products that are needed to fulfil public missions; *ii*) technology diffusion and commercialisation of the results of publicly funded research; *iii*) building public infrastructure for innovation; and *iv*) building innovative networks and enhancing co-operation in specific locations, sectors or technological fields.

Figure 3.1 proposes a typology of P/PPs. The corners show the four types of traditional policy measures: public procurement; public performance of R&D; direct/indirect subsidies to business R&D through tax incentives or conventional grant schemes; and public provision of infrastructure (including for human resource development) and services for business R&D and innovation. Towards the centre are shown four categories of programmes that are close to conventional policy measures in terms of stated goals but incorporate some P/PP components. Examples include: grant schemes that require matching funding by the private sector (*e.g.* grants from the Netherlands Organisation for Applied Scientific Research [TNO] financed by the Ministry of Economic Affairs in the Netherlands); various measures aimed at the commercialisation of publicly funded R&D; and other public support measures in the design and management of which the private sector is formally involved (*e.g.* schemes to facilitate development of or access to human resources, such as CIFRE and CORTECHS [see Table 3.1] in France). Finally, in the centre of the figure are proposed four major types of P/PPs: mission-oriented, market-oriented, industry-science relation (ISR)-oriented, and cluster/network-oriented.

Figure 3.1. **A typology of P/PPs**



Source: OECD.

Such programmes are not mutually exclusive. For example, the last two types mentioned, which are gaining in importance, often have mission-oriented objectives (*e.g.* the rise of so-called "national benefits" Co-operative Research Centres [CRCs] in Australia) or market-oriented secondary objectives (*e.g.* the Kind and Knet programmes in Austria [see Table 3.1]). Some P/PPs may even be part of broader programmes with multiple main objectives (*e.g.* the National Centres for Technological Research in France). Moreover, the nature of programmes may change over time: a conventional support

Table 3.1. **Major P/PP programmes in four countries**

	P/PP programme	Purpose	Budget (millions)	P/PPs as % of total S&T budget
Australia	Co-operative Research Centres Programme (CRCs)	Promote collaborative research between industry and public research organisations.	AUD 148.6	9.1 %
	Innovation Investment Fund	Provide small, high-technology companies with access to equity capital.	26.0	
	Pre-seed Program	Facilitate financing of spin-offs from public research.	6.0	
	Rural R&D Corporation	Partnership between government, including public research organisations (*e.g.* CSIRO) and rural industries to advance the uptake of knowledge by industry.	194.4	
	ARC Linkage Grants and Fellowships	Promote alliances between higher education institutions and industry, including funding for industry fellowships and infrastructure.	76.7	
Austria	Kplus, Kind/Knet	Promote collaborative research between industry and public research organisations.	EUR 36.0	2.8%
	Christian Doppler Laboratories	Bridge the gap between universities and industry research through support to industry-relevant research by small public research teams.	4.0	
France	Research and Technological Innovation Networks (RRITs)	Promote collaborative research between industry and public research organisations.	EUR 173.7	n.a.
	National Centres for Technological Research (CNRT)	Promote collaboration between public and private labs in regional innovation hubs.	n.a.	
	Regional Centres for Innovation and Technology transfer (CRITT)	Facilitate SME access to technological competencies of the education system.	n.a.	
	Technological Research Teams	Stimulate industry-relevant research in universities	n.a.	
	CIFRE and CORTECHS	Facilitate SME access to highly skilled labour.	n.a.	
Netherlands	Leading Technology Institutes (LTIs)	Promote collaborative research between industry and public research organisations.	EUR 28.9	6.3%
	STW Technology Foundation	Stimulates demand-driven technical and scientific research at Dutch universities.	42.8	
	Innovation-oriented Research Programmes (IOPs)	Strengthen strategic research at Dutch universities and research institutes in relation to private sector needs, via a programme-based approach.	13.4	
	Organisation for Applied Scientific Research (TNO)	Promote more demand-driven strategic and applied research via matching grants.	28.1	
	Technological Partnership scheme	Subsidise technological projects by corporate alliances or partnerships between companies and between companies and research institutes.	62.1	
	Economy, Ecology and Technology (EET) programme	Support major research projects which can contribute to sustainable growth.	33.0	
	The Netherlands Genomics Initiative	Promote collaborative research in the field of genomics.	11.4	
	Catalysis	Promote collaborative research in the field of catalysis.	2.3	

programme or clever financing scheme may accumulate sufficient partnership content to cross the line and become a true P/PP (*e.g.* the successive reforms of the Advanced Technology Program (ATP) and Small Business Innovative Research (SBIR) programme in the United States). Finally, P/PPs for innovation may grow out of public procurement in other fields (*e.g.* a contract for water supply and treatment may induce a firm to enter a P/PP in related R&D).

The increased use of P/PPs for innovation

In recent years, P/PPs for innovation have continued to expand in the OECD area, as reflected in budget allocations and programme design. New types of P/PPs have emerged in new policy areas, and many countries have implemented reforms to improve existing programmes, often with the aim of deepening the partnership component.

Table 3.2. **Share of P/PPs in competitive funding of research in France**
EUR millions

	1998	1999	2000	2001	2002
Competitive P/PP funding (RRIT)	15.2	50.6	66.3	86.9	80.2
Other competitive funding	26.0	20.4	21.5	22.7	23.0
Total	41.2	71.0	87.8	109.6	103.2
P/PPs in %	37%	71%	76%	79%	78%

Source: French Ministry of Research.

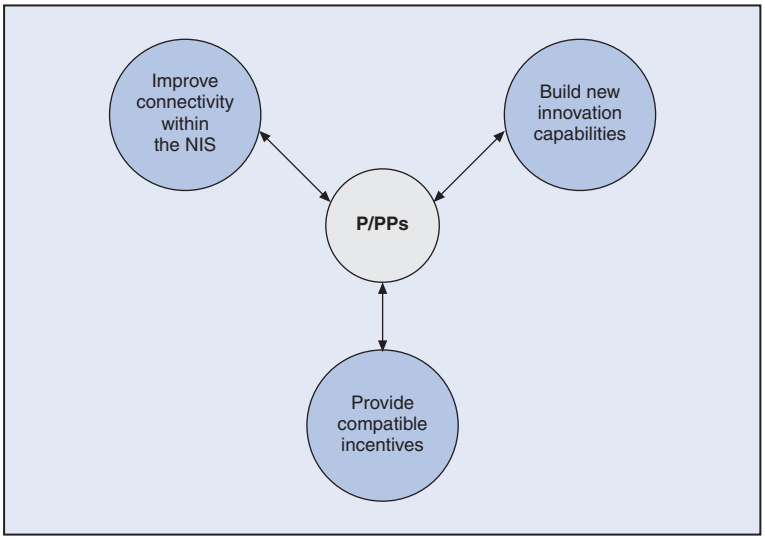
P/PPs represent a significant and increasing share of the overall S&T budget (Table 3.2). Their share is likely to increase in future; for example, the Dutch government has reserved EUR 805 million for public-private research proposals in strategic areas for the 2003-10 period.

Expansion of the scope of P/PPs has taken place in several directions:

- First, major programmes to promote strategic R&D co-operation among universities, public research institutes and private firms have been launched or reinforced in many OECD countries. Co-operative research centres or networks (*e.g.* Kplus and Kind/Knet in Austria, RRITs in France and LTIs in the Netherlands) are increasingly popular, following the pioneering example of the Australian CRC programme.
- Second, a number of OECD governments have promoted the formation of innovative networks in strategic research fields such as nanotechnology and genomics, either as stand-alone initiative (*e.g.* genomics in the Netherlands) or as part of a broader P/PP programme (*e.g.* Réseau de Recherche en Micro et Nano Technologies, Genhomme and Genoplante, as part of RRITs in France, and the Kplus centre on bio-molecular therapeutics in Austria).
- Third, in several countries, early-stage funding of innovation has emerged as a new domain for P/PPs (*e.g.* Australia's Pre-seed Programme).

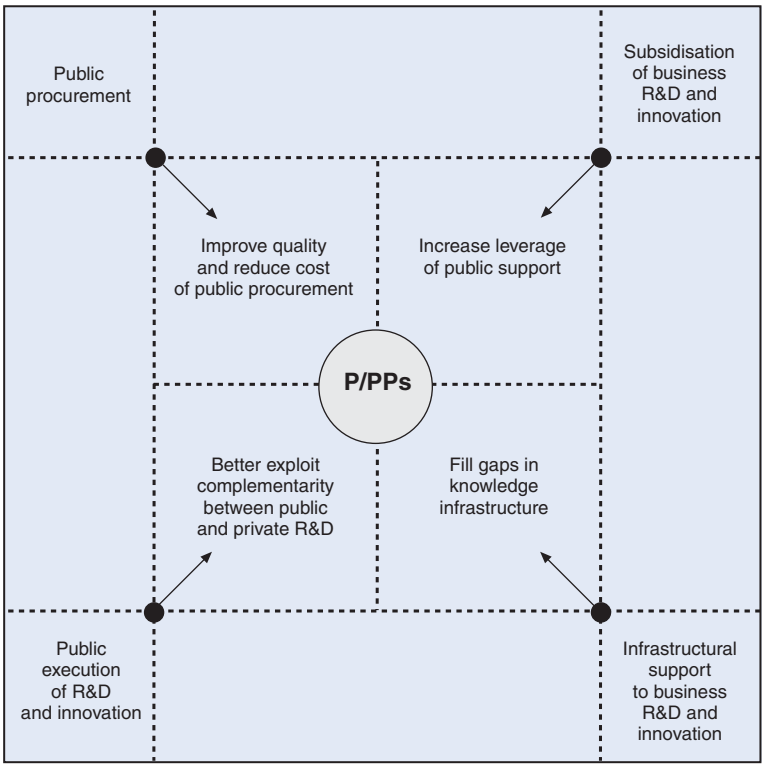
While the reasons for the increasing use of P/PPs are many, it is possible to single out some basic ones (Figures 3.2 and 3.3). The fundamental rationale of most P/PPs is to reap broader economic and social benefits from investments in public research by: *i*) improving the leverage of public support to business R&D through cost and risk sharing; *ii*) securing higher-quality contributions by the private sector to government mission-oriented R&D and opening new avenues for commercial spillovers from public research; *iii*) fostering the commercialisation of results from public research; and *iv*) upgrading knowledge infrastructures. P/PPs emerge as a response to the partial failure of other policy instruments to achieve such objectives in a new environment characterised by the changing nature of R&D and innovation processes (*e.g.* increased scientific content of technological development, higher dependency of innovators on external sources of knowledge and know-how), and rapidly evolving business R&D strategies[3] and social needs (*e.g.* health, security, environment).

Figure 3.2. **P/PPs for research and innovation: basic rationale**



Traditional mission-oriented policies rested on three pillars: procurement, public research and targeted subsidisation of private R&D and innovation. In many areas they were characterised by the concentration of resources on large-scale programmes targeted predominantly at technical achievements, involving a small number of participants and managed through centralised administrative control. Such policies have lost

Figure 3.3. **Expected benefits from a P/PP approach to innovation policy**



their effectiveness because of the characteristics of new technologies (*e.g.* ICTs, biotechnology), the greater priority attached to some socio-economic goals (environment, health, security), and the more pressing social demand for tangible and more broadly diffused benefits from public investment in research. To be effective, new-generation mission-oriented programmes need to adopt a systemic approach, providing a framework for a more market-driven and bottom-up definition of objectives and more decentralised implementation procedures. Partnerships with the private sector are key components of new policies that are characterised by: the articulation of missions according to the highest social return; the widespread diffusion of results in order to maximise economic benefits; appropriate co-ordination between the genuine policy purpose of the mission (*e.g.* sustainable development, improved quality of life for the elderly) with the other goals of innovation and technology policy (*e.g.* increased competitiveness); the involvement of all qualified actors, irrespective of their status, size and location within the innovation system.

The evolution of French research policy in the field of telecommunications is emblematic in this regard. Up to the mid-1990s, a specialised public lab, CNET (Centre National d'Études des Télécommunications) carried out most research for the public operator France Telecom. With the deregulation of markets and the corporatisation of France Telecom, new arrangements had to be found. Whereas France Telecom focused increasingly on near-market research, a research network, the RNRT (Réseau National de Recherche en Télécommunications) was created to promote pre-competitive research as well as start-ups and spin-offs.

Generally as a complement to broadly based horizontal support to business R&D, diffusion-oriented technology policies were traditionally aimed at promoting a one-way transfer of knowledge from national or foreign research institutions to manufacturing, as well as interactive technological learning among firms in the same sector. This orientation is at odds with current trends towards more interactive modes of innovation based on multidisciplinary knowledge inputs and more and more involvement with the service sector. First, feedback loops from industry to research organisations have to be engineered, *e.g.* by making bridging institutions operate as two-way transfer mechanisms. Second, greater flexibility than that allowed by a sectoral approach is warranted when linking sources and users of knowledge, as well as when filling gaps in the knowledge infrastructure.

The evolution of Austrian innovation policy is illustrative in this regard. Project-based, non-targeted support for science, technology and innovation (mainly the Science Foundation – FWF – for basic research and the Industrial Research Promotion Fund – FFF – for applied research) had long dominated the system of public support to R&D. In recent years, there has been a move towards P/PPs that target clearly identified weaknesses in the innovation system, in particular in the area of science-industry relations. It is complemented by regulatory reform in the public research sector, especially universities.

Overall, increased use of P/PPs reflects two priority objectives of technology and innovation policies: *i*) to fill gaps in innovation systems where this would yield the highest social return, instead of directing public support according to predefined sectoral or political priorities; and *ii*) to improve linkages among all actors in innovation systems by providing them with coherent and market-compatible incentives.

Implementing efficient P/PPs: issues and good practices

P/PPs can potentially achieve what other policy instruments cannot, but handling them is a delicate matter. Their design and management must be such as to engage partners with different managerial cultures and partly conflicting goals in sustained co-operation. There is often a discrepancy between the hierarchical and rather stiff organisation of the public sector and the private sector's increasingly network-based and flexible organisation. To be reliable partners of the private sector, government and public research organisations must often increase the speed with which they operate and adapt to business practices for project management. Reciprocally, firms must accept that P/PPs pursue objectives that go beyond those that can be easily translated into private benefits. An examination of P/PP policies in four countries suggest that success depends on how well the following main issues are addressed: ensuring industry commitment while balancing public and private objectives; embedding P/PPs properly within the innovation system; optimising financing arrangements; securing sufficient SME participation; creating appropriate international linkages; and implementing rigorous evaluation procedures (OECD, 2003a, b; OECD, 2004a, b).

Ensuring industry commitment while balancing public and private objectives

Commitment and balance should be achieved at the P/PP programme level, as well as at that of individual co-operative research centres or networks. Requirements differ according to the level, as well as the objective and research orientation, of each P/PP (Table 3.3), but some basic rules for success concern the nature of the process for selecting P/PPs and their participants and the arrangements regarding intellectual property rights.

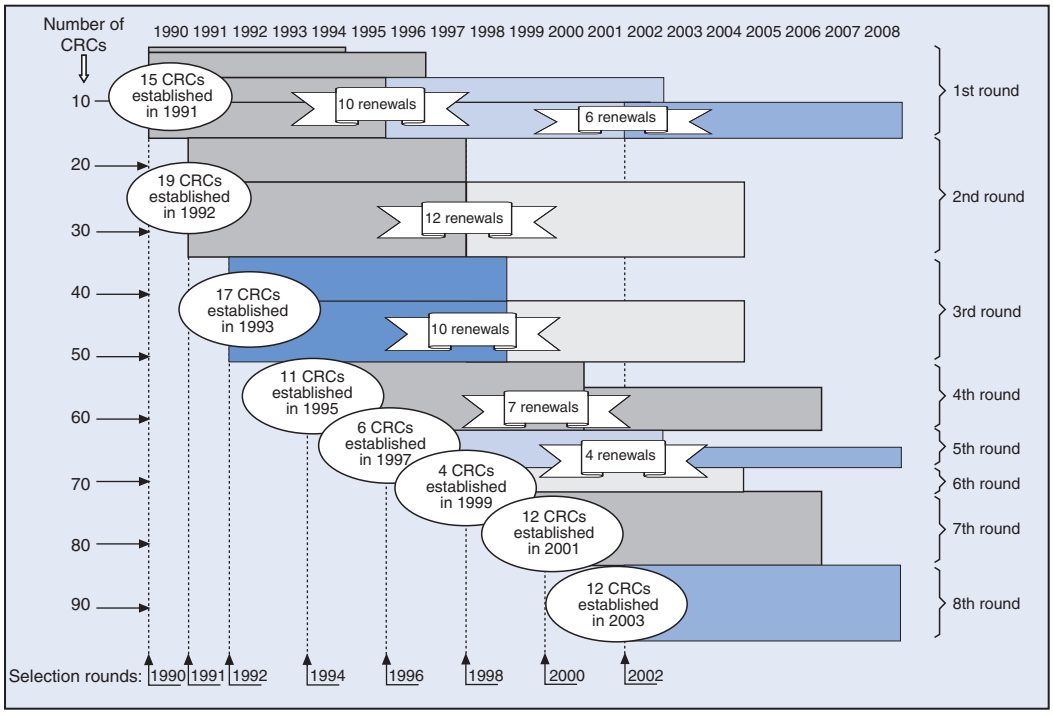
Table 3.3. **P/PP objective and type of research**

		Type of research	
		Rather applied	Pre-competitive
Type of P/PP	Mission-oriented	• Some Australian "national benefits" CRCs • Some projects in some French RRITs	• Some Australian "national benefits" CRCs • Some French RRITs
	Market-oriented	• Australian "Business Development" CRCs • Most Austrian Kind/Knet	• Australian "Industrial collaboration" CRCs • Most Austrian Kplus • Most French RRITs • Dutch LTIs

Source: OECD.

In order to attract firms to P/PPs, a bottom-up and competitive approach in selecting co-operative research projects is a good practice. It has been implemented by the four countries examined (Figure 3.4 and Table 3.4). However, countries differ in the definition of the P/PP portfolio, *i.e.* the selection of research fields in which partnerships are promoted. There are two approaches.

Figure 3.4. **The eight selection rounds since the inception of the CRC programme (Australia)**



Note: Oval symbols designate the original funding decisions; other shapes designate the renewal of contracts.
Source: Australian Department of Industry, Tourism and Resources.

Table 3.4. **Selection process of the proposals for LTIs in the Netherlands**

19 initial proposals	6 invitations for business proposals	4 LTIs finally selected
Food sciences	X	x
Metals technology	X	x
Polymers	X	x
Telematics	X	x
Sustainable energy	X	–
Transport and logistics	X	–
Bio-organic materials	–	
Catalysis	–	
Embedded systems	–	
ICT/Information on demand	–	
Innovation in medicine/health	–	
Knowledge management	–	
Mobile/telecommunication	–	
Multimedia engineering	–	
Oncology	–	
Optical/electro-optic materials	–	
Pyrotechnology of natural gas	–	
Telematics-European Design Centre	–	
Waterworks	–	

Source: Dutch Ministry of Economic Affairs.

The approach used by Austria and the Netherlands is to stick to a purely bottom-up approach. One drawback is that while one can ensure that each selected centre addresses a well-identified market failure in an important research field, from both a private and public perspective,[4] nothing guarantees that, collectively, they cover all the areas with the highest strategic importance for the country. This is particularly apparent when, as in the Netherlands, few co-operative centres are funded. This risk is reduced with the multiplication of co-operative research centres, as in Austria,[5] where, however, the issue of critical mass arises, especially for a small economy.

Another approach seeks to balance public and private interests by using some top-down criteria to choose the main research fields eligible for support to collaborative research (Table 3.5). In Australia, "national benefits" CRCs were launched as a result of government targeting of areas of high importance for society, as determined by National Research Priorities.[6] They focus on research on resource sustainability, including maintenance of biodiversity, environmental health and natural disasters. Examples include those for satellite systems, pest animals and bush fires. In addition, in the last selection round, greater weight was given in the selection criteria to national research priorities, as

Table 3.5. **Some selection criteria reflecting public interest and private benefit**

	Public interest	Private benefit
Australia[1]	• The proposed outcomes of CRC will make a significant contribution to Australia's sustainable economic and social development • The proposed CRC has a well-defined graduate education and training programme	• The proposed CRC has well defined objectives that address a specific community and/or industry need • The proposed CRC has a well-structured, feasible and practicable strategy for the commercialisation, technology transfer or utilisation of research outputs
Austria	• Research competence and linkages to science • Human resource development	• Linkages to the business sector
France	• Scientific relevance and degree of innovation in the light of usage trends, including in the public sector	• Industrial and technological objectives
Netherlands	• Possibilities for scientific developments in the fields, especially the chances for quantum leaps	• Existence of a solid industrial base

1. 2002 selection round only.

identified by foresight or technology road-mapping exercises. In France, several research networks financed under the RRIT programme – such as PREDIT (land transport), Earth and Space, and RNRT (telecommunications) – build on pre-existing schemes that target strategic sectors, while others have been selected by the government on the basis of their role in the economy (*e.g.* multimedia) or their contribution to answering social needs (*e.g.* accidental pollution). Engaging industry in public good types of co-operative research requires efforts to make tangible private benefits possible, for example through spin-offs or other forms of commercialisation of research results.

A major challenge in both approaches is to avoid a drift in the research agenda over time towards either too near-market research or blue-sky investigations with no prospective end users, in other words, avoiding the capture of P/PPs by either the business or the scientific community. The only solutions are strict monitoring, interim evaluations and sunset clauses with a rigorous evaluation prior to renewal. Strong leadership by an independent and respected manager seems to be important for escaping such risks.

Intellectual property rights (IPRs) have an important influence on participants' motivations, especially among private firms. Experience shows that standard IPR arrangements are not a good solution, given the diversity of co-operative research ventures. IPR rules should be negotiated among partners, using only a few basic guidelines. With minor differences, this is the practice in all four countries. In Austria's Kplus, all IPRs belong to the centre and each partner has the right to use the results; Kind/Knet have no standard regulations. In Australia, IPRs belong to the CRC when it is incorporated and otherwise to the public-sector partners on behalf of the CRC participants. In France, RRITs are subject to a minimal IPR policy, which consists of ensuring that all IPR issues are covered by an agreement between all those involved in a joint R&D project. For a project to be eligible, all actors must approve a prior draft IPR agreement. The actual details of apportioning IPRs among the various categories of actors, both private and public, are *ad hoc* arrangements between the parties and not subject to any specific policy or guidelines. In the Netherlands, IPR allocation among partners is also on an *ad hoc* basis.

Integration of P/PPs *in the innovation system*

Benefits from P/PPs depend in part on how they are embedded in the innovation system. There are three aspects to be considered: *i*) the management of P/PP programmes within government (how do they fit into the S&T policy system?); *ii*) the systemic efficiency of P/PPs (how do they interact with other policy measures?); and *iii*) the organisation and management of individual P/PP research ventures, which represent a new type of actor in the innovation system (what are the best organisational models?).

Within government competencies, the fields covered by P/PPs are often split between different ministries. For example, the Dutch LTI programme is under the Ministry of Economic Affairs, but the Ministry of Education, Culture and Science is the main funding body of TNO, the organisation for applied scientific research, and is responsible for university research. In France, RRITs are financed and overseen by both the Ministry of Industry and the Ministry for Research. In Austria, the Kplus programme was developed and started at the former Ministry of Science and Transport, now Ministry of Transport, Innovation and Technology, whereas the Kind/Knet programmes were launched by the Ministry of Economics and Labour. In Australia, the Department of Education, Science and Training is responsible for university research and administers the CRC program, but responsibility for industrial innovation lies with the Department of Industry, Tourism and Resources.

P/PPs can provide opportunities and incentives for improved inter-ministerial co-ordination, but their design and operation may suffer from inter-ministerial competition.[7] An efficient way to lessen this problem is to separate strategic steering from operations. There are two approaches, with equal merit in different national contexts, to doing this. One is to create an independent agency to run the P/PP programme, as Austria has done for Kplus.[8] The other is to rely on independent bodies for the selection of proposals and programme evaluation, such as the CRC Committee in Australia, and to give managers or chief executive officers (CEOs) of co-operative centres a large degree of autonomy.

P/PP programmes are introduced to perform tasks that could not be accomplished at all or as efficiently through other measures, but their performance may depend on the existence of complementary policies. The costs of the increased complexity of already complicated S&T policy systems should not exceed the expected benefits derived from P/PPs. The rise of P/PPs may justify intensified efforts to streamline the public support schemes for innovation, as the Netherlands is currently doing. This is not to rule out any form of policy experiments whereby different government bodies compete to develop innovative answers to a given problem. For example, in Australia, the ARC Centres of Excellence are supported by part of the scientific community as a complementary or arguably alternative approach to CRCs for supporting public good collaborative research. In the Netherlands, a research project that had been rejected in the LTI selection process has subsequently been successful under different arrangements (Catalysis is currently hosted by the Dutch Science Foundation – NWO).

The success of a P/PP programme always owes much to the favourable framework conditions for research and innovation created by other measures and institutions, including, for example, generic support to business R&D and the accumulated expertise of public research institutions. In addition, some more specific measures may enhance the systemic efficiency of P/PPs. For example, Austria's K programmes are complemented and supported by the Christian Doppler Laboratories (CDL). CDL is an effective model for easy-to-handle, smaller scale P/PPs for R&D between industry and academia. In Australia, the ARC Linkage Grants could play the same complementary role *vis-à-vis* the CRCs. Australian firms also benefit from an increasingly generous set of tax incentives that encourage additional business investment in R&D.[9]

Whereas good P/PP programme design and management can ensure a balance between the interests of the public and private sectors, satisfactory daily operations of the co-operation research centres or networks requires an organisation and management which bring together for a common purpose individuals from two different communities, scientists and engineers, who often have different mindsets and practices (Table 3.6).[10] Flexible organisational models that can be customised to meet the specific needs of partners, efficient knowledge management, and strong leadership are necessary to build the level of trust that is required for the smooth and productive operation of co-operative research ventures.

In all four countries examined, the government imposes only minimum requirements for the organisation of P/PPs. While some of these take the form of central institutes (the Institute for Metals Research and the Telematica Institute in the Netherlands, and Austria's Kplus centres), others are virtual organisations, with a lean organisation at the core and research being done at the participating research institutes. Participants in P/PPs that build on pre-existing networks usually choose to organise as virtual institutes (the Dutch Polymer Institute) and WCFS (food technologies), Austrian Kind/Knet, French RRITs and most Australian CRCs). Each organisational model has advantages and disadvantages (Table 3.7). A central institute can more easily mobilise and motivate researchers and build a corporate image, but it runs the risk of a lack of full support from some participating organisations because it takes

Table 3.6. **Differences between science and technology communities**

	Science community	Technology community
Goal: to advance	Knowledge	Utility
Specific objective	Find causal relationships	Improve function of artefacts
Method	Experiment	Testing
Form of knowledge	Explicit, universal	Tacit, local, routines, procedures
Communication	Open	Secret
Rewards	Reputation	Profit
Quality of assessment	Replication, peer-review	Market selection
Complementary function	Training, publication	Production, marketing

Source: SPRU.

Table 3.7. **Organisational models**

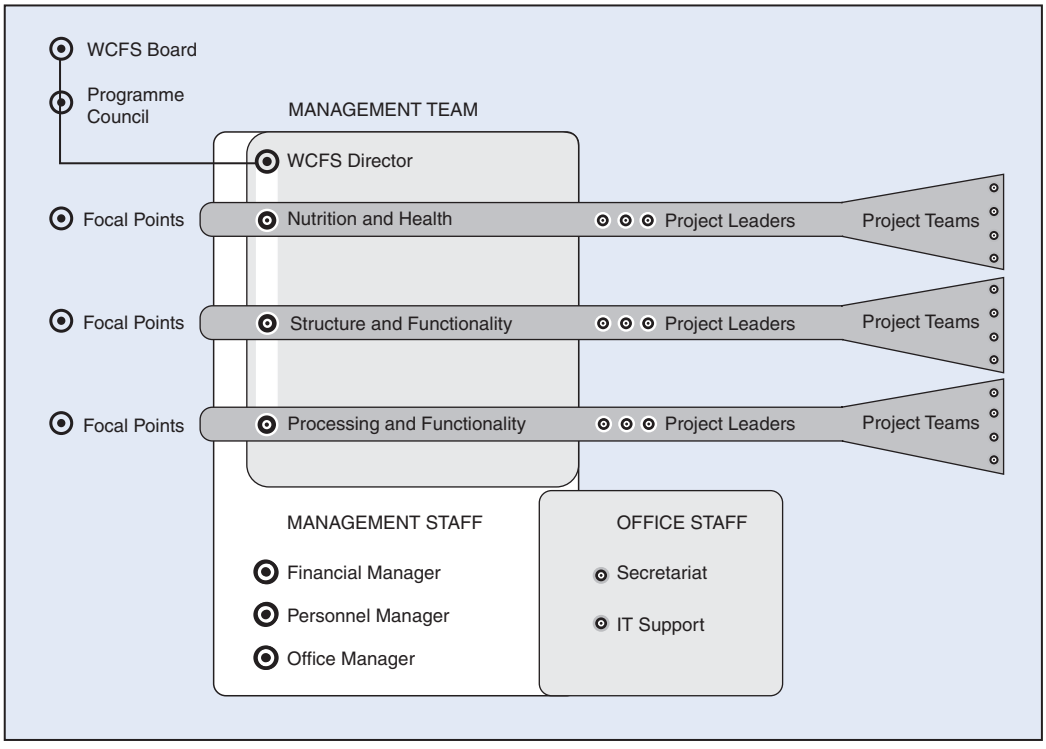
	Central institute	Virtual institute
Advantage	• Easy integration • More corporate culture	• Researchers can work in their natural habitat • Flexible personnel policy
Disadvantage	• Pulls out researchers from universities • Can become isolated	• Difficult to organise • Double loyalty of researchers

Source: OECD.

promising researchers and funds away from them. The virtual institute can mobilise manpower and equipment at their home institutes, but the loyalty of research partners may be weaker, as they may have a greater incentive to concentrate on their own, separate missions.

Efficient knowledge management is vitally important to minimise the risk of opportunistic or egotistical behaviour. All partners should believe that demonstrating a co-operative spirit will increase their chances of appropriating a fair share not only of the knowledge generated through P/PP projects, but also of the background knowledge that flows between participant organisations. It is important that the organisational features of a P/PP maximise interaction not only among the researchers directly involved in a project but also between them and the end users of research results in participating firms (*e.g.* the focal points in Figure 3.5, which shows the organisational diagram of WCFS, the leading Dutch

Figure 3.5. **The WCFS[1] organisational diagram**



1. WCFS is the leading Dutch institute on food technologies.
Source: WCFS, Annual Report.

institute on food technologies). Flows of knowledge can also be enhanced through exchanges of researchers between partners and recruitment of PhD students to work on specific projects. Access to knowledge can be facilitated by training courses, mindshare events and regular workshops, as well as by intensive use of Internet-based communication tools.

Finally, experience shows that no organisational arrangement, however good, can fulfil alone the delicate task of holding partners together and avoiding a drift in the research agenda. Strong leadership by a well-known, respected figure with broad experience and good links with both academia and industry is always a necessary condition of success.

Optimal financing

In theory, an optimally designed financing mechanism should help: *i*) ensure efficient selection of private partners; *ii*) secure the desired amount and quality of R&D at least cost to the government; and *iii*) avoid opportunistic behaviour by either the government or the private partners, especially the risk of partnerships attracting second-rate projects and less qualified research teams or a drift in the research agenda towards either pure basic research or outsourced corporate research.

In practice cost-sharing ratios among partners differ from country to country. In France, and to a lesser extent in Australia, they even differ quite widely from network to network. For example, in Dutch LTIs, the government funds at most 50% of total costs and public research organisations and firms provide at least 20% in matching funds. In the case of French RRITs, industry participation ranges from around one-third to almost one-half. Public research labs are deeply involved and provide from 27% of the budget appropriations for space and aeronautics to 42% in life sciences. Participation of academic laboratories is even more diverse: from 5% in life sciences to 19% in ICTs. In Australia, two-thirds of all resources are provided by the CRC programme, universities, CSIRO (the Commonwealth Scientific and Industrial Research Organisation) and other Commonwealth organisations. Only one-quarter is provided by industry and other non-government sources. In Austria, up to 35% of total costs are covered by federal funds, a maximum 25% from other public sources, and a minimum 40% from industry.

There is room for improvement in such financing arrangements, especially regarding the rate of subsidisation by the central government. A central issue is whether such support is warranted at all, and if so for how long and at what rate. When launching the LTIs, the Dutch government announced that it would stop funding them once they reached maturity. After four years, LTIs were renewed with unchanged financial arrangements, but the objective of making them self-sustaining by 2007 was reaffirmed. Australia has also always sought to encourage CRCs to develop strategies that would allow them to become independent of financial support from the CRC programme. At the same time, however, it was recognised that some CRCs, because of the field of research and the substantial public benefit aspect, may never reach independence. In fact, lengthy experience with CRCs demonstrates that very few CRCs reach self-sufficiency and that consequently self-sufficiency should not be an overriding objective of a P/PP programme. Rather, the objective should be to introduce some flexibility in financing arrangements so as to find a better match between these arrangements and the specific mission of different types of P/PPs:

- When a P/PP aims at mobilising the competencies of the private sector to improve government mission-oriented R&D, it will have to be supported permanently.
- The same may apply to P/PPs for pre-competitive research, but with a lower rate of support.
- When a P/PP aims primarily at improving the leverage of public support to business R&D, the rate of subsidisation should be even lower, with a sunset clause.
- For P/PPs whose main objective is to open new avenues for commercial spillovers from public research, different financial arrangements might be applied to different stages (*e.g.* launching stage, mature stage, commercialisation stage), with an effort to involve venture capital as soon as possible.

Participation of SMEs

Strong participation of SMEs in P/PPs is essential for their success in many technological fields, but also more generally for stimulating technological entrepreneurship, ensuring that highly innovative small firms have access to the most fertile sources of knowledge, and linking science-based innovation networks to less R&D-intensive ones.

The rise of P/PPs as a tool of S&T policy may induce increased participation of SMEs in publicly supported R&D projects. This accentuates the revealed preference of government-financed business R&D for small firms which can be observed in a majority of countries[11] and attenuates the bias against SMEs in others. France exemplifies the latter situation (Table 3.8). The launch of its RRITs had two major impacts. First, it boosted the involvement of independent SMEs in research areas dominated by large firms and their subcontractors (*e.g.* in transport and telecommunications, RRITs replaced less SME-friendly approaches, the so-called large-scale programmes). Second, it created new opportunities for science-industry partnerships in areas such as life sciences and multimedia where new and existing small firms are key actors at every stage of the research and innovation processes.

However, imposing collaboration with other firms as a condition of eligibility for a P/PP may not be sufficient to guarantee a satisfactory degree of SME involvement. The weak presence of SMEs at the interface between science and innovation remains an issue in almost all countries, even in those that have the longest successful experience with P/PPs. For example, in Australia, the guidelines for the latest selection round of CRCs state that the government wishes to see opportunities for SMEs to participate enhanced.[12]

Innovative SMEs have strong incentives to develop linkages with other firms and knowledge institutions, but they often experience difficulties in devising and implementing their networking strategy. These difficulties, which generally increase with the depth and breadth of the network, are due to:

- The relatively high amount of senior management resources required for initiating and sustaining participation in a co-operative venture.
- The need to commit resources for a long period.
- The difficulty of gaining enough influence within a network to justify such investment and commitment, given the pivotal role of large firms in most high-technology, and especially science-based, innovation networks.

Table 3.8. **Share of SMEs in the financing of 13 French public/private research networks, 2001**
Millions of EUR, %

Type of recipient	Life sciences[1]		Energy, transport, environment, natural resources[2]		Information and communication technologies[3]		Space and aeronautics		Total	
	EUR	%	EUR	%	EUR	%	EUR	%	EUR	%
SMEs[4]	11.39	43	4.34	25	7.34	19	1.78	35	24.84	29
Large firms[5]	0.37	1	1.71	10	6.76	18	0.11	2	8.95	10
Public research labs	11.15	42	6.60	38	12.55	33	1.38	27	31.67	36
Higher education	1.43	5	2.62	15	7.08	19	0.75	15	11.88	14
Engineering schools	0.93	3	0.83	5	2.88	8	0.60	12	5.25	6
Others	1.39	5	1.32	8	1.09	3	0.46	9	4.27	5
Total	26.65	100	17.43	100	37.69	100	5.09	100	86.86	100

1. RNTS, GenHomme, Génoplante, RARE.
2. PREDIT, Pile à combustible, Matériaux, Génie civil, Eau et environnement, Pollution accidentelle.
3. RNRT, RNTL, RMNT.
4. Enterprises with fewer than 500 employees.
5. Enterprises with more than 500 employees.

Source: French Ministry of Research.

Box 3.2. **A special service unit to connect SMEs to a major P/PP – *Kunstoffenhuis* (Netherlands)**

The Dutch government does not provide specific incentives for SMEs to participate in P/PPs such as the four LTIs, including the Dutch Polymer Institute (DPI). However, several actors (the TNO, the Technical University of Eindhoven, and Fontys Hogescholen) have established a service unit (the so-called *Kunstoffenhuis*) to make the results from academic polymer research available to polymer-processing SMEs. This organisation facilitates knowledge transfer by offering consultancy and training and helps SMEs to become aware of developments in academic research, including the activities of DPI, and of possible benefits for their own business.

P/PPs are fragile constructions which must be long-lasting if they are to bear fruit. They are based on trust and their success depends on the existence of fairly shared, sustained mutual benefits. Efficient P/PPs build on bottom-up initiatives, stress competence as the main criterion for selection, and have only light top-down steering processes. Their integrity can easily be jeopardised by top-down interference, such as requirements governing the nature and identity of participants. SME participation should therefore be promoted with due care.

Experience suggests that there are three main roads to improvement. The first, and most obvious, consists of ensuring that the portfolio of P/PPs (*i.e.* the set of co-operative ventures supported under a P/PP programme) gives sufficient space to the technological areas where smaller organisations are main actors. The second consists of lowering entry barriers by creating mechanisms which allow easy and inexpensive access to any P/PP through, for example, industry associates programmes. Typically, such programmes allow SMEs to become associated with a P/PP at nominal cost, thereby providing them with preferential access to information about the research outcomes and sometimes also access to the researchers. The third consists of circumventing entry barriers when these cannot be lowered without damaging the incentive structure of the P/PP. Box 3.2 gives the example of a service unit that connects Dutch SMEs to collaborative pre-competitive research in their field.

Internationalisation

Innovation networks are global, and foreign sources supply a large and increasing portion of external knowledge that firms and public institutions need to access to implement their research and innovation strategies. This applies to P/PPs even if the primary and legitimate goal of such partnerships is to strengthen linkages among domestic firms and public research organisations. Most of the necessary international linkages are secured outside the P/PP through participants' networks, including inter-governmental S&T programmes, with indirect benefits for their joint ventures. However, international partners are increasingly needed at the core of most P/PPs.[13]

In practice, however, this need is only partly met, owing to too narrow a definition of national benefits from foreign participation and also sometime because of unhelpful regulations regarding public financing. Until recently only foreign firms domiciled in the Netherlands (those with an R&D or production presence in the country) could participate in subsidised research partnerships, providing also that they could demonstrate that the results would be exploited locally. In Austria, foreign firms can fully take part in a Kplus centre, subject to a maximum 25% of the industrial share (*i.e.* of the minimum 40% private contribution) and provided that benefits for Austria can be demonstrated. In Australia, one of the CRC programme's selection criteria is an indication of how proposed international linkages will contribute to the CRC's objectives. However, international collaboration with overseas firms is generally undertaken through Australian subsidiaries rather than through direct collaboration with foreign firms.

In France, any foreign public or private organisation can take part in RRITs but none can enjoy government financial support.

Another problematic area is the lack of synergy between national and international P/PP initiatives, such as the EU Framework Programme. This has been subject to debate in the Netherlands. The so-called anti-cumulation rule, which decrees that the total subsidy cannot exceed 50% of the total budget, makes it unattractive for the LTI to seek substantial additional funds, *e.g.* from the European Framework Programme, because such funds would not, or only marginally, increase the total budget.[14]

Evaluation

Evaluation of public-private partnership programmes is not a straightforward task, especially because the costs and benefits of partnerships are inherently hard to measure, even though countries try to rely on quantitative indicators (Table 3.9). Benefits may be more indirect than direct, and the existence of multiple stakeholders may give rise to conflicts in terms of the objectives of evaluations. Programme managers and private stakeholders may be more interested in programme services and delivery than in broader economic impacts, while policy makers may seek macroeconomic outcomes such as employment and productivity effects. Another difficulty associated with evaluations is the often very long timeline of expected impacts.

The evaluation of P/PPs needs new perspectives on the additionality of government funding to supplement the traditional private vs. social returns model. Additionality has a behavioural dimension. P/PPs often encourage networking and create lasting links within national innovation systems. Evaluation should place greater weight on how partnerships modify behaviour to create persistent beneficial effects. In Australia, this idea is emphasised by stating that CRC means not only "co-operative research centres" but also "changing the research culture". Austria also sees measuring additionality as important (Box 3.3). One should also recognise that when the programme promotes pre-competitive research or innovation in the delivery of public services, the long-term, diffused or largely qualitative nature of its benefits makes almost meaningless the application of any additionality criteria.

Despite these difficulties and gaps in evaluation methodologies, P/PPs have been subjected to quite close scrutiny, especially the CRCs in Australia, Kplus in Austria and LTIs in the Netherlands. For example, each CRC is formally evaluated in terms of its progress against the milestones of its agreement as well as more generally against the objectives of the CRC programme. Evaluations take place after one, two and five years and serve to provide feedback to centres and as input to any future

Table 3.9. **Indicators for the evaluation of Dutch LTIs**

Criteria	Indicators
Market orientation and (inter)national relevance to industry	Number of industrial partners Contribution of industry to total budget (%) Number of established or transferred patents Number of licences sold to third parties Number of spin-off companies Number of institute researchers finding employment elsewhere in the field Procedures for performance measurement by industrial partners
International position	Number of EU projects with participation of the LTI EU funds in total budget (%) Contribution of international partners to total budget (%)
Scientific/academic position	Number of LTI papers in internationally refereed journals
Education	Number of completed PhDs
Governance, organisation, finance and efficiency	Ratio of indirect costs/total costs Expenditures for knowledge transfer

Source: Dutch Ministry of Economic Affairs.

Box 3.3. The measurement of additionality in the Austrian Kplus programme

The concept of *additionality* in its various dimensions (input, output, behavioural additionality) plays an important role in the Kplus programme at various levels of implementation. In particular, it is of importance in the following contexts:

- E*x ante* evaluation of centres. Evaluators are asked to provide an *ex ante* assessment, covering both scientific-technical and economic aspects.
- Communication between TIG, the agency managing the programme, and Kplus centres. This includes TIG's understanding of its role in negotiation processes (*e.g.* in defining the research agenda, IPRs, etc.).
- I*nterim* (four-year) evaluation. Consortia are asked to provide a statement. In addition, a standardised questionnaire is distributed to participating companies. The questionnaire focuses on quantitative information with an emphasis on input additionality, but also addresses some aspects of output and behavioural additionality. So far four centres have completed the questionnaire.
- A future programme evaluation. Measuring additionality is likely to be a key concern.

application for an extension or a renewal of funding. The CRC programme as a whole has also attracted close attention and underwent external reviews in 1995, 1997 and 2003. The Austrian Kplus centres are subject to an interim evaluation after four years. The results determine the possibility of further public funding for a second term of another three years. In 2003, a first joint assessment of Kplus and Kind/Knet was made. The Dutch government requires that LTI activities be regularly monitored (annually) and evaluated (every four years) by the Technology Foundation STW, a part of the National Research Council. In France, RRITs are monitored by funding ministries to check that public money is used for good purposes, but the design of evaluation procedures is still under way. Such practices can help ensure that P/PPs achieve their potential in strengthening national innovation systems.

NOTES

1. For example, the government is usually very active in the design/initiation and completion/evaluation stages, while public research organisations are mainly involved in the implementation phase.
2. In practice, some such schemes, such as the Advanced Technology Program in the United States, involve two-way flows at various stages, *e.g.* in setting programme strategy and, once R&D is under way, in producing social benefits beyond the private returns to the firm.
3. For example, large companies in Netherlands have reduced or abolished their central research facilities. This has entailed a shift to more short-term and development-related work and the decline of business-performed basic research, making firms more dependent on the results of long-term research performed in the public sector.
4. All four Dutch LTIs carry out pre-competitive research on topics that are key to the future competitiveness of important Dutch industries.
5. As a result, some Austrian Competence centres have public good missions; examples are the Bioenergy Centre and the Centre for Natural Hazard Management.
6. These broad priorities are: an environmentally sustainable Australia; promoting and maintaining good health; frontier technologies for building and transforming Australian industries; and safeguarding Australia.
7. It is unlikely that there would have been two programmes in Austria if competencies in S&T policy had been concentrated in one ministry. A major reorganisation is under way and should put the two programmes, as well as the two implementing agencies (Technologie Impulse Gesellschaft [TIG] and FFF), under the same umbrella.
8. TIG, is a limited company owned by the Republic of Austria, as represented by Ministry of Transport, Innovation and Technology. TIG took over the organisation of the selection process, the implementation and monitoring of Kplus centres as well as programme-related information activities.
9. Under its Backing Australia's Ability initiative, the Australian government has maintained its 125% R&D tax concession programme and has extended initiatives to encourage business expenditure on R&D: a tax offset to assist small companies, a 175% premium tax concession for additional R&D, and effective life treatment of R&D plant expenditure.
10. Interviews with stakeholders in some Australian CRCs revealed that many university professors are reluctant to participate in CRCs for various reasons: CRCs have a negative effect on the research traditions of academics; the university is losing control; CRCs cost the university in terms of staff, time and funds; because of the CRCs, professors lose time for their own curiosity-driven research; etc. Reciprocally, the business community complains about the public research sector's lack of skills for project management and the "publish or perish syndrome".
11. About 25% of the industrial partners in the Austrian Kplus centres are SMEs.
12. In the 2002 round, the Minister stated: "One of the strengths of the CRC Program has been its flexibility in the range of participants and operating structure of each individual CRC. I would like applicants to think innovatively about how they can better involve the many SMEs that make up an integral part of Australia's industrial structure. It is important that Centres develop linkages with SMEs to facilitate technology transfer. I would also expect to see an increase in SME spin-offs coming out of the Program in the future."
13. To overcome the insufficient ability of Australian firms to commercialise domestic scientific outputs, a niche strategy involving key foreign participants has been highly successful in the case of "Vision CRC", whereas the continuing success of some CRCs (*e.g.* the Satellite Systems CRC and the Composite Materials CRC) depends now almost entirely on their ability to attract foreign partners with key complementary capabilities.
14. In order to avoid losing the extra subsidy that one LTI (Telematica) acquired through European projects, the subsidy ceiling was increased from 50% to 60%.

REFERENCES

OECD (2001), *Science, Technology and Industry Outlook 2001 – Drivers of Growth: ICT, Innovation and Entrepreneurship*, Paris

OECD (2003a), "Partenariats public-privé pour la recherche et l'innovation – une évaluation de l'expérience française". *www.oecd.org/sti/innovation*.

OECD (2003b), "Public-private Partnerships for Research and Innovation – An Evaluation of the Dutch Experience". *www.oecd.org/sti/innovation*.

OECD (2004a), "Public-private Partnerships for Research and Innovation – An Evaluation of the Australian Experience". *www.oecd.org/sti/innovation*.

OECD (2004b), "Public-Private Partnerships for Research and Innovation – An Evaluation of the Austrian Experience". *www.oecd.org/sti/innovation*.

Table 3.A.1.1. **Comparative features of four P/PP programmes**

	CRCs (Australia)	Kplus, Kind/Knet (Austria)	RRITs (France)	LTIs (Netherlands)
Duration				
Starting date	1990	Kplus: 1998 Kind/Knet: 1999	1999	1997
Period	7 years • Renewal rate: 60% over six distinct selection rounds	4 years with the possibility of extension for another three years.	Open	4 years • Funded for two rounds
Coverage				
Number of co-operative research centres (networks)	96 centres since inception, of which 70 are currently operating	18 Kplus centres 17 Kind/Knet centres/networks	16 networks	4 centres
Research fields	Varied	Varied	Varied	Focus on four areas (polymers, telecommunications, food sciences, metals technology)
Participants				
Selection process	Competitive – 15 out of the first 120 applications in 1991 Evaluation by: two external technical expert advisory panels; national and international referees; the CRC Committee	Competitive Assessed through an independent, international peer review	Competitive The selection of projects involves two phases: preparation and calls for proposals; and scientific expertise and project certification	Competitive – 4 out of 19 initial proposals Evaluation by external group of experts
Participants per centre	15 organisations on average, of which universities (40%), firms (32%), public labs (24%)	Require participation of at least one public research organisation and five companies	On average firms get 46% of public funding, compared to 36% for public labs and 20% for higher education institutions	20 companies and 8 public research organisations on average
Participation of SMEs	Enhancing the participation of SMEs has become a higher priority in the latest selection round	Kplus: about 25% of the industrial partners are SMEs Kind/Knet: the participation of SMEs is not mandatory but the guidelines include the technological needs of SMEs among the criteria for granting support to a competence centre	Ensuring that SMEs participate in or benefit from co-operative research is an important objective of all RRITs SMEs get at least 20% of the budget appropriations, with their share rising to 43% in life science-based networks	No specific incentives The share of SMEs is limited (10%), partly owing to the research focus of LTIs (generic research in fields where SMEs are minor actors)

Table 3.A.1.1. **Comparative features of four P/PP programmes** (*cont.*)

	CRCs (Australia)	Kplus, Kind/Knet (Austria)	RRITs (France)	LTIs (Netherlands)
Participation of foreign companies	Collaboration within international research networks is an explicit selection criterion.	Foreign firms can fully take part in a Kplus centre Participation in international RTD programmes is included among evaluation criteria Out of 285 industrial partners participating in the 18 currently operating Kplus centres, 36 (*i.e.* 13%) are foreign Kind/Knet centres/networks have in general a dominant regional dimension.	Foreign domiciled firms are allowed to participate in all RRITs	Non-domiciled firms, as well as foreign public research organisations, can participate, subject to government approval Foreign researchers account for 21% of LTIs workforce
Financing				
Cost-sharing	Two thirds of all resources are provided by the CRC programme, universities, CSIRO and other Commonwealth organisations. Only one-quarter of the resources are provided by industry and other non-government sources	Up to 35% federal funds, a maximum 25% from other public sources, and a minimum 40% from industry.	Industry participation ranges from almost one-half to around one-third. Public research labs are deeply involved, representing from 27% of the budget appropriations for space and aeronautics to 42% in life sciences Participation of academic laboratories is very diverse: from 5% in life sciences to 19% in ICTs	Government funding: at most 50% Public research organisations: at least 20% Firms: at least 20%
Self-sustainability	Self-sustainability is an objective but there are very few examples of CRCs reaching such stage	Self-sustainability is an objective	Self-sustainability is not an explicit objective	By the end of 2007, LTIs should be self-sustained
Organisation				
Organisational form (central or virtual)	Participants have considerable freedom to choose the arrangement they consider to be most appropriate to their particular needs	Most Kplus centres operate at one physical location Most Kind/Knet are virtual centres/networks	RRITs are virtual networks made up of companies, laboratories, experts and representatives of government	Some are purely virtual, others have a mixed organisational form
Legal status	Mostly unincorporated joint ventures, but incorporation is encouraged	Incorporated (limited companies)	Special status	Incorporated (limited companies)

Table 3.A.1.1. **Comparative features of four P/PP programmes** (*cont.*)

	CRCs (Australia)	Kplus, Kind/Knet (Austria)	RRITs (France)	LTIs (Netherlands)
Intellectual property rights	No general rules for all centres The government does not claim any share in the IPRs generated by CRCs IPRs developed in the course of the research by a CRC belong to the CRC and in the case of CRCs which are not legal entities in their own right (*i.e.* unincorporated joint ventures) the IPRs are held by one of the public-sector partners on behalf of the CRC participants	Kplus: Basic research: all IPRs belong to the centre and each partner has the right to use the results Industrial research with partner companies: all IPRs belong to the centre and each partner of the project has the right to use the results. Kind/Knet: IPR issues are addressed on an *ad hoc* basis	RRITs have a minimal IPR policy, ensuring that all IPR issues are covered by an agreement between all those involved in a joint R&D project. For a project to be eligible, all actors must approve a prior draft IPR agreement. The actual details of the apportioning of IPRs among the various categories of actors, both private and public, are *ad hoc* arrangements between the parties and not subject to any specific policy or guidelines.	No explicit agreement about IPR allocation among partners – *ad hoc* basis
Evaluation	Each centre is formally evaluated after one, two and five years The CRC programme as a whole underwent external reviews in 1995, 1997 and 2003	Kplus have been so far subject to a more rigorous evaluation process than Kind/Knet: An *ex ante* evaluation After a first term of four years, interim evaluation An *ex post* evaluation after seven years	The evaluation of research project proposals (project achievements) or the internal or external audit of operations, which are core tasks of good management practices of the RRITs	Extensive formal evaluation every four years

Table 3.A.1.2. **List of co-operative research centres (networks) currently operating, classified by technological field**

Australia (CRCs)	Austria (Kplus and Kind/Knet)	France (RRITs)	Netherlands (LTIs)
Manufacturing technology			
Advanced Composite Structures	Mechatronics	Earth and Space	Polymers
Bioproducts	Applied Biocatalysis	Aeronautics	Metals
CAST Metals Manufacturing (CASTMM)	Tribology	Land Transport	
Intelligent Manufacturing Systems and Technologies	Tech Research	Urban Planning and Civil Works	
MicroTechnology	Applied Electrochemistry	Materials and Processes	
Polymers	Light Metals	Nanotechnology	
Welded Structures	Materials		
Construction Innovation	Polymers		
Functional Communication Surfaces	Wood Composites and Chemistry		
Innovative Wood Manufacturing	Industrial Mathematics		
Railway Engineering and Technologies	Materials and Engineering for Aeronautics		
	Wood Construction		
	Wood Technology		
	Wood Research		
	Acoustic		
	Automation		
	Light Technologies		
Information and communication technology			
Satellite Systems	Advanced Computer Vision	Earth and Space	Telematics
Photonics	Telecommunications	Land Transport	
Telecommunications	Knowledge Management	Telecommunications	
Enterprise Distributed Systems Technology	Software	Nanotechnology	
Sensor Signal and Information Processing	Virtual Reality	Software	
Smart Internet Technology	Electronic Commerce	Multimedia	
Technology Enabled Capital Markets	Interactive e-Business		
Mining and energy			
Greenhouse Gas Technology	Bioenergy	Fuel Cells	
Mining Technology and Equipment	Renewable Energy		
Hydrometallurgy			
Clean Power from Lignite			
Coal in Sustainable Development			
Landscape Environments and Mineral Exploration			
Predictive Mineral Discovery			
Agriculture and rural-based manufacturing			
Sustainable Sugar Production		Génoplante	Food
Molecular Plant Breeding			
Sustainable Forestry Production			
Sustainable Rice Production			
Cotton			
Cattle and Beef Quality			
Tropical Plant Protection			
Viticulture			
Sheep Industry			

Table 3.A.1.2. **List of co-operative research centres (networks) currently operating, classified by technological field** (*cont.*)

Australia (CRCs)	Austria (Kplus and Kind/Knet)	France (RRITs)	Netherlands (LTIs)
Innovative Dairy Products			
Sustainable Aquaculture of Finfish			
Innovative Grain Food Products			
Environment			
Antarctica and the Southern Ocean	Natural Hazard Management	Earth and Space	
Sustainable Tourism	Recycling and Sustainable Product Development	Land Transport	
Environmental Biotechnology	Environment-Friendly Engines	Water and Environment Technology	
Biological Control of Pest Animals	Environment Technology Processes	Maritime Accidental Pollutions	
Catchment Hydrology		Urban Planning and Civil Works	
Coastal Zone, Estuary and Waterway Management			
Freshwater Ecology			
The Great Barrier Reef World Heritage Area			
Greenhouse Accounting			
Tropical Rainforest Ecology and Management			
Weed Management			
Plant-based Management of Dryland Salinity			
Tropical Savannas Management			
Water Quality and Treatment			
Medical science and technology			
Aboriginal and Tropical Health	Bio-Molecular Therapeutics	Génhomme	
Cellular Growth Factors	Biopharmaceutical Technology	Nanotechnology	
Discovery of Genes for Common Human Diseases	Medicine	Health Technologies	
Eye Research and Technology	Health Information Technologies		
Vaccine Technology			
Asthma			
Chronic Inflammatory Diseases			
Cochlear Implant and Hearing Aid Innovation			
Diagnostics			

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:

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/10.1787/036108151783

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.

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/10.1787/442056514762

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:

(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.

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	-

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.

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	-

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.

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:

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.

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:

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.

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:

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

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:

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

Year availability:

1. 1998 instead of 2000.
2. 1999 instead of 2000.
3. 1986 instead of 1985.
4. 1982 instead of 1981.
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.

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/10.1787/348312071533

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.

StatLink: http://dx.doi.org/10.1787/052066133807

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.
3. 2000 instead of 2001.
4. 1998 instead of 2001.
5. 1983 instead of 1981.
6. 1982 instead of 1981.

Source: OECD, MSTI database, May 2004.

StatLink: http://dx.doi.org/10.1787/345101246407

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	-

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/10.1787/377412476274

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.

StatLink: http://dx.doi.org/10.1787/005860125823

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.

StatLink: http://dx.doi.org/10.1787/707487145841

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.

StatLink: http://dx.doi.org/10.1787/771435384853

TABLE OF CONTENTS

Chapter 5

Ensuring the Supply of Human Resources in Science and Technology

Chapter 6

Multinational Enterprises and Productivity Growth: Insight at the Firm Level

Statistical Annex

List of Tables

Chapter 1

Chapter 2

Chapter 3

Statistical Annex Tables

List of Figures

List of Boxes