Measuring Globalisation

OECD Economic Globalisation Indicators

OECD PUBLISHING

2005

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Publié en français sous le titre :

Mesurer la mondialisation

INDICATEURS DE L'OCDE SUR LA MONDIALISATION ÉCONOMIQUE

Foreword and acknowledgments

The OECD recently published Measuring Globalisation: OECD Handbook on Economic Globalisation Indicators. *This Handbook constitutes a conceptual and methodological framework for gathering quantitative information and constructing indicators. The* Handbook *has been undertaken with two primary objectives:*

1. *To identify a set of relevant globalisation indicators to gauge the magnitude and intensity of the globalisation process, and to enable policymakers and other analysts to track how it evolves over time.*
2. *To provide national data compilers with the methodological and statistical guidelines needed to construct the chosen indicators and make them compatible with international standards.*

While the conceptual framework developed in the Handbook *is essential for measuring the globalisation process, the development of appropriate indicators for measuring these trends and their diffusion to a wider public is becoming increasingly important.*

This document represents a first attempt to develop the main indicators proposed in the OECD Handbook *for the purpose of measuring the scope and magnitude of the globalisation process through its main vectors, which are:*

- *Capital movements and foreign direct investment.*
- *The economic activity of multinational firms.*
- *The internationalisation of technology.*
- *International trade.*

The present document results from the co-operation of three OECD directorates: the Directorate for Science, Technology and Industry (DSTI), the Directorate for Financial and Enterprise Affairs (DAF), and the Statistics Directorate. Thomas Hatzichronoglou, of DSTI, the principal author of this document, prepared all the sections except for Section B (Foreign Direct Investment), which was prepared by Ayse Bertrand of DAF, and part of Section I (Aspects of Trade Globalisation), which was prepared by Andreas Lindner of the Statistics Directorate. Other members of the Secretariat who made significant contributions include Dirk Pilat, Andrew Wyckoff, Nadim Ahmad, Chiara Criscuolo, Isabelle Desnoyers-James, Laurent Moussiegt, Michela Gamba, Florian Eberth and Enrico Giovannini. Julie Branco-Marinho, Beatrice Jeffries and Paula Venditti provided secretarial support. Joseph Loux supervised the publication process.

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ISBN 92-64-01238-9
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Executive Summary

The long-term trend towards a global economy continues. This publication on *Economic Globalisation Indicators* focuses on several aspects of the globalisation of OECD economies, including capital movements, the economic activity of multinational firms, the internationalisation of technology and trade in goods and services.

This publication brings together a wide range of charts and analysis to help examine emerging policy issues including the changing role of multinational enterprises, new patterns in trade competitiveness, and the emergence of key international players outside the OECD area. A selection of the most notable facts and figures from the publication is presented below.

International trade and investment flows

- Since the second half of the 1990s, financial transactions (direct investment, portfolio and other investments) have constituted the fastest growing segment of the international transactions of OECD countries. The share of trade in OECD international transactions, however, has remained persistently high, averaging 22% of OECD GDP.
- Between 2000 and 2003, the United States received over a third of the aggregate portfolio investments of OECD countries. The value of this investment was ten times higher than the US portfolio investment in other countries (Germany, Japan, France and the United Kingdom).
- In some countries, portfolio investment has played a dominant role in recent years (*e.g.* Japan, France, the Netherlands, Switzerland, Ireland) while in others, the value of foreign direct investment was more important (*e.g.* the United States, Belgium and Luxembourg).
- The United States and the United Kingdom recorded the highest income of any of the OECD countries from their aggregate outward investment. The strong performance of the United States is attributable primarily to income from direct investment.

Foreign direct investment

- In 2002, seven OECD countries invested more abroad than they hosted foreign investment: Switzerland, the United Kingdom, Finland, France, the Netherlands, Norway and Sweden. In seven other countries, the situation was the reverse: Ireland, Hungary, the Czech Republic, New Zealand, Portugal, Australia and Belgium.
- Industry-level data point to the growing importance of the services sector in the OECD area. In 2002, this sector represented two-thirds of total investment flows in both inward and outward investment. The weight of the manufacturing sector decreased significantly between 1992 and 2002.

- With respect to the share of outward investment in manufacturing in total outward investment, the United States showed the greatest decrease during the reference period (1992-2002). As regards the share of inward manufacturing investment in total inward investment, Germany experienced the largest decline.
- OECD countries' overseas investments remain concentrated within the OECD area. Non-OECD countries attract a smaller portion of OECD capital and their share in the total outward investment position of OECD countries has grown more slowly than overall investments in the OECD area.
- In absolute amounts, the United States recorded the highest income both in terms of income credits (income from outward investment) and debits (income from inward investment), followed by the United Kingdom.

The activities of multinationals in the manufacturing sector

- Between 1995 and 2001, the share of foreign-controlled affiliates in manufacturing value added increased in all countries for which data were available, except Portugal. The highest growth in these shares was observed in Sweden, Finland and Norway.
- The share of parent companies in the manufacturing turnover and employment of the compiling countries is very high in Finland and the United States.
- The turnover of French and German multinationals abroad represents approximately one-quarter of the turnover of the same groups in the domestic market. American multinationals in manufacturing earn half of their turnover abroad and half of their employees are located abroad.
- In the largest OECD economies (the United States, Germany and, in particular, Japan), the number of employees of affiliates abroad is higher than the number of employees of foreign affiliates in these countries.

Multinationals in the services sector

- The share of turnover under foreign control in the services sector is relatively high in several countries, and over 35% in Ireland and Hungary. The share of affiliates in employment is lower in all countries than the share of turnover, and ranges from 22% in Ireland to less than 5% in Germany.
- Between 1995 and 2002, in all the available OECD countries except Belgium, the employment of foreign affiliates in services increased. The most important increase was observed in the Czech Republic, with approximately 200 000 employees.
- For services, the turnover of affiliates controlled by compiling countries located abroad is typically higher, compared with total service exports of these countries, than the same ratio in the manufacturing sector. This confirms that, for services, establishment abroad and local production is currently a more important means of penetrating markets than exports.

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The contribution of multinationals to value added and labour productivity

- In Ireland and Hungary, between 70% and 80% of value added in the manufacturing sector was generated by firms under foreign control. In France, Sweden, the Czech Republic, the Netherlands and Norway, this ratio was between 25% and 30%. In other countries, it was below 20%.
- Labour productivity (value added per employee) of foreign affiliates in the manufacturing sector was greater than the national average in all countries for which data are available.
- Foreign affiliates in the services sector also had higher labour productivity than the national average in 2001, except for Finland and the United States.
- Between 1995 and 2001, growth in labour productivity of foreign affiliates in the manufacturing sector was very strong in Sweden and the United States but negative in Spain and Portugal. The growth in labour productivity of foreign affiliates in the services sector was high in Japan but negative in the Netherlands, Portugal and Finland.
- The contribution of foreign affiliates to the annual growth in labour productivity was higher in the manufacturing sector than in the services sector. The highest growth was recorded in the Czech Republic in both the manufacturing and the services sector, and the lowest (negative) in Portugal.

The internationalisation of industrial R&D

- Between 1995 and 2001, R&D investments of foreign affiliates rose in value from USD 29.1 million to USD 51.6 billion. This increase was observed across all major countries.
- The share of foreign affiliates in industrial R&D varies widely across countries, ranging from less than 5% in Japan to over 70% in Hungary and Ireland. The share of R&D conducted by foreign affiliates is also over 40% in the Czech Republic, Portugal, Australia, Spain, the Slovak Republic and Sweden.
- In 2001, foreign affiliates in the United States accounted for more than USD 21 billion of R&D investments. However, between 1995 and 2001, the share US foreign affiliates in total R&D expenditure of foreign affiliates in OECD member countries declined from 50.6% to 41.7%.
- The increase in R&D expenditure of affiliates under foreign control between 1995 and 2001 was particularly strong in Germany, which attracted USD 4.3 billion of new R&D foreign investment over this period. This contrasts with a decline in the turnover and employment of foreign affiliates in Germany.
- Between 1995 and 2001, Germany attracted two-and-a-half times more R&D investment than France. Japan attracted USD 1.8 billion of R&D investment, an important contribution compared with the relatively low level of turnover under foreign control in Japan. Foreign affiliates were a major factor in the growth of manufacturing R&D expenditure in OECD member countries.
- In 2001, American multinationals invested more than 62% of their R&D investments abroad in the European Union (USD 11 billion) and 7% in Japan (USD 1.5 billion), while the European Union invested USD 16.7 billion in the United States and USD 2 billion in Japan.
- The number of researchers of foreign affiliates in the manufacturing sector per thousand employees in 2001 was very high in Japan and, to a lesser extent, in the United States and Finland. It was very low in Poland and the Czech Republic.

- In 2001, the R&D expenditure of affiliates under foreign control in the United States, Japan and Sweden was higher than the R&D expenditure of affiliates controlled by these countries abroad.
- Among the countries for which data are available, Switzerland is the only country where the R&D expenditure of its affiliates abroad represents more than the R&D expenditure of all firms located in Switzerland.

International diffusion of technology

- From the end of the 1990s to early 2000, an average of 15% of all inventions in any OECD country was owned or co-owned by a foreign resident. Likewise, OECD countries owned around 15% of inventions made abroad.
- During the same period, an average of 7% of patents was the result of international co-operation.
- In most OECD countries, technological receipts and payments increased sharply during the 1990s and the beginning of 2001. Overall, the OECD area maintained its position as a net technology exporter *vis-à-vis* the rest of the world.
- The European Union, on the other hand, continued to run a deficit on its technological balance of payments.

Aspects of trade globalisation

- For some OECD countries, the trade balance in goods and services runs a structural deficit (*e.g.* the United States, Greece and Portugal), while in others, it is structurally in surplus (*e.g.* Ireland, Luxembourg, Norway, Germany). A number of countries with overall deficits for goods and services run surpluses in services (*e.g.* the United States, Greece, Spain), while others with overall surpluses run deficits in services (*e.g* Germany, Japan).
- Over the period 1995 to 2003, among the G7 countries, Japan, the United States, France and Italy lost export market shares in total trade of goods and services, while Germany, Canada and the United Kingdom increased theirs. During the same period, only the United States and the United Kingdom recorded a trade deficit.
- The loss in export market shares of Japan and the United States was attributable equally to goods and services, while the loss in France and Italy was mainly due to services.
- The increase in Germany's export market shares was attributable mainly to goods. In the United Kingdom, however, it was attributable exclusively to services.
- Between 1995 and 2003, of the OECD countries, Japan was the most important exporter to China, with more than 32% of total OECD exports, accounting for USD 57 billion. Japanese exports of goods to the United States represent half of those to China. Contrary to the decline observed in the American market, Japanese export market shares to China have remained at the same level. Korea and Germany increased their export market shares in China's domestic market while the United States, France, Italy and the United Kingdom recorded losses.
- In 2001, the United States was the only country where domestic demand in manufacturing goods was satisfied in the same proportions from imports and local sales by foreign affiliates. In the other OECD countries, the largest part of domestic demand was satisfied by imports.
- High-technology industries are in general more internationalised than less technology-intensive industries. While they only account for 25% of total OECD trade in goods, their annual growth rate largely outstrips the manufacturing average.

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- In some countries like the Netherlands, the import content of exports exceeds 40%. Japan and the United States are the least dependent on imports for their exports.
- The vast majority of affiliates under foreign control export more than the average domestic firm. In Ireland, for example, over 90% of the manufacturing output of foreign affiliates is exported while in Sweden and the Netherlands, the proportion is over half.
- In some countries, the trade of affiliates under foreign control contributes to the manufacturing trade surplus (*e.g.* in Ireland, France, Sweden), while in others their trade increases the overall deficit (*e.g.* the United States, Poland).
- In contrast, in the services sector, affiliates under foreign control run substantial deficits and contribute to a deterioration of the trade balance in all countries.
- The share of intra-firm exports in the total exports of manufacturing affiliates under foreign control ranges between 15% and 60% in the OECD countries for which data are available. These proportions remained stable throughout the 1990s and the early 2000s in the United States, Canada and the Netherlands; they rose sharply in Sweden (from 35% to 75%) and declined in Japan (from 35% to 15%). In 2001, only 30% of the exports of affiliates under foreign control in Sweden went to non-affiliated firms, while the corresponding proportion in Japan was 85%.
- In 1999, 73% of French industrial exports and 64% of imports were performed by multinational firms; 44% of exports and 27% of imports by French multinationals; and 29% of exports and 39% of imports by foreign affiliates located in France.
- The ratio of intra-firm trade of US parent companies with their affiliates abroad to total US trade is very high with some partner countries (Switzerland, Argentina, Singapore, Ireland) and lower for others (Canada, Mexico). In absolute value, however, intra-firm imports from Canada, for example, are twice as great as intra-firm imports from all European countries. In the case of exports, the figures are nearly the same.
- High-technology manufacturing imports represent more than 35% of total manufacturing imports in the United States and almost 28% in Japan and the Netherlands. Part of these high-technology manufactured goods are imported by foreign affiliates: 18% in the Netherlands, 13% in the United States and less than 10% in Japan.


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PART I

International Transactions of OECD Countries

OECD countries' international transactions

The financial side of the economy is the most globalised. Globalisation in this market has accelerated since the liberalisation of capital movements and financial markets in the early 80s.

International financial transactions can be mainly characterised by flows of portfolio investment, direct investment and other investment. The main trends of these flows are presented in the first part of the report, from data collected in the framework of the balance of payments. A special section is devoted to foreign direct investment, which plays a major role in the globalisation of the economy, and to the activity of multinational firms, to which a major part of this document is devoted.

To enhance comparability, balance of payments data have been used in this part to show the main trends relating to trade in goods and services. However, given that trade is the principal channel for the integration of countries into the global economy, the fourth part of this report is entirely devoted to international trade.

A. INTERNATIONAL TRADE AND INVESTMENT FLOWS

A.1. Trends in international trade and investment flows

■ In the dynamic, multidimensional process of globalisation, national economies can integrate their activities and internationalise through various channels: trade in goods and services, capital and labour flows, transfer of production facilities and/or technology.

■ Such economic linkages are not new, but the intensity and multiplicity of transactions have accelerated over the past decade, making the economic implications of globalisation harder to quantify.

■ More advanced information and communication technology, lower transport costs, firms' strategies regarding location and the need to exploit technological and organisational advantages worldwide, liberalisation of trade and financial flows, etc., have all contributed to the speed-up of the globalisation process.

■ Financial transactions (portfolio investment, direct investment, other investment) have been the fastest-growing segment of international transactions. The upsurge in direct investment and portfolio investment was especially significant in the second half of the 1990s.

■ Such investment flows, in particular portfolio investment, have also proved highly volatile. Portfolio investment, for instance, declined in the early 1990s, tripled between 1995 and 1999, declined again from 1999 and only showed a significant increase in 2003. For its part, foreign direct investment rose sharply from 1997, but has steadily declined since 2000.

■ The lowering of tariff and non-tariff barriers has contributed to a steady rise in international trade. The share of trade in international transactions has remained high, averaging 15% of OECD GDP over the 1990s.

■ In terms of the composition of international trade, the share of trade in goods is more than four times the share of trade in services.

Main components of international trade and investment

Balance of payments current account

Trade in goods and services. Data relating to trade in goods and services correspond to each country's exports to, and imports from, the rest of the world. These data are collected to determine the balance of payments. Data relating to international trade in goods are also collected in customs surveys, but are generally not systematically comparable to balance of payment data. Since trade data need to be compared with data on international investment, the balance of payments has been chosen as source data to ensure comparability of trade and investment data.

Investment income. This covers receipts and payments on external financial assets and liabilities, including receipts and payments on portfolio investment, direct investment and other investments, and receipts on reserve assets.

Balance of payments financial account

Foreign direct investment. Foreign investment is a category of international investment whereby the investor holds at least 10% of the ordinary shares or voting rights in the non-resident entity with objective of establishing a "lasting interest". This implies the existence of a long-term relationship between the direct investor and the direct investment enterprise and a significant degree of influence by the direct investor in the management of the non-resident direct investment enterprise. Direct investment relationship does not necessarily require complete control.

Portfolio investments include equity securities and debt securities in the form of bonds and notes and money market instruments. In cases where the equity securities held by foreign investors account for less than 10% of the capital (ordinary shares or voting rights) of an enterprise, the investment is classified as a "portfolio investment". This type of investment usually corresponds to "short-term" investments for which the investor does not intend to influence the management of the firm.

Other investment. This is a residual category that covers all financial transactions not covered by direct investment, portfolio investment or reserve assets. It includes trade credits, loans, currency and deposits, and other assets and liabilities.

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A.1. Trends in international trade and investment flows

Figure A.1.1. **Trends in international trade and investment components**[1]

OECD,[2] 1990 = 100, current prices

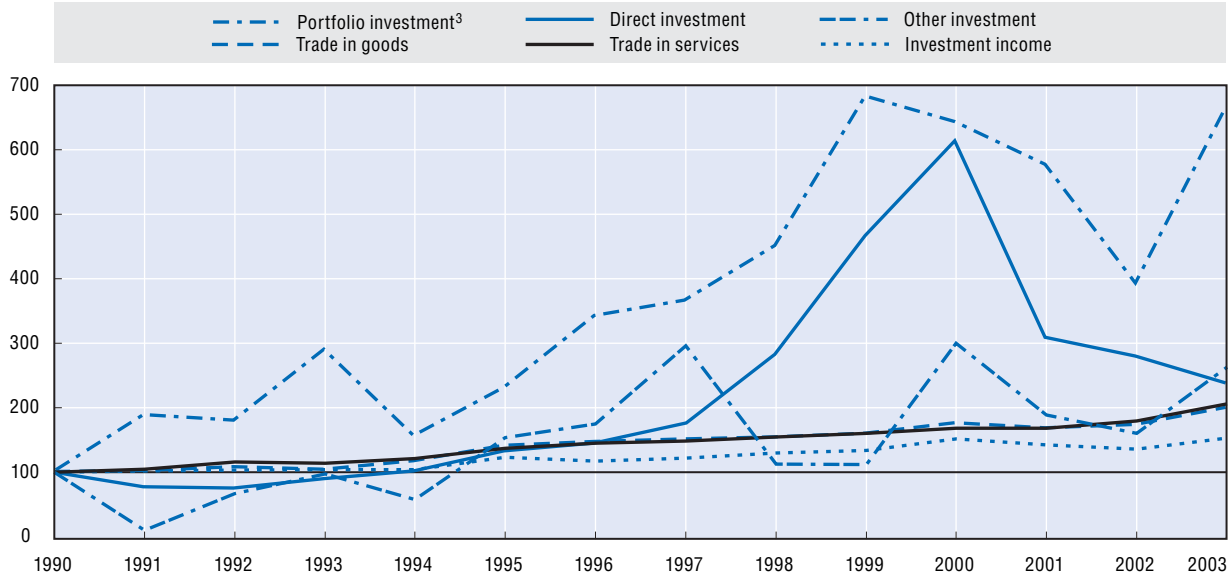


Figure A.1.2. **Main components of the current account as a percentage of GDP,[4] OECD[5]**

Gross basis, average 1999-2003

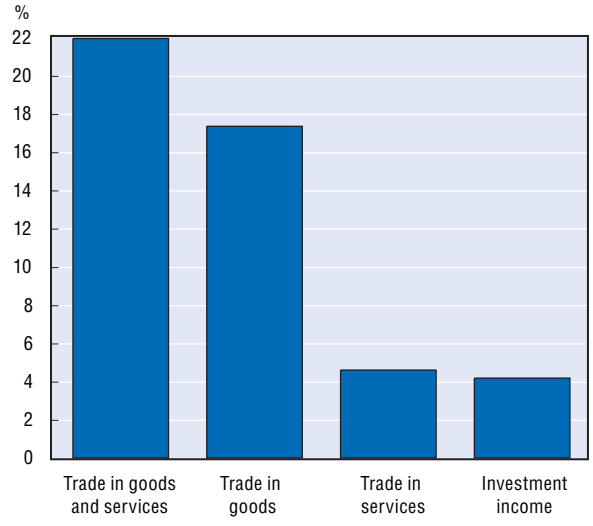
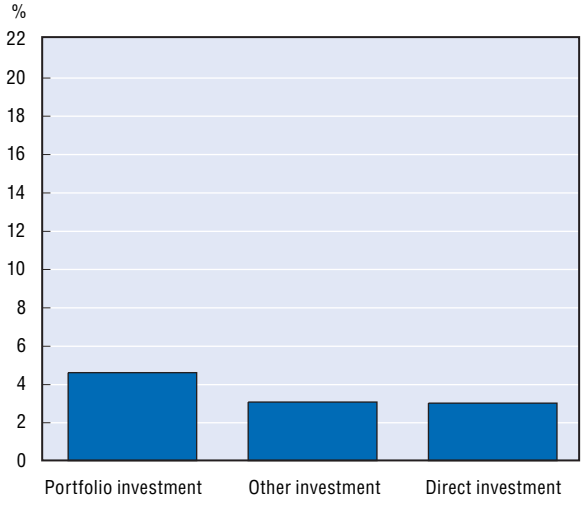


Figure A.1.3. **Main components of the financial account as a percentage of GDP,[6] OECD[5]**

Net basis, average 1999-2003



1. Average imports + exports or average assets + liabilities.
2. OECD excludes the Czech Republic 1990-92, Greece 1998, the Slovak Republic 1990-92 and 2001.
3. Excluding financial derivatives.
4. Imports + exports divided by 2 and by GDP.
5. Excluding the Slovak Republic in 2001.
6. Assets + liabilities (in absolute terms) divided by 2 and by GDP.

Source: IMF, *Balance of Payments Statistics* and OECD, National Accounts of OECD Countries database, April 2005.

StatLink: *http://dx.doi.org/10.1787/882880820207*

A.2. Trends in financial accounts (direct, portfolio and other investments)

■ Cross-border financial flows, which comprise portfolio investment, direct investment and other investment, have exhibited great volatility since the latter half of the 1990s, with a significant drop in 1998, a sharp rise between 1999 and 2000, a further decline in 2001 and 2002, and again significant growth in 2003 for both financial assets and liabilities to non-residents (Figure A.2.1).

■ Over the 2000-03 period, the United States, followed by the United Kingdom, are the main countries involved in these financial flows. Investment flows by the United States are almost double those of the United Kingdom. With respect to both assets and liabilities, Belgium-Luxembourg recorded greater levels than France and Germany, while the investments recorded for Ireland exceed those of Japan, Canada, Italy and Switzerland.

■ Japan is the only major OECD country which recorded between 1992 and 2003 a sharp drop in assets held by, and liabilities to, non-residents. However, this spectacular differential is due in part to reserve assets.[1] If reserve assets are excluded, the differential narrows significantly. A similar phenomenon is also observed in Sweden, although this development relates to liabilities only.

1. See IMF *Balance of Payments Manual*, Rev. 5, § 424.

Reserve assets

Reserve assets consist of those external assets that are readily available to and controlled by monetary authorities for direct financing of payments imbalances.

The category of reserve assets comprises monetary gold, SDRs, reserve position in the Fund, foreign exchange assets and other claims.

Figure A.2.1. **Financial accounts assets and liabilities of OECD total, 1992-2003**

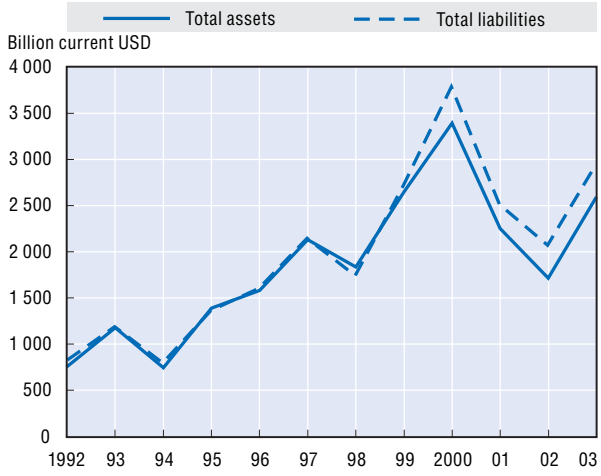
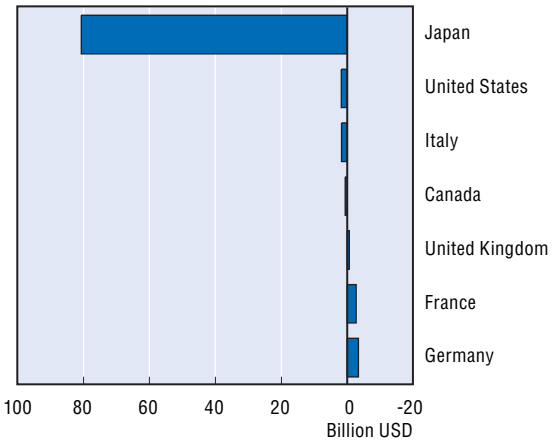


Figure A.2.2. **Reserve assets, G7 countries**

Billion current USD, average 2000-03



Source: IMF, *Balance of Payments Statistics*, April 2005.

StatLink: *http://dx.doi.org/10.1787/344074231714*

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A.2. Trends in financial accounts (direct, portfolio and other investments)

Figure A.2.3. **Assets 1992-2003, G7 countries**

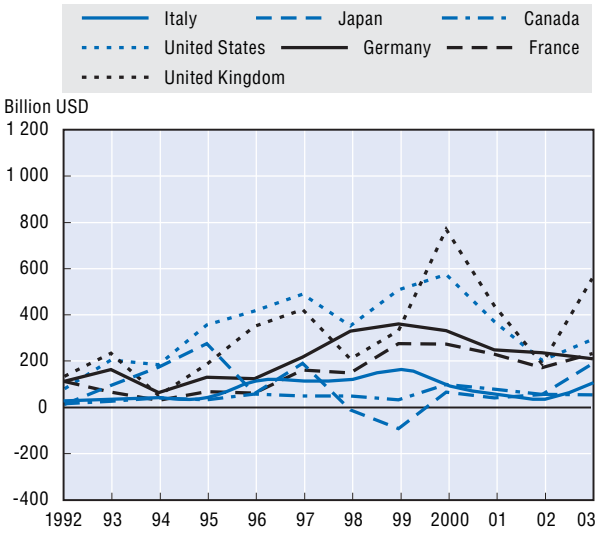


Figure A.2.4. **Liabilities 1992-2003, G7 countries**

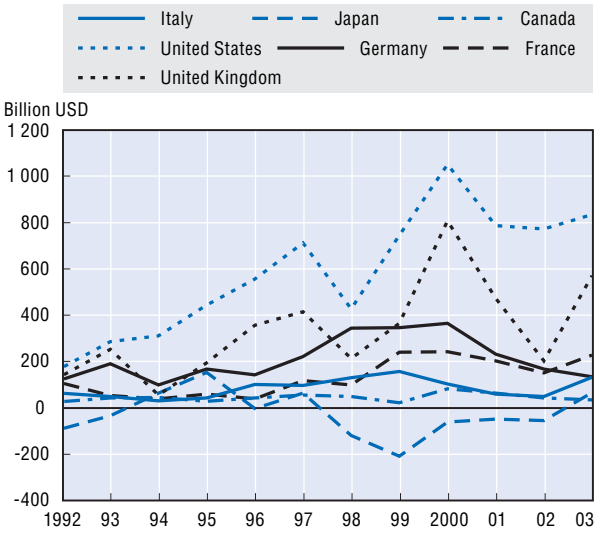


Figure A.2.5. **Assets,[1] average 2000-03**

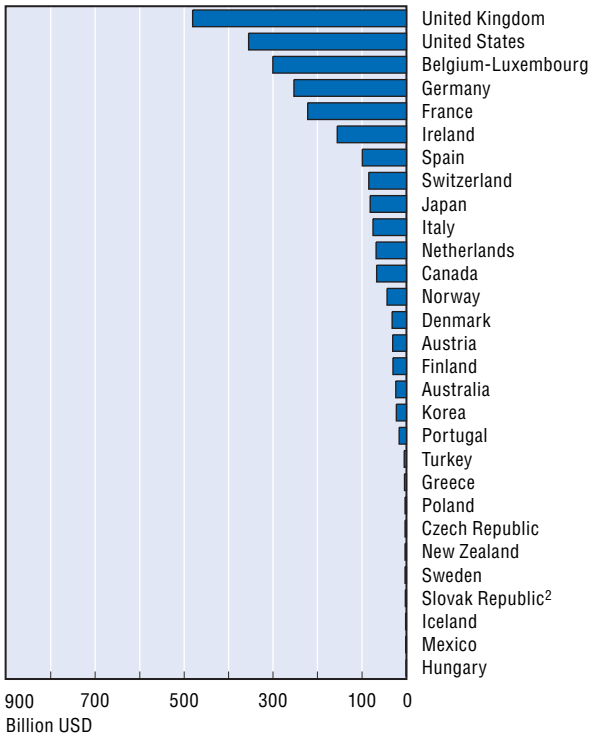
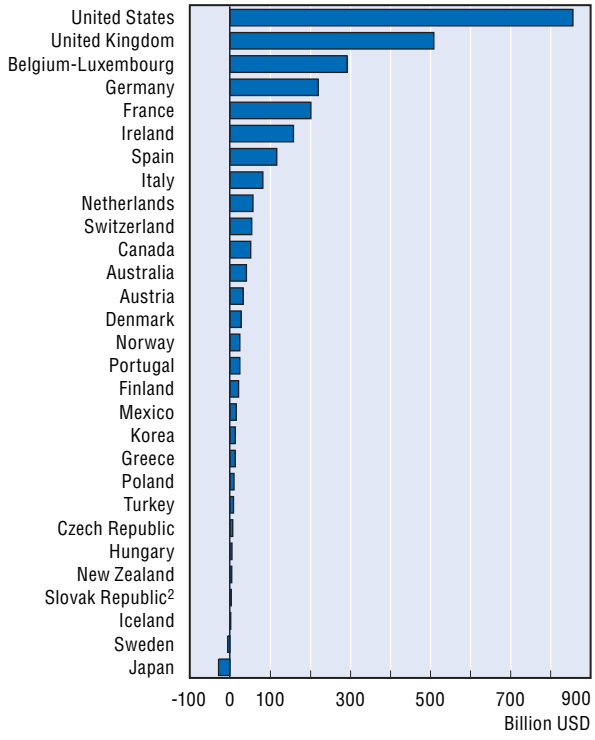


Figure A.2.6. **Liabilities, average 2000-03**



1. Including reserve assets.
2. Excluding 2001.

Source: IMF, *Balance of Payments Statistics*, April 2005.

StatLink: *http://dx.doi.org/10.1787/344074231714*

A.3. Trends in portfolio investment flows

■ Portfolio investment, although more volatile than direct investment, accounts for between a third and half of aggregate investment, all categories combined, depending on the year and the country (see also Figure A.1.1).

■ Between 2000 and 2003, the United States received over a third of aggregate portfolio investment by the OECD countries (Figure A.3.4), but the value of this investment was ten times more than that of US portfolio investment abroad (Figure A.3.3).

■ Other large countries (such as Germany, Japan, France and the United Kingdom) received the bulk of the remainder of portfolio investment, but unlike the United States, for these countries the amount of assets held by residents on one hand and liabilities to non-residents on the other hand were more evenly balanced.

■ As regards the small countries, Ireland is noteworthy because the high level of the assets that, on average, exceed that of France or Germany. In the case of liabilities, Belgium-Luxembourg stands out.

Content of portfolio investment

Equity securities[1]	Debt securities[1]
• Shares • Stocks • Participation certificates (for example: American Depository Receipts or ADR certificates) • Preferred stock and shares that provide for participation in the distribution of residual earnings or in the residual value upon liquidation (participating preference shares) • Mutual funds	1. Bonds and other debt securities, such as: • Non-participating preferred stocks and shares • Convertible bonds • Bonds with optional maturity dates • Negotiable certificates of deposit • Dual currency bonds • Floating rate and indexed bonds • Collateralised mortgage obligations (CMOs) and participation certificates 2. Money market instruments or negotiable debt securities, such as: • Treasury bills • Commercial and finance paper • Bankers' acceptances • Negotiable certificates of deposit with original maturities on one year or less • Short-term notes issued under note issuance facilities (NIFs)

1. See IMF *Balance of Payments Manual*, Rev. 5.

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A.3. Trends in portfolio investment flows

Figure A.3.1. **Assets 1992-2003, G7 countries**

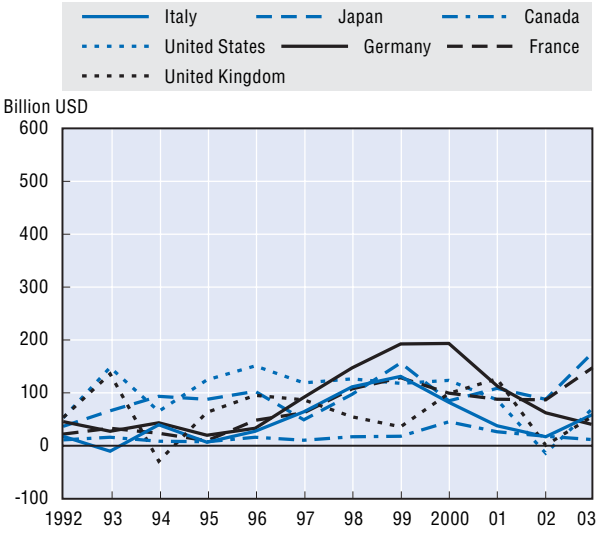


Figure A.3.2. **Liabilities 1992-2003, G7 countries**

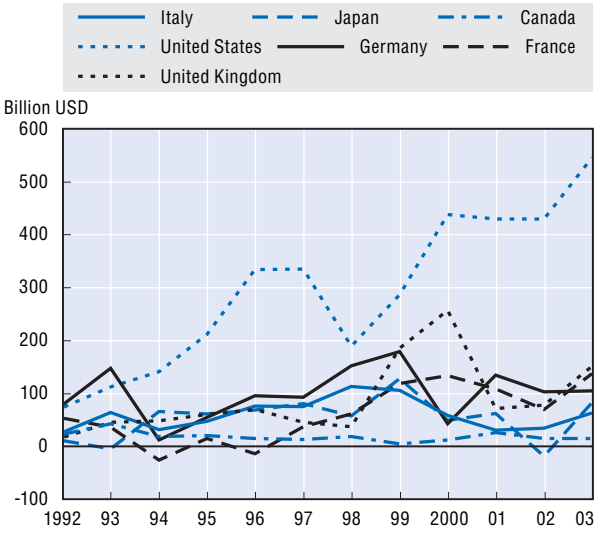


Figure A.3.3. **Assets, average 2000-03**

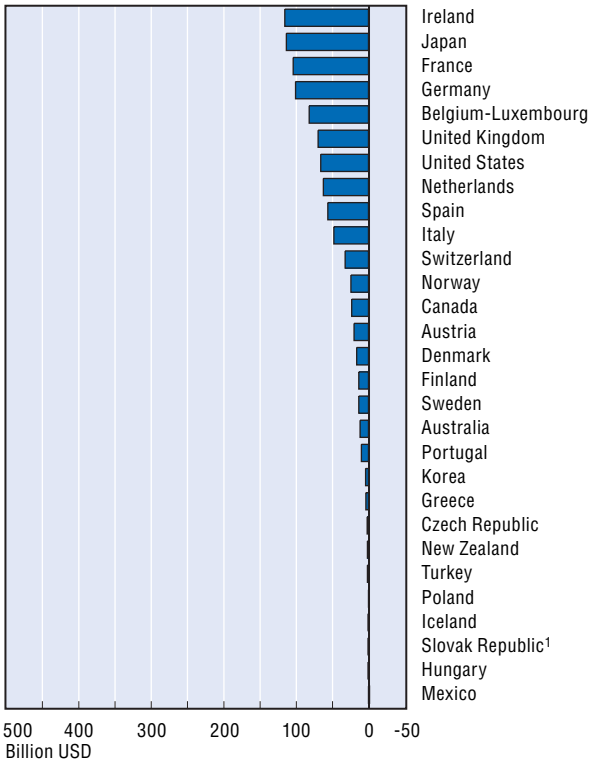
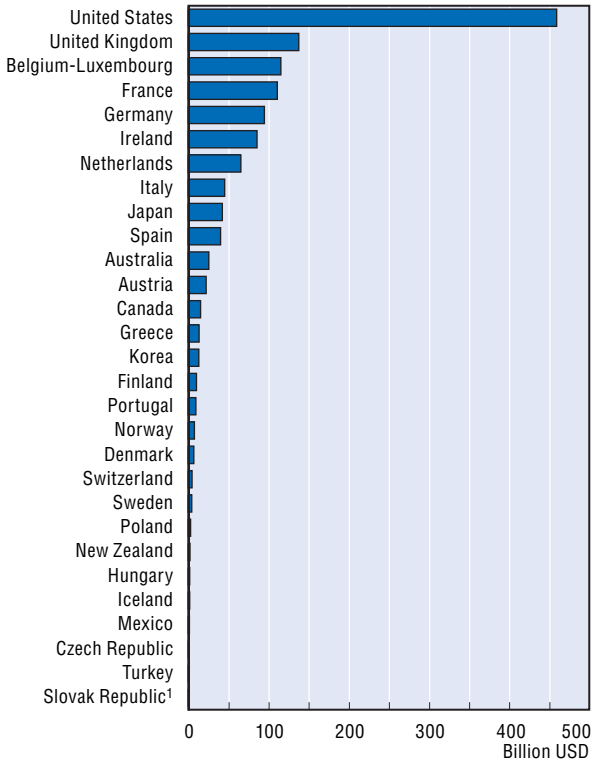


Figure A.3.4. **Liabilities, average 2000-03**



1. 2001 is not available.

Source: IMF, *Balance of Payments Statistics*, April 2005.

StatLink: *http://dx.doi.org/10.1787/064456265788*

A.4. Trends in foreign direct investment flows

- Since the second half of the 1980s, foreign direct investment has played a fundamental role in furthering international integration and has been the most dynamic factor in industrial restructuring at the global level.
- It should be emphasised, however, that the greater part of direct investment during the past 15 years corresponds to acquisition, *i.e.* a change of ownership rather than the creation of a new business enterprise or capacity enlargement of existing firms.
- The magnitude of inward direct investment depends on many factors: size of the domestic market, labour skills and infrastructure quality, labour costs, taxation, level of technology and development of the banking and financial system.
- All direct investment flows recorded sharp drops beginning in 2000 (see also Figure A.1.1).
- The United States is not only the main investing country but also the leading host country for foreign investment followed by the United Kingdom. Until 2004, Luxembourg appears as the second host and investor country in absolute values but in reality capital flows merely transit through this country due to the presence of holding companies set up to transit or manage the investments of multinational companies. Outflows by the United Kingdom declined very insignificantly in 2004 while direct investment inflows more than tripled. Canada and France hold the third position as direct investors followed by Spain and Japan. Australia is the third OECD host country for direct investment followed by Belgium.
- Between 2000 and 2004, OECD was a net exporter of direct investment capital. Four countries, France, Japan, the United Kingdom and the United States account to a large extent for this trend. Australia, Germany and Poland are major direct investment importers over the period.

Foreign direct investment flows

Foreign investment is a category of international investment whereby the investor holds at least 10% of the ordinary shares or voting rights in the non-resident entity with objective of establishing a "lasting interest". This implies the existence of a long-term relationship between the direct investor and the direct investment enterprise and a significant degree of influence by the direct investor in the management of the non-resident direct investment enterprise. Direct investment relationship does not necessarily require complete control.

Direct investment is measured in terms of flows and stocks. Direct investment flows in the reporting economy or abroad comprise: equity capital (claims, liabilities), reinvested earnings (net) and other capital (claims, liabilities). Direct investment enterprises are entities that are either directly or indirectly owned by the direct investor. A direct investment enterprise may be: *a)* a subsidiary: an enterprise of which more than 50% is owned by a non-resident investor; *b)* an associate: an enterprise of which 10%-50% is owned by a non-resident investor; and *c)* a branch or an unincorporate enterprise wholly or jointly owned by a non-resident.

For more details, see: *IMF Balance of Payments Manual*, Rev. 5; *OECD Benchmark Definition of Foreign Direct Investment*, 3rd edition; and *Measuring Globalisation: OECD Handbook on Economic Globalisation Indicators*, Chap. 2, OECD, 2005.

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A.4. Trends in foreign direct investment flows

Figure A.4.1. **Outward 1992-2004, G7 countries**

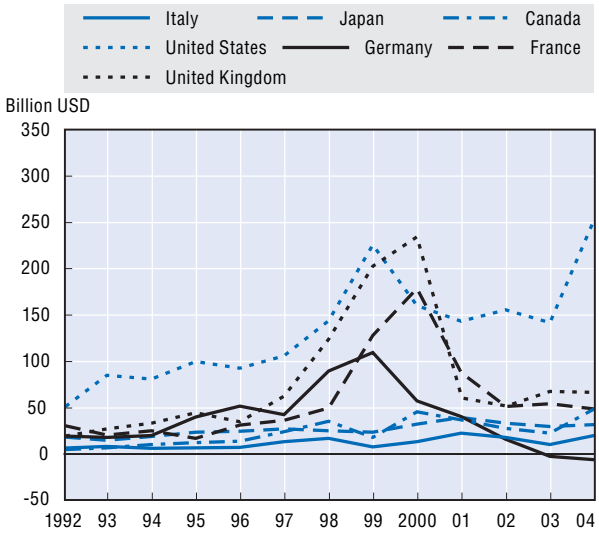


Figure A.4.2. **Inward 1992-2004, G7 countries**

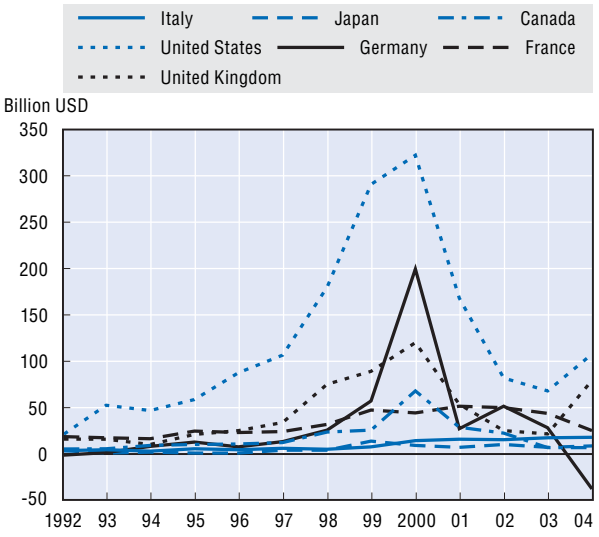


Figure A.4.3. **Outward, average 2000-04**

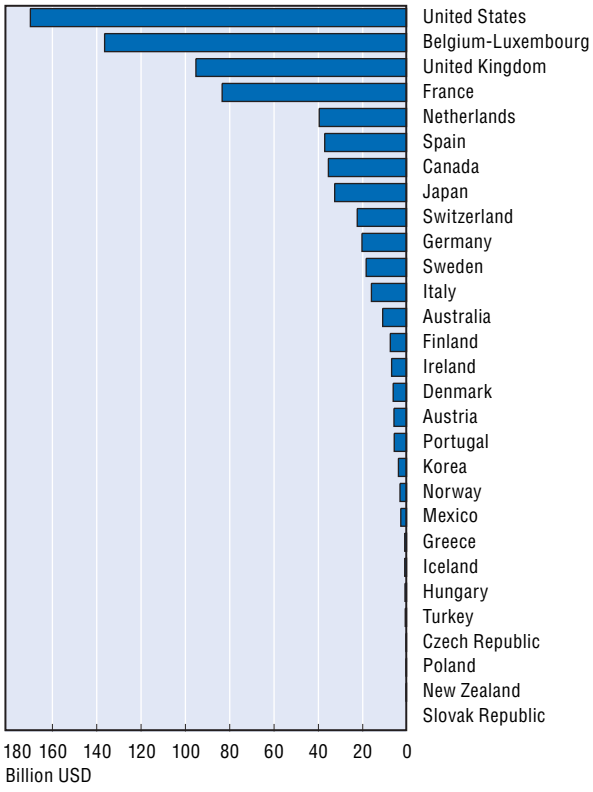
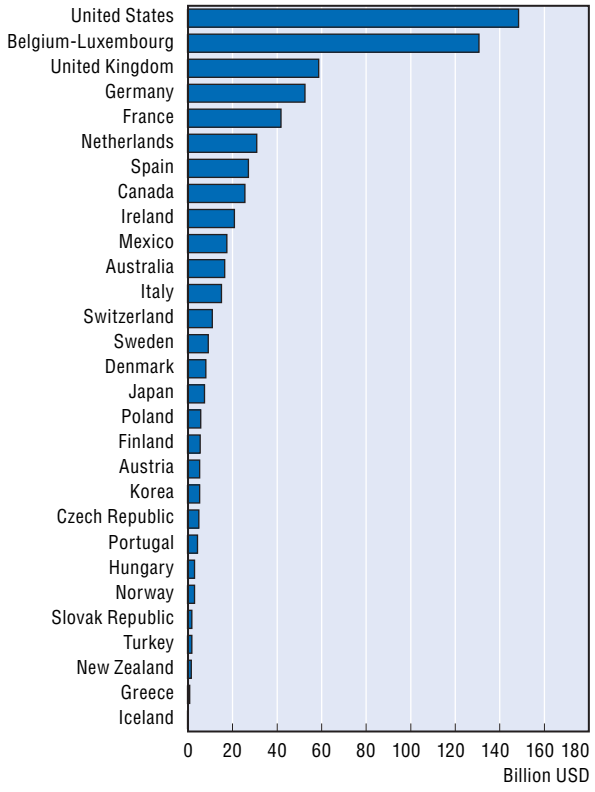


Figure A.4.4. **Inward, average 2000-04**



Source: OECD, International Direct Investment Statistics, June 2005.

StatLink: *http://dx.doi.org/10.1787/311051637013*

A.5. Trends in other investment flows

- Trends in other investment flows (see box for definition) show once again that three countries occupy dominant positions: the United States, the United Kingdom and Germany. In this category of investment, however, average assets and liabilities between 1994 and 2003 put the United Kingdom in first place, ahead of the United States.
- Switzerland also plays an important role in these investment flows, ranking just after the three large countries cited above.
- Between 1994 and 2003, Japan repeatedly recorded negative values, for both assets and liabilities, especially in the early 1990s, with a spectacular plunge for both in 1999.

Other investment flows

Other investment flows covers short- and long-term trade credits; loans (including use of IMF credits, loans from the IMF, and loans associated with financial leases); currency and deposits (transferable and other – such as savings and term deposits, savings and loan shares, shares in credit unions, etc.); and other accounts receivable and payable. Transactions covered under direct investment are excluded.

The traditional distinction, which is based on original contractual maturity of more than one year or one year or less, between long- and short-term assets and liabilities applies only to other investment. In recent years, the significance of this distinction has clearly diminished for many domestic and international transactions. Consequently, the long- and short-term distinction is accorded less importance in the IMF *Balance of Payments Manual*. However, because the maturity factor remains important for specific purposes – analysis of external debt, for example – it is retained for other investment.

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A.5. Trends in other investment flows

Figure A.5.1. **Assets 1992-2003, G7 countries**

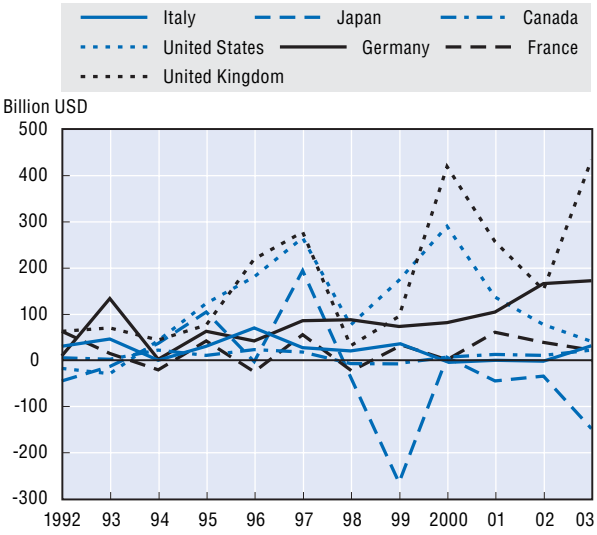


Figure A.5.2. **Liabilities 1992-2003, G7 countries**

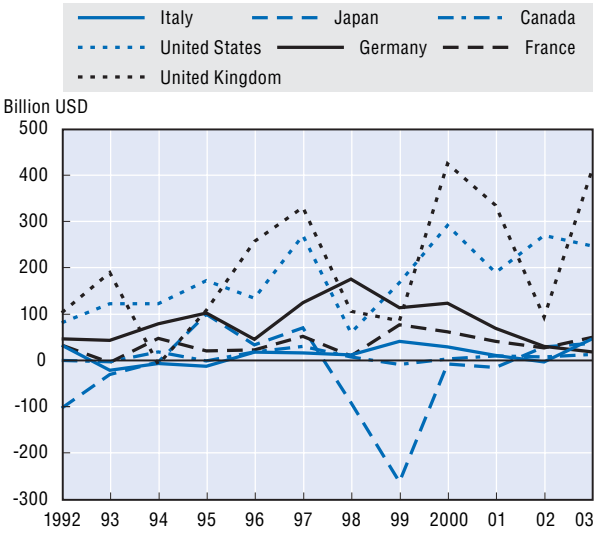


Figure A.5.3. **Assets, average 2000-03**

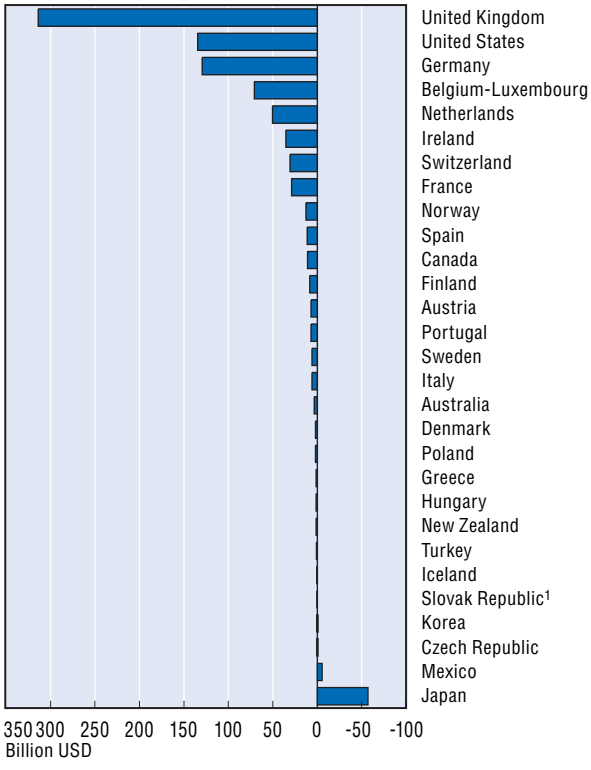
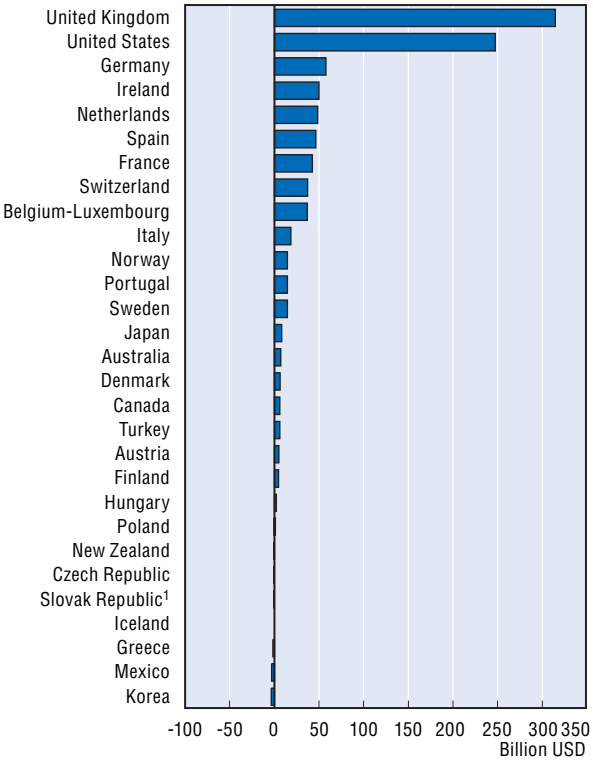


Figure A.5.4. **Liabilities, average 2000-03**



1. Excluding 2001.

Source: IMF, *Balance of Payments Statistics*, April 2005.

StatLink: *http://dx.doi.org/10.1787/803762661407*

A.6. Trends in investment income flows

■ In the latter half of the 1990s and in the early 2000s, the United States derived the most income (credits minus debits) from its aggregate investment. Other countries also recorded positive values, such as the United Kingdom, Japan, Switzerland and Belgium-Luxembourg. For the majority of other countries, receipts and payments corresponding to investment income balanced, except for Italy and Ireland. For these countries, debit flows significantly exceeded credit flows.

■ The strong performance of the United States is attributable primarily to income from direct investment and, to a lesser extent, from other investment. US repayments associated with portfolio investment have risen sharply, to over USD 148 billion in 2003, as opposed to scarcely 60 billion in 1993.

■ Japan's investment income between 2000 and 2003 puts that country in third place in respect of receipts, owing in particular to income from portfolio investment and from other investment.

■ Investment income, in respect of receipts and payments alike, puts Belgium and Luxembourg in fifth and fourth place respectively, ahead of France and Italy.

Investment income

Investment income (property income in the SNA) covers income derived from a resident entity's ownership of foreign financial assets. The most common types of investment income are income on equity (dividends) and income on debt (interest). Dividends, including stock dividends, are the distribution of earnings allocated to shares and other forms of participation in the equity of incorporated private enterprises, co-operatives and public corporations. Interest, including discounts in lieu of interest, comprises income on loans and debt securities (*i.e.* such financial claims as bank deposits, bills, bond notes and trade advances). Net interest flows arising from interest rate swaps also are included. The components of investment income are classified as direct investment, portfolio investment and other investment income.

Direct investment income is broken down into income on equity (dividends, branch profits and reinvested earnings) and income on debt (interest).

Portfolio investment income comprises income transactions between residents and non-residents and is derived from holdings of shares, bond notes and money market instruments, and associated with financial derivatives. It is broken down into income on equity (dividends) and income on debt (interest).

Other investment income covers interest receipts and payments on all other resident claims (assets) on and liabilities to non-residents respectively. This category also includes, in principle, imputed income to households from net equity in life insurance reserves and in pension funds.

Source: IMF Balance of Payments Manual, Rev. 5, § 274-281.

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A.6. Trends in investment income flows

Figure A.6.1. **Credit flows 1992-2003, G7 countries**

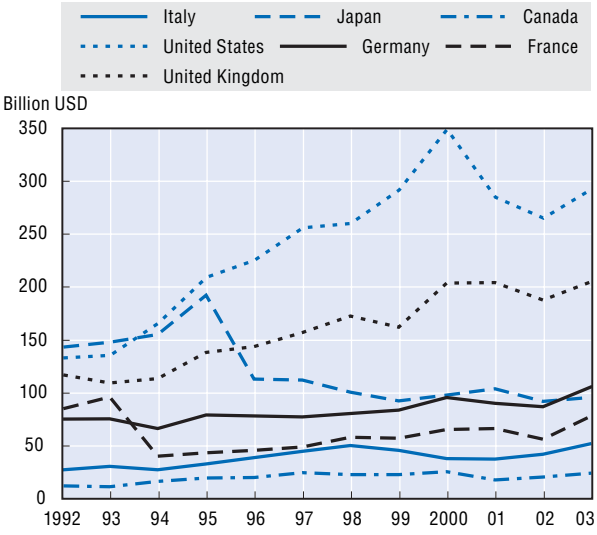


Figure A.6.2. **Debit flows 1992-2003, G7 countries**

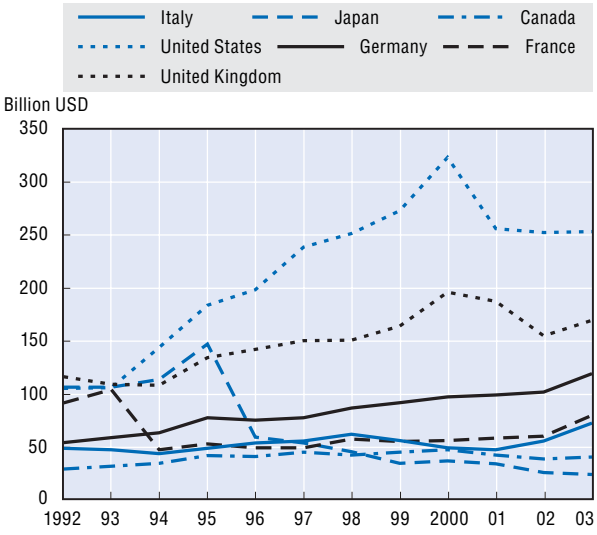


Figure A.6.3. **Credit flows, average 2000-03**

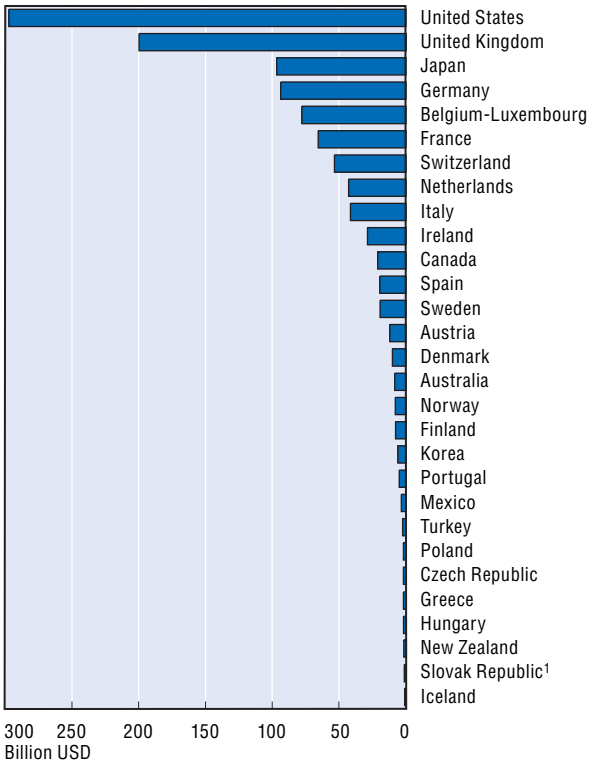
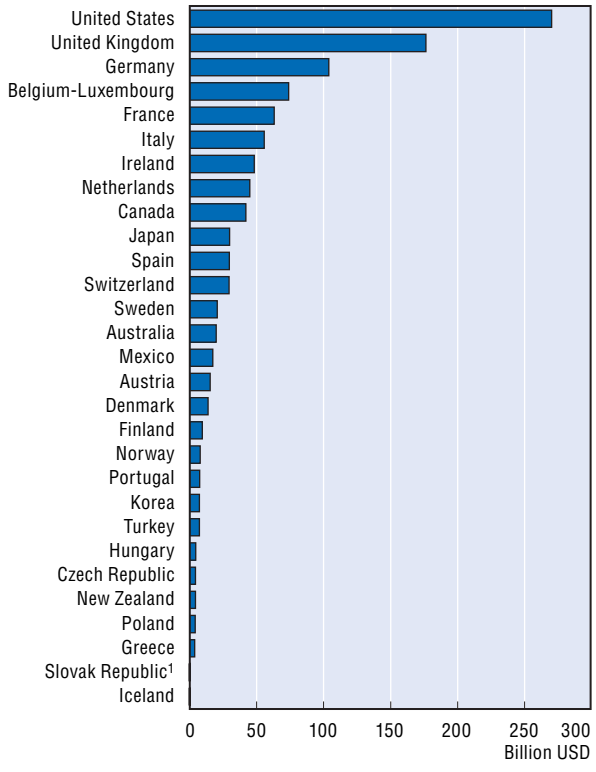


Figure A.6.4. **Debit flows, average 2000-03**



1. Excluding 2001.

Source: IMF, *Balance of Payments Statistics*, April 2005.

StatLink: *http://dx.doi.org/10.1787/837237027730*

A.7. Trade interdependencies

■ One of the characteristics of globalisation is the growing interdependency in all international transactions, and particularly as regards trade and investment. Between 1995 and 2003, the share of domestic demand met by imports in the total OECD area increased from 34% to 41% for goods, and from 35% to 48% for services (see Figures A.6.2 and A.6.3). However, important changes occurred in the structure of countries involved in these imports.

■ The first change, which concerns all OECD zones (United States, European Union, Japan), is their greater dependency *vis-à-vis* China for imports. Between 1995 and 2003, its weight has almost doubled in the imports of each OECD area (Figures A.7.1 to A.7.3).

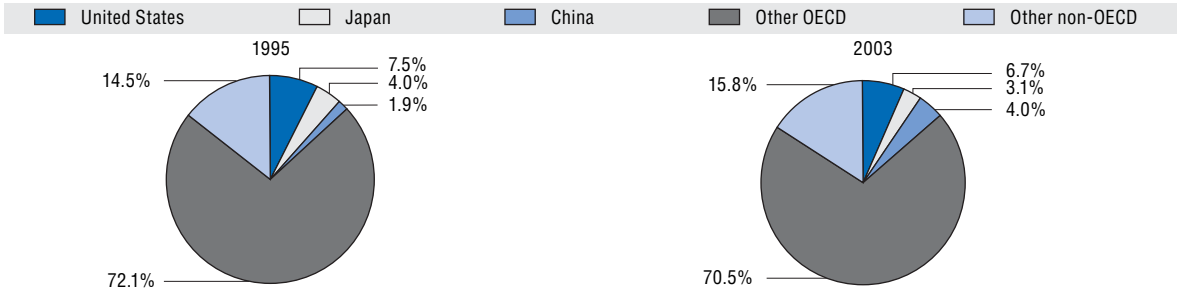
■ The European Union is the area least dependent on Chinese imports, and also on those from other OECD countries not belonging to the EU.

■ Japan is the OECD country most dependent on Chinese imports (about 20% of its imports).

■ Between 1995 and 2003, the share of OECD countries in Chinese imports has decreased to the benefit of imports coming essentially from Asia. About two-thirds of these imports have Chinese Taipei and Korea as economies of origin, and to a lesser extent Singapore and Hong Kong (China).

Figure A.7.1. **Total imports of the European Union[1] by country or zone**

1995-2003



1. EU15 excluding Luxembourg.

Source: OECD, STAN Bilateral Trade database, May 2005.

StatLink: *http://dx.doi.org/10.1787/036670364331*

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A.7. Trade interdependencies

Figure A.7.2. **Total imports of the United States by country or zone**

1995-2003

Figure A.7.3. **Total imports of Japan by country or zone**

1995-2003

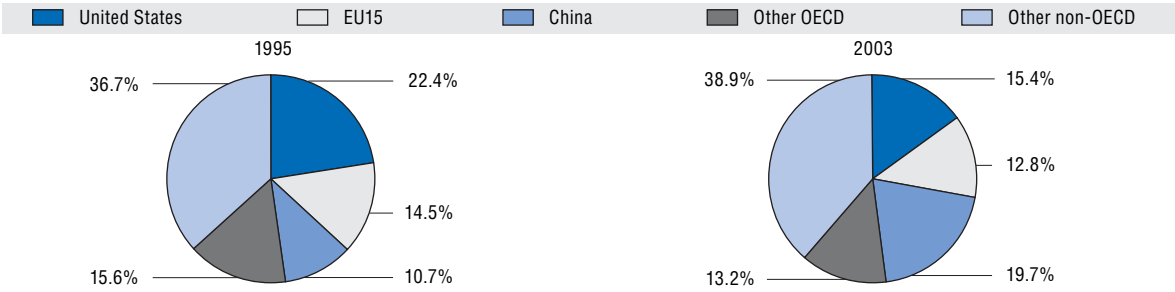
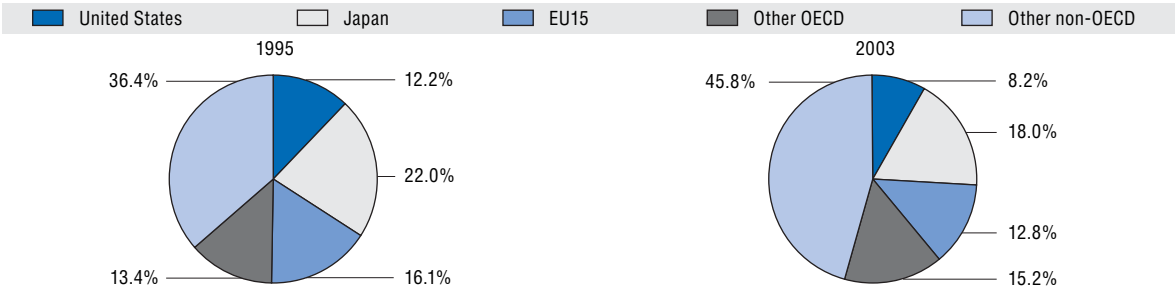


Figure A.7.4. **Total imports of China by country or zone**

1995-2003



Source: OECD, STAN: OECD Structural Analysis Statistics (STAN Bilateral Trade database), May 2005.

StatLink: *http://dx.doi.org/10.1787/036670364331*

A.8. FDI interdependencies

■ Between 1995 and 2002, in the three regions of the OECD area, the ratio of inward direct investment position as a percentage of GDP has strongly increased, particularly in the European Union where the ratio almost tripled.

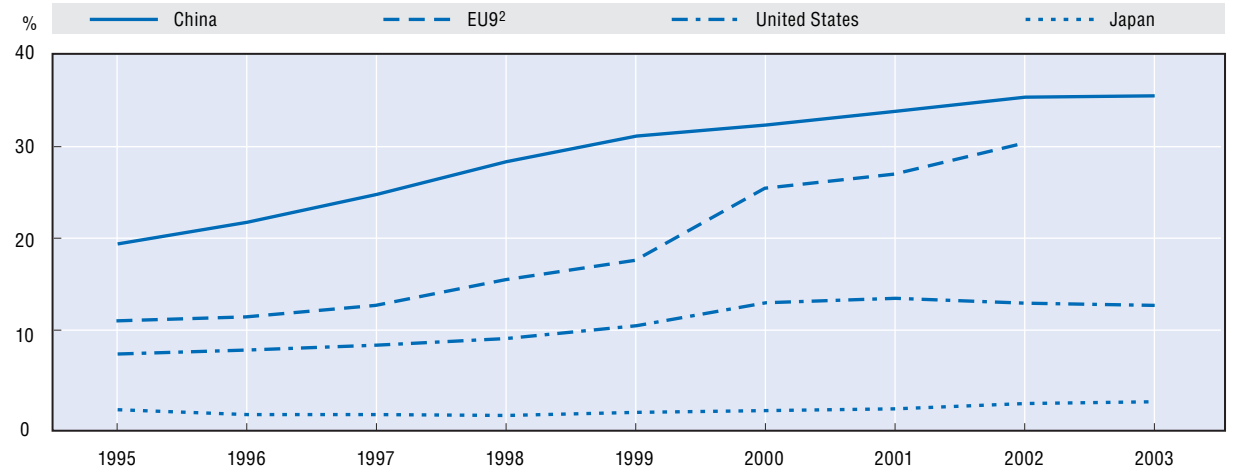
■ As opposed to trade, direct investment primarily originated from the OECD area. The OECD zone receives only a relatively small portion of direct investment from non-OECD member countries (about 4% for the European Union, 8% for Japan and the United States).

■ Until now, the weight of China is almost negligible for inward direct investment into OECD countries, even though the situation is about to change. China has started to invest abroad and in the OECD area, more particularly in energy and high-technology sectors. On the other hand, OECD countries are investing more and more in China.

■ In the United States in 2002, the share of direct investment from the European Union was greater than 60% of total investment, whereas the share of US investment in the European Union was less than 22% of the total. The share of direct investment in the United States from Japan has significantly decreased, as is also the case for trade.

■ In Japan on the contrary, the share of direct investment from the European Union in total inward investment position has doubled, from 20% to almost 40%, about the same proportion than investment from the United States.

Figure A.8.1. **Inward FDI position[1] as a percentage of GDP**



1. See definition in Box B.3.
2. Including Austria, Finland, France, Germany, Italy, the Netherlands, Portugal, Sweden and the United Kingdom.

Source: OECD, International Direct Investment Statistics, April 2005.

StatLink: *http://dx.doi.org/10.1787/605280682325*

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A.8. FDI interdependencies

Figure A.8.2. **Inward FDI position of the European Union[1] by country or zone**

1996-2002

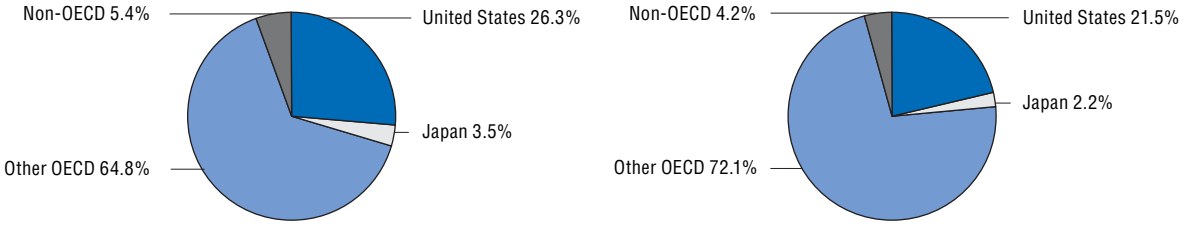


Figure A.8.3. **Inward FDI position of the United States by country or zone**

1996-2002

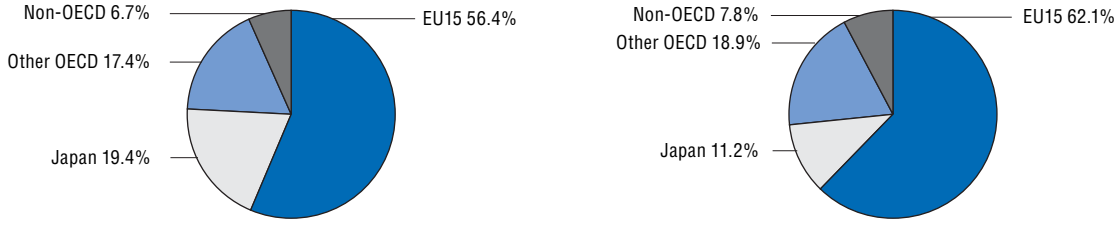
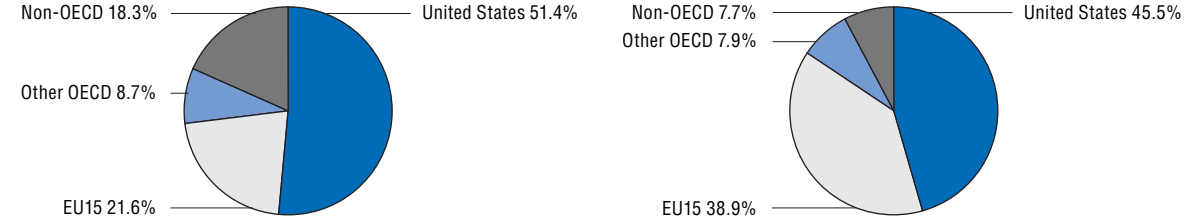


Figure A.8.4. **Inward FDI position of Japan by country or zone**

1996-2002



1. Including Austria, Finland, France, Germany, Italy, the Netherlands, Portugal, Sweden and the United Kingdom.

Source: OECD, International Direct Investment Statistics, April 2005.

StatLink: *http://dx.doi.org/10.1787/605280682325*

B. FOREIGN DIRECT INVESTMENT

B.1. General foreign direct investment trends

The investment boom of the 1990s became more significant in the latter part of the decade. Direct investment inflows to and outflows from the OECD area stood at historically high levels in 2000 when they reached USD 1 289 billion and USD 1 239 billion, respectively. In 2004, FDI inflows to the OECD were USD 415 billion (a decrease of 4% from 2003) while OECD investment abroad increased by 6% to USD 663 billion.

FDI grew significantly in 1998 when inflows increased by 75% and outflows by 59%. The yearly increase in 1999 continued to be very significant (inflows increased by 69% and outflows by 60%). This trend slowed down the following year (44% and 18%, respectively) even though such flows reached their peak in 2000.

OECD countries recorded a sharp decline of FDI flows in 2001 when inflows fell by around 50% and outflows by 45%. The decline in FDI inflows to the OECD continued in until 2004 while outflow from the OECD started increasing as from 2003 but rather modestly at around 5%. This contraction is significant when compared to the investment bubble of the end-1990s but it does not imply that FDI activity is low. Both FDI inflows and outflows of the OECD are notably higher than similar cross-border flows of early or mid-1990s.

In spite of the fluctuations in overall investment during the period 1992-2004, OECD continues to be net exporter of FDI flows, in average USD 97 billion, with the exception of the year 2000 when OECD countries became net importers of FDI by USD 50 billion. In 2004, OECD was net exporter of around USD 250 billion FDI flows, which is six times more than the net outflows in 1999, the highest net FDI exports during the period.

The share of G7 countries in both FDI inflows and outflows of OECD countries is significant. During the period 1992-2003, in average, the share of G7 countries accounted for more than 55% of total OECD inflows and around 70% of the outflows. Net FDI export of the OECD is mostly due to significant cross-border investments by G7 which has off-set the net capital imports by a number of other OECD countries.

With respect to the sectoral distribution of FDI in the OECD in the period 1992-2003, the share of services increased significantly over the years while the relative weight of investments in the manufacturing sector became strikingly smaller. In 2002, investment positions in services account for around two-thirds of overall FDI of the OECD.

Direct investment, direct investment enterprise and direct investor

Foreign Direct Investment (FDI) is defined as international investment by a resident entity in one economy (direct investor) with the objective of obtaining a lasting interest in an enterprise resident in another economy (direct investment enterprise). The "lasting interest" implies the existence of a long-term relationship between the direct investor and the non-resident enterprise and a significant degree of influence by the direct investor on the management of the direct investment enterprise. Direct investment involves both the initial transaction between the two entities and all subsequent transactions between them and among affiliated enterprises, both incorporated and unincorporated.

A ***direct investment enterprise*** is an incorporated enterprise in which a foreign investor owns 10% or more of the ordinary shares or voting power or an unincorporated enterprise in which a foreign investor has equivalent ownership. Ownership of 10% of the ordinary shares or voting stock is the basic criterion for determining the existence of a direct investment relationship. An "effective voice in the management", as evidenced by an ownership of at least 10%, implies that the direct investor is able to influence, or participate in, the management of an enterprise; absolute control by the foreign investor is not required.

A ***direct investor*** is an individual, an incorporated or unincorporated public or private enterprise, a government, a group of related enterprises (incorporated or unincorporated) or individuals, that has a direct investment enterprise (that is, a subsidiary, associate or branch) operating in an economy other than the economy or economies of residence of the foreign direct investor or investors.

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B.1. General foreign direct investment trends

Figure B.1.1. **Total FDI flows to and from OECD countries**

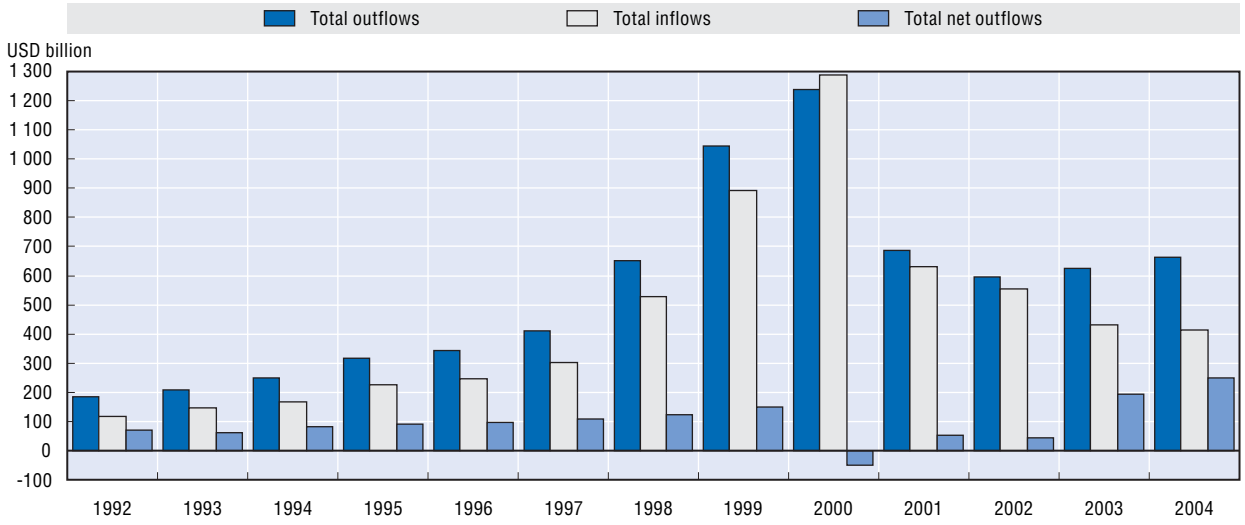


Figure B.1.2. **Inward investment positions of the OECD area**

1992-2002

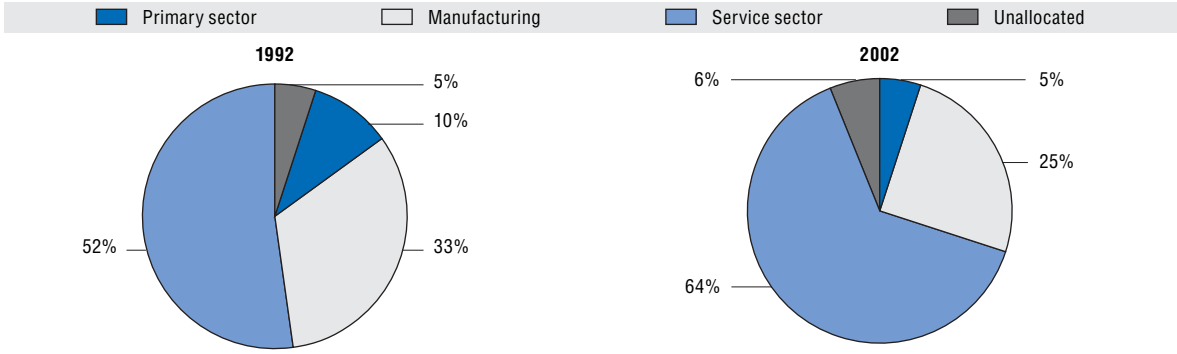
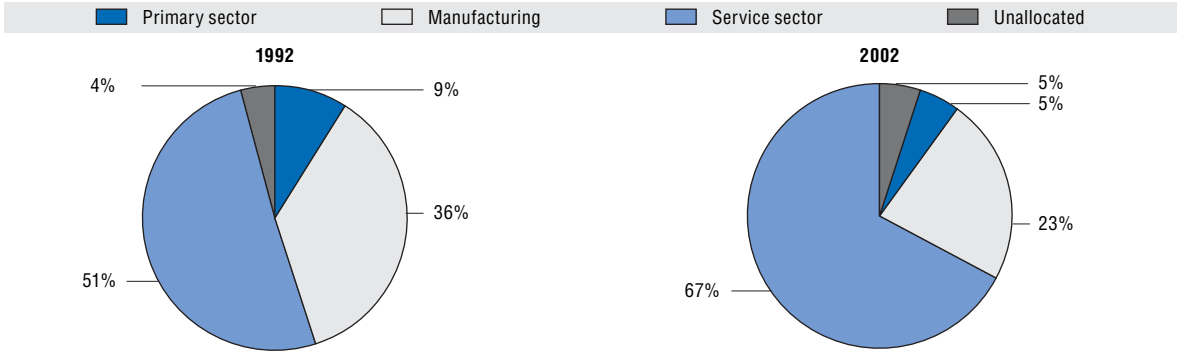


Figure B.1.3. **Outward investment positions of the OECD area**

1992-2002



Source: OECD, International Direct Investment Statistics, June 2005.

StatLink: *http://dx.doi.org/10.1787/884733037826*

B.2. Foreign direct investment flows as a percentage of GDP

■ Flows of direct investment as a percentage of GDP help measure the relative importance of globalisation by relating an economy's direct investment to its level of economic activity.

■ In absolute terms, the United States is both the largest foreign investor and the largest recipient of FDI in the OECD area (USD 124 billion in outflows and USD 120 billion in inflows over 1992-2003). However, when measuring FDI as a share of GDP, its relative importance appears in a different light. The United States occupies, on average, the fifth position among G7 countries, after the United Kingdom, France, Canada and Germany.

■ Some OECD countries have relatively high ratios for both inward and outward flows of FDI. In the Benelux countries, for example, some of these flows are largely due to the activities of special purpose entities and holding companies established by multinationals to finance and manage their cross-border investment. Owing to the methodology currently used for FDI statistics, a significant share of the transactions of such entities is included in FDI statistics.

■ Other OECD countries, such as Finland, Sweden and Spain, invest on average 5% or more of their GDP in non-resident enterprises. Sweden, the Czech Republic, and the Slovak Republic receive on average FDI corresponding to more than 5% of their GDP.

Foreign direct investment capital transactions

Direct investment flows are transactions between a direct investor in one economy and a direct investment enterprise in another economy, and among affiliated direct investment enterprises that are in a direct investment relationship, other than those that are resident in the same economy. Direct investment flows are recorded on a directional basis: *i)* as resident direct investment abroad (outflows); or *ii)* non-resident direct investment in the reporting economy (inflows). Direct investment financial flows are composed of equity capital, reinvested earnings (and undistributed branch profits) and other capital.

Equity capital comprises: *i)* equity in branches; *ii)* all shares in subsidiaries and associates (except non-participating preference [preferred] shares, which are treated as debt securities and included under direct investment, other capital); and *iii)* other capital contributions, including non-cash acquisitions of equity (such as through the provision of capital equipment).

Reinvested earnings and undistributed branch profits comprise in proportion to equity held, direct investors' shares of *i)* earnings that foreign subsidiaries and associated enterprises do not distribute as dividends (reinvested earnings), and *ii)* earnings that branches and other unincorporated enterprises do not remit to direct investors (undistributed branch profits).

Other capital: covers the borrowing or lending of funds between *i)* direct investors resident in one economy and their subsidiaries, branches, and associates resident in other economies, and *ii)* enterprises within a group of related direct investment enterprises that are resident in different economies. The instruments covered include loans, debt securities, suppliers' (trade) credits, financial leases, and non-participating preference [preferred] shares which are treated as debt securities.

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B.2. Foreign direct investment flows as a percentage of GDP

Figure B.2.1. **FDI outflows from G7 countries as a percentage of GDP**

1992-2003

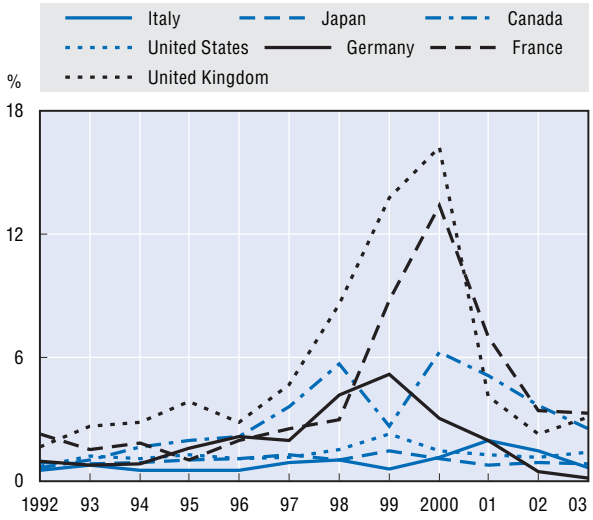


Figure B.2.2. **FDI inflows to G7 countries as a percentage of GDP**

1992-2003

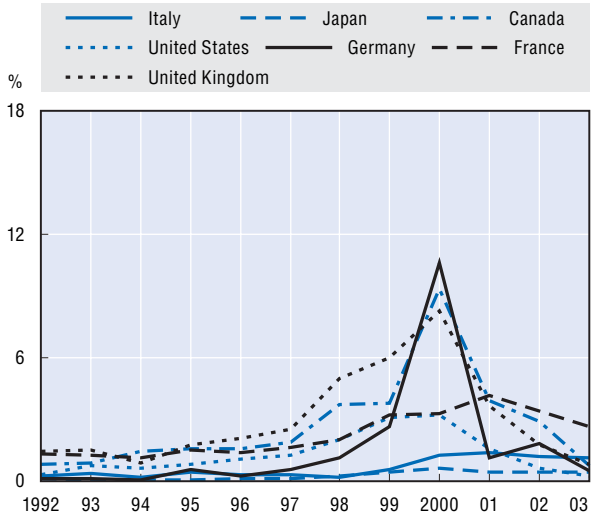
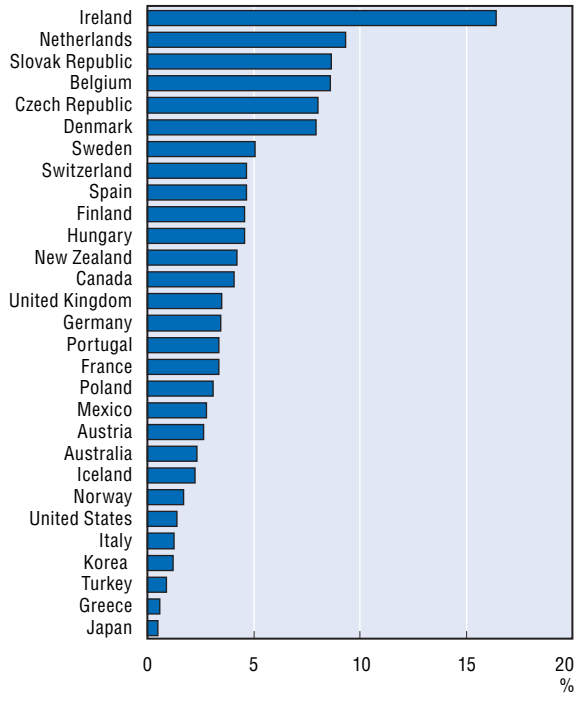


Figure B.2.3. **FDI outflows from OECD countries as a percentage of GDP**

Average 2000-03

Figure B.2.4. **FDI inflows to OECD countries as a percentage of GDP**

Average 2000-03



Source: OECD, International Direct Investment Statistics and National Accounts of OECD Countries databases, June 2005.

StatLink: *http://dx.doi.org/10.1787/506487100281*

B.3. Foreign direct investment position (stocks) as a percentage of GDP

The underlying motivation of direct investment is to establish a long-term relationship between the direct investor and the direct investment enterprise. FDI positions measured as a percentage of GDP provide a structural indicator regarding the relative interdependence of economies particularly when analysed by partner country.

Overall, the relative share of outward FDI positions of G7 countries as well as most OECD countries is higher as compared to their inward investments. This confirms the dominant trend of OECD countries as net exporters of FDI, either in the form of mergers and acquisitions or greenfield (new) investments.

In terms of absolute amounts, the United States ranks first in the OECD as both home and host economy for direct investment. The relative share of US direct investors (outward investment) and direct investment enterprises (inward investment), doubled over the period 1992-2002. However, the relative importance of FDI for the United States is less significant as compared to some other OECD countries.

Amongst G7 countries, in 2002 the United Kingdom had the highest ratio for outward FDI positions (as in the previous years) as well as for inward investments. The outward FDI position of Japan represented only 7% of its GDP while direct investment by foreigners was less than 2%, which is the lowest ratio amongst all OECD countries.

The FDI positions of the Benelux countries, Switzerland and Ireland confirm the trends observed for FDI flows. Statistics based on the current methodology include most of the operations by Special Purpose Entities and holding companies and, therefore, should be interpreted with caution.

The direct investment positions of the Nordic countries, Finland, Norway, Denmark and Sweden, measured in proportion to their GDP respectively are quite significant as compared to other OECD countries. These countries also act as host to direct investment even though the relative share of investment in domestic enterprises by non-resident investors is less significant.

Smaller OECD economies are mostly recipients of FDI; where FDI positions represented as much as around 50% of GDP in 2002. Other countries such as Greece, Iceland and Turkey have FDI positions that range between 5% and 10% of GDP.

Foreign direct investment position (stocks)

Direct investment position data are stock data showing an economy's direct investment assets and liabilities at a given point in time. For annual data, statistics may be based on calendar years or fiscal years when the latter is different from the calendar year.

According to international standards, assets and liabilities should be valued at market prices prevailing on the date they are recorded in the statistics. Most OECD countries deviate from this recommendation and establish their FDI position statistics according to book values which represent values recorded in the balance sheets of direct investors. Depending on the type of book values applied, the results will vary significantly. Book values which are not based on revaluations but reflect for example historical costs are not in line with market valuation concepts.

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B.3. Foreign direct investment position (stocks) as a percentage of GDP

Figure B.3.1. **Outward FDI position of G7 countries as a percentage of GDP**

1992-2002

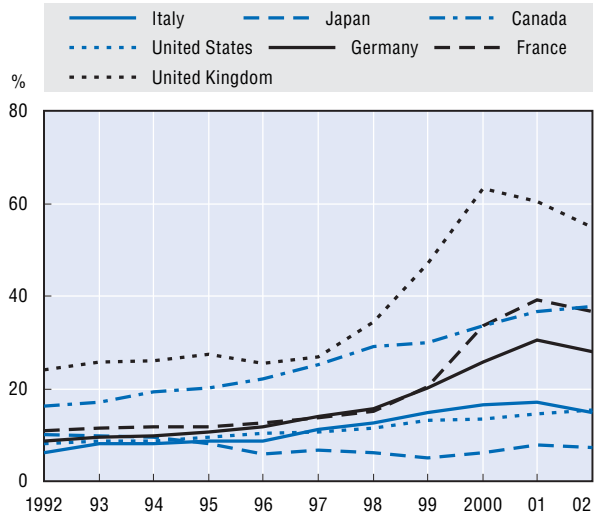


Figure B.3.2. **Inward FDI position of G7 countries as a percentage of GDP**

1992-2002

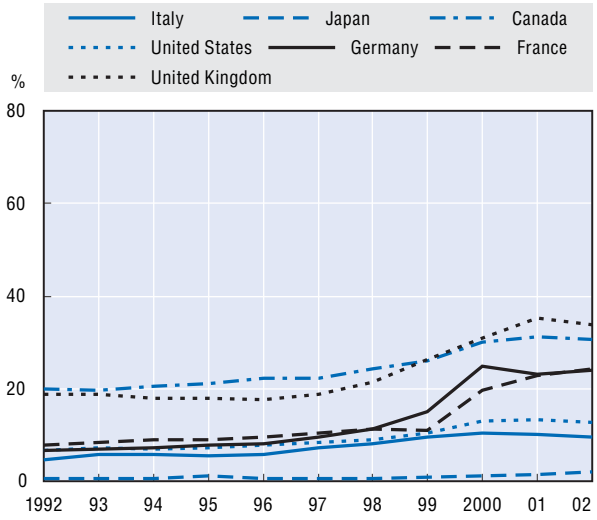


Figure B.3.3. **Outward FDI position of OECD countries as a percentage of GDP**

2002

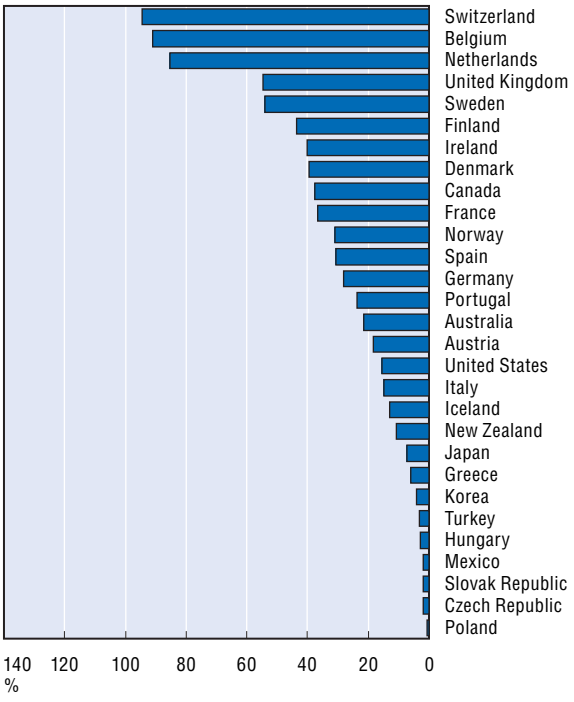
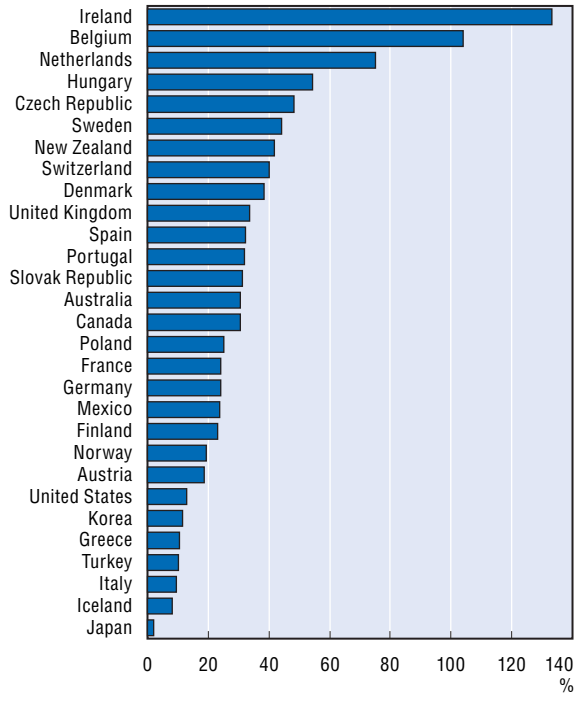


Figure B.3.4. **Inward FDI position of OECD countries as a percentage of GDP**

2002



Source: OECD, International Direct Investment Statistics and National Accounts of OECD Countries databases, June 2005.

StatLink: *http://dx.doi.org/10.1787/050572410707*

B.4. Foreign direct investment position of manufacturing as a percentage of total FDI positions

Detailed statistics on FDI flows, position and income classified by industry sectors are compiled by the OECD. These series enable measures of the contribution of various sectors of individual countries to the global economy, as well as measures of the dependence of host economies on sectors of investment from abroad. For the convenience of the present document, industries are aggregated into three main categories: *a)* primary sector; *b)* manufacturing; and *c)* services. In addition, some data are classified as unallocated mostly due to confidentiality clauses (see also Figures B.1.2 and B.1.3).

In 2002, the outward investment position of OECD countries in the manufacturing sector had increased by 180% from the level in 1992. In spite of the increase over this period, the share of manufacturing sector in total outward investment dropped from 36% in 1992 to 23% in 2002.

With respect to G7 countries, the United States showed the greatest decrease in the share of outward manufacturing investment in total outward investment during the reference period (Figure B.4.1).

With respect to the share of manufacturing inward investment in total inward investment, the most spectacular decrease was observed in the case of Germany and, to a lesser extent, France (Figure B.4.2).

Concerning the other OECD countries the most important outward manufacturing investments in total outward FDI stocks concerns Finland (almost 70%). Manufacturing represented the majority of inward investment in Korea, Mexico and Iceland (more than 50% of total inward stocks).

Industrial classifications

Foreign direct investment can be allocated according to the industry of the resident direct investment enterprise or non-resident direct investor for inward direct investment or according to the industry of the resident direct investor or the industry of the non-resident direct investment enterprise. OECD recommends that, where feasible, two sets of statistics be compiled according to both methods and that the economic activity should be the main activity of the direct investor and all its subsidiaries and related companies in its country of residence. The industrial classification should be based at least on main sections identified by *the United Nations International Standard Industrial Classification of All Economic Activity (ISIC)*.

If statistics are not complied according to the same principles by partner countries, the results will be different and bilateral and international comparison of the statistics will be difficult. In this document most OECD countries compile the data according to the industry sector of the resident direct investment enterprise for inward investments and according to the industry sector of the resident direct investor for outward investment.

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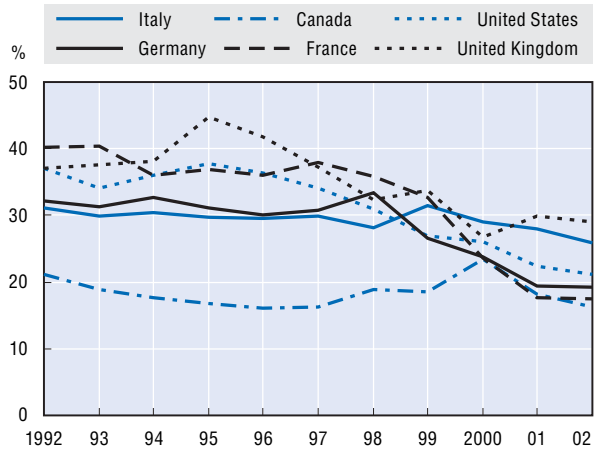
B.4. Foreign direct investment position of manufacturing as a percentage of total FDI positions

Figure B.4.1. **Share of the manufacturing sector in the total outward FDI positions of G7 countries**[1]

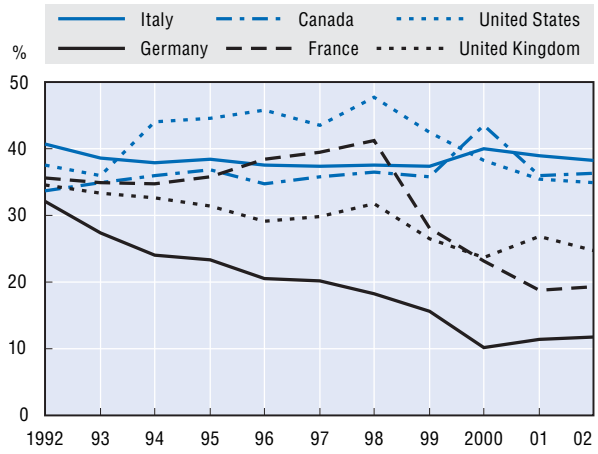
Percentages, 1992-2002



1. The breakdown is not available for Japan.

Figure B.4.2. **Share of the manufacturing sector in the total inward FDI positions of G7 countries**[1]

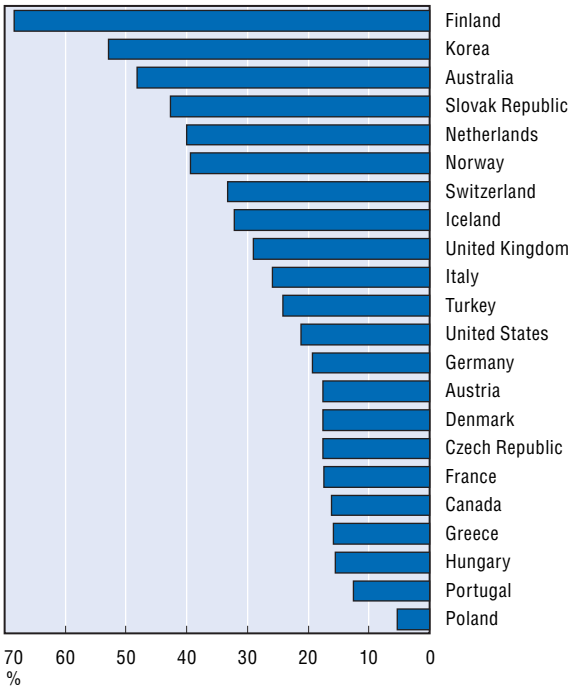
Percentages, 1992-2002



1. The breakdown is not available for Japan.

Figure B.4.3. **Share of the manufacturing sector in the total outward FDI positions of OECD countries**[1]

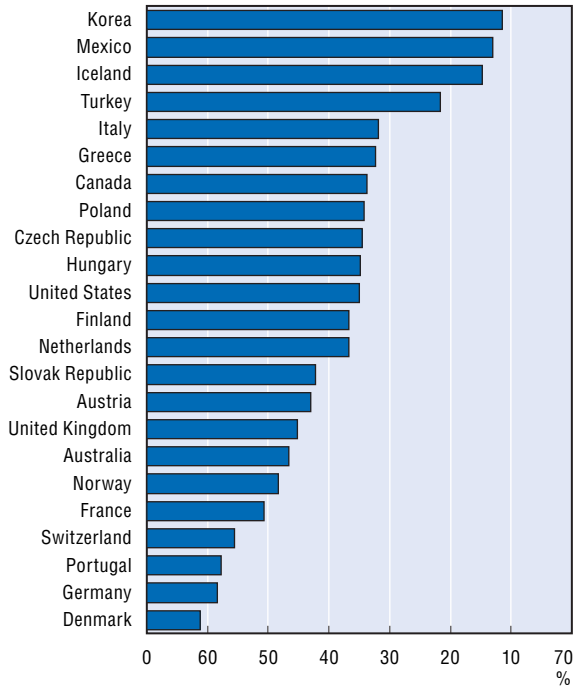
Percentages, 2002[2]



1. The breakdown is not available for Belgium, Ireland, Japan, Luxembourg, Mexico, New Zealand, Spain and Sweden.
2. 2001 for Korea and Norway.

Figure B.4.4. **Share of the manufacturing sector in the total inward FDI positions of OECD countries**[1]

Percentages, 2002[2]



1. The breakdown is not available for Belgium, Ireland, Japan, Luxembourg, New Zealand, Spain and Sweden.
2. 2001 for Korea, 2000 for Mexico.

Source: OECD, International Direct Investment Statistics, June 2005.

StatLink: *http://dx.doi.org/10.1787/416417321660*

B.5. Foreign direct investment position of services as a percentage of total FDI positions

■ The share of foreign direct investment in services sector, already dominant in the early 1990s, increased significantly over the recent period as investment in manufacturing followed the opposite trend. This development coincides, to some extent, with the growth of financial and business services boosted by recourse to SPEs and holding companies which are more and more involved in the investment of multinational enterprises. The ratio of the primary sector to total investment positions, modest in the earlier part of the decade, in 2002 represented only 5% of both total outward and inward investment positions of the OECD.

■ The share of outward OECD direct investment in service sectors represented 50% of total outward FDI positions in 1992 and increased to 67% in 2002. While total outward FDI positions in 2002 were close to three times the level of 1992, outward positions in services sector increased more than three and a half times.

■ Inward direct investment positions of OECD countries exhibit a similar trend. The level of FDI positions was multiplied by four in 2002 as compared to 1992 while total inward investment increased only three times and the manufacturing sector by only around 130%. The relative share of the service sector in total inward investment position increased from 52% in 1992 to 64% while the share of manufacturing dropped from 33% to 25%.

■ Investment positions of G7 countries exhibit similar developments over the period 1992-2002, with the share of both inward and outward investments in services sector become more predominant and the share of manufacturing sectors declining generally as from 1998.

■ In 2002, services industries accounted for more than 75% of total investments for Greece, the Czech Republic, Poland, France, Germany and Austria. The relative share of services for inward investment positions represented as much as 70% to 88% of total investments of Germany, Switzerland, Denmark, France, Austria and the Slovak Republic.

■ Several OECD countries which attract less foreign investment in services sector such as Korea, Mexico, Iceland and Turkey had a large share of manufacturing industries in 2002 (around 50% or more). The share of outward investments in services of Finland, Korea, Australia, Slovak Republic and the Netherlands represented between 40% to around 60% of their total outward investment positions.

Service sectors

Statistics are based on the industrial classification identified by *the United Nations International Standard Industrial Classification of All Economic Activity (ISIC)*. Accordingly (see also Box on industry classification under B.4), direct investment statistics classified as "services" are the following:

- Electricity, gas and water
- Construction
- Trade and repairs
- Hotels and restaurants
- Transport and communication
  - Land, sea and air transport
  - Telecommunications
- Financial activities
- Monetary institutions
- Other financial institutions
- Insurance and activities auxiliary to insurance
- Other financial institutions and insurance act
- Real estate and business activities
- Other services

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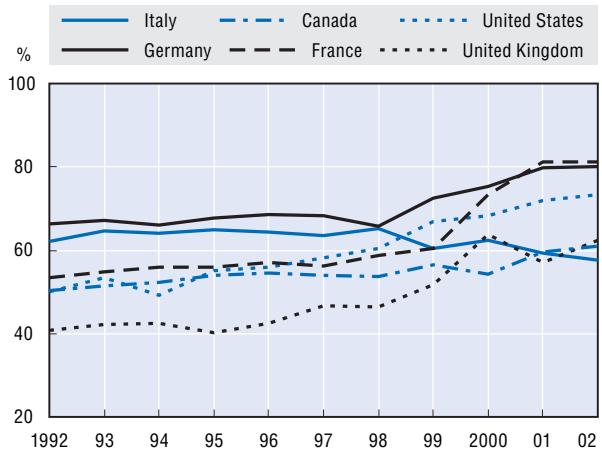
B.5. Foreign direct investment position of services as a percentage of total FDI positions

Figure B.5.1. **Share of the service sector in the total outward FDI positions of G7 countries**[1]

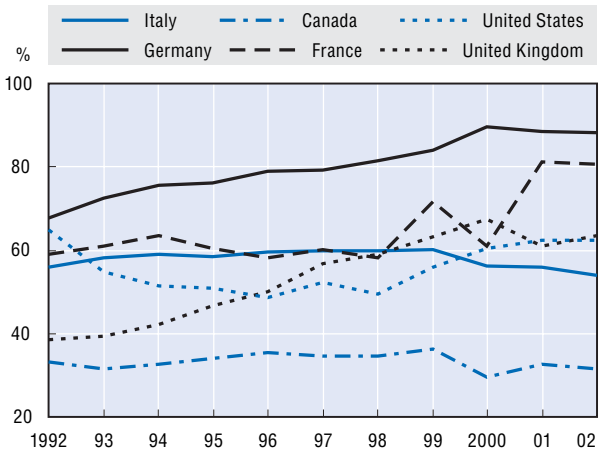
Percentages, 1992-2002



1. The breakdown is not available for Japan.

Figure B.5.2. **Share of the service sector in the total inward FDI positions of G7 countries**[1]

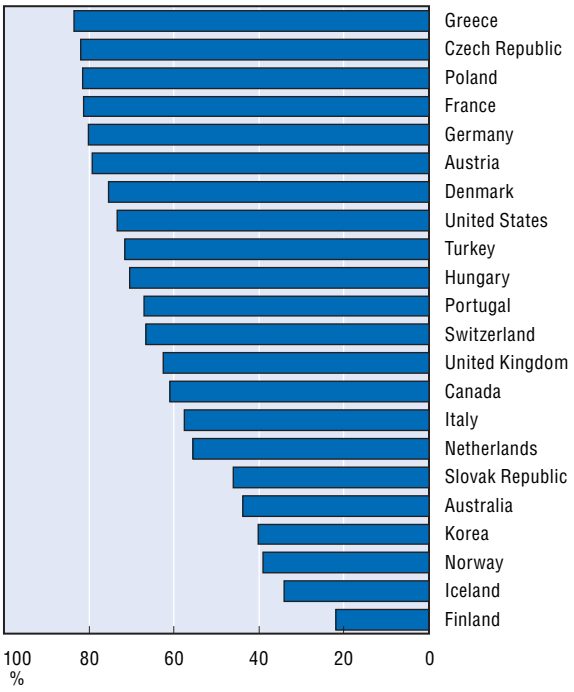
Percentages, 1992-2002



1. The breakdown is not available for Japan.

Figure B.5.3. **Share of the service sector in the total outward FDI positions of OECD countries**[1]

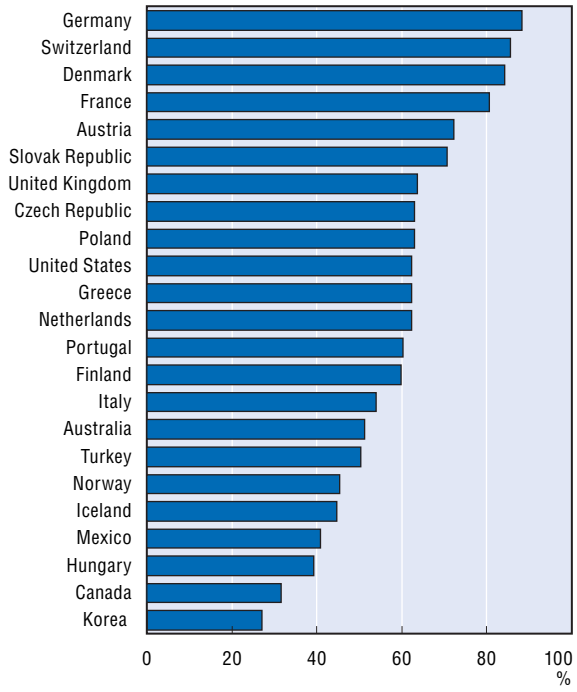
Percentages, 2002[2]



1. The breakdown is not available for Belgium, Ireland, Japan, Luxembourg, Mexico, New Zealand, Spain and Sweden.
2. 2001 for Korea and Norway.

Figure B.5.4. **Share of the service sector in the total inward FDI positions of OECD countries**[1]

Percentages, 2002[2]



1. The breakdown is not available for Belgium, Ireland, Japan, Luxembourg, New Zealand, Spain and Sweden.
2. 2001 for Korea, 2000 for Mexico.

Source: OECD, International Direct Investment Statistics, June 2005.

StatLink: *http://dx.doi.org/10.1787/772767668732*

B.6. Inward and outward foreign direct investment stocks as a percentage of GDP and as a share of total OECD

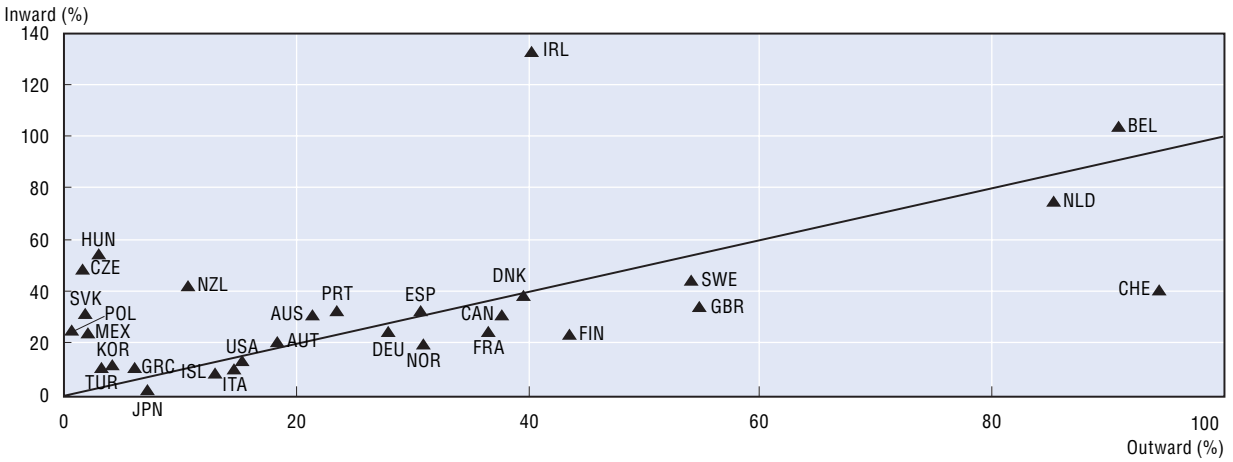
Figure B.6.1 combines countries' relative positions in GDP percentage terms for both inward and outward investments in 2002. Some countries invested more abroad than they hosted foreign investment at home. This is the case for Switzerland, the Netherlands, the United Kingdom, Sweden, Finland, and to a lesser extent Canada and France.

Other countries were in the reverse situation, hosting more foreign investment at home than they invested abroad, particularly Ireland, Hungary, the Czech Republic, New Zealand, the Slovak Republic, Poland and Belgium. For most other countries, the two ratios are relatively similar, especially if computed over a longer time period.

Figures B.6.2 and B.6.3 show each country's relative share for 2002 in OECD total foreign investment stocks. The United States attracted nearly 28% of inward direct investment, while the European Union attracted more than 55% of total inward investment (Figure B.6.2). Similar trends are also observed for outward investment. The United Kingdom is the second biggest investor abroad, followed by Germany and France, and is also an important host country.

Figure B.6.1. **Inward and outward foreign direct investment positions as a percentage of GDP**

2002



Source: OECD, International Direct Investment Statistics and National Accounts of OECD Countries databases, 2005.

StatLink: *http://dx.doi.org/10.1787/068807240101*

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B.6. Inward and outward foreign direct investment stocks as a percentage of GDP and as a share of total OECD

Figure B.6.2. **Share of main investor countries in OECD[1] total foreign direct investment positions**

Percentages, 2002

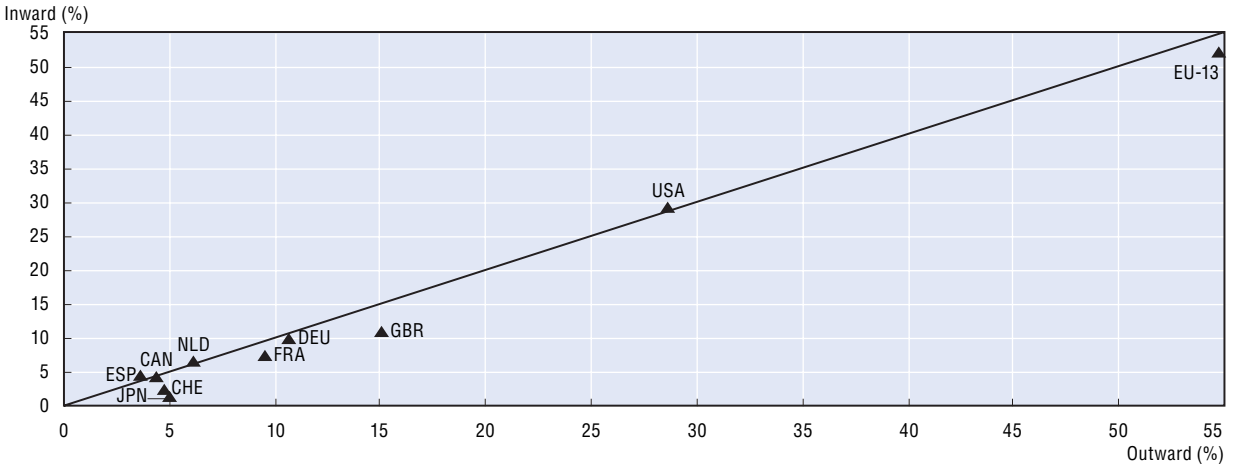
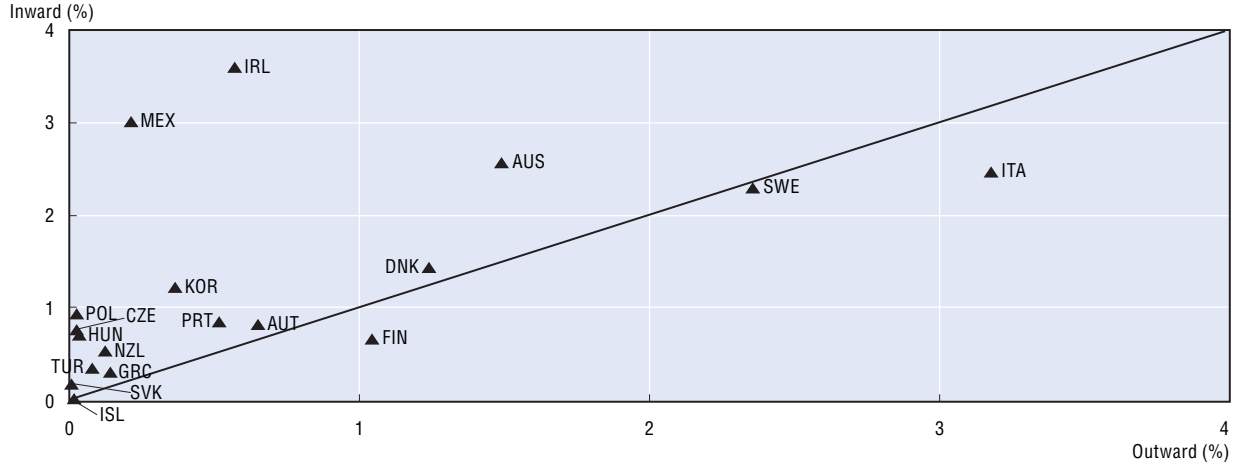


Figure B.6.3. **Share of other investor countries in OECD[1] total foreign direct investment positions**

Percentages, 2002



1. Excluding Belgium, Luxembourg and Norway.

Source: OECD, International Direct Investment Statistics, June 2005.

StatLink: *http://dx.doi.org/10.1787/068807240101*

B.7. Foreign direct investment income as a percentage of GDP

■ Only a few OECD countries fully apply the Current Operating Performance Concept to measure the inward and outward earnings of direct investment enterprises. International comparison is limited since most OECD countries do not apply this recommended methodology.

■ In absolute amounts the United States recorded the highest income both for income credits (income from outward investments) and debits (income from inward investments) followed by the United Kingdom.

■ Over the period 1992-2003, the relative importance of the earnings of the United Kingdom from direct investment enterprises abroad was notably higher than those of other G7 countries. At a lower ratio of GDP, the earnings from direct investment enterprises in the United Kingdom exhibit similar trends, and are at a similar ratio to those of Canada. The relative importance of income of direct investment in the United States and overseas investment by the United States was stable over the period. Earnings of Japanese and French direct investment companies abroad are not very significant but higher than the earnings of inward direct investment enterprises of which, in average, the ratio of earnings (2000-03) was amongst the lowest in the OECD area (France 0.2% and Japan 0.1%).

■ In the OECD area, Switzerland (8.1%) followed by Sweden (5.2%) recorded the highest income ratio in 2000-03 for outward investments. Ireland had by far the highest ratio for inward investments, with 23% on average, followed by 5% for Belgium.

Direct investment income and current operating performance

Direct investment income comprises income on equity and income on debt accruing to a direct investor resident in one economy from the ownership of direct investment capital in an enterprise in another economy. Direct investment earnings should be recorded at the time such flows accrue and according to Current Operating Performance Concept. However, most of the countries use the All-inclusive concept. Both methods are explained in the International Accounting Standard No. 8, "Unusual and Prior Period Items and Changes in Accounting Policy".

***Current operating performance concept* (COPC):** Earnings measured on the basis of this concept consist of income from normal enterprise operations before non-recurring items (such as write-offs) and capital gains and losses are accounted for. Enterprises should report their operational earnings after deduction for provisions for depreciation of capital and income and corporations taxes.

***All-inclusive concept*:** When earnings are measured on the basis of this concept, income is considered to be the amount remaining after allowing for all items (including write-offs and capital gains and losses), causing any increase or decrease in the shareholders' or investors' interests during the accounting period, other than dividends and any other transactions between the enterprise and its shareholders or investors.

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B.7. Foreign direct investment income as a percentage of GDP

Figure B.7.1. **Income of G7 direct investment enterprises abroad as a percentage of GDP**

1992-2003

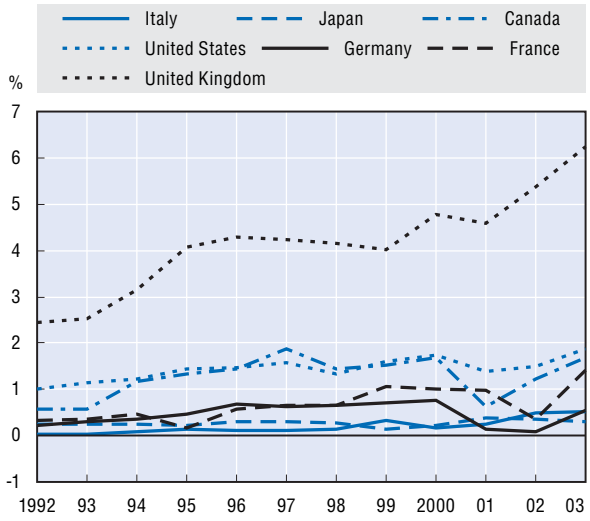


Figure B.7.2. **Income of G7 resident direct investment enterprises as a percentage of GDP**

1992-2003

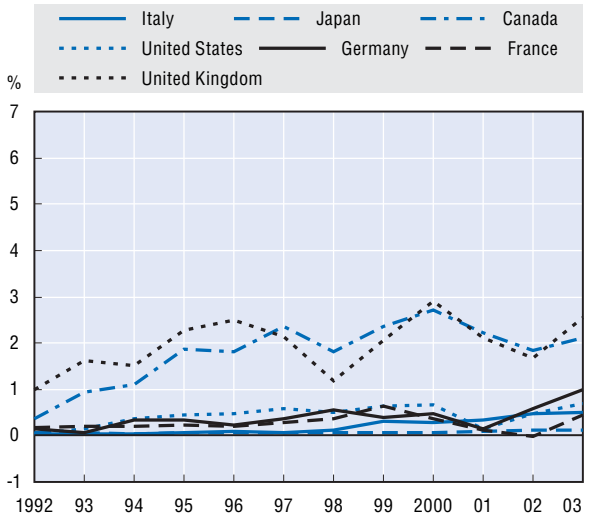


Figure B.7.3. **Income of OECD direct investment enterprises abroad as a percentage of GDP**[1]

Average 2000-03

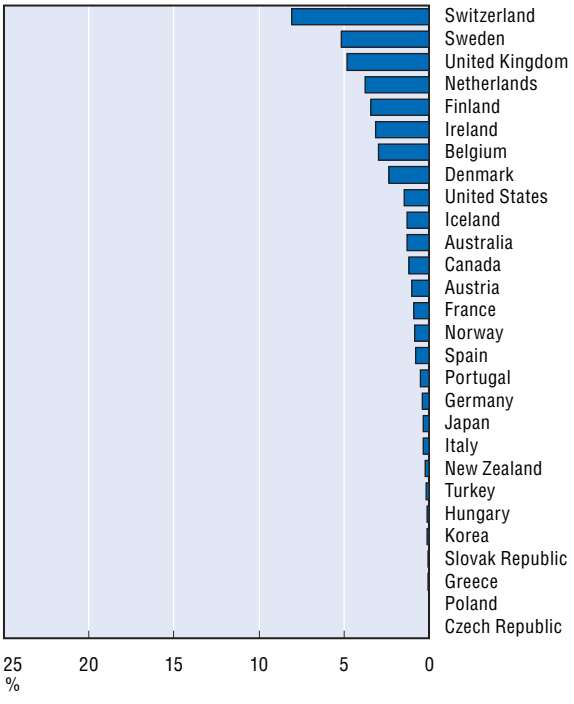
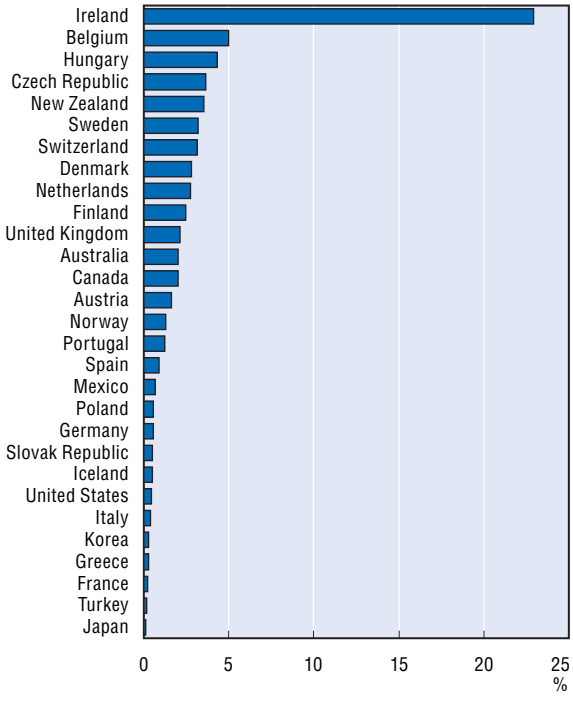


Figure B.7.4. **Income of OECD resident direct investment enterprises as a percentage of GDP**[1]

Average 2000-03



1. Excluding Luxembourg and Mexico.

1. Excluding Luxembourg.

Source: OECD, International Direct Investment Statistics, June 2005.

StatLink: *http://dx.doi.org/10.1787/672642312465*

B.8. FDI outward positions in OECD and non-OECD countries

■ Historically, OECD countries' overseas investments are concentrated on investments in non-resident enterprises located within the OECD area. Non-OECD countries attract only a smaller portion of OECD capital and their share in total outward investment position of OECD countries has grown more slowly than overall investments in the OECD area.

■ Direct investment enterprises resident in the OECD area are to a very large extent financed by OECD countries with the share of non-OECD countries remaining quite insignificant.

■ Amongst G7 countries the United States, followed by the United Kingdom, account for the largest share of outward and inward direct investment positions of G7 countries. Together they accounted for about 60% of OECD investment to G7 countries in 2002 and about 50% of the G7 outward investment positions to OECD. The share of direct investment position of Japan for both inward and outward investment reduced substantially as from 1996 which may also be due to a change in methodology. The share of Canada, France, Germany and Italy remained rather steady. G7 investments to and from non-OECD countries followed the inverse pattern.

■ In the OECD area, the United States, the United Kingdom and Germany account each for more than 10% of OECD countries investment in the area in 2002 while these three countries and France account for more than 10% of outward investments to OECD countries. The United States distanced other OECD countries with the highest outward investment position in 2002 in non-OECD countries (more than 40% of OECD) followed by the United Kingdom (at 12%). Investments by non-OECD economies in the OECD area in 2002 exhibit similar features.

■ OECD investment in Brazil stands as the highest OECD investment amongst selected emerging economies followed by China and Argentina.

Geographic classification

Partner country statistics may not fully coincide when comparing bilateral data depending on the principles applied as well as the method for identification of partner country.

***Geographic classification*:** The recommended methodology for direct investment position data should ideally be determined according to the debtor/creditor principle even though international manuals do not specify the methodology for direct investment flows which can be either based on the debtor/creditor principle or the transactor principle.

The ***debtor/creditor principle*** allocates transactions resulting from changes in the financial claims of the compiling economy to the country or residence of the non-resident debtor, and transactions resulting in changes in the financial liabilities of the compiling economy to the country of residence of the non-resident creditor, even if the amounts are paid to or received from a different country.

The ***transactor principle*** allocates transactions resulting from changes in the financial claims and liabilities of the compiling economy to the country of residence of the non-resident party to the transaction (the transactor), even if this is not the country of residence of the direct investment enterprise or direct investor.

Country identification for direct investment positions is recommended for both in respect of the immediate host or investing country and in respect of the ultimate host or controlling country while FDI flows are required only for the former.

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B.8. FDI outward positions in OECD and non-OECD countries

Figure B.8.1. **G7 outward investment to OECD countries as a percentage of total outward FDI stocks**

1992-2002

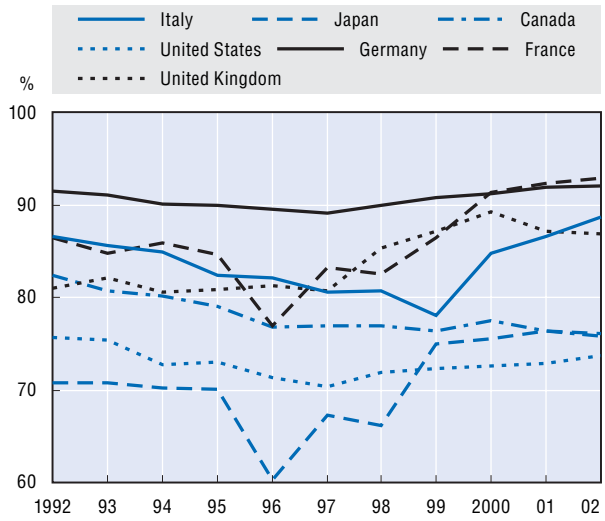


Figure B.8.2. **G7 outward investment to non-OECD countries as a percentage of total outward FDI stocks**

1992-2002

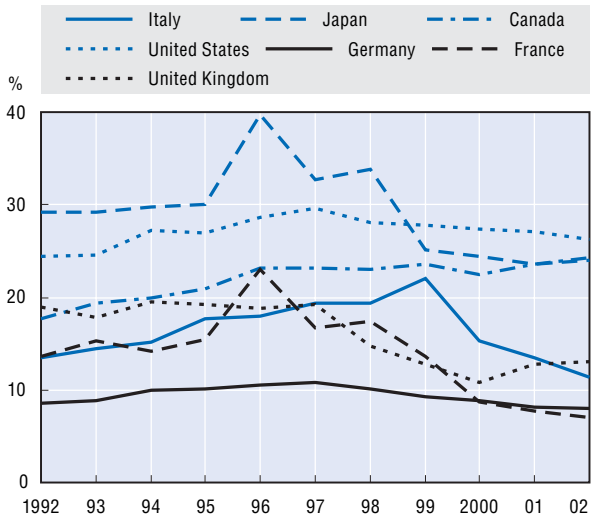
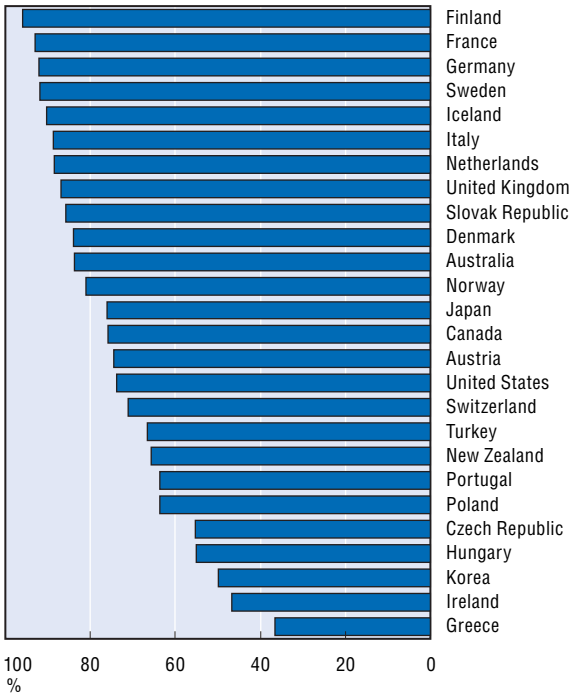


Figure B.8.3. **OECD[1] outward investment to OECD countries as a percentage of total outward FDI stocks**

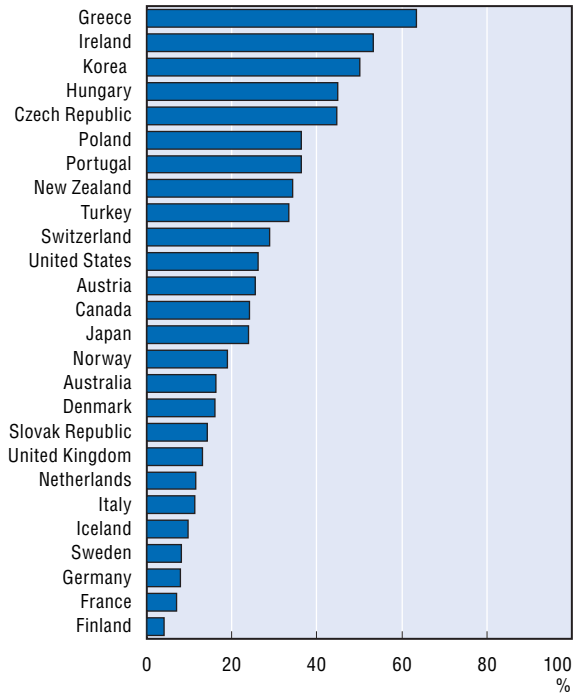
2002[2]



1. Breakdown not available for Belgium, Mexico and Spain.
2. 2001 for Korea and Norway.

Figure B.8.4. **OECD[1] outward investment to non-OECD countries as a percentage of total outward FDI stocks**

2002[2]



1. Breakdown not available for Belgium, Mexico and Spain.
2. 2001 for Korea and Norway.

Source: OECD, International Direct Investment Statistics, June 2005.

StatLink: *http://dx.doi.org/10.1787/242464584682*

B.9. Rate of return on direct investment

The rate of return on direct investment is calculated as a ratio of direct investment income to direct investment positions at a given point in time. This indicator contributes to the analysis of the profitability of enterprises even though other information is necessary for a complete assessment.

Among G7 countries, the United Kingdom recorded the highest rates of return for direct investment enterprises abroad but dropped almost to the same percentage of the United States in 2003 which, on average, held the second position over the period 1992-2003. For both countries, the rate of return was lower for inward direct investment. The situation in Japan exhibits the opposite trend; inward direct investments recorded notably higher rates of return than outward investments. On the other hand, in both cases, the ratio for Japan shows significant fluctuations which is also observed for Canada, although to a lesser extent. France and Italy show similarities both for inward and outward investments.

In the OECD area, the five countries which recorded on average the highest rates of return for outward investments over 2000-03 were Iceland, Sweden, Switzerland, Ireland and the United Kingdom. The Czech Republic is the only country which shows a negative rate of return. For inward investment, the five top countries are Ireland, Finland, Hungary, Sweden and Austria while France has the lowest rate of return.

Rate of return on direct investment

The macroeconomic ***return on direct investment*** could be defined as the ratio of direct investment income to direct investment position (stocks) in respect of both inward and outward investment. The possible values of this ratio depend on how stocks are valued (see also definition of FDI position in B.3).

Direct investment income comprises income on equity and income on debt accruing to a direct investor resident in one economy from the ownership of direct investment capital in an enterprise in another economy.

Income on equity comprises: *i*) dividends and distributed branch profits; and *ii*) reinvested earnings and undistributed branch profits.

Dividends are the distribution of earnings allocated to shares and other forms of participation in the equity of incorporated private enterprises, co-operatives, and public corporations. These can be recorded on the date they are payable, on the date they are paid, or at some other point in time and can be recorded either gross or net of withholding taxes.

Reinvested earnings and undistributed branch profits comprise, in proportion to equity held, direct investors' shares of *i*) earnings that foreign subsidiaries and associated enterprises do not distribute as dividends (***reinvested earnings***), and *ii*) earnings that branches and other unincorporated enterprises do not remit to direct investors (***undistributed branch profits***).

Income on debt (interest) consists of interest payable on inter-company debt to/from direct investors from/to associated enterprises abroad. It covers interest on the borrowing and lending of funds (including debt securities and suppliers' credits) between direct investors and direct investment enterprises.

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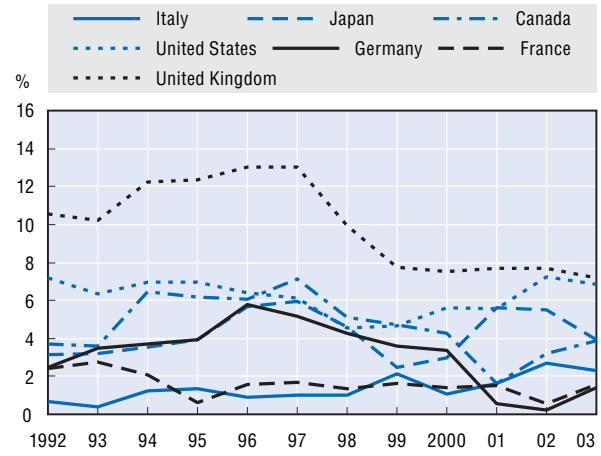
B.9. Rate of return on direct investment

Figure B.9.1. **Rate of return on outward direct investment[1] in G7 countries**

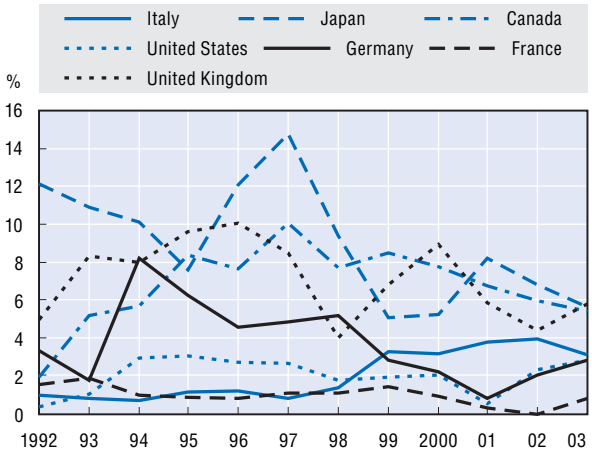
Percentages, 1992-2003



1. FDI income credits as a percentage of outward FDI positions.

Figure B.9.2. **Rate of return on inward direct investment[1] in G7 countries**

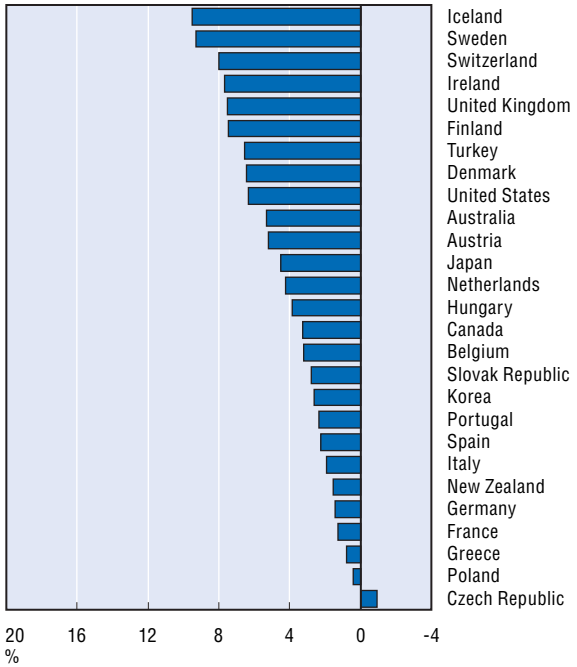
Percentages, 1992-2003



1. FDI income debits as a percentage of inward FDI positions.

Figure B.9.3. **Rate of return on outward direct investment[1] in OECD countries**

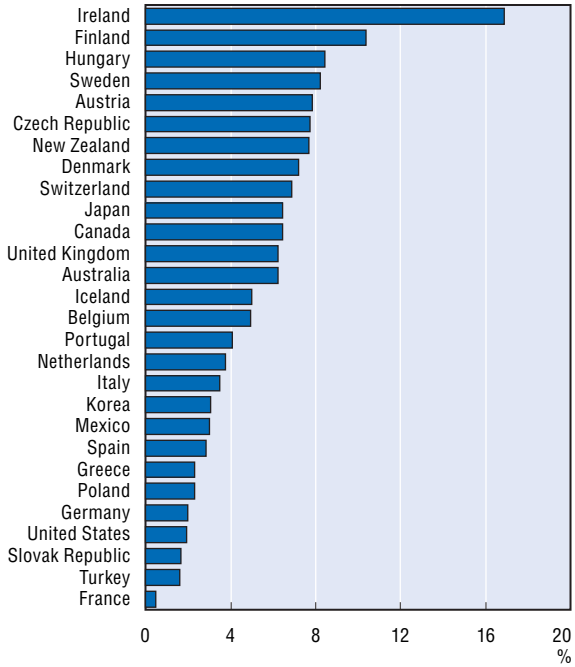
Percentages, average 1999-2003[2]



1. FDI income credits as a percentage of outward FDI positions.
2. 1999-2001 for Denmark; 2001-03 for Belgium, Ireland and Korea; 2000-02 for Sweden; 2002-03 for the Slovak Republic.

Figure B.9.4. **Rate of return on inward direct investment[1] in OECD countries**

Percentages, average 1999-2003[2]



1. FDI income debits as a percentage of inward FDI positions.
2. 1999-2001 for Denmark; 2001-03 for Belgium, Ireland and Korea; 2000-02 for Sweden; 2002-03 for the Slovak Republic; 2001-02 for Mexico.

Source: IMF, *Balance of Payment Statistics* and OECD, International Direct Investment Statistics, June 2005.

StatLink: *http://dx.doi.org/10.1787/508810784757*

B.10. Reinvested earnings

Reinvested earnings data represent analytical difficulties while they do not only relate to undistributed profits but also to net losses which are recorded as negative reinvested earnings. In addition, reinvested earnings are in many cases calculated as balancing items which may generate negative values if, for example, exceptional distribution of dividends exceeds the overall income. The ratios in this section are calculated to measure the relative importance of reinvested earnings as a percentage of direct investment positions.

In terms of dollar values the United States recorded sharp increases in reinvested earnings of foreign affiliates in 2002 and 2003 while the equivalent data for the United Kingdom have dropped in 2003 following an increase in the previous year. This trend is also reflected in the ratio for calculating the relative importance of reinvested earnings (credits) as a per cent of outward direct investment positions. Amongst other G7 countries Germany shows negative ratios since 2002 representing losses (–2.9% in 2001) even though there is a considerable recovery 2003 (–2%). Negative ratios in the recent years were also observed for France and Italy followed by a visible recovery in 2003.

Regarding reinvested earnings of resident direct investment enterprises (debits) as a percentage of inward investment positions, both the United Kingdom and the United States have experienced negative ratios in 2001 followed by a recovery in each case. It is to note that the reinvested earnings of United States enterprises which stood at USD 4.1 billion in 1999 dropped to USD –33.9 billion in 2001 (following USD –0.3 billion in 2000). We observe a recovery in most G7 countries.

In OECD countries, the average ratio over 2002-03 was the highest for reinvested earnings of foreign affiliates of Iceland (8%) followed by Ireland, United States, United Kingdom, Sweden ranging between 4 and 4.4%. Regarding reinvested earnings of resident OECD enterprises, the highest ratio was in Ireland (7.9%) the Czech Republic (4.7%) and Hungary (4.7%).

Reinvested earnings

According to international standard ***Reinvested earnings and undistributed branch profits*** comprise, in proportion to equity held, direct investors' shares of *i)* earnings that foreign subsidiaries and associated enterprises do not distribute as dividends (***reinvested earnings***), and *ii)* earnings that branches and other unincorporated enterprises do not remit to direct investors (***undistributed branch profits***). Reinvested earnings are the direct investor's share of the total consolidated profits earned by the company and its subsidiaries and associates and should be recorded in the periods in which the underlying profits are earned. Net losses of unincorporated or incorporated enterprises should be recorded as negative reinvested earnings. Retained earnings represent an increase in the value of financial investments in an enterprise while losses reduce the value of financial investment.

Generally speaking, a meaningful analysis of the statistics recorded as reinvested earnings while the data includes losses as well. Hence, the data on reinvested profits provides the net amounts but it is difficult to identify separately reinvested earnings and losses of the enterprise.

Calculating reinvested earnings on a consolidated basis raises problems for compilers. Moreover, it may lead some instances of double counting.

In practice, many countries derive reinvested earnings as the residual after deducting dividends from equity income, which may lead to interpretation problems particularly when extraordinary dividends exceeding income are paid.

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B.10. Reinvested earnings

Figure B.10.1. **Assets as a percentage of FDI position, 1992-2003, G7 countries**

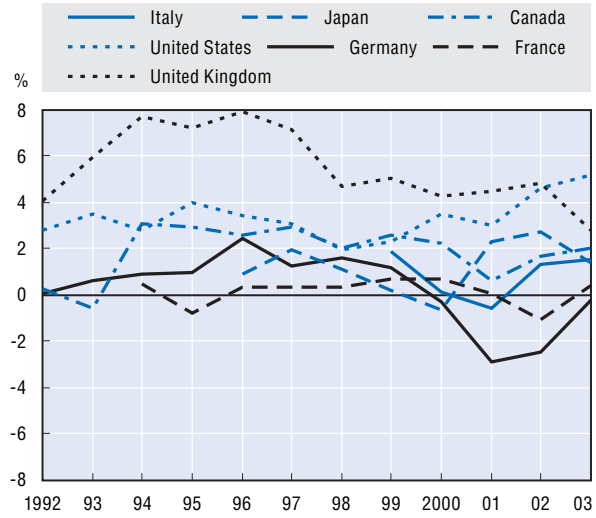


Figure B.10.2. **Liabilities as a percentage of FDI position 1992-2003, G7 countries**

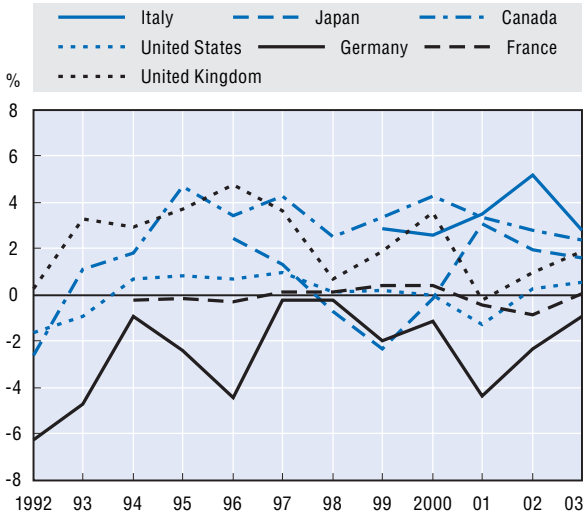


Figure B.10.3. **Assets as a percentage of FDI position, average 2000-03**

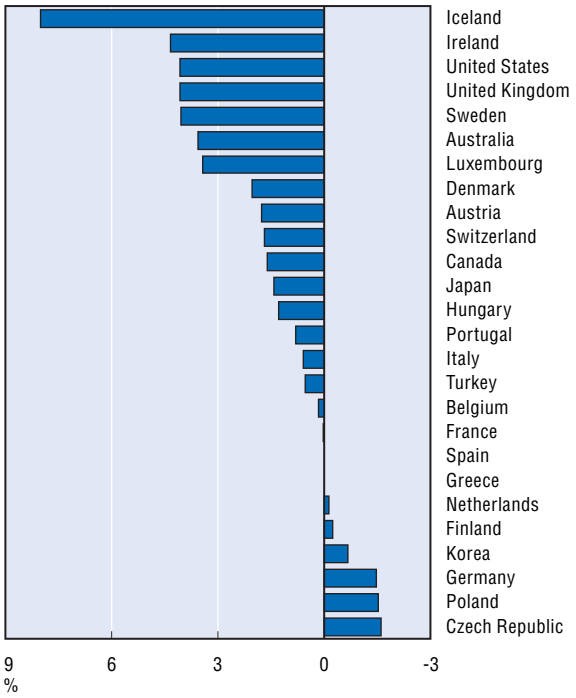
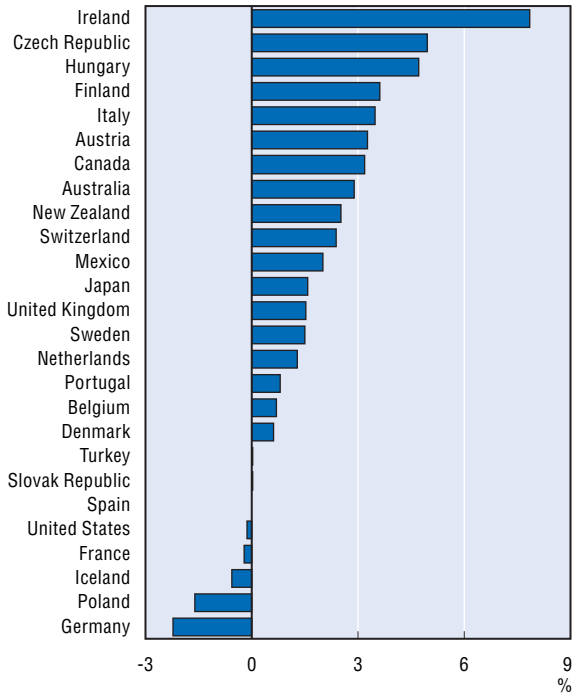


Figure B.10.4. **Liabilities as a percentage of FDI position, average 2000-03**



Source: IMF, *Balance of Payments Statistics.*

StatLink: *http://dx.doi.org/10.1787/846736021113*

B.11. Direct investment dividends

This indicator provides a breakdown of the rate of return of direct investment discussed under Section B.9. It analyses the evolution of distributed profits to direct investors by measuring the relative share of dividends as a percentage of FDI positions.

Regarding dividends received by investors (credits) of G7 countries, the United States and the United Kingdom occupy the highest position in terms of dollar amounts throughout the period 1992-2003. Nevertheless, in terms of relative importance of dividends measured as a per cent of direct investment positions the United Kingdom occupies the first position indicating an increase in 2003 after successive decreases starting in 1997. This trend contrasts with other G7 countries all of which demonstrate a relative decline in 2003. The United States have recorded a decline of the relative importance of dividends from 4.3% in 1992 to the lowest level in 2003, 1.5%.

Dividends (debits) paid to non-residents of G7 countries once again show the United States and the United Kingdom as the highest dividends distributed in terms of dollar amounts. In contrast the relative importance of dividends as a per cent of inward investment positions is the highest in Japan through the period 1992-2003 even though they have declined in the recent years. The ratio of dividends in the United States was stable through the period ranging between 1-1.6%.

Regarding other OECD countries, in average over the period 2002-03, the relative importance of dividends received by investors as a percentage of outward investments was the highest for Finland (6.5%), followed by Switzerland, Turkey and Denmark, each more than 4%. Dividends paid by direct investment enterprises to non-resident investors as a per cent of inward investment was the highest for Ireland (8.3%), followed by Denmark (6.2%) and Finland (5.7%). Iceland, Sweden, Austria, Switzerland, Japan, and New Zealand range between 4-4.8%. It is to note that we observe negative dividends in Italy in 2002 which is unusual.

Dividends distributed to direct investors

Dividends are the distribution of earnings allocated to shares and other forms of participation in the equity of incorporated private enterprises, co-operatives, and public corporations. They are paid according to the discretionary decision of the incorporated enterprise. Dividends comprise all dividends that are declared payable to the direct investor within an accounting period less dividends declared payable by the direct investor to the direct investment enterprise. They can be recorded on the date they are payable, on the date they are paid, or at some other point in time and should be recorded gross of withholding taxes. When dividends and profits remitted by the direct investor are denominated in foreign currency, the amounts should be converted at the closing mid-market spot exchange rate on the day they are received.

Earnings distributed to non-resident shareholders as stock dividends are considered as capitalisation of current earnings and an alternative to the distribution of cash dividends. Such earnings are recorded in the balance of payments as investment income in the current account and as offsetting equity investment in the financial account. Liquidating dividends are recorded in the financial account as withdrawals of capital and are excluded form investment income while they do not represent distribution of earnings.

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B.11. Direct investment dividends

Figure B.11.1. **Credit flows as a percentage of FDI position, 1992-2003, G7 countries**

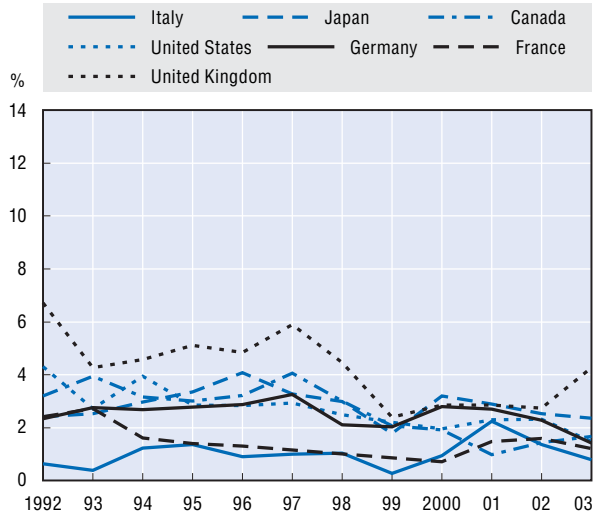


Figure B.11.2. **Debit flows as a percentage of FDI position, 1992-2003, G7 countries**

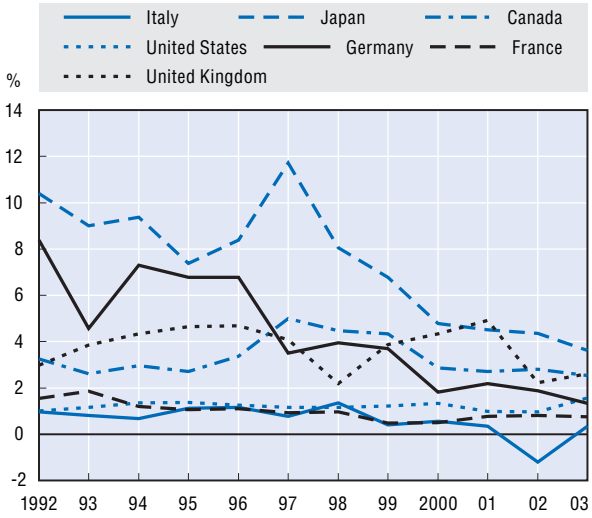


Figure B.11.3. **Credit flows as a percentage of FDI position, average 2000-03**

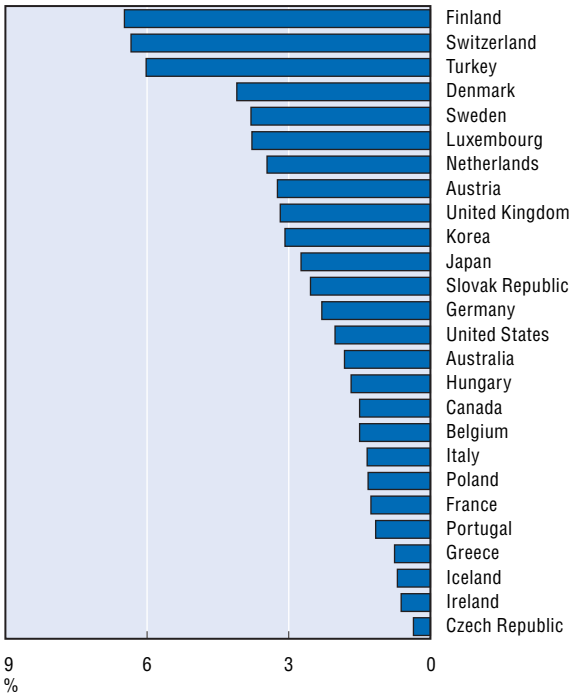
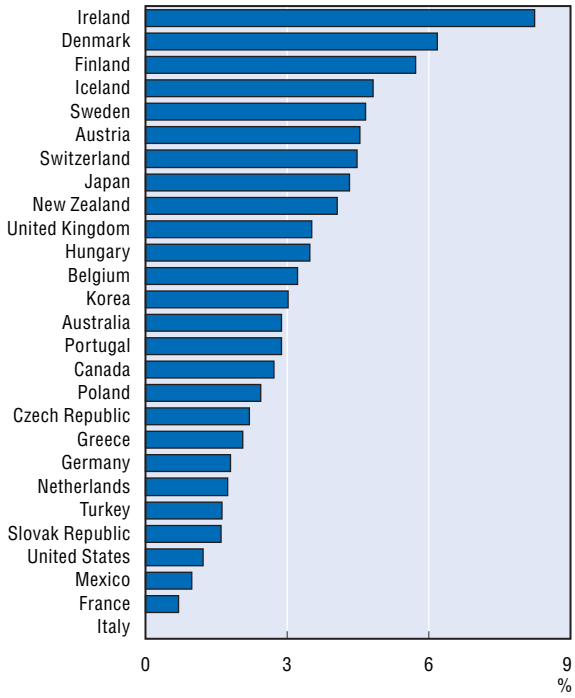


Figure B.11.4. **Debit flows as a percentage of FDI position, average 2000-03**



Source: IMF, *Balance of Payments Statistics* and OECD, International Direct Investment Statistics, June 2005.

StatLink: *http://dx.doi.org/10.1787/203466071071*

B.12. International investment agreements

One of the most important international policy developments of the last decade is the rise of investment treaties to "promote" and "protect" investors and investments across borders. More than 2 300 bilateral investment treaties (BITs) and some 230 free trade agreements (TAs) with investment content have so far been concluded world-wide and negotiations of new agreements are continuing at an unabated pace. A recent OECD study of direct investment to and from the region actually covered by these agreements points to some interesting findings.

The twelve largest outward investors among OECD countries (United States, United Kingdom, France, Germany, Netherlands, Switzerland, Japan, Canada, Spain, Italy, Sweden and Australia) have contracted some 727 BITs and some 19 BIT-like provisions in FTAs. European countries account for the majority of the 1 330 BITs concluded by OECD countries and Australia, Canada, Mexico and the Unites States for 90% of FTAs' BITs-like provisions.

Outward direct investment positions covered by investment treaties rarely exceed 10% of total investments in European countries; the largest share of their investments abroad are made in European countries. Investments between OECD European countries are fully protected by EU/EFTA provision.

Countries which have contracted TAs cover, under such agreements, a larger share of their investments abroad: *e.g.* 47% in Australia, 44% in Canada and 20% in the United States. On the other hand, Japan, which is a relatively recent BIT/TA player, enjoys a protection of only 12% of its outward investment.

BITs/TAs also significantly protect inward investments into some OECD countries (*e.g.* 30% in Australia). This is because the agreements in question create a meaningful relationship between the partner countries.

There are currently some 300 new BITs and 70 TAs which are under negotiation by OECD countries. Most BIT negotiations involve non-OECD partners. In the majority of cases, the additional investment to be captured by the new BITs does not exceed 2%. New TAs, on the other hand, could potentially increase treaty coverage of OECD's outward investment, most strikingly in the United Sates, Korea and Japan. They will also raise the level of commitments of the OECD countries by a significant amount.

International Investment Agreements (IIA)

Bilateral Investment Treaties (BITs) are agreements between two countries providing for the reciprocal promotion and protection of investments in each other's territories from investors of other countries. This includes basic guarantees on admission and establishment, fair and equitable treatment and non-discriminatory treatment and compensation in the case of expropriation or damage. Investors may also been given access to international arbitration.

Trade Agreements (TAs) are comprehensive agreements aimed at eliminating barriers to trade and other economic relations between two or several countries. They typically cover trade in goods and services, government procurement, intellectual property, competition policy and investment. NAFTA is the first agreement to have incorporated BIT standards in trade agreements. This precedent is being followed by several OECD and non-OECD countries.

Methodology: Statistics on FDI stock positions by partner country are used as a proxy of investment assets/liabilities protected by BITs/TAs. The analyses are based on the most recent FDI statistics available in the OECD International investment statistics database (2002 or 2003). The number of investment treaties included in Figures B.12.1. and B.12.2. correspond to outstanding agreements, *i.e.* new treaties are not included until they come into force.

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B.12. International investment agreements

Figure B.12.1. **Number of bilateral investment treaties by G7 countries, 1992-2003**

Cumulative number since 1960

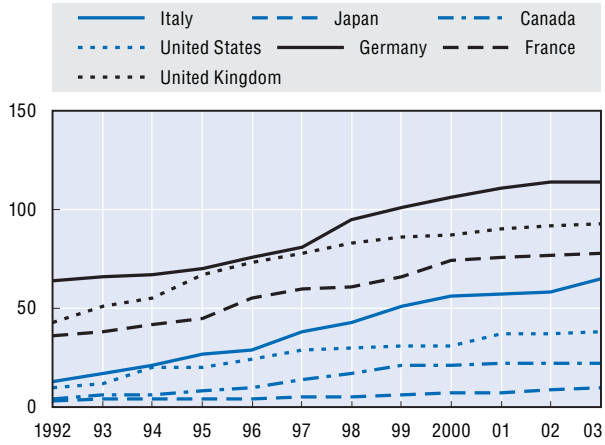


Figure B.12.2. **Number of bilateral investment treaties by all OECD countries, 1992-2003**

Cumulative number since 1960

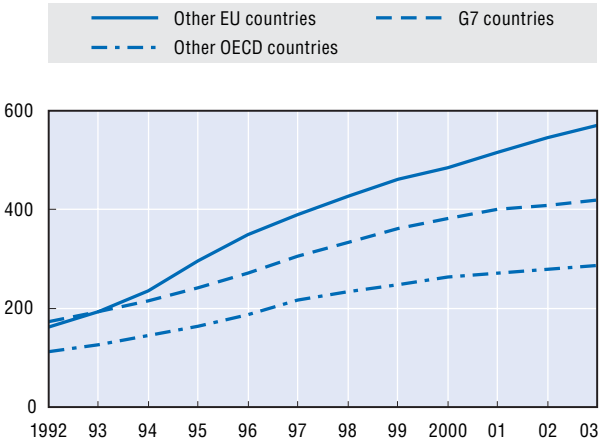


Figure B.12.3. **Outward FDI of OECD countries[1] protected by investment treaties as a per cent of total outward investment**

Latest available year (2003 or 2002)

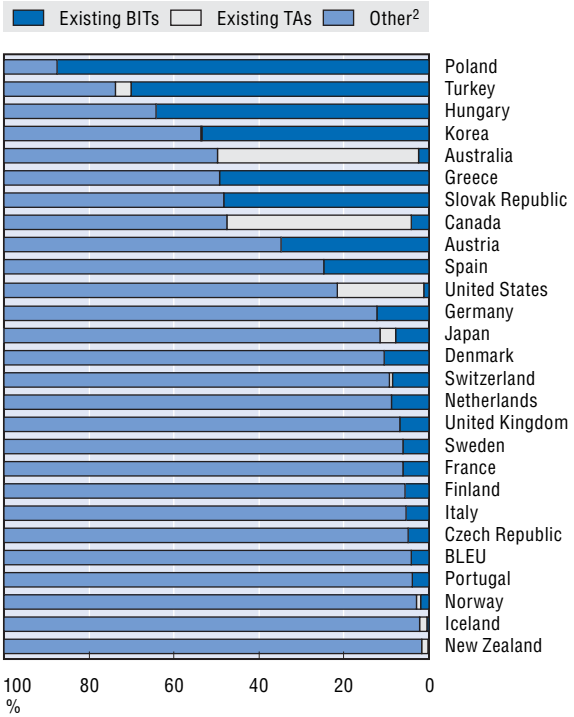
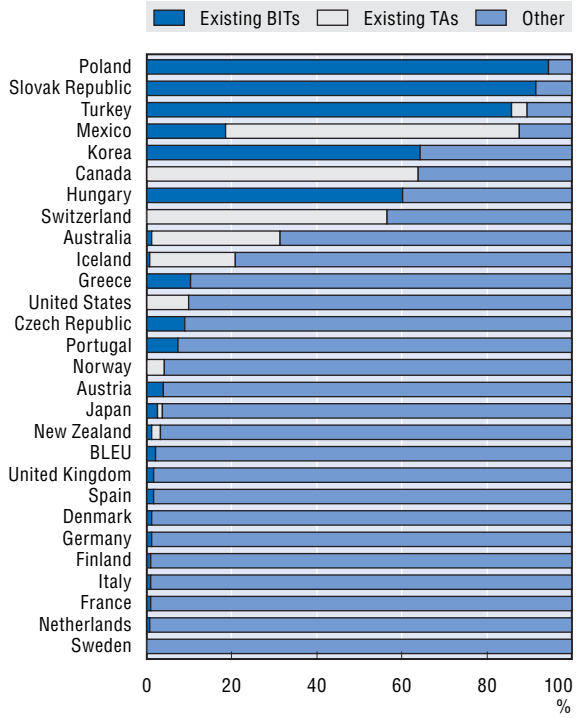


Figure B.12.4. **Inward FDI of OECD countries[3] protected by investment treaties as a per cent of total inward investment**

Latest available year (2003 or 2002)



1. Bilateral outward FDI statistics not available for Ireland and Mexico.
2. Other include EU/EFTA provisions.
3. Bilateral inward FDI statistics not available for Ireland.

Source: OECD International Direct Investment Statistics, June 2005.

StatLink: *http://dx.doi.org/10.1787/178626510617*

B.13. Cross-border mergers and acquisitions

Mergers and acquisitions (M&As) refer to the change of ownership in existing enterprises to achieve strategic and financial objectives. Enterprises engage in cross-border M&As for several reasons: to strengthen their market position by expanding their businesses to other opportunities on the global market; to obtain a critical size in the world market; to exploit other firms' complementary assets such as innovations, technology, etc.; to access other advantages such as company reputation, economies of scale, brands or design; to diversify products and markets, etc.

Even though M&A statistics do not follow the same methodology as FDI statistics, they demonstrate similar trends while M&As represent the most common form of FDI. Both FDI flows and cross-border M&As reached their peak in 2000. In fact, the FDI bubble at the turn of the century is due to the spectacular increase in M&A deals.

Over the period 1995-2004, the United States and the United Kingdom were the two leading countries in cross-border operations followed by Germany and France. After the peak in 2000, M&As recorded sharp declines, a trend which was reversed in 2004 and also reflected in most recent FDI statistics.

On average, the United States was the main target country in the period 2000-04 representing 25% of the OECD area followed by the United Kingdom and Germany (each accounting for 16% of OECD). Regarding M&As abroad, the United Kingdom accounted on average for 23% of the OECD, closely followed by the United States at 21%. France and Germany (in average at 11% and 9% respectively) confirmed the strong presence of continental European investors.

Large-scale cross-border merger and acquisitions account for the bulk of the increase in the value of cross-border mergers and acquisitions. In the telecommunications sector, for example, the deal between Mannesmann (Germany) and Vodafone AirTouch (United Kingdom) in 2000 was valued at USD 202.8 billion. The 1998 deal between Amoco (United States) and British Petroleum (United Kingdom) was valued at USD 48.2 billion.

Cross-border mergers and acquisitions are taking place in manufacturing as well as services, changing the shape of industry worldwide in sectors such as the automotive, chemical and pharmaceutical, telecommunications and financial industries. During the 1990s, the most active sectors at global level were oil, automotive equipment, banking, finance and telecommunications.

Cross-border mergers and acquisitions

A merger is an operation in which two or more companies decide to pool their assets to form a single company. In the process, one or more companies disappear completely. An acquisition does not constitute a merger if the acquired company does not disappear. Mergers are less frequent than acquisitions.

Cross-border mergers and acquisitions can either be inward or outward. Inward cross-border mergers and acquisitions imply an inward capital movement through the sale of domestic firms to foreign investors, while outward cross-border mergers and acquisitions imply an outward capital movement through the purchase of all or parts of foreign firms.

The data are taken from the Mergers and Acquisitions Global database (Dealogic). The definitions and methodology used for OECD's FDI statistics and Dealogic's M&A statistics are not compatible. Therefore direct comparison between FDI and M&A data used in the present document is not possible. However, M&A data provide meaningful indicators to project FDI.

An analysis of mergers and acquisitions can be found in OECD(2001), *New Patterns of Industrial Globalisation: Cross-border M&As and Alliances,* OECD, Paris; and in Nam-Hoon Kang and Sara Johansson, "Cross-border Mergers and Acquisitions: Their Role in Industrial Globalisation", STI Working Paper 2000/1, as well as in *International Investment Perspectives,* No. 1, OECD, 2002.

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B.13. Cross-border mergers and acquisitions

Figure B.13.1. **Outward cross-border mergers and acquisitions by G7 countries, 1995-2004**

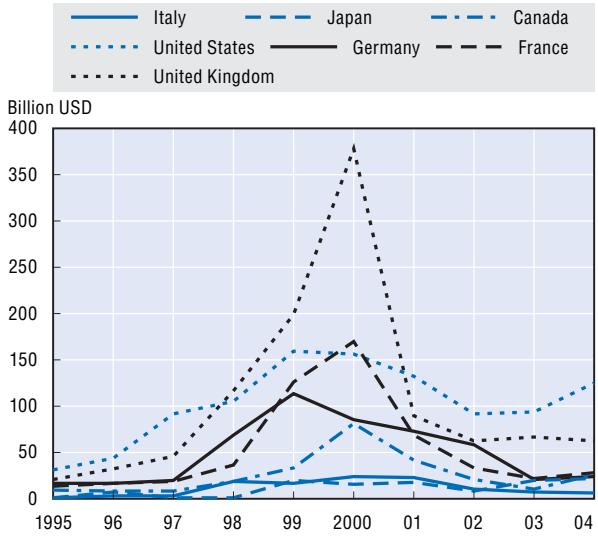


Figure B.13.2. **Inward cross-border mergers and acquisitions to G7 countries, 1995-2004**

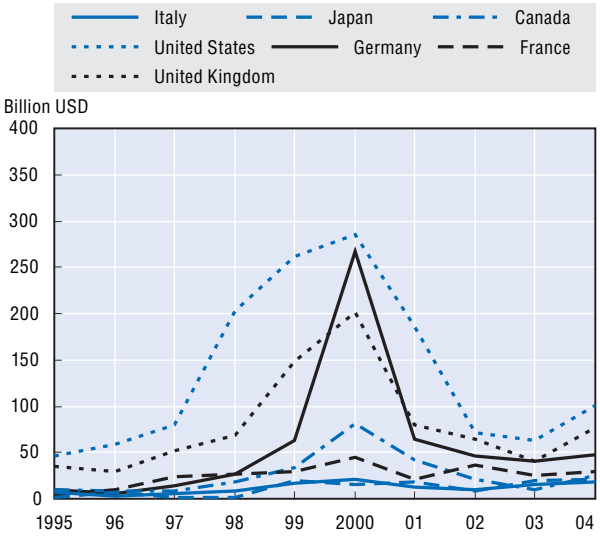


Figure B.13.3. **Outward cross-border mergers and acquisitions by OECD countries, average 2000-04**

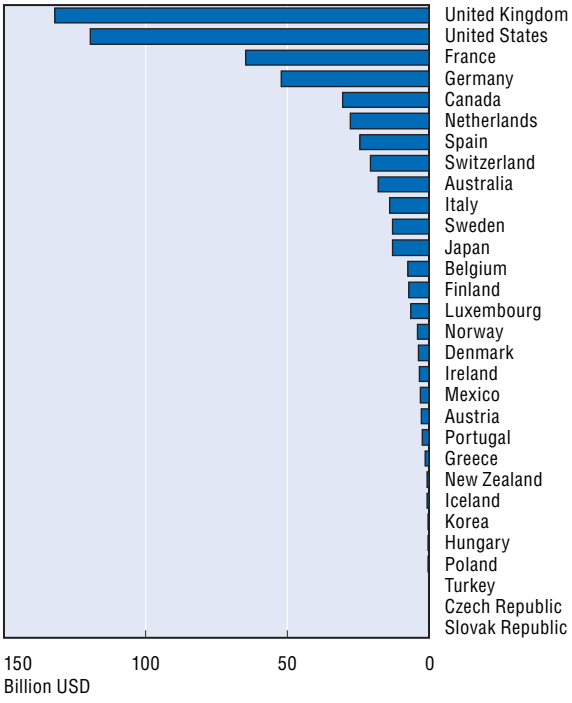
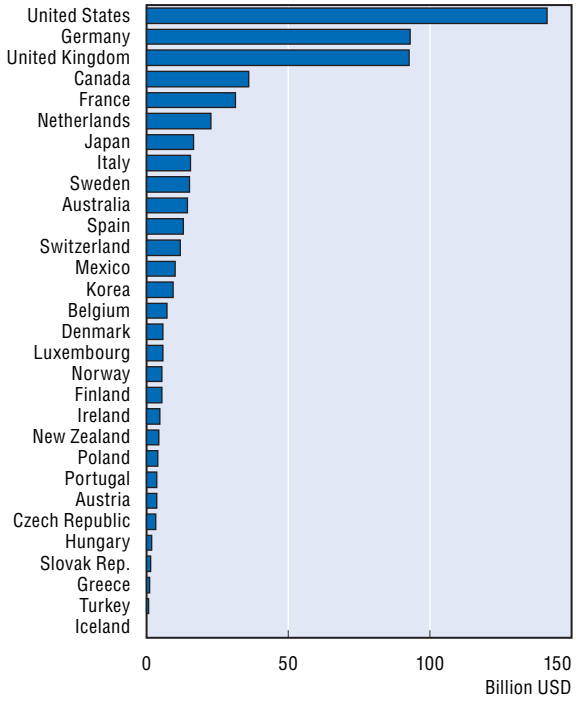


Figure B.13.4. **Inward cross-border mergers and acquisitions to OECD countries, average 2000-04**



Source: Dealogic.

StatLink: *http://dx.doi.org/10.1787/162614505561*

PART II

The Economic Activity of Multinationals

The concepts of influence and control

The basic criterion used to determine whether an investment is a direct investment is its capacity to exert "influence" on company management. The notion of influence is reflected, in statistical terms, in the holding of more than 10% of the ordinary shares or voting rights, while any investment below 10% is considered portfolio investment. The notion of influence is not sufficient for collecting data on the activities of multinational enterprises in a coherent and operational manner, whence the need to resort to the notion of "control".

The notion of control implies the ability to appoint a majority of administrators empowered to direct an enterprise, to guide its activities and determine its strategy. In most cases, this ability can be exercised by a single investor holding a majority (more than 50%) of the shares with voting rights. The notion of control allows all of a company's activities to be attributed to the controlling investor. This means that variables such as a company's turnover, staff or exports are all attributed to the controlling investor and to the investor's country of residence.

Data on the activity of multinationals use the notion of "control" to a greater degree than the notion of "influence". Influence implies attributing production, value added, the number of employees and other variables according to shareholders' percentage stake in the enterprise, and it is the "financial" aspect that predominates. In the case of control, it is the "power to take decisions" and "decide corporate strategy" that comes first.

When control of all of an enterprise's economic variables is attributed to a single majority shareholder, this does not mean that the latter appropriates all of the enterprise's output or profits, but that it makes all of the strategic choices. Where a firm's activity is concerned, however, there are other reasons for taking a control-based approach. When there are numerous minority shareholders and when the chain of indirectly owned companies is also included, attributing the variables according to the principles of ownership becomes much more complicated. The difficulty is compounded when the investors' countries of residence have to be attached to these variables (*Measuring Globalisation: OECD Handbook on Economic Globalisation Indicators*, Chap. 3, § 297-301).

The term "foreign affiliate" is restricted to majority-owned affiliates under foreign control. Accordingly, the geographical origin of a foreign affiliate is the country of residence of the ultimate controller. An investor (company or individual) is considered to be the investor of ultimate control if it is at the head of a chain of companies and controls directly or indirectly all the enterprises in the chain without itself being controlled by any other company or individual.

C. THE ACTIVITY OF MULTINATIONALS IN THE MANUFACTURING SECTOR

C.1. Share of foreign-controlled affiliates in manufacturing turnover and employment

■ The share of firms under foreign control in total manufacturing sector turnover in 2001 or 2002 varied from about 75% in Ireland and Hungary to less than 3% in Japan.

■ Their share exceeded 40% in Canada, Belgium and Luxembourg, and 30% in the Czech Republic, Sweden, the United Kingdom, France, Poland and the Netherlands.

■ In the European Union, the penetration of firms under foreign control was the least pronounced in Denmark and, to a lesser extent, Portugal and Finland.

■ In Japan, in spite of progress in the level of production of firms under foreign control in recent years, their penetration remained the lowest in the OECD area.

■ Employment under foreign control in OECD countries generally follows the same pattern as turnover, although the share in total employment is smaller, since foreign direct investment is more capital- than labour-intensive. However, while turnover under foreign control is about the same in France and in the United Kingdom, the share of employment under foreign control is greater in France.

Share of foreign affiliates in manufacturing turnover

Output differs from turnover because it includes changes in stocks of finished goods and work in progress and because of differences in the measurement of activities involving trade or financial intermediation. Turnover covers gross operating revenues less rebates, discounts and returns. It should be measured exclusive of consumption and turnover (sales) taxes on consumers and value-added taxes. The turnover variable generally presents fewer collection difficulties and thus is likely to be more widely available than value added. Also, unlike value added, turnover indicates the extent to which affiliates under foreign control are used to deliver outputs originating in the affiliates themselves or in other firms.

Share of foreign affiliates in manufacturing employment

Employment in foreign affiliates should normally be measured as the number of persons on the payrolls of affiliates under foreign control. Employment data are sometimes converted to a full-time equivalent (FTE), with part-time workers counted according to time worked. Employment data can be used to determine the share of affiliates under foreign control in host country employment or to help determine the extent to which employment by affiliates under foreign control complements or substitutes for domestic (home country) employment by parent companies or other domestic firms. The share of affiliates under foreign control in host country employment may reflect the importance of foreign direct investment in maintaining or creating employment in a compiling country. However, this information does not allow for evaluating net job creation due to foreign investment in the compiling countries.

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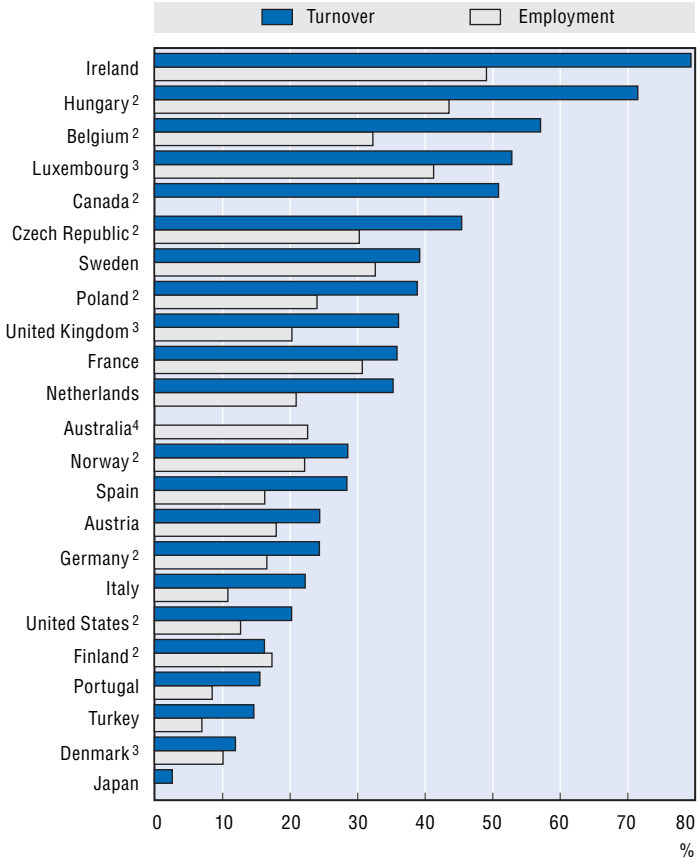
C.1. Share of foreign-controlled affiliates in manufacturing turnover and employment

Figure C.1.1. **Share of foreign-controlled affiliates in manufacturing turnover[1] and employment, 2001**



1. Production rather than turnover for Canada and Ireland.
2. 2002.
3. 1999.
4. 2000.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA) and Volume II: Services (FATS), February 2005.

StatLink: *http://dx.doi.org/10.1787/771851032701*

C.2. Trends in foreign affiliates' employment in the manufacturing sector

■ Between 1995 and 2001, the employment of affiliates under foreign control in OECD countries increased by 24%. In 2001, the employment of foreign affiliates in the United States represented more than 34% of total employment of foreign affiliates in the OECD economies, which represented a decrease from the US share in 1995.

■ During the same period, the employment of affiliates under foreign control in France grew by 281 000 people. France is the only country where the employment of foreign affiliates increased in both absolute and relative terms.

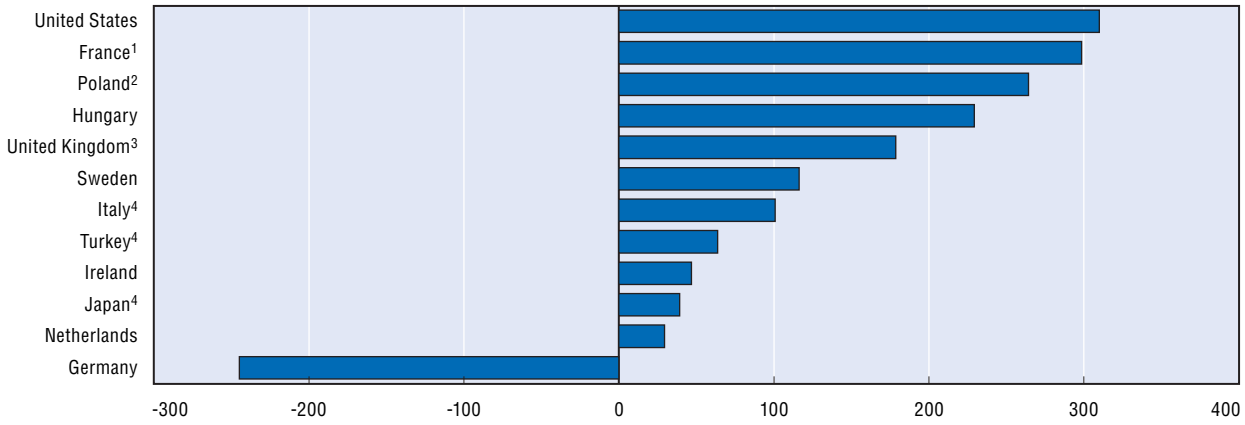
■ Germany is the only OECD country where, between 1995 and 2001, the employment of affiliates under foreign control fell substantially (by 120 000 people).

■ In absolute terms, over a longer period (1990-2001), the share of employment held by affiliates under foreign control in the manufacturing sector increased considerably in all countries except Germany where job losses amounted to more than 250 000. It is worth noting, however, that in all countries this change does not necessarily imply job creation but often is due to a change of ownership resulting from the acquisition of existing firms by foreign investors.

■ During the 1990-2001 period, in absolute terms, the United States experienced the largest increase, with more than 300 000 jobs controlled by foreign affiliates, including both new posts (*via* greenfields) and post transferrals (*via* acquisitions), followed by France, Poland and Hungary.

Figure C.2.1. **Number of employees of affiliates under foreign control in the manufacturing sector**

Change between 1990 and 2001, in thousands



1. 1993-2001.
2. 1993-2002.
3. 1990-99.
4. 1991-2001.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), February 2005.

StatLink: *http://dx.doi.org/10.1787/500011282644*

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C.2. Trends in foreign affiliates' employment in the manufacturing sector

Figure C.2.2. **Trends in manufacturing employment of foreign affiliates in selected OECD member countries between 1995 and 2001**

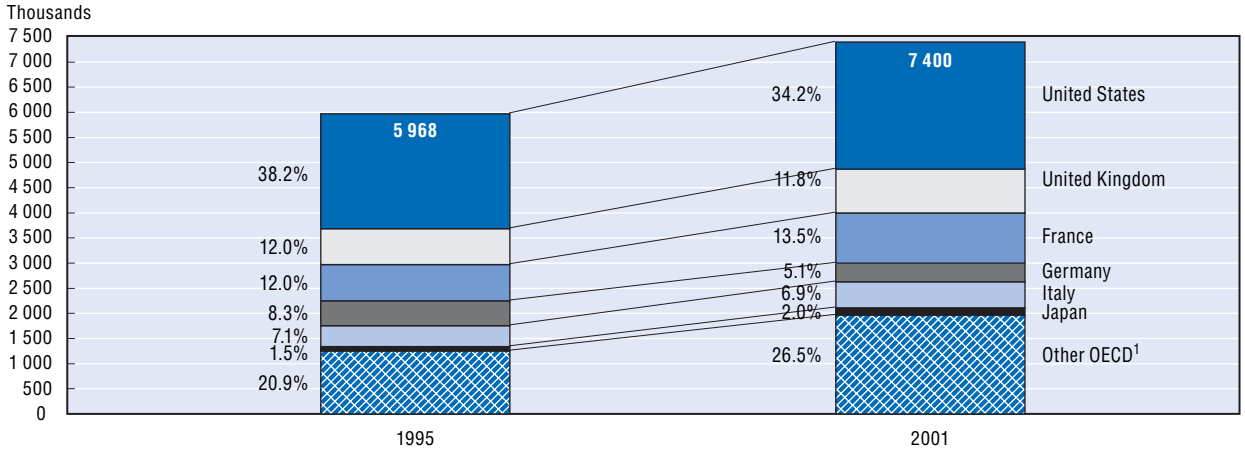
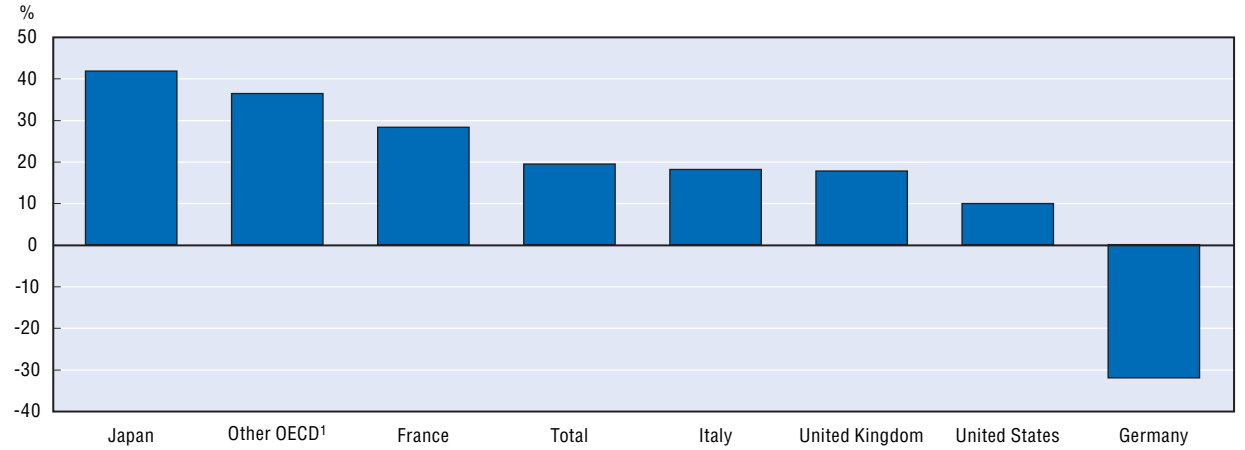


Figure C.2.3. **Change in manufacturing employment by affiliates under foreign control between 1995 and 2001**



1. Consists of the Czech Republic, Hungary, Finland, Ireland, Luxembourg, the Netherlands, Norway, Poland, Portugal, Sweden and Turkey.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA) and OECD estimates, May 2005.

StatLink: *http://dx.doi.org/10.1787/500011282644*

C.3. Patterns and trends in foreign affiliates' value added in the manufacturing sector

■ Between 1995 and 2001, foreign-controlled affiliates increased their share in manufacturing value added in all countries for which data are available except Portugal. The share grew most in Ireland, Sweden and Norway.

■ In most countries, the share of foreign affiliates in manufacturing value added corresponds to their share in manufacturing turnover. Their share in value added was a little higher than their share in turnover in Ireland, Sweden and Norway. In Hungary and the United Kingdom, their share in manufacturing value added was lower than their share in manufacturing turnover.

■ Leaving aside the role of intermediate consumption in the production process, the difference between the shares of foreign affiliates in manufacturing turnover and in value added reflects the fact that some foreign affiliates import goods from their parent company or parent group and sell them on the domestic market without transforming them. These transactions raise turnover (sales) without increasing value added.

The share of foreign-controlled affiliates in value added

Value added – the portion of an enterprise's output that originates within the enterprise itself – is perhaps the most comprehensive measure of economic activity to be derived from data on the activities of multinationals. It is particularly useful for analysing globalisation. The System of National Accounts (SNA) defines the gross value added of an establishment, enterprise, industry or sector as the amount by which the value of the outputs produced exceeds that of the intermediate inputs consumed. Gross value added can provide information about the contribution of affiliates under foreign control to host country gross domestic product (GDP), both in the aggregate and in specific industries.

Value added, when it concerns all the components of a country's economy, is equal to the sum of its GDP, the most widely available aggregate measure of the size of an economy and its growth. Thus, the shares of foreign-controlled affiliates in total GDP and in the relevant industrial sector are a useful measure of the extent to which an economy has become globalised.

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C.3. Patterns and trends in foreign affiliates' value added in the manufacturing sector

Figure C.3.1. **Foreign-controlled affiliates' share of manufacturing value added, 2001**

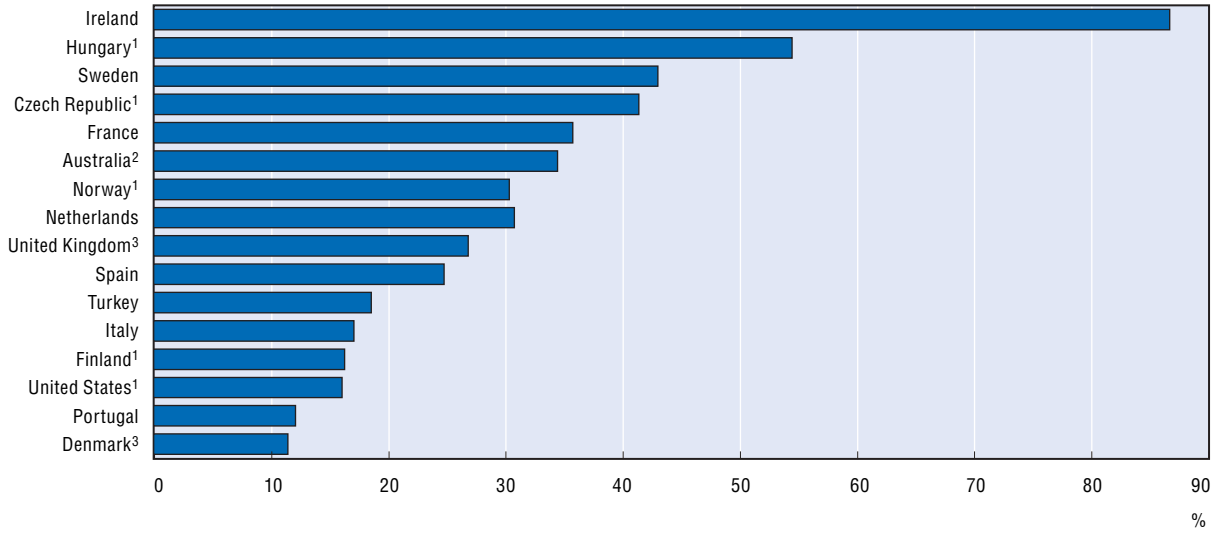
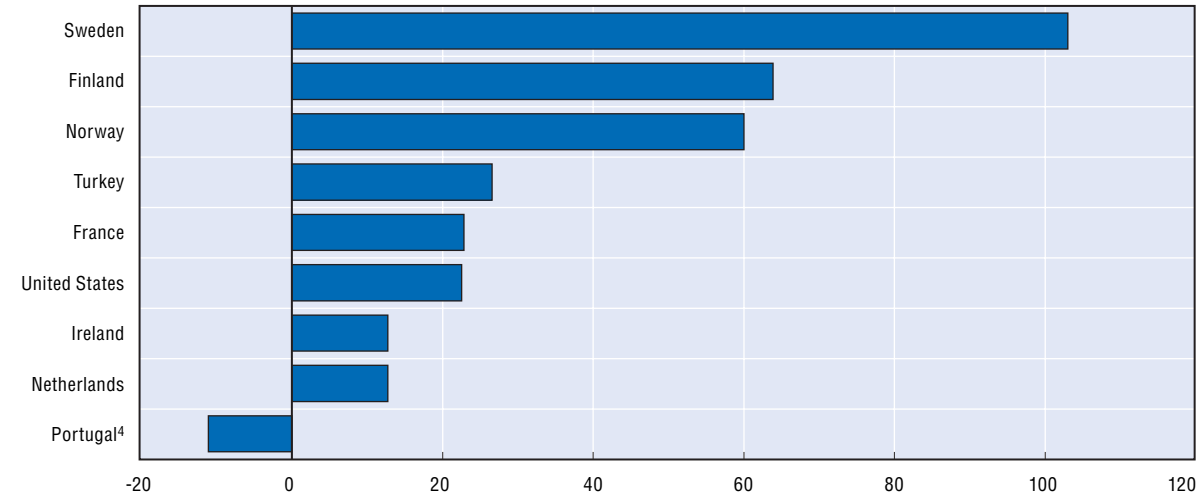


Figure C.3.2. **Growth of foreign-controlled affiliates' share of manufacturing value added between 1995 and 2001**

Percentages



1. 2002.
2. 2000.
3. 1999.
4. 1996-2001.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), June 2005.

StatLink: *http://dx.doi.org/10.1787/112470503015*

C.4. Patterns and trends in foreign affiliates' gross fixed capital formation in the manufacturing sector

■ Between 1995 and 2001, the share in gross fixed capital formation of foreign affiliates increased substantially in some countries. It almost doubled in the case of Sweden, Turkey and the United States but marked no significant change in the United Kingdom and Japan.

■ The share of foreign-controlled affiliates in manufacturing gross fixed capital formation in the majority of OECD countries corresponds to the proportion of those enterprises' gross output or turnover in the respective national total.

■ In some countries, however, these shares are proportionately greater than foreign affiliates' share of turnover in their respective compiling countries' manufacturing industries. This is particularly the case in the United States, in Sweden, in the Czech Republic and in Poland, and reflects capital intensive mix of industries.

■ The share of foreign affiliates in manufacturing gross fixed capital formation, on the other hand, is lower than the equivalent share in manufacturing turnover in the Netherlands, Italy, Finland and the United Kingdom.

Foreign-controlled affiliates' share of gross fixed capital formation (GFCF) in the compiling country

Gross fixed capital formation is measured by the total value of a producer's acquisitions, less disposals, of fixed assets during the accounting period, plus certain additions to the value of non-produced assets realised by the productive activity of institutional units. Fixed assets are tangible or intangible assets produced as outputs from processes of production that are themselves used repeatedly or continuously in other processes of production for more than one year. There is substantial diversity in different types of gross fixed capital formation that may occur. The following main types may be distinguished:

- Acquisitions, less disposals, of new or existing **tangible fixed assets**, broken down by type of asset into: *a)* dwellings; *b)* other buildings and structures; *c)* machinery and equipment; *d)* cultivated assets that are used to produce products.
- Acquisitions, less disposals, of new and existing **intangible fixed assets**, broken down by type of asset into: *a)* mineral exploration; *b)* computer software; *c)* entertainment, literary or artistic originals; and *d)* other intangible fixed assets.

All these investments are valued gross, *i.e.* prior to all adjustments of book value and before deduction of sales. The assets purchased are valued at purchase cost, *i.e.* including transport and installation costs, duties and fees, and property transfer costs. Own-account produced tangible assets are valued at product cost. When investments are large-scale and spread over more than one reference period, each instalment of expenditure must be booked as an investment made during the reference period to which the instalment relates. Assets acquired through mergers are not counted. Purchases of minor non-fixed assets count as current expenditure. This category of investment also includes additions, alterations, improvements and repairs to extend the normal useful life or increase the productivity of existing fixed assets. It excludes current expenditure on capital equipment used under lease or lease with option of purchase. It also excludes investment in intangible fixed assets and in financial assets (*Definition of Economic Variables*, Code 15110, Eurostat).

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C.4. Patterns and trends in foreign affiliates' gross fixed capital formation in the manufacturing sector

Figure C.4.1. **Foreign-controlled affiliates' share of manufacturing gross fixed capital formation, 2001**

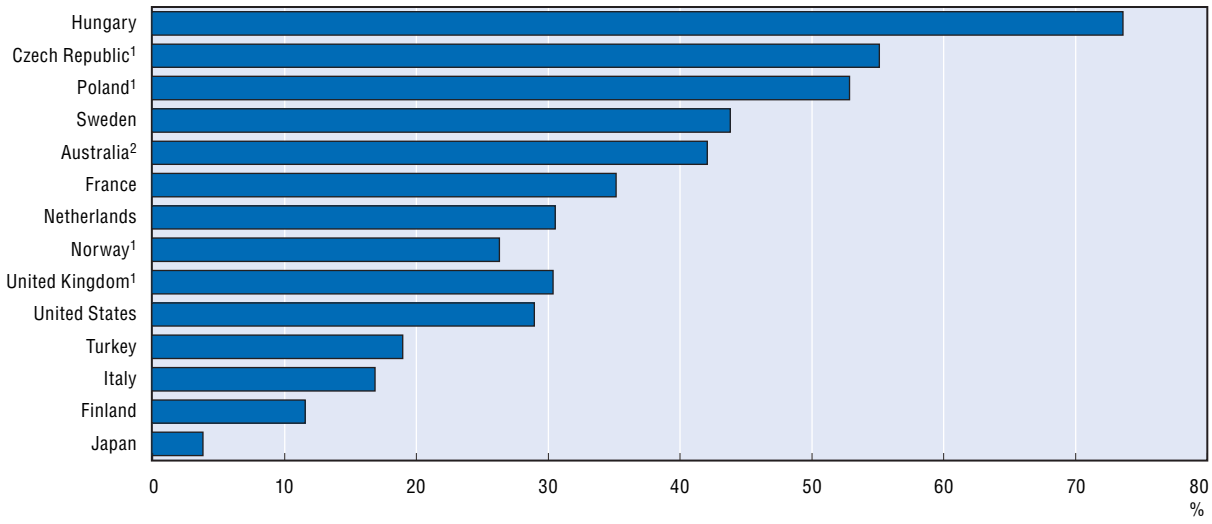
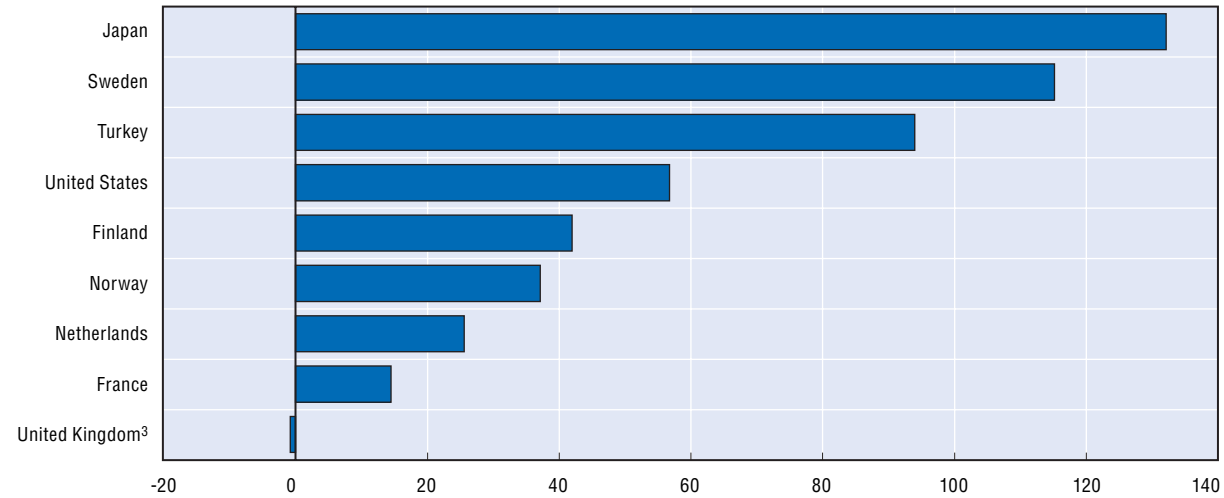


Figure C.4.2. **Growth of foreign-controlled affiliates' share of manufacturing gross fixed capital formation between 1995 and 2001**

Percentages



1. 2002.
2. 2000.
3. 1995-2002.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), June 2005.

StatLink: *http://dx.doi.org/10.1787/477824602171*

C.5. Patterns and trends in foreign affiliates' employee compensation in the manufacturing sector

■ In all countries for which data are available, compensation per employee of firms under foreign control was higher than the average for all firms.

■ Between 1995 and 2001, the share of compensation of foreign-controlled affiliates in the total compensation of employees in the manufacturing sector increased in several countries, particularly in Hungary, Sweden, the United Kingdom and France.

■ These wage differentials can be explained in a number of ways. Affiliates under foreign control tend to concentrate on industries where wages per employee exceed the national average. The differentials may also reflect differences in skills, in the number of hours worked or in the organisation of the labour market. They can also be explained by regional differences, the specific market conditions concerning affiliates under foreign control, and the size of these firms, which are often considerably larger than the average domestic firm.

Employee compensation

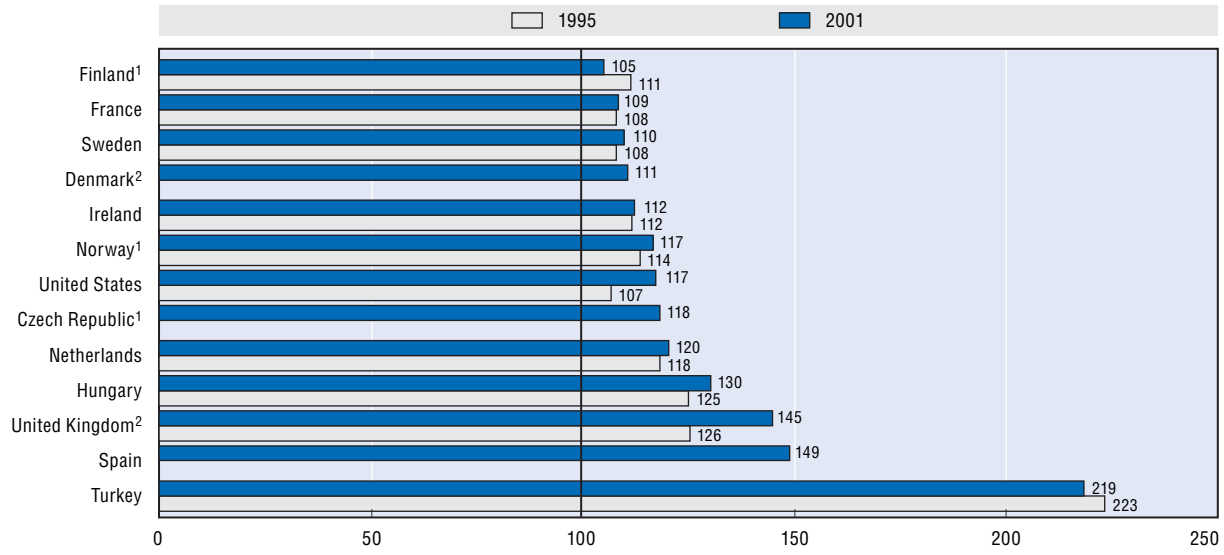
"Employee compensation is defined as the total remuneration, in cash or in kind, payable by an enterprise to an employee in return for work done by the latter during the accounting period. Compensation of employees has two main components:

- Wages and salaries payable in cash or in kind.
- The value of the social contributions payable by employers; these may be actual social contributions payable by employers to social security schemes or to privately funded social insurance schemes to secure social benefits for their employees; or imputed social contributions by employers providing unfunded social benefits (SNA 1993, § 7.21 and 7.31).

Social security costs for the employer include the employer's social security contributions to schemes for retirement pensions, sickness, maternity, disability, unemployment, occupational accidents and diseases, and family allowances as well other schemes. Optional social benefits are also a cost for the employer" (*Definition of Economic Variables*, Code 13330, Eurostat).

Figure C.5.1. **Compensation per employee of affiliates under foreign control in the manufacturing sector**

Total manufacturing firms = 100



1. 2002.
2. 1999.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), February 2005.

StatLink: *http://dx.doi.org/10.1787/314807675547*

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C.5. Patterns and trends in foreign affiliates' employee compensation in the manufacturing sector

Figure C.5.2. **The share of foreign-controlled affiliates in manufacturing compensation of employees, 2001**

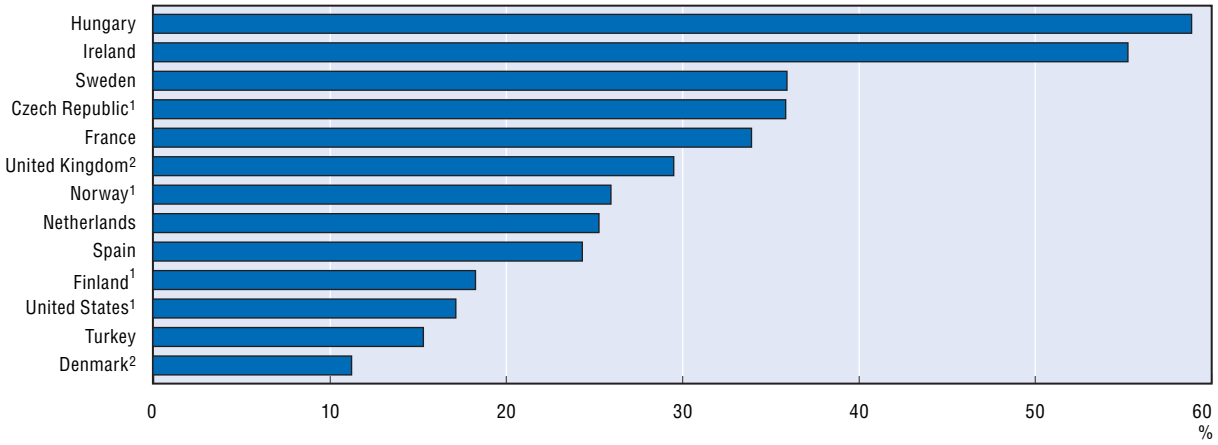
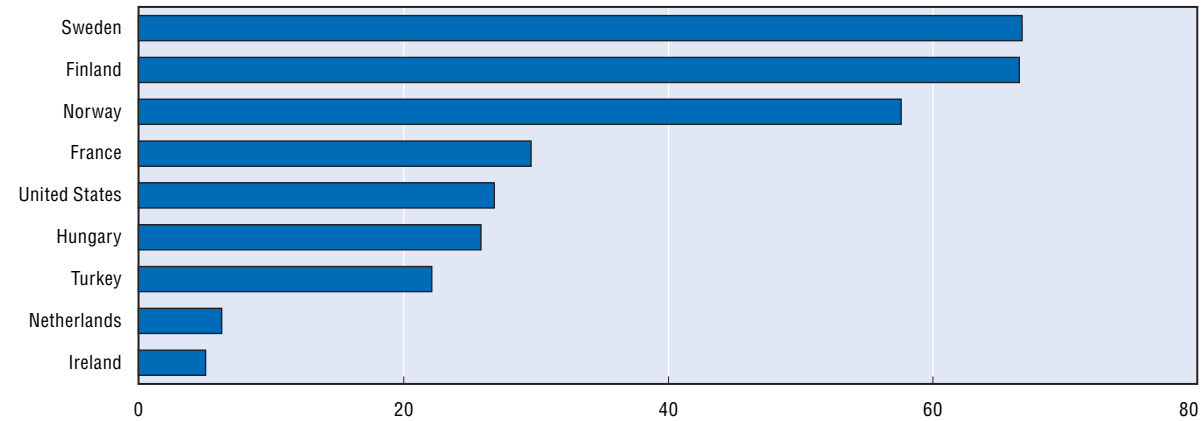


Figure C.5.3. **Growth of foreign-controlled affiliates' share of manufacturing compensation of employees between 1995 and 2001**

Percentages



1. 2002.
2. 1999.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), June 2005.

StatLink: *http://dx.doi.org/10.1787/314807675547*

C.6. Patterns of parent companies' turnover and employment in the manufacturing sector

■ The share of parent companies in the manufacturing turnover and employment of the compiling countries is extremely high in Finland and the United States and significantly lower in France.

■ Since the data concerning the activity of parent companies in the compiling countries were requested recently in the framework of OECD surveys, few member countries have thus far been able to provide this information. One cause for the differences observed between countries could be the method used to consolidate data of enterprise groups.

■ As for the affiliates under foreign control, the share of parent companies in the manufacturing turnover is higher than their share in manufacturing employment. This confirms that the main activities of parent companies are concentrated in capital-intensive sectors or characterised by high mark-ups, which may imply that there is oligopolistic competition in these industries.

■ The high shares of parent companies in manufacturing turnover and employment could be explained by the fact that many medium-sized firms are included in these data since they are under the direct and indirect control of the parent groups.

Parent company of a compiling country

"Parent company", in the context of a compiling country, refers to the parent consolidated enterprise or parent enterprise group in the compiling country. This includes the headquarters of the group (which in many cases is not controlled by any other company or individual) plus the domestic firms which the headquarters control directly or indirectly (see *Measuring Globalisation: OECD Handbook on Economic Globalisation Indicators*, Box 3.7 and § 319-331 for the definition of parent company and § 306-310 for the definition of direct and indirect control). By definition, all the parent companies have affiliates abroad.

With respect to compiling country, the parent company is in principle located in this country. There are two possible situations: *a)* when the parent company is located in the compiling country and is controlled by the residents of the compiling country; and *b)* when the parent company located in the compiling country is under foreign control. In the first case, the headquarters of the company is also the unit of ultimate control while, in the second case, the headquarters and the unit of ultimate control are different entities and located in different countries. Since the parent company under foreign control is also an affiliate under foreign control, *Measuring Globalisation: OECD Handbook on Economic Globalisation Indicators*, in order to avoid possible double counting, recommends taking separately into account (at least as far as the total is concerned) parent companies under foreign control and other foreign affiliates.

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C.6. Patterns of parent companies' turnover and employment in the manufacturing sector

Figure C.6.1. **Parent companies' share in manufacturing turnover in selected OECD member countries, 2001**

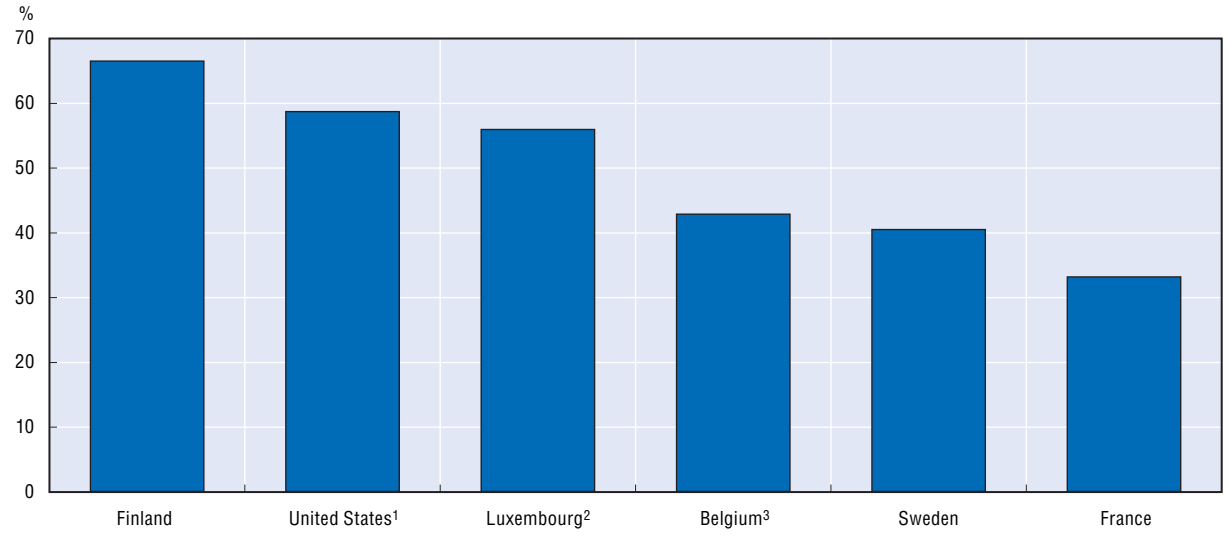
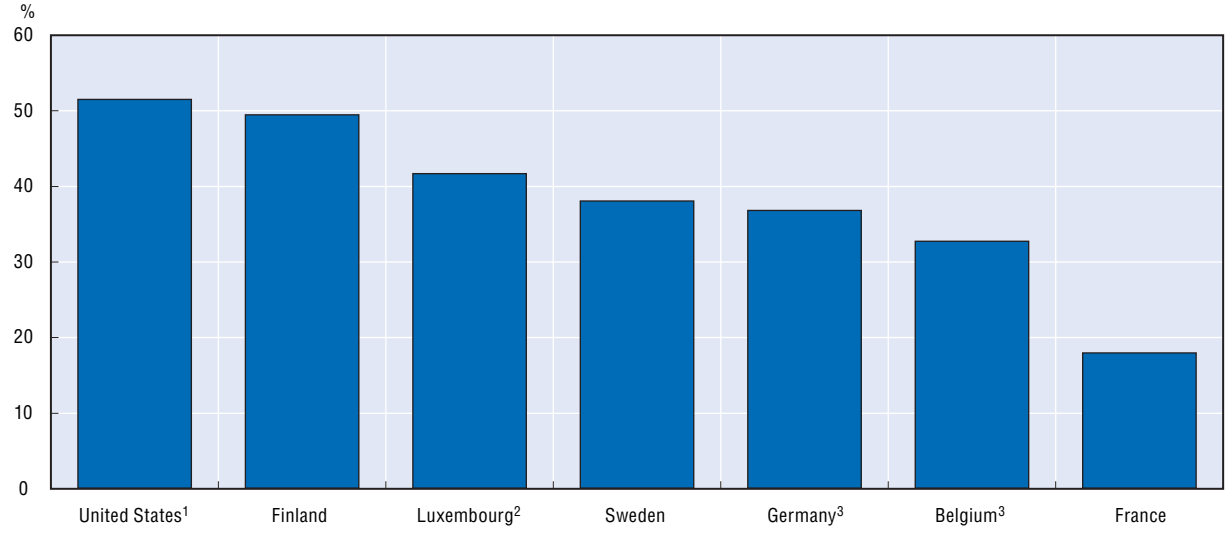


Figure C.6.2. **Parent companies' share in manufacturing employment in selected OECD member countries, 2001**



1. 1997.
2. 1999.
3. 2002.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA) and Volume II: Services (FATS), May 2005.

StatLink: *http://dx.doi.org/10.1787/347336828642*

C.7. Patterns in turnover and employment of multinationals in the manufacturing sector

■ In 2001, for countries for which data were available, the share of turnover of multinationals in the total manufacturing turnover was higher than 70%, except for France (50%).

■ Generally the share of employment of multinationals in total manufacturing employment of the domestic economy is lower than the equivalent ratio for turnover.

■ When comparing Figures C.6.2 and C.7.2, it can be seen that in a number of small countries (for example, Luxembourg, Belgium, Sweden), excluding Finland, shares in the total manufacturing employment of parent companies and of affiliates under foreign control present similar values. However, in the case of large countries with a great number of multinationals, such as the United States and, to a lesser extent, France, shares of parent companies in the total manufacturing employment are greater than those of affiliates under foreign control.

■ The share of turnover of Swedish multinationals in the manufacturing sector is twice as high as that of parent companies (see Figures C.6.1 and C.7.1).

Turnover and employment of multinational firms

Although *Measuring Globalisation: OECD Handbook on Economic Globalisation Indicators* does not give an explicit definition of multinationals, in the framework of data collection and analytical work a multinational is defined as a firm which has at least one subsidiary abroad, in other words, controls directly or indirectly an affiliate abroad.

Consequently, multinationals are generally enterprise groups with subsidiaries located in different countries, dependent on an ultimate control unit which, in some cases, is the parent company.

In the framework of the domestic market, concerning a compiling country, multinationals correspond to both parent companies and affiliates under foreign control (see also *Measuring Globalisation: OECD Handbook on Economic Globalisation Indicators*, Chap. 3, § 3.3.1, "Defining target populations").

In some cases, affiliates under foreign control also have subsidiaries abroad and consequently are the parent companies of these subsidiaries. In order to avoid potential double counting, the *Handbook* recommends that affiliates under foreign control which are also parent companies be classified in one of these two categories of firms. It also recommends that data be published separately concerning parent companies controlled by residents of compiling countries and parent companies under foreign control, at least as far as the total is concerned, if at the sectoral level this raises confidentiality problems.

For the United States figures are not available after 1997, since this is the year of the last benchmark survey providing figures compatible with the national total.

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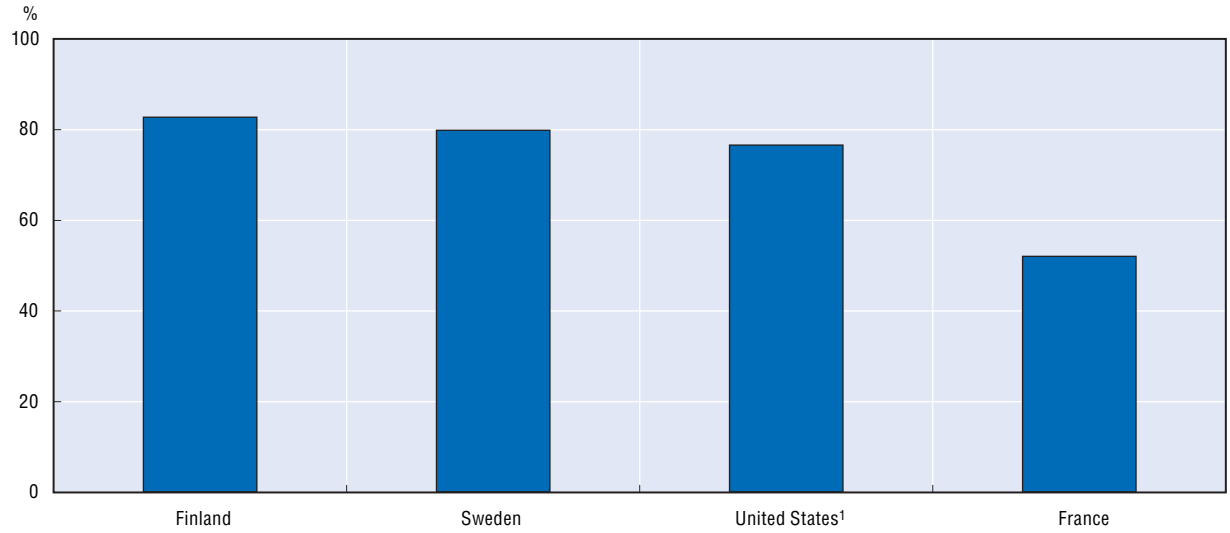
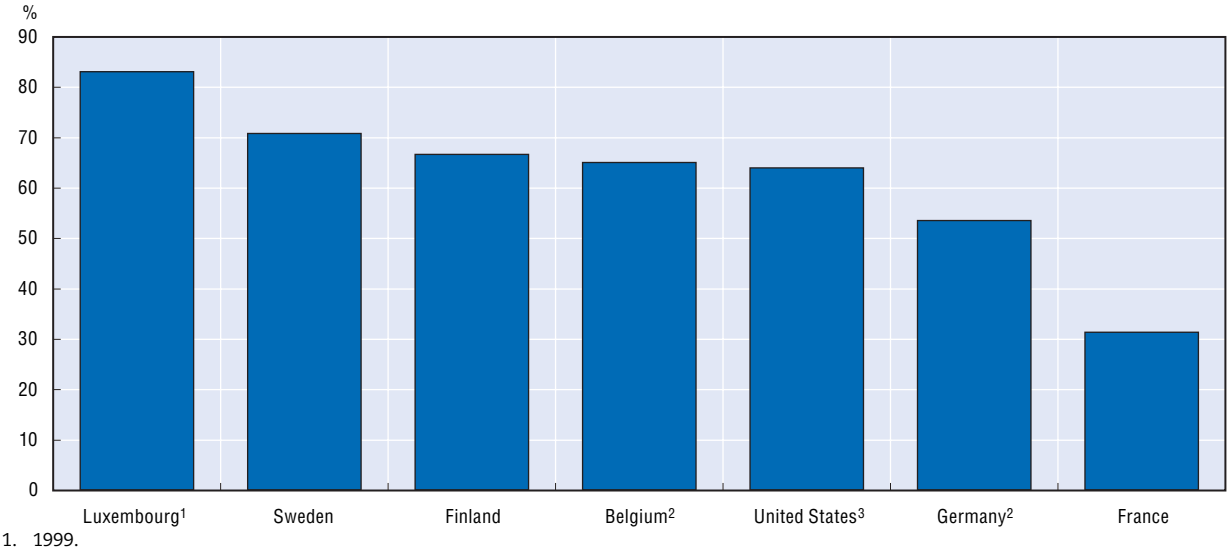
C.7. Patterns in turnover and employment of multinationals in the manufacturing sector

Figure C.7.1. **Share of multinationals (parent companies + affiliates under foreign control) in total manufacturing turnover in selected OECD member countries, 2001**



1. 1997.

Figure C.7.2. **Share of multinationals (parent companies + affiliates under foreign control) in total manufacturing employment in selected OECD member countries, 2001**



1. 1999.
2. 2002.
3. 1997.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA) and Volume II: Services (FATS), May 2005.

StatLink: *http://dx.doi.org/10.1787/322411171882*

C.8. Herfindahl concentration index of manufacturing affiliates' sales and employment abroad

■ Data for the available countries show that Finland's and Germany's sales from affiliates abroad are the least geographically concentrated, while the Czech Republic's are the most concentrated.

■ With respect to affiliates' employment abroad, on the other hand, Germany's employment is the most geographically concentrated while the United States' is the least geographically concentrated. This result is due to the high concentration of German affiliates employment in the automobile sector in the United States.

Herfindahl concentration index

One way to measure, for a compiling country, the degree of concentration of its affiliates' sales or employment abroad, is the Herfindahl index. This is easy to compile and offers the advantage that the information necessary to compute it is available in most cases. For example, to compare the degree of geographic concentration of a compiling country's affiliates' sales abroad, it is necessary to add the squares of the country's market share of affiliates' sales for each of the countries (markets) in which that country has invested and has local sales. In other words, the Herfindahl index for country A (H_A) would be equal to:

$$H_A = \left(\frac{SAL_1}{\sum_{i=1}^{n} SAL_i} \right)^2 + \left(\frac{SAL_{2(1)}}{\sum_{i=1}^{n} SAL_i} \right)^2 + \ldots + \left(\frac{SAL_n}{\sum_{i=1}^{n} SAL_i} \right)^2 = \sum_{i=1}^{n} \left(\frac{SAL_i}{\sum_{i=1}^{n} SAL_i} \right)^2$$

where: SAL_i = the value of country A's affiliates' sales in each destination country i.

$\sum_{i=1}^{n} SAL_i$ = the sum of country A's affiliates' sales in all countries i.

If country A had the same value of sales in each host country, *i.e.* if $SAL_1 = SAL_2 = \ldots = SAL_n$, then the value of the Herfindahl index would be equal to $1/n$.

It is easy to deduce that the lower country A's market shares are, the more negligible their values would be, and the calculations could disregard them. Herfindahl indices can be calculated to measure the geographic concentration of affiliates' sales or employment abroad across two or more countries, across different sectors of a given country or across different countries in respect of a particular sector. Countries or sectors having a low Herfindahl index will be less geographically concentrated and thus more internationally disposed. The indices can be adjusted to factor in the geographic distance between investing country A and countries i, which country A's sales are destined for. The more distant the countries in which country A's affiliates sell their goods and services, the greater the degree of globalisation.

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C.8. Herfindahl concentration index of manufacturing affiliates' sales and employment abroad

Figure C.8.1. **Herfindahl index of manufacturing affiliates' sales abroad in selected OECD member countries, 2002**

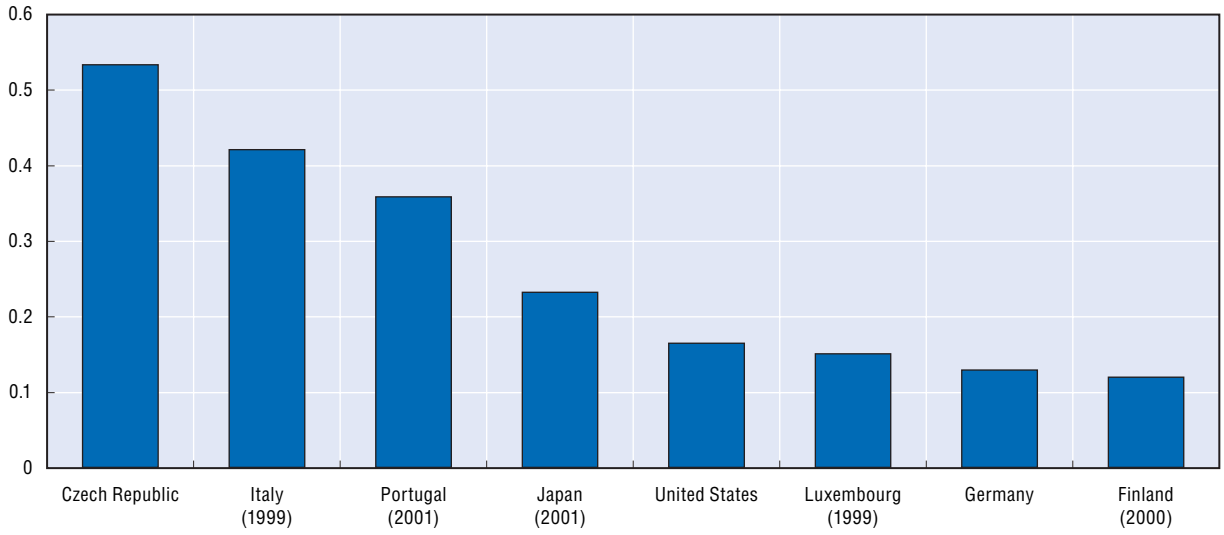
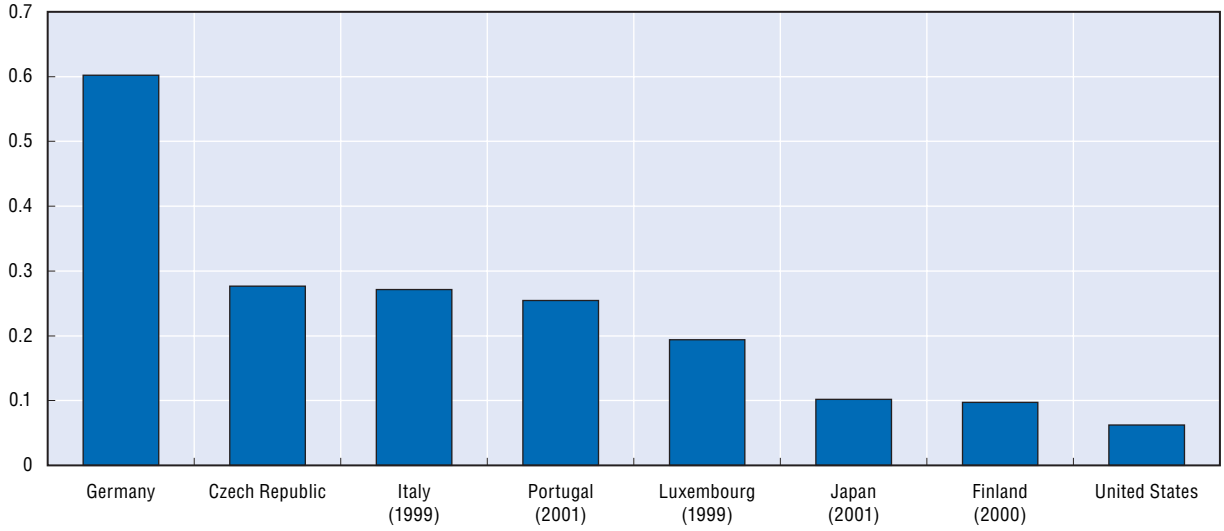


Figure C.8.2. **Herfindahl index of manufacturing affiliates' employment abroad in selected OECD member countries, 2002**



Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA) and Volume II: Services (FATS), March 2005.

StatLink: *http://dx.doi.org/10.1787/148347475514*

C.9. Comparisons between activities of affiliates of parent companies abroad and of parent companies in the domestic economy

Figures C.9.1 and C.9.2 compare the turnover and number of employees of affiliates abroad with those of parent companies in compiling countries.

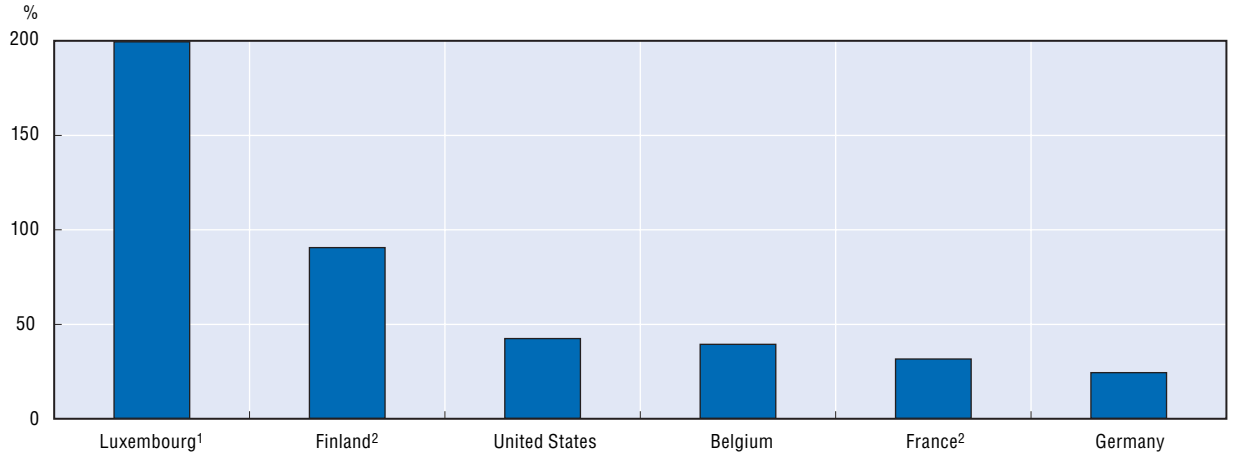
Apart from Luxembourg, whose multinationals count twice as many employees abroad as in the domestic market, it is important to mention two other European countries, Sweden and Finland, whose multinationals play an important role in their economy. Swedish multinationals have twice as many employees abroad as in Sweden while Finnish multinationals have as many employees abroad as in the domestic market. This result well illustrates the degree of internationalisation of these two countries (Figure C.9.2).

The turnover of French and German multinationals abroad represents approximately a quarter of the turnover of the same groups in the domestic market. American multinationals carry out half of their turnover abroad and half of their employees are located abroad.

Figure C.9.3 compares the number of employees of affiliates abroad with the number of employees of affiliates under foreign control located in the domestic economy of compiling countries. In the case of large economies (the United States, Germany and, in particular, Japan), the number of employees of affiliates abroad is higher than the number of employees of foreign affiliates located in these countries.

Similar trends are also observed in Sweden and Finland while in other countries with few affiliates abroad (*e.g.* the Czech Republic, Portugal, Austria and Belgium), the opposite trends are observed.

Figure C.9.1. **Share of affiliates of parent companies abroad in the manufacturing turnover of parent companies located in the domestic economy in selected compiling countries, 2002**



1. 1999.
2. 2001.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA) and Volume II: Services (FATS), May 2005.

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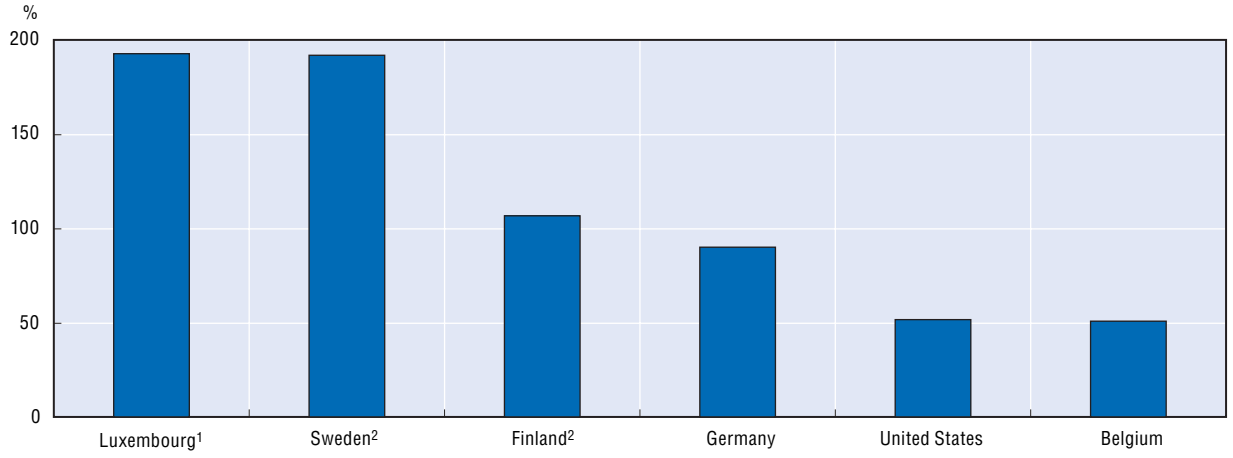
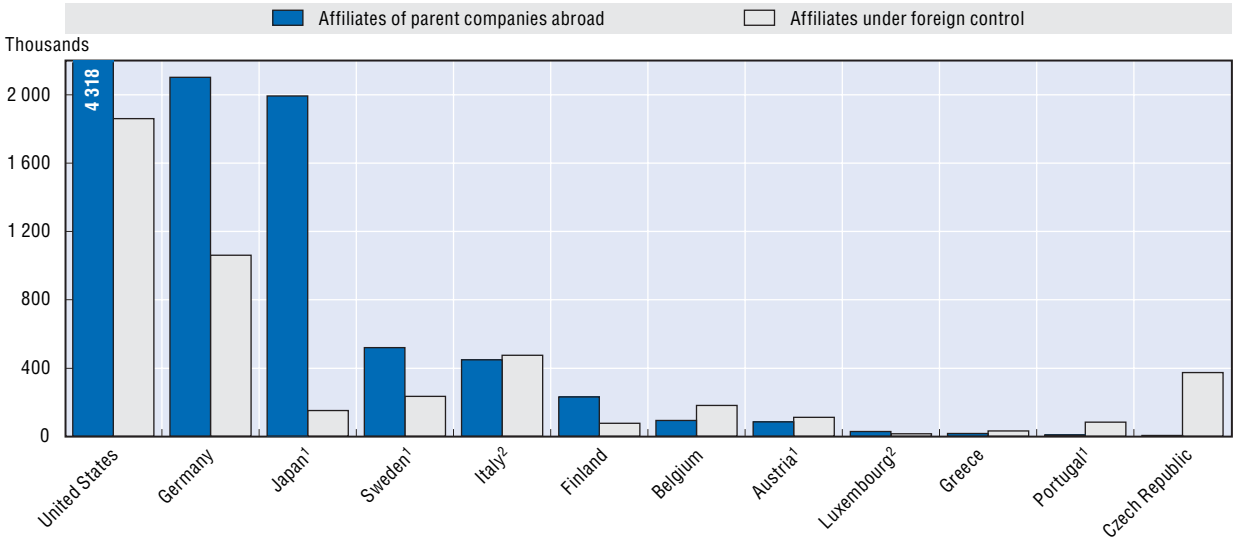
C.9. Comparisons between activities of affiliates of parent companies abroad and of parent companies in the domestic economy

Figure C.9.2. **Share of affiliates of parent companies abroad in the manufacturing employment of parent companies located in the domestic economy in selected compiling countries, 2002**



1. 1999.
2. 2001.

Figure C.9.3. **Number of employees of affiliates of parent companies abroad and affiliates under foreign control in the manufacturing sector of the domestic economy, 2002**



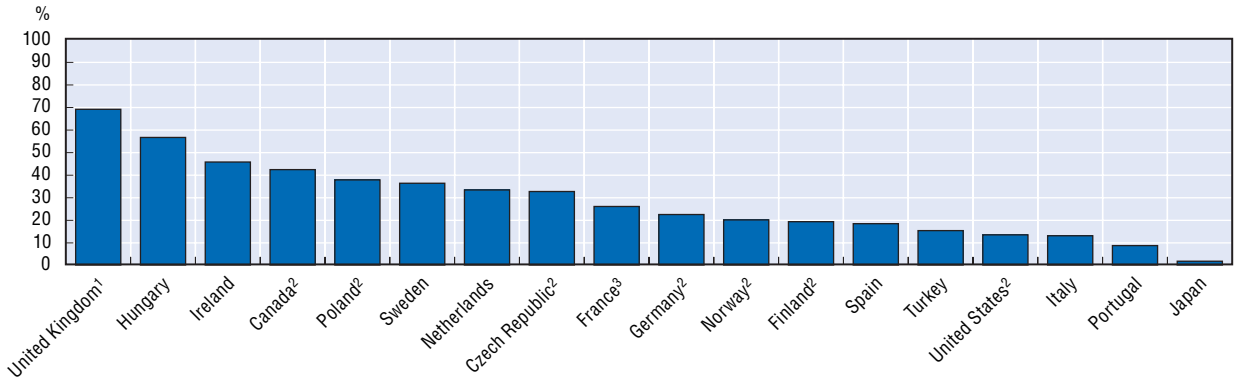
1. 2001.
2. 1999.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA) and Volume II: Services (FATS), May 2005.

StatLink: *http://dx.doi.org/10.1787/032236876841*

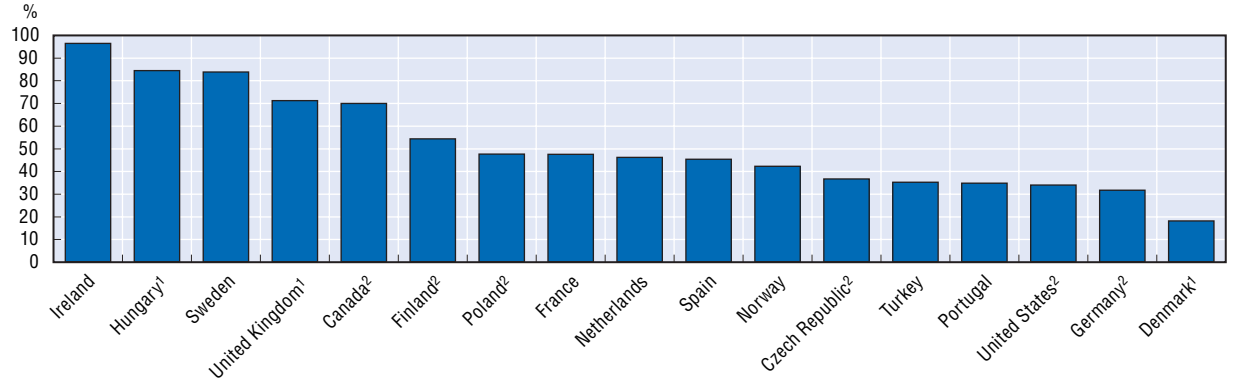
C.10. Share of turnover of affiliates under foreign control in selected manufacturing sectors

Figure C.10.1. **Food, beverages and tobacco (ISIC 15 to 16), 2001**



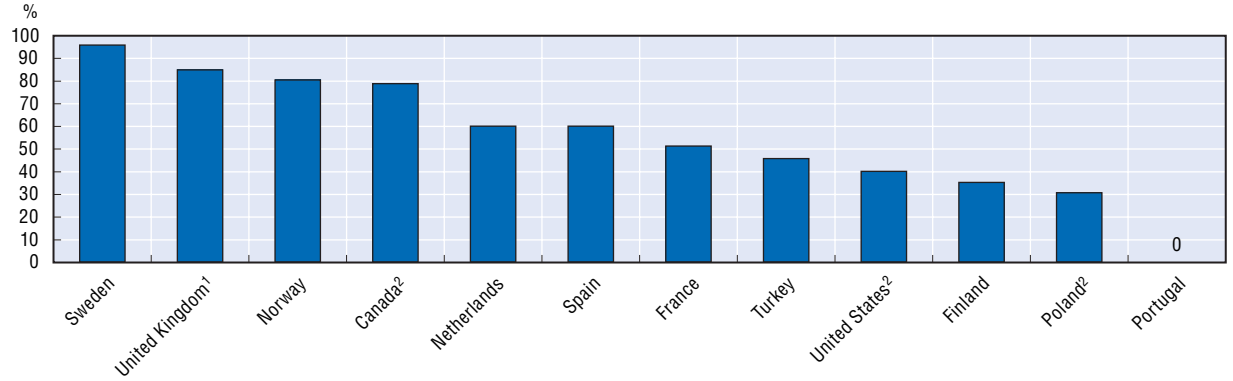
1. 1999.
2. 2002.
3. Tobacco excluded.

Figure C.10.2. **Chemicals (ISIC 24), 2001**



1. 1999.
2. 2002.

Figure C.10.3. **Pharmaceuticals (ISIC 2423), 2001**



1. 1999.
2. 2002.

StatLink: *http://dx.doi.org/10.1787/652324141122*

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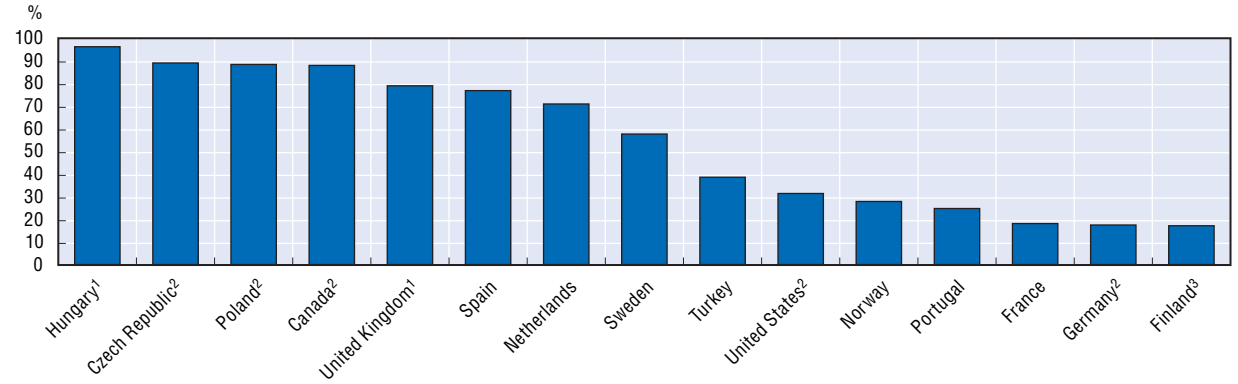
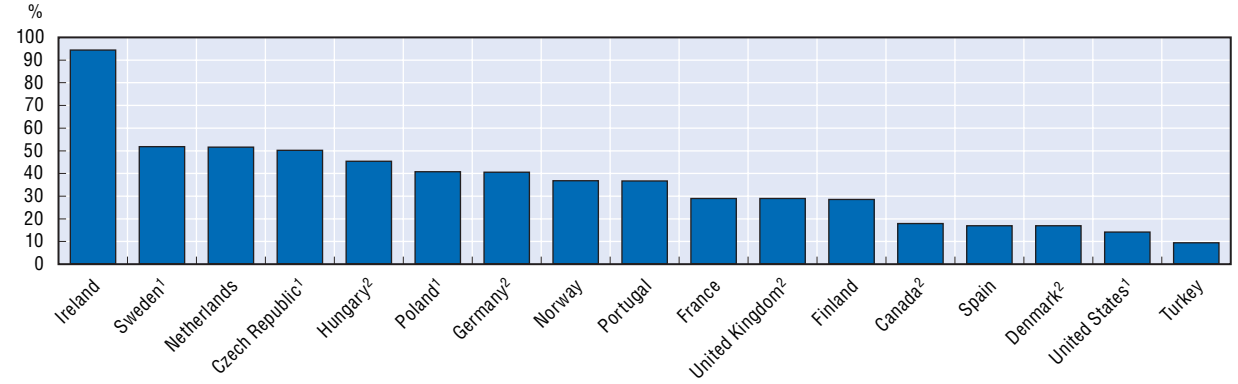
C.10. Share of turnover of affiliates under foreign control in selected manufacturing sectors

Figure C.10.4. **Motor vehicles (ISIC 34), 2001**



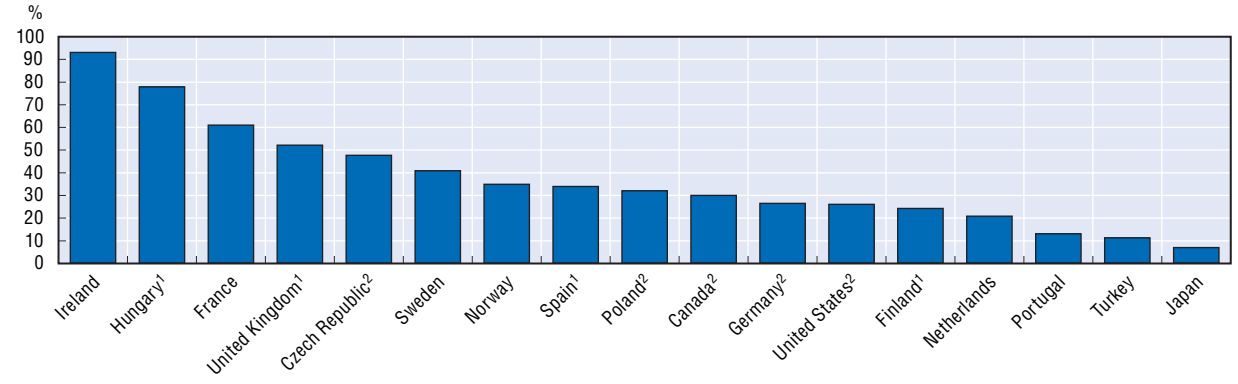
1. 1999.
2. 2002.
3. 2000.

Figure C.10.5. **Instruments (ISIC 33), 2001**



1. 2002.
2. 1999.

Figure C.10.6. **Non-electrical machinery (ISIC 29 to 30), 2001**



Note: For the ICT sectors, see H.6.

1. 1999.
2. 2002.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA) and Volume II: Services (FATS), March 2005.

StatLink: *http://dx.doi.org/10.1787/652324141122*

D. THE ACTIVITY OF MULTINATIONALS IN THE SERVICES SECTOR

D.1. Turnover and employment of foreign affiliates in services

■ The share of turnover under foreign control in the services sector is relatively high in several countries, at over 35% for Ireland and Hungary. With respect to employment, the share of these affiliates in all countries is lower than the share of turnover, and ranges from 22% in Ireland to less than 5% in Germany.

■ In the case of a number of countries, the turnover and number of employees of affiliates under foreign control are of the same magnitude in services as in manufacturing. In contrast, foreign affiliates' share of the entire economy is less in services than in manufacturing because the share of services in these countries' overall economy is double or triple the share of manufacturing (Figures C.1.1, Figure D.1.1 and D.1.2).

■ Between 1995 and 2002, in all the selected OECD countries except Belgium, the employment of foreign affiliates in services increased. The most important increase in the number of employed by foreign affiliates was observed in the Czech Republic, with approximately 200 000 employees (Figure D.1.4). This result could partly reflect the importance of interim enterprises in the service sector.

Figure D.1.1. **Share of foreign affiliates in service turnover,[1] 2002[3]**

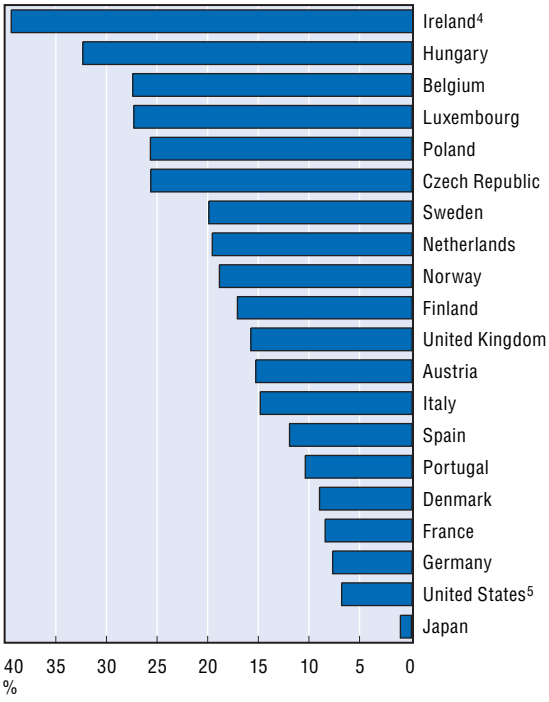
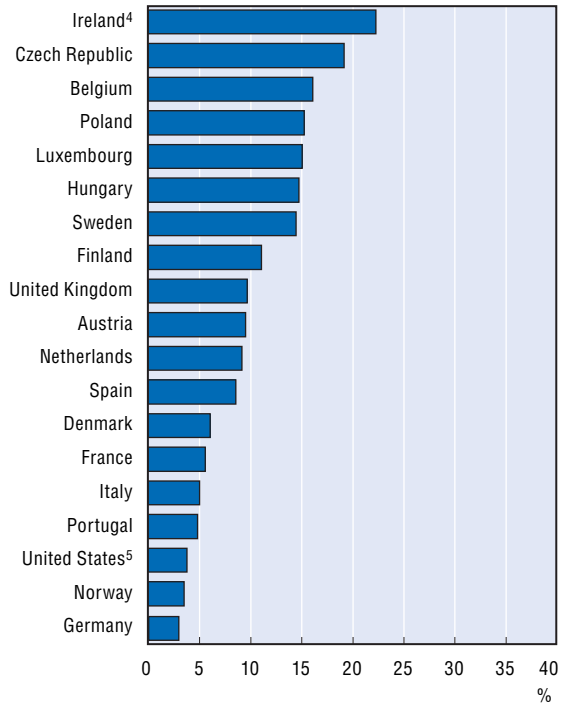


Figure D.1.2. **Share of foreign affiliates in service employment,[2] 2002[3]**



1. Turnover: Financial intermediation (ISIC 65 to 67) excluded completely or in part for all countries except the Czech Republic and France; Community, social and personal services (ISIC 80 to 93) excluded for Austria, Denmark, Germany, Ireland, Portugal and the United Kingdom.
2. Employment: Financial intermediation (ISIC 65 to 67) excluded completely or in part for all countries except Austria, them Czech Republic, Finland, France, Italy, Luxembourg and Norway. Community, social and personal services (ISIC 80 to 93) excluded for Austria, Denmark, Germany, Ireland, Portugal and the United Kingdom.
3. 2001 for Austria, Finland, France, Germany, Italy, Japan, the Netherlands and Portugal; 2000 for Sweden; 1999 for Denmark; 1998 for Luxembourg; 1997 for Norway and the United Kingdom.
4. Enterprises with 20 employees or more.
5. The data used here for foreign affiliates are broken down by industry of sales to be compatible with national total data.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume II: Services (FATS), April 2005.

StatLink: *http://dx.doi.org/10.1787/341775305157*

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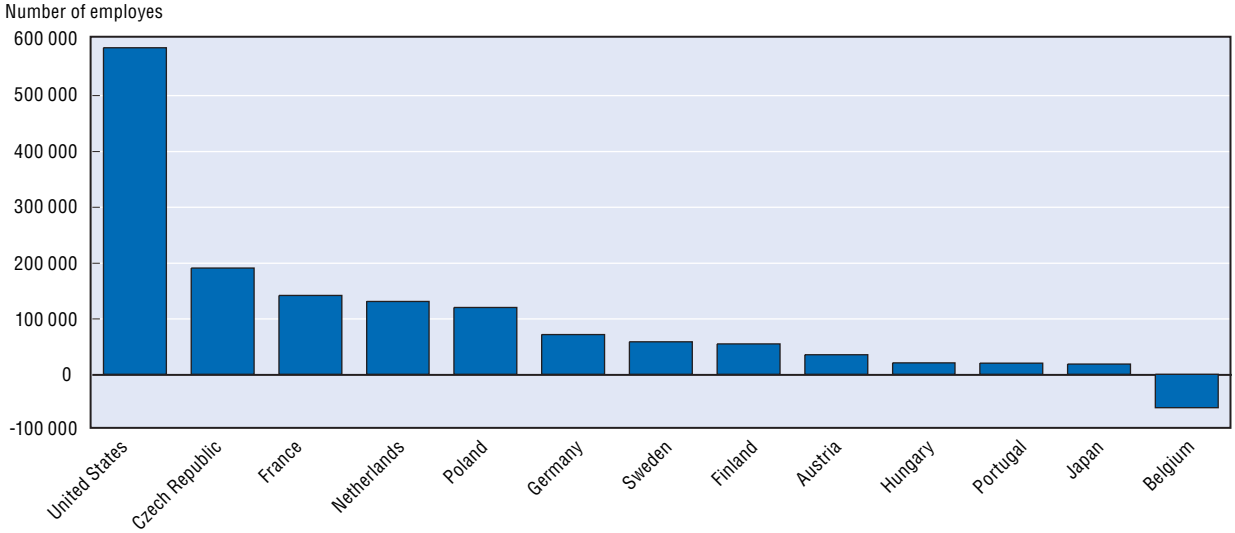
D.1. Turnover and employment of foreign affiliates in services

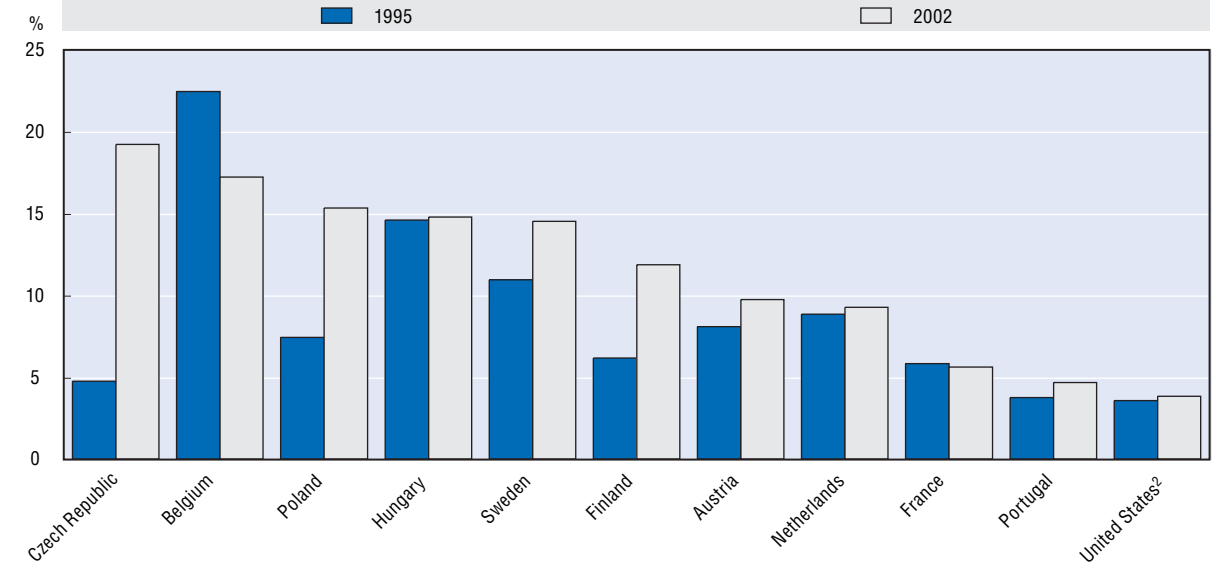
Figure D.1.3. **Numbers employed by affiliates under foreign control in the service sector, total change between 1995 and 2002**[1]



1. 1995-2001 for Austria, Finland, France and Germany; 1996-2002 for Belgium and Portugal; 1998-2002 for Hungary and Poland; 1997-2001 for Japan and the Netherlands; 1997-2000 for Sweden.

Source: OECD, FATS database, April 2005.

Figure D.1.4. **Share of foreign affiliates in service employment in selected OECD countries, 1995 and 2002**[1]



1. 1995-2001 for Austria, Finland and France; 1996-2002 for Belgium and Portugal; 1997-2002 for the United States; 1998-2002 for Hungary and Poland; 1997-2001 for the Netherlands; 1997-2000 for Sweden.
2. The data used here for foreign affiliates are broken down by industry of sales to be compatible with national total data.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume II: Services (FATS), April 2005.

StatLink: *http://dx.doi.org/10.1787/341775305157*

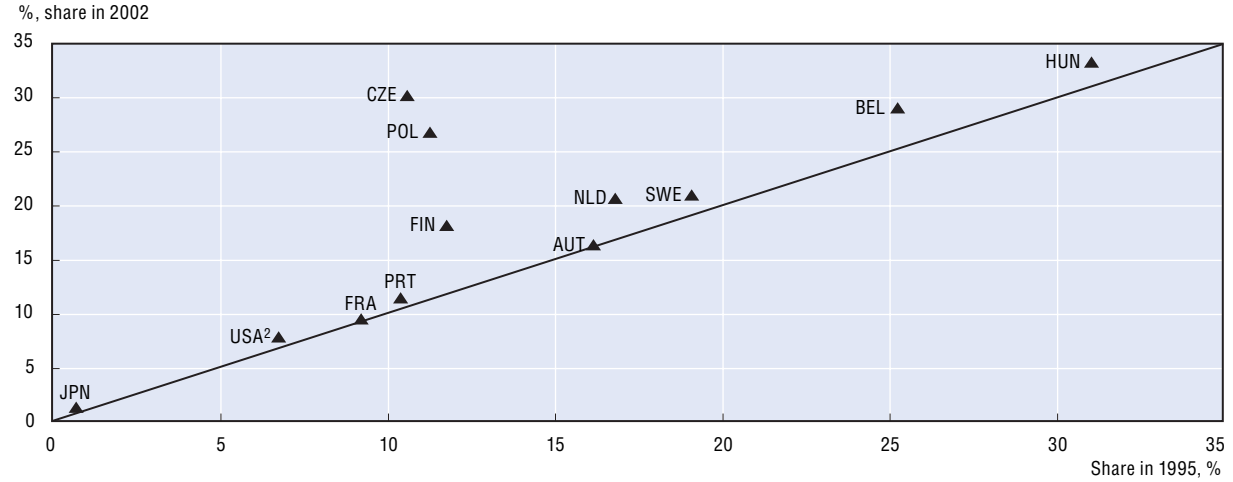
D.2. Share of foreign affiliates and parent companies in the service sector

In most OECD countries, between 1995 and 2002, the share of foreign affiliates' turnover in services increased slightly. Two countries, the Czech Republic and Poland, recorded the highest increase and, at the same time, among the highest share of foreign affiliates in the total national turnover in the services sector. In Japan and the United States, on the other hand, foreign affiliates' share in total national turnover was the lowest of OECD member countries and did not show any significant change during the reference period (Figure D.2.1).

Comparisons between Figures D.1.1 and D.2.2 show that the shares of foreign affiliates in turnover and value added are relatively similar.

In Finland and Belgium, the share of turnover of parent companies in the services sector is higher than 25% of the national total. In the United States, this share also corresponds to more than 20% of national turnover in services (Figure D.2.3).

Figure D.2.1. **Trends in the share of foreign affiliates turnover in the service sector between 1995 and 2002**[1]



1. 1995-2001 for Austria, Finland and France; 1996-2002 for Belgium, 1996-2001 for Portugal; 1998-2002 for Hungary and Poland; 1997-2002 for the United States; 1997-2001 for Japan and the Netherlands; 1997-2000 for Sweden.
2. Data used for the United States are classified by industry of sales to be comparable with national total.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume II: Services (FATS), 2005.

StatLink: *http://dx.doi.org/10.1787/070776628325*

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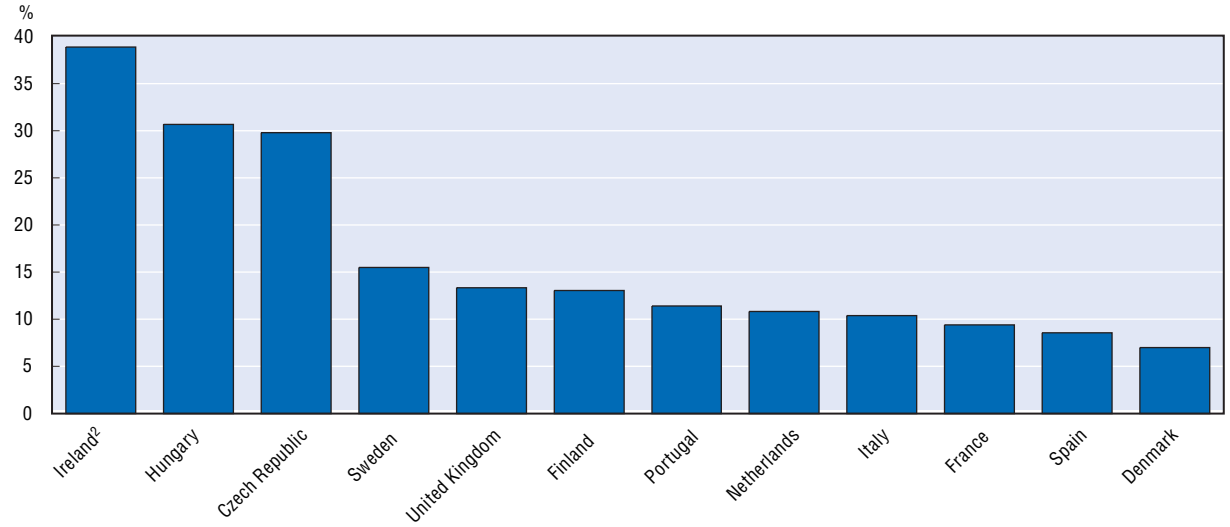
D.2. Share of foreign affiliates and parent companies in the service sector

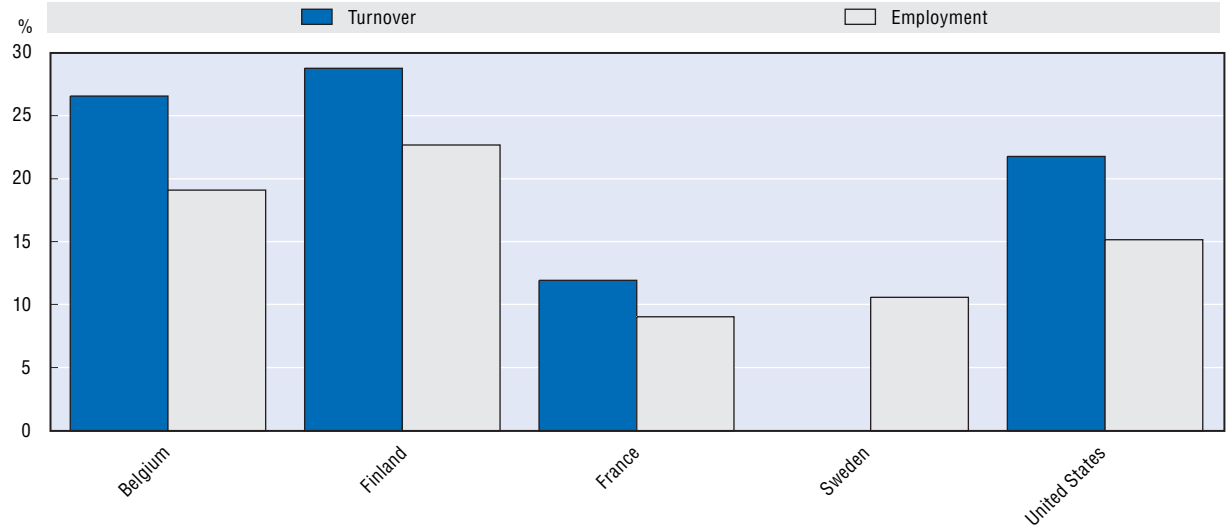
Figure D.2.2. **Share of foreign affiliates in the value added of services, 2002**[1]



1. 2001 for Finland, France, Italy, the Netherlands and Portugal; 2000 for Sweden; 1999 for Denmark; 1997 for the United Kingdom.
2. Enterprises with 20 employees or more.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume II: Services (FATS), 2005.

Figure D.2.3. **Parent companies' share of service turnover and employment in selected OECD countries, 2002**[1]



1. 2001 for Finland and France; 1997 for Sweden.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume II: Services (FATS), 2005.

StatLink: *http://dx.doi.org/10.1787/070776628325*

D.3. Turnover of affiliates located abroad in the services and manufacturing sectors

■ Figure D.3.1 compares the turnover of outward investment with that of inward investment in the services sector and in the manufacturing industry.

■ Where the services sector is concerned, the largest difference between the turnover of outward investment and that of inward investment concerns Japan (more than nine times as high), the reason being the still small number of firms under foreign control in Japan.

■ In Japan, the United States, Germany, France and Finland, the turnover of outward investment in the services sector in 2002 was greater than that of inward investment.

■ In other small-sized European countries (Austria, Belgium, Portugal and Greece), the turnover generated by outward investment in the services sector is lower than the turnover of firms under foreign control located in these countries.

■ In 2002, in France and Japan and to a lesser extent, Germany, Belgium, Portugal and Greece, the turnover ratio of outward to inward investment in services was lower than the equivalent ratio in the manufacturing industry. On the other hand, in the United States, Finland and Austria, the opposite trend is observed.

■ For services, the turnover of affiliates controlled by compiling countries located abroad is routinely higher, compared with total service exports of these countries, than the same ratio in the manufacturing sector.

■ This result confirms that, for services, establishment abroad and local production is currently a more important means of penetrating markets than exports.

■ Turnover from services by Japanese affiliates located abroad is 8 times higher than total Japanese services exports, compared with 7.5 times in Finland, 5.8 times in Germany, 4.1 times in the United States, 3 times in France and 2.2 times in Canada.

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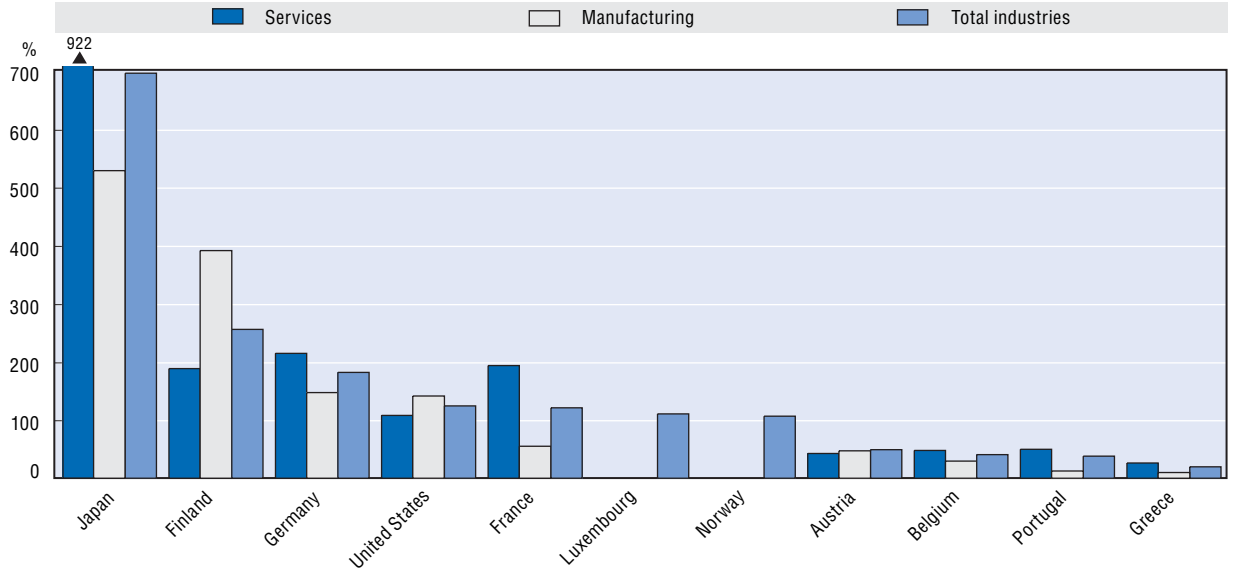
D.3. Turnover of affiliates located abroad in the services and manufacturing sectors

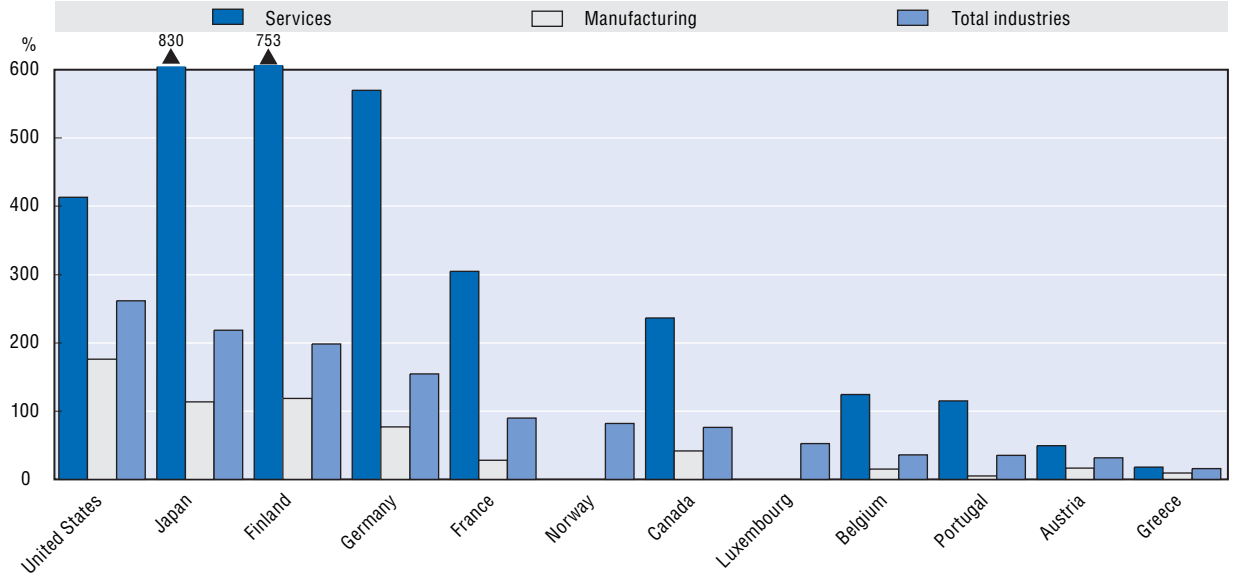
Figure D.3.1. **Turnover of affiliates located abroad compared with the turnover of firms under foreign control located in the compiling country, 2002**[1]



1. 2001 for Austria, France and Japan; 2000 for Finland; 1998 for Luxembourg; 1997 for Norway.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume II: Services (FATS), 2005.

Figure D.3.2. **Turnover of affiliates located abroad compared with national total exports, 2002**[1]



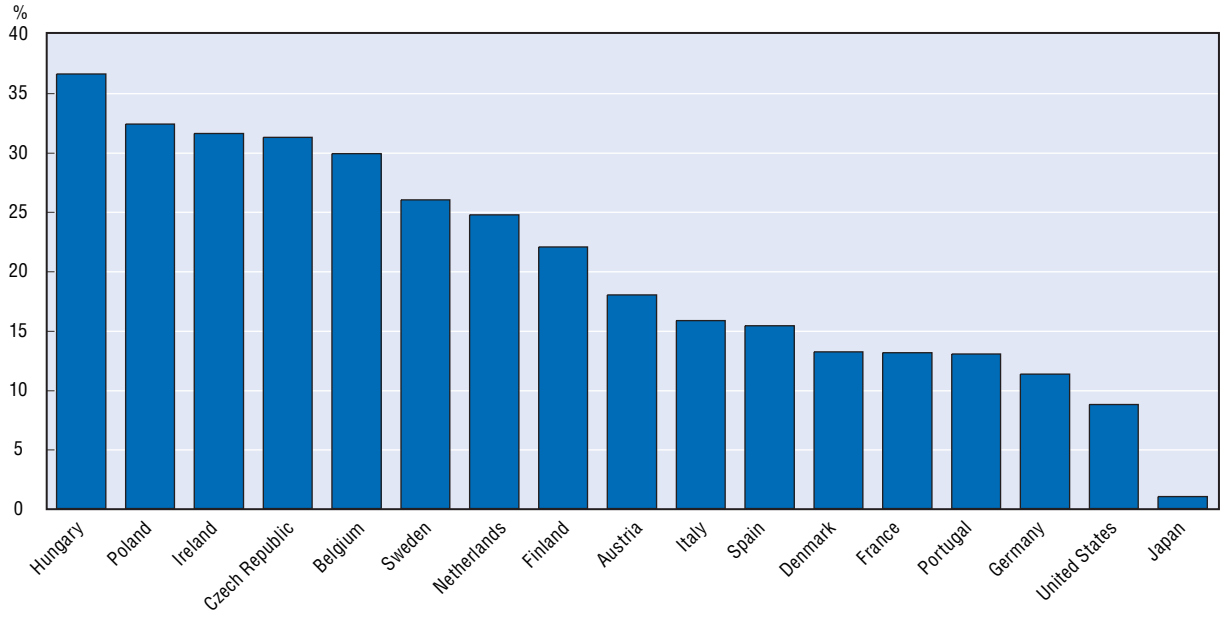
1. 2001 for France and Japan; 2000 for Finland; 1998 for Luxembourg; 1997 for Norway.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume II: Services (FATS), 2005.

StatLink: *http://dx.doi.org/10.1787/544144641013*

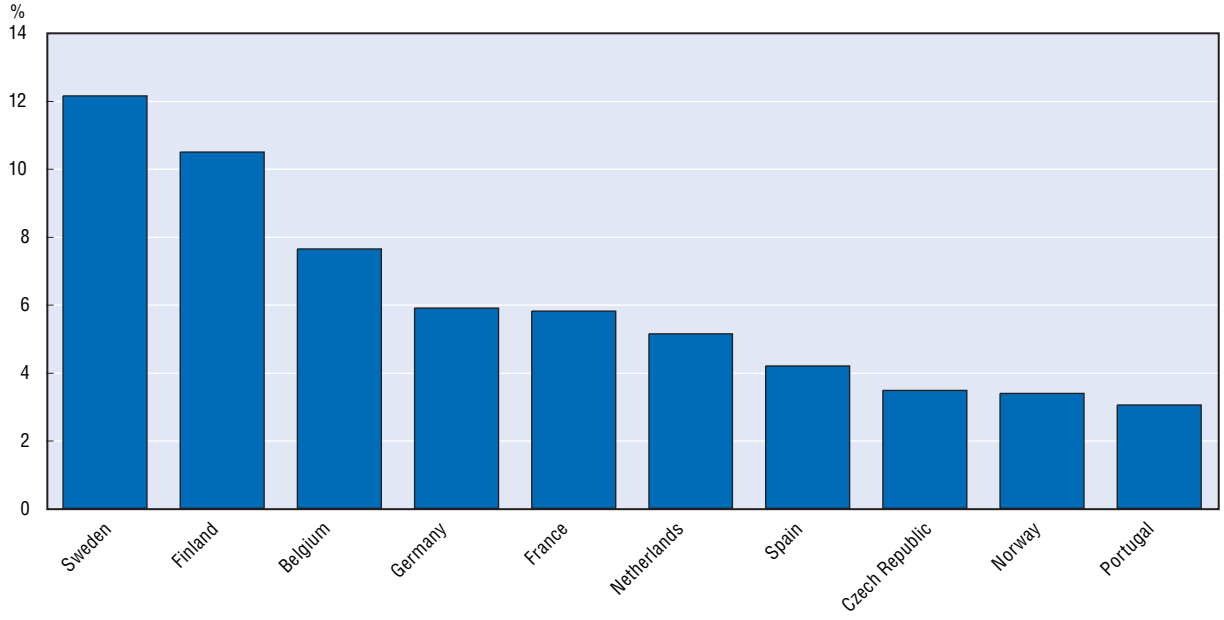
D.4. Share of turnover of affiliates under foreign control in selected service sectors

Figure D.4.1. **Wholesale and retail trade (ISIC 50 to 52), 2002**[1]



1. 2001 for Austria, Finland, France, Germany, Italy, Japan, the Netherlands and Portugal; 2000 for Sweden; 1999 for Denmark.

Figure D.4.2. **Land, water and air transport (ISIC 60 to 62), 2002**[1]



1. 2001 for Austria, Finland, France, Germany, the Netherlands and Portugal; 2000 for Sweden; 1997 for Norway.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume II: Services (FATS), 2005.

StatLink: *http://dx.doi.org/10.1787/840003083083*

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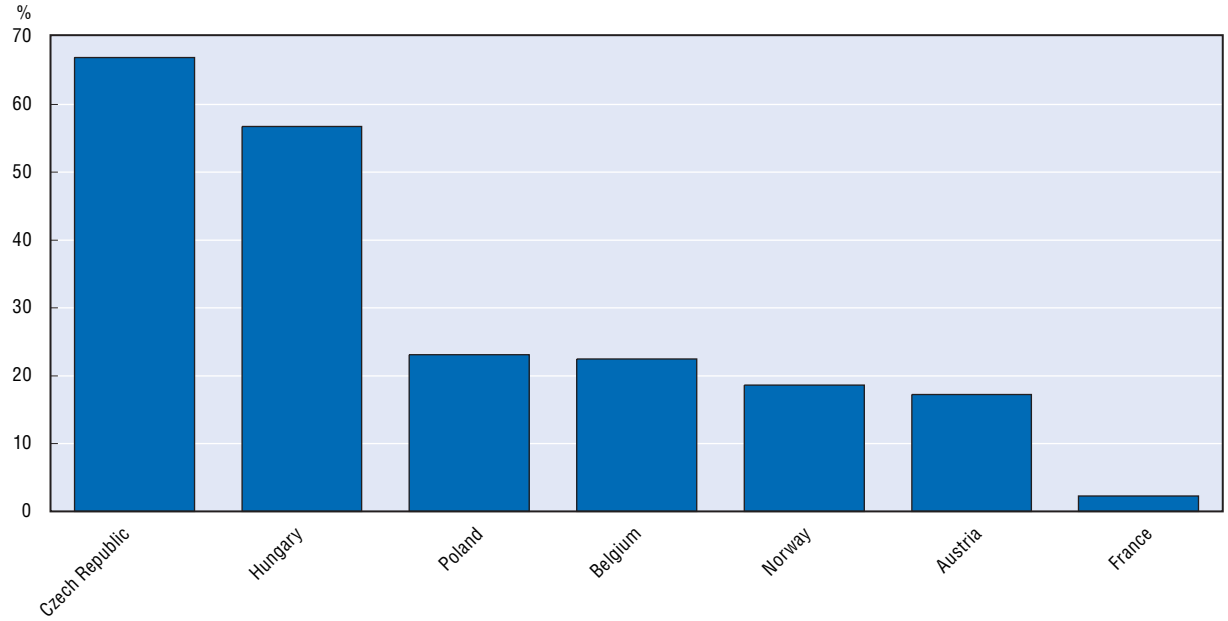
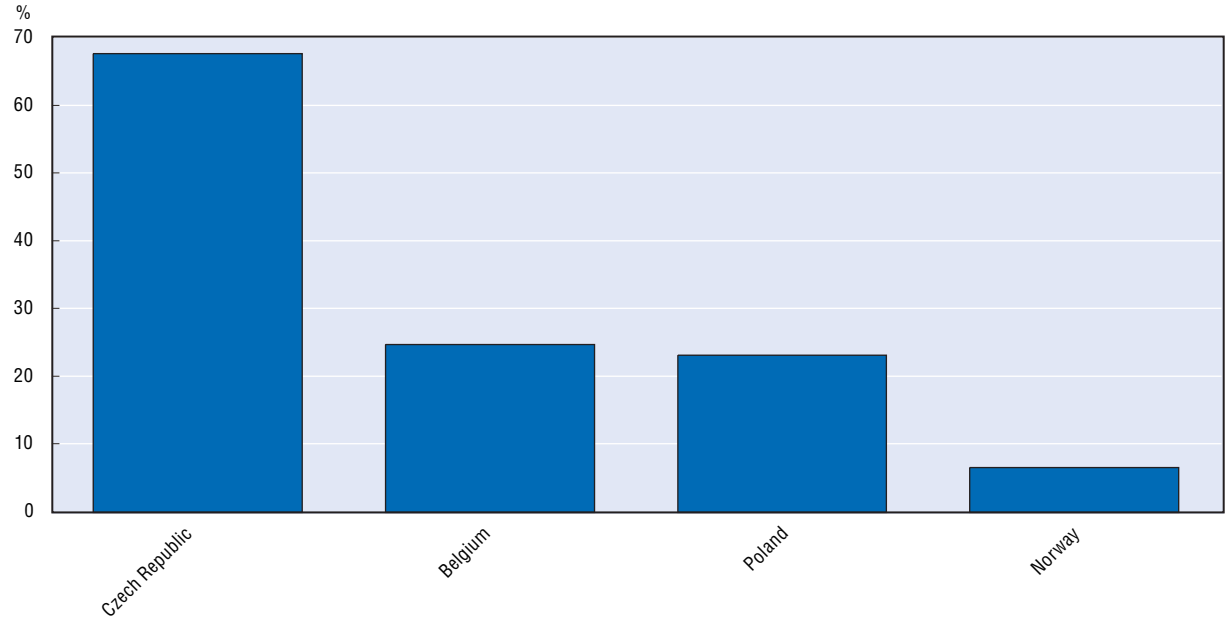
D.4. Share of turnover of affiliates under foreign control in selected service sectors

Figure D.4.3. **Financial intermediation and insurance (ISIC 65 to 67), 2002**[1]



1. 2001 for Austria, France and Hungary; 1997 for Norway.

Figure D.4.4. **Financial intermediation (ISIC 65 and 671), 2002**[1]



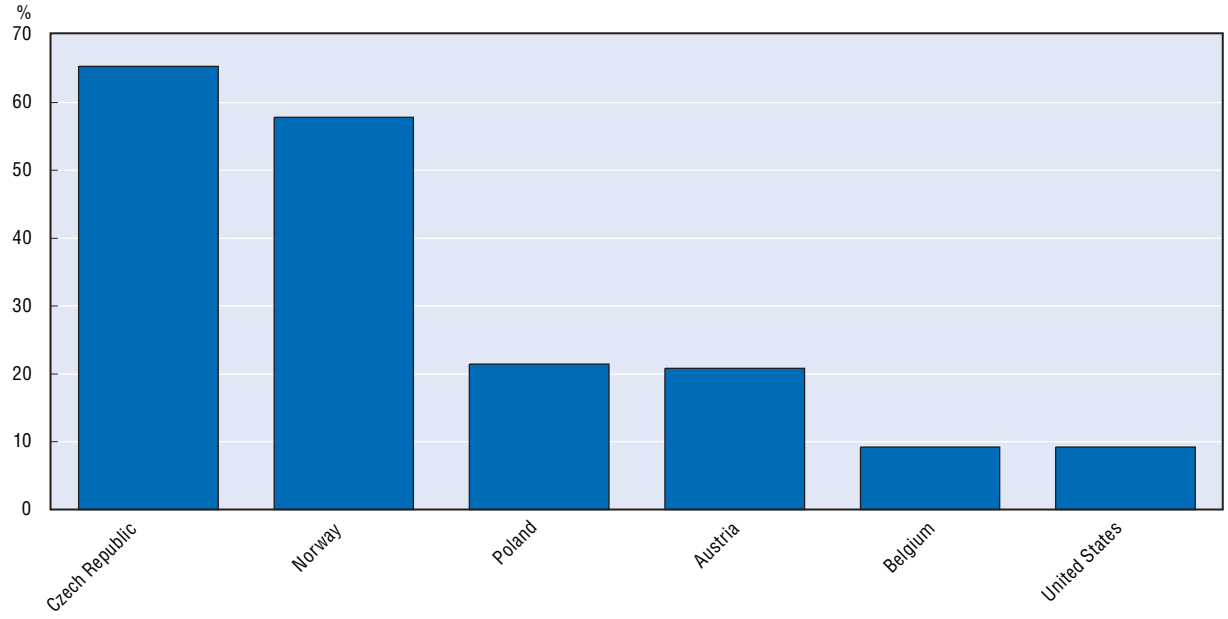
1. 1997 for Norway.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume II: Services (FATS), 2005.

StatLink: *http://dx.doi.org/10.1787/840003083083*

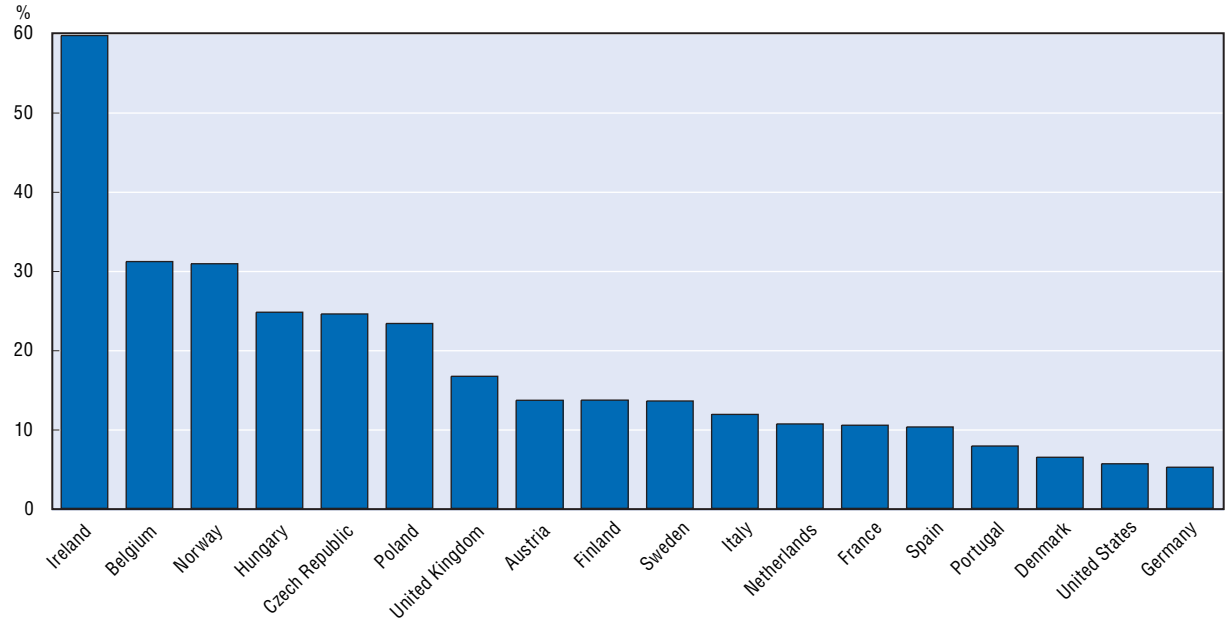
D.4. Share of turnover of affiliates under foreign control in selected service sectors

Figure D.4.5. **Insurance and pension funding (ISIC 66 and 672), 2002**[1]



1. 2001 for Austria; 1997 for Norway.

Figure D.4.6. **Real estate, renting and business activities (ISIC 70 to 74), 2002**[1]



1. 2001 for Austria, Finland, France, Germany, Italy, the Netherlands and Portugal; 2000 for Sweden; 1999 for Denmark; 1997 for Norway and the United Kingdom.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume II: Services (FATS), 2005.

StatLink: *http://dx.doi.org/10.1787/840003083083*

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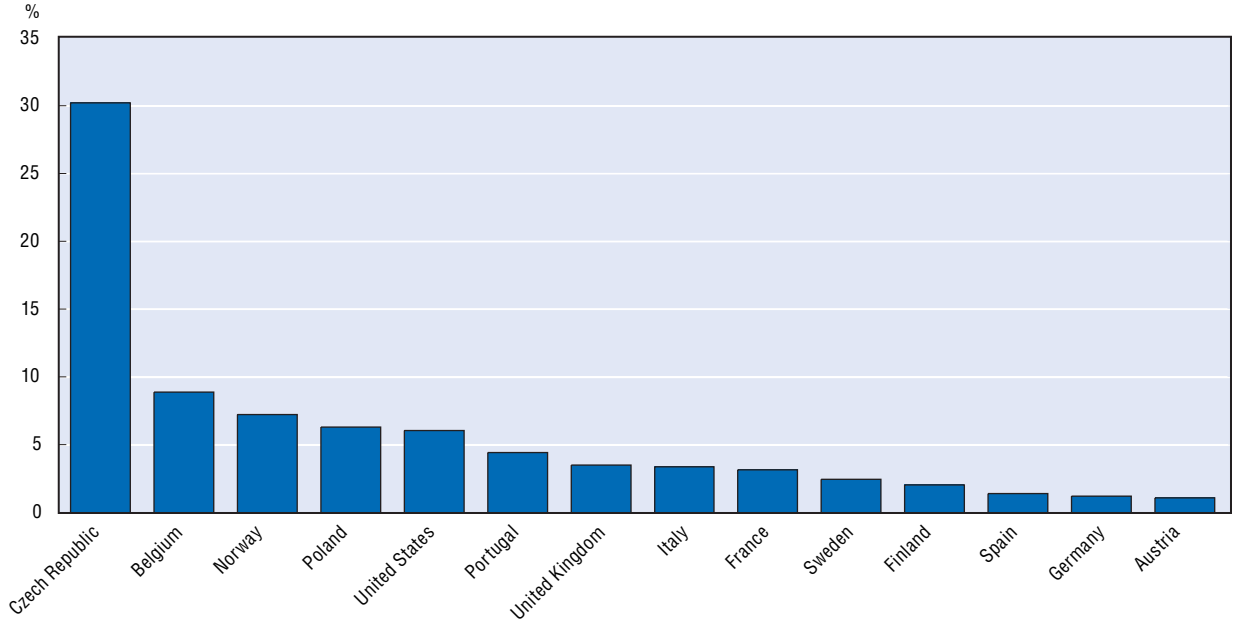
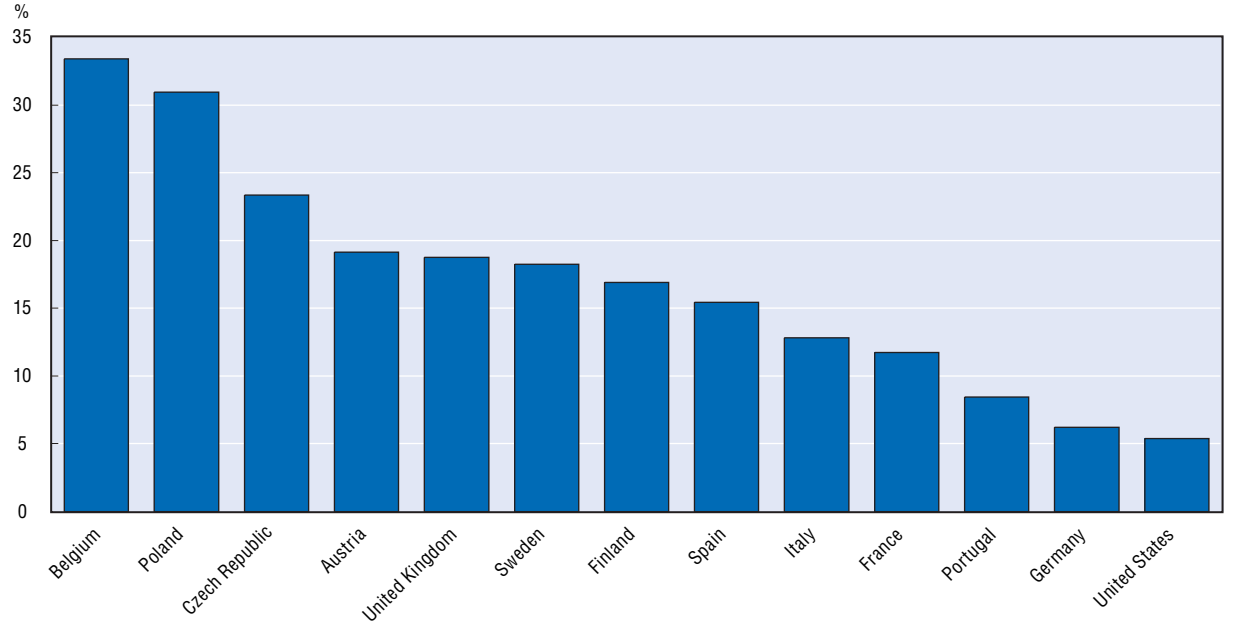
D.4. Share of turnover of affiliates under foreign control in selected service sectors

Figure D.4.7. **Real estate (ISIC 70), 2002**[1]



1. 2001 for Austria, Finland, France, Germany, Italy and Portugal; 2000 for Sweden; 1997 for Norway and the United Kingdom.

Figure D.4.8. **Business activities (ISIC 72 to 74), 2002**[1]



1. 2001 for Austria, Finland, France, Germany, Italy and Portugal; 2000 for Sweden; 1997 for the United Kingdom.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume II: Services (FATS), 2005.

StatLink: *http://dx.doi.org/10.1787/840003083083*

E. COMPARISON BETWEEN THE ACTIVITY OF FOREIGN AFFILIATES IN THE MANUFACTURING SECTOR AND IN THE SERVICES SECTOR

E.1. Comparison between foreign affiliates' turnover and employment in the manufacturing and in the services sectors

■ In the majority of OECD countries turnover of foreign affiliates is concentrated in the services sector. Figures E.1.1 and E.1.2 point this out for each country where it should be noted that the addition of percentages may be less than 100% because of the absence of primary sectors.

■ In some countries, however, the turnover of foreign affiliates in the manufacturing sector in 2002 represented more than half of the turnover of foreign affiliates. This is particularly the case in Japan, France and Germany (Figure E.1.2).

■ In spite of the weight of foreign investment and consequently of turnover of foreign affiliates in the service sector, the share of turnover of these affiliates in the turnover of the services as a whole in most countries was lower than the equivalent ratio in the manufacturing sector (Figure E.1.3).

■ This results of the much larger weight of the service sector in the business sector in the majority of countries, often two or three times that of the manufacturing sector.

■ Similar results can also be observed for employment (Figure E.1.4).

Figure E.1.1. **Share of services[1] turnover in total turnover of foreign affiliates, 2002[2]**

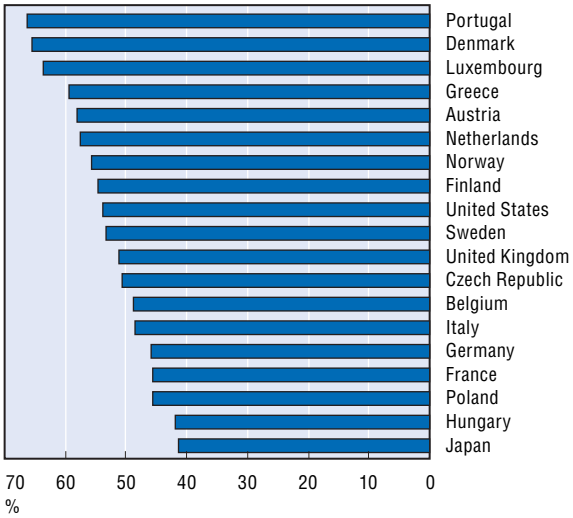
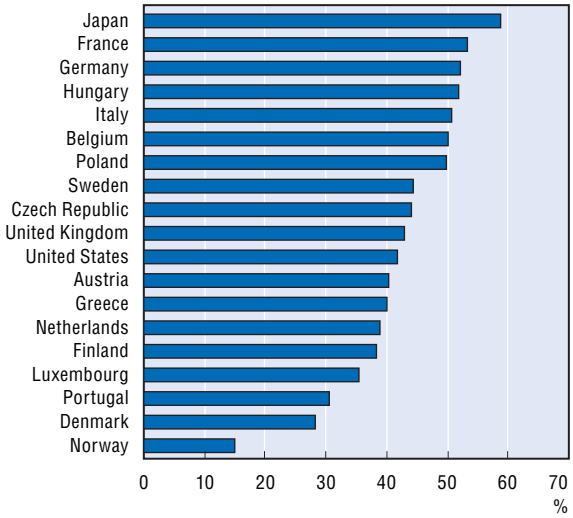


Figure E.1.2. **Share of manufacturing turnover in total turnover of foreign affiliates, 2002[2]**



1. Financial intermediation (ISIC 65 to 67) is excluded for Denmark, Finland, Hungary, Italy, Japan, the Netherlands, Sweden and the United Kingdom. Banks (ISIC 651) are excluded for Austria, Germany, Greece, Luxembourg, Poland and the United States. Community, social and personal services (ISIC 80 to 93) is excluded for Denmark and the United Kingdom.
2. 2001 for Austria, Finland, France, Italy, Japan and the Netherlands; 2000 for Sweden; 1999 for Denmark; 1998 for Luxembourg; 1997 for Norway and the United Kingdom.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume II: Services (FATS), April, 2005.

StatLink: *http://dx.doi.org/10.1787/518708262071*

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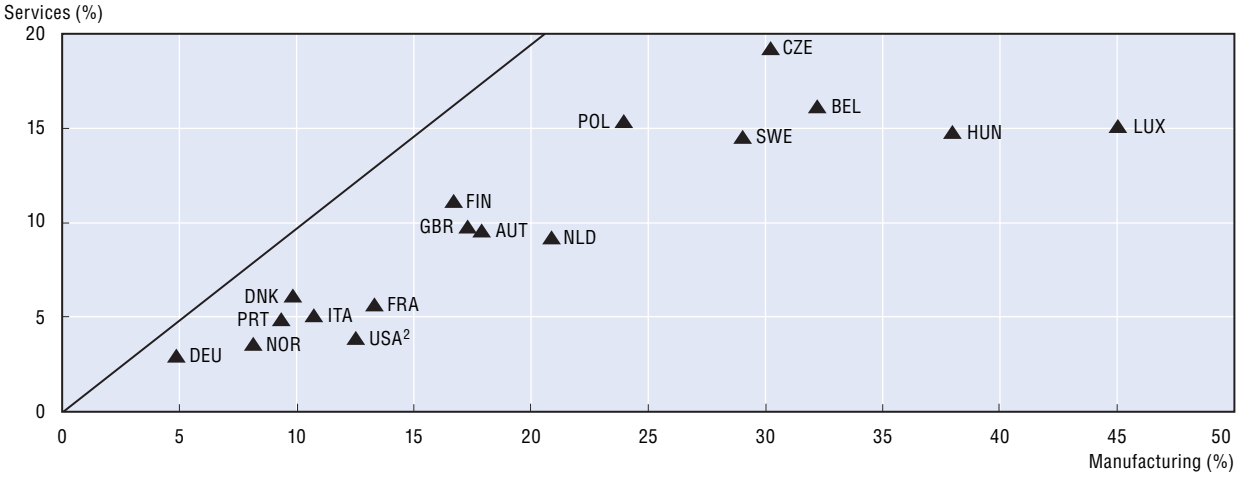
E.1. Comparison between foreign affiliates' turnover and employment in the manufacturing and in the services sectors

Figure E.1.3. **Share of foreign affiliates' turnover in the turnover of the services and manufacturing sectors, 2002**[1]

Figure E.1.4. **Share of foreign affiliates' employment in the employment of the services and manufacturing sectors, 2002**[1]



1. 2001 for Austria, Finland, France, Germany, Italy, Japan, the Netherlands and Portugal; 2000 for Sweden; 1999 for Denmark; 1998 for Luxembourg; 1997 for Norway and the United Kingdom.
2. The data used for foreign affiliates are broken down by industry of sales to be compatible with national totals.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume II: Services (FATS), April 2005.

StatLink: *http://dx.doi.org/10.1787/518708262071*

E.2. Employment of foreign affiliates in the services and manufacturing sectors in absolute values

■ Employment of foreign affiliates is also sizeable in absolute terms. While Figures C.2.2 and C.2.3 show employment trends, Figure E.2.1 presents the structure of foreign affiliate employment in the service sector in 2002.

■ The total number of employees of foreign affiliates in the service sector is higher than in the manufacturing sector, except for countries for which foreign investment is more concentrated in the manufacturing sector than in the service sector (in Germany, France and Japan in particular).

■ The large majority of employment is concentrated in four major sectors: wholesale and retail trade, hotel and restaurants, transport and business services. In Figure E.2.1, these sectors correspond to the category "Other services".

■ The weight of financial intermediation in total employment in services of foreign affiliates is low, except for Luxembourg where it corresponds to the bulk of employment in foreign affiliates. A significant share can also be observed for the employment of this sector in total employment of affiliates in the United States, Germany and the Czech Republic. Unfortunately this breakdown is not available for the United Kingdom.

■ In the United States, the number of employees working in the manufacturing foreign affiliates is just over 2.2 million, almost a million less than in services.

■ In France the number of employees in the manufacturing sector was twice as high than in services, while in Germany the difference in employment between the two sectors is less important.

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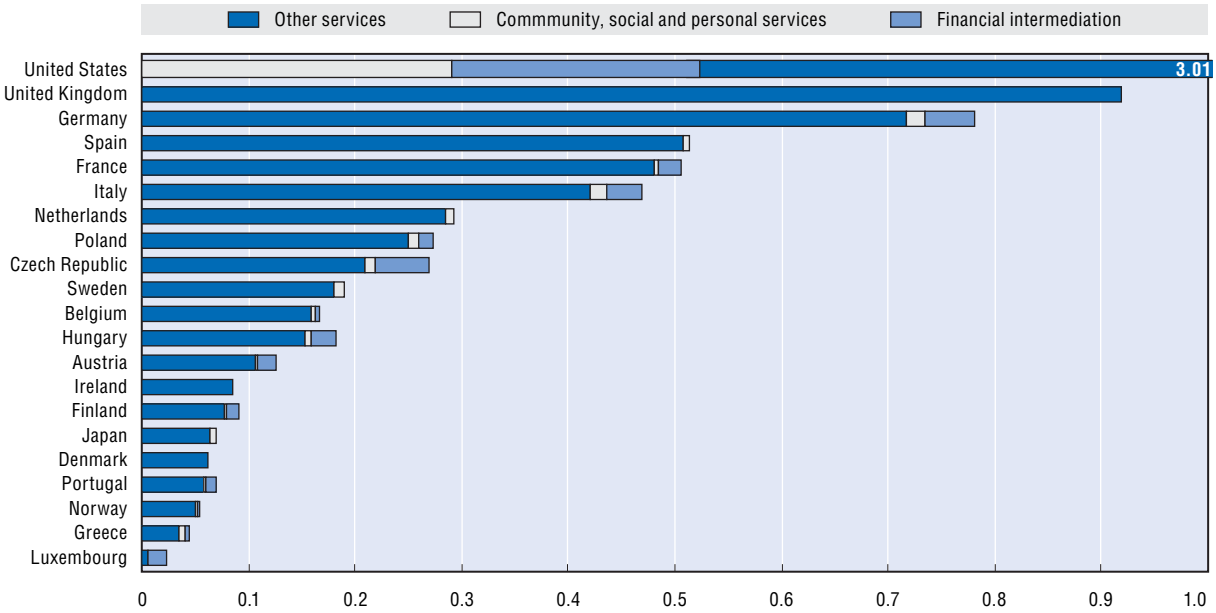
E.2. Employment of foreign affiliates in the services and manufacturing sectors in absolute values

Figure E.2.1. **Employment of foreign-controlled affiliates in the services sector,[1] 2002[2]**

Millions of employees

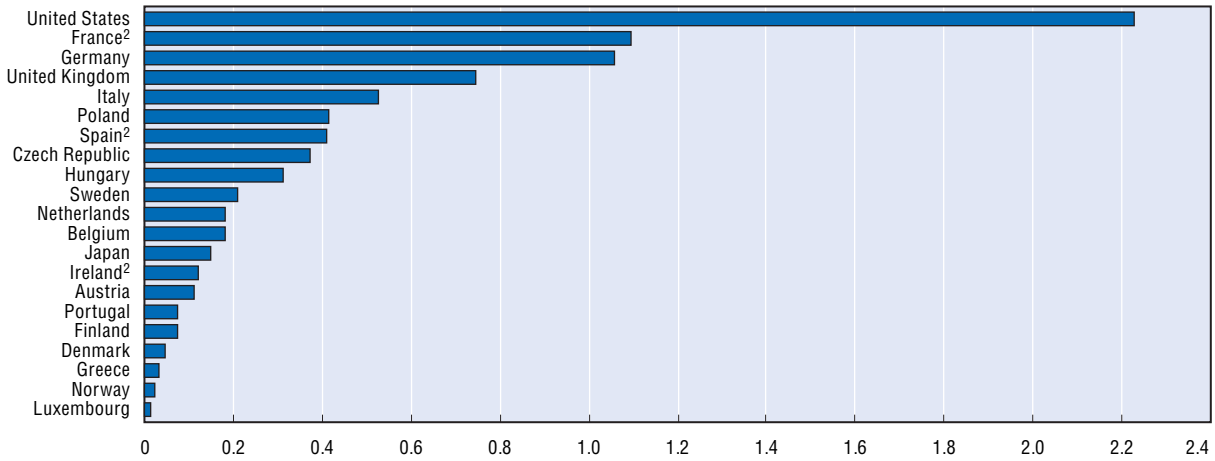


1. Financial intermediation (ISIC 65 to 67) and Community, social and personal services (ISIC 80 to 93) are not always covered. Banks (ISIC 651) are excluded for Greece, Poland and the United States.
2. 2001 instead of 2002 for Austria, Finland, France, Hungary, Italy, Japan, and the Netherlands; 2000 for Sweden; 1999 for Denmark; 1998 for Luxembourg; 1997 for Norway and the United Kingdom.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume II: Services (FATS), April 2005.

Figure E.2.2. **Employment of foreign-controlled affiliates in the manufacturing industry, 2002[1]**

Millions of employees



1. 2001 instead of 2002 for Austria, Finland, France, Hungary, Ireland, Italy, Japan, the Netherlands and Spain; 2000 for Sweden; 1999 for Denmark; 1998 for Luxembourg; 1997 for Norway and the United Kingdom.
2. Data for France, Ireland and Spain are from the AFA database.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume II: Services (FATS), April 2005.

StatLink: *http://dx.doi.org/10.1787/270717315201*

E.3. Employment and turnover of affiliates located abroad in services and manufacturing sectors

■ As in the case of turnover, the employment share of affiliates controlled by compiling countries located abroad compared with that of domestic firms is greater for manufacturing industries than for services, except for Portugal.

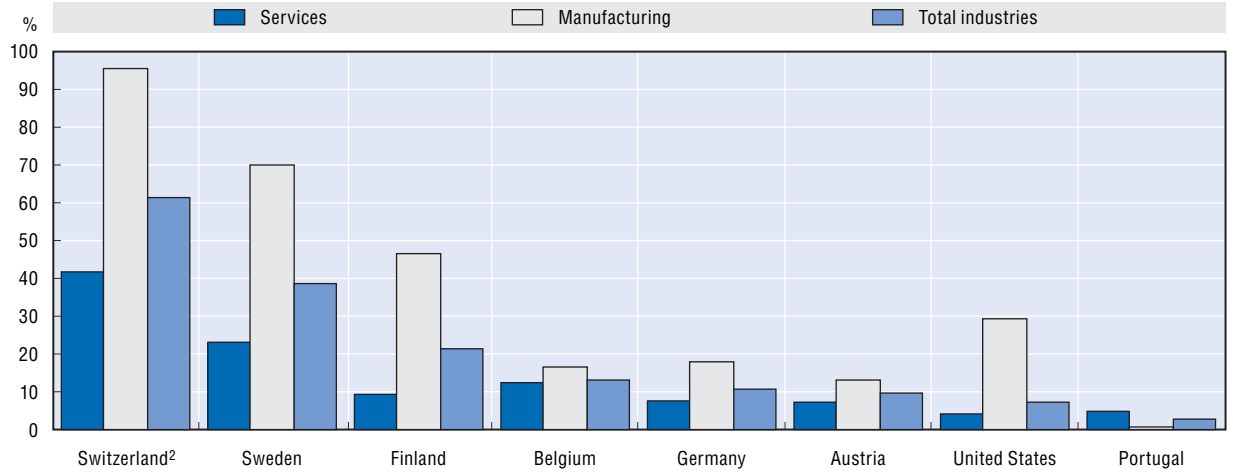
■ In the services sector, the number of personnel employed by affiliates controlled by compiling countries located abroad is less than 15% of total national employment in this sector, with the exception of Switzerland and to a lesser extent Sweden. In 2002, the corresponding percentages for these two countries were 42% and 23%, respectively.

■ The number employed by Swedish affiliates abroad in the manufacturing industry is 70% of the total employed by all manufacturing firms in Sweden.

■ Portugal, Greece, France, Belgium, Japan and Germany in particular, generate more turnover abroad from services than from manufacturing, as can be seen from the turnover of affiliates located abroad (Figure E.3.2).

■ The situation is the reverse for Finland and Canada, while in the case of the United States firms investments are relatively more evenly balanced between manufacturing and services.

Figure E.3.1. **Employment of affiliates controlled by compiling countries located abroad as a percentage of national total employment, 2002**[1]



1. 2001 for Germany and Portugal; 2000 for Sweden.
2. Manufacturing includes Agriculture, Mining, Construction and Electricity, gas and water.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume II: Services (FATS), April 2005.

StatLink: *http://dx.doi.org/10.1787/535125816422*

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E.3. Employment and turnover of affiliates located abroad in services and manufacturing sectors

Figure E.3.2. **Share of the service sector in the turnover of affiliates located abroad and controlled by the compiling country, 2002**[1]

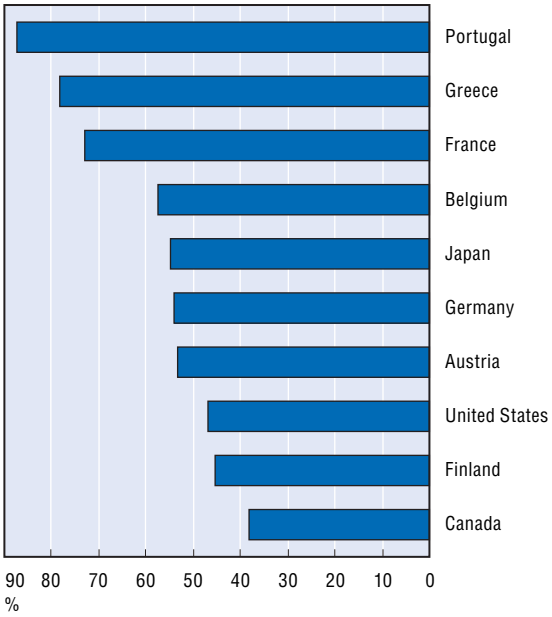
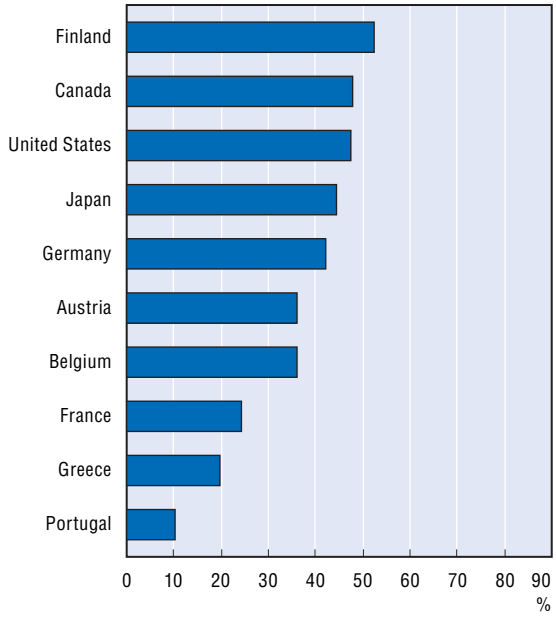


Figure E.3.3. **Share of the manufacturing industry in the turnover of affiliates located abroad and controlled by the compiling country, 2002**[1]



1. 2001 for France and Japan; 2000 for Finland.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume II: Services (FATS), April 2005.

StatLink: *http://dx.doi.org/10.1787/535125816422*

F. THE CONTRIBUTION OF MULTINATIONALS TO VALUE ADDED AND LABOUR PRODUCTIVITY IN THE MANUFACTURING AND SERVICES SECTORS

F.1. The contribution of foreign affiliates to value added and turnover of the total domestic business sector

■ While the respective shares of affiliates under foreign control in total manufacturing turnover and value added would seem to be correlated, various reasons could justify differentials between the two measures.

■ In the case of Hungary, where the share of value added is significantly less than that of turnover, it may be that foreign affiliates import more intermediate goods from their parent companies abroad or distribute final products in the domestic market without any transformation. In this case, turnover increases but not the value added corresponding to these goods.

■ In Ireland, the situation may be different if the intermediate consumption of foreign affiliates could be less important than that of firms controlled by residents.

■ In Hungary and the Czech Republic, foreign affiliates have the highest contribution to value added in both manufacturing and service sectors. This result is particularly interesting for Hungary since only 40% of the turnover of foreign affiliates is concentrated in services (Figures E.1.1 and F.1.2).

■ On the other hand in Denmark and Portugal, where more than 60% of foreign affiliates' turnover is concentrated in the service sector, the contribution of these affiliates to value added of this sector is less than 8% and 12% respectively (Figure F.1.2).

■ Figure F.1.2 shows that in all countries for which data are available, the share of foreign affiliates in value added is higher for the manufacturing than for the service sector. This result reflects the higher proportion of the value added of the service sector compared to that of the manufacturing sector in total value added of the business sector.

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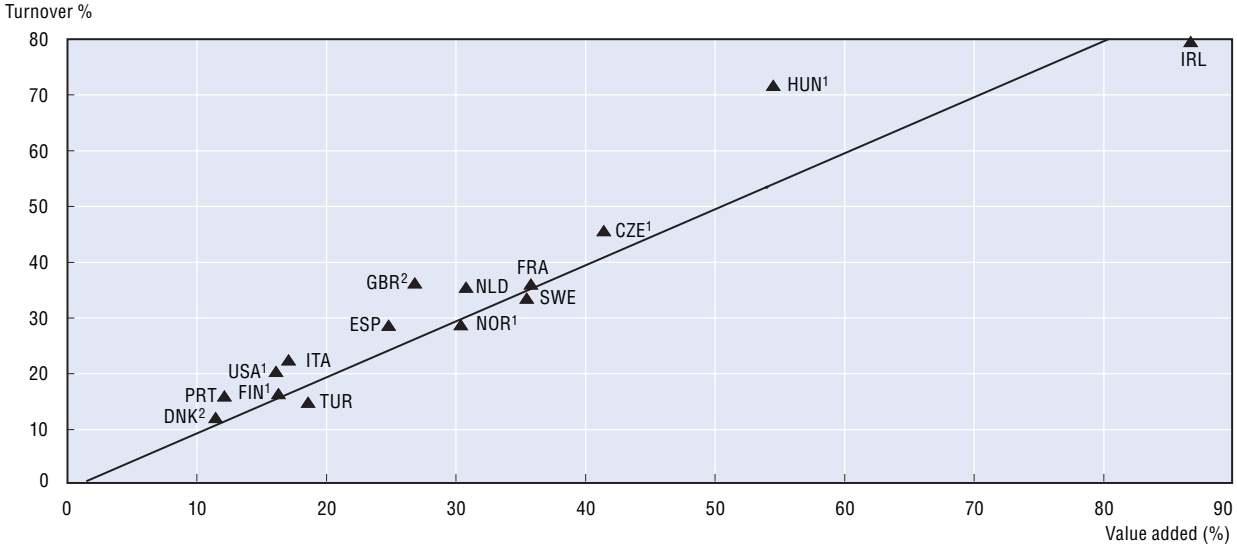
F.1. The contribution of foreign affiliates to value added and turnover of the total domestic business sector

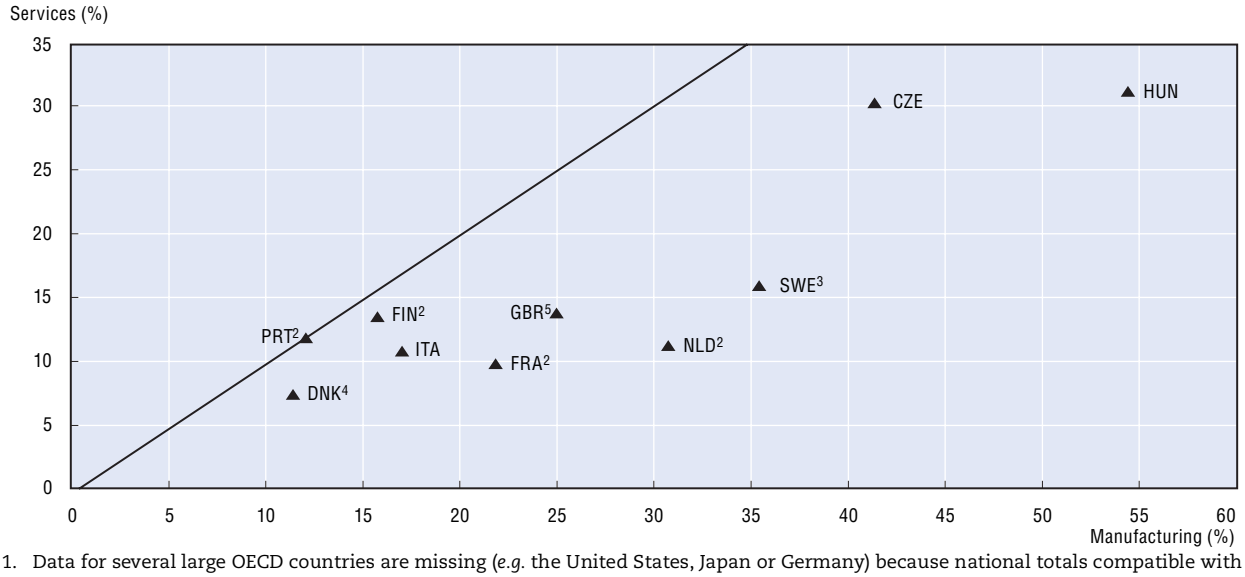
Figure F.1.1. **Share of affiliates under foreign control in total manufacturing value added and turnover, 2001**



1. 2002.
2. 1999.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), April 2005.

Figure F.1.2. **Share of affiliates under foreign control in the value added of the services and manufacturing sectors,[1] 2002**



1. Data for several large OECD countries are missing (*e.g.* the United States, Japan or Germany) because national totals compatible with data on foreign affiliates are not available, especially for the service sector (see: *Measuring Globalisation: OECD Handbook on Economic Globalisation Indicators*, Chap. 3, Section 3.3.7).
2. 2001.
3. 2000.
4. 1999.
5. 1997.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume II: Services (FATS), April 2005.

StatLink: *http://dx.doi.org/10.1787/007876213066*

F.2. Labour productivity of multinationals in manufacturing and service sectors

■ In 2002, labour productivity of manufacturing foreign affiliates in the United Kingdom was more than two times higher than the average labour productivity of all manufacturing domestic firms.

■ In the United States, Finland and France, labour productivity of manufacturing foreign affiliates was almost at the same level as the national average (Figure F.2.1).

■ With respect to the service sector, foreign affiliates in Portugal were two times more productive than the national average, while in Finland and the United States, labour productivity of foreign affiliates was lower than the national average.

■ Between 1995 and 2001, in the manufacturing sector, foreign affiliates in Sweden, Finland and the United States recorded the highest growth of labour productivity, while in Spain and Portugal the growth of labour productivity of these affiliates was negative (Figure F.2.2).

■ During the same period, the growth of labour productivity of foreign affiliates in the service sector was high in Japan, but negative in the Netherlands, Portugal, Finland, the Czech Republic and France.

Measuring labour productivity in foreign affiliates in host countries

In this report, the choice of measurement of labour productivity was largely determined by the availability of data itself. Even at the level of total manufacturing, it was not possible to calculate the total factor productivity, since, for the affiliates there were no data available on capital stock. The labour productivity is measured on the basis of gross value added divided by the number of employees. As regards the number of employees, in principle it should be expressed in full-time equivalents.

The relative labour productivity of foreign affiliates is the ratio of labour productivity of foreign affiliates in the national total of labour productivity of the manufacturing and the service sectors.

To measure labour productivity in terms of growth for the total manufacturing and services sectors, value added data have been deflated in the case of affiliates using the sectoral deflators of the national industry and weighing them according to the sectoral structure of foreign affiliates. These calculations have been made every time it was possible, since for some sectors, it was impossible due to missing data. In these cases, deflators at a higher aggregate level were used.

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F.2. Labour productivity of multinationals in manufacturing and service sectors

Figure F.2.1. **Relative labour productivity of foreign affiliates, 2002**

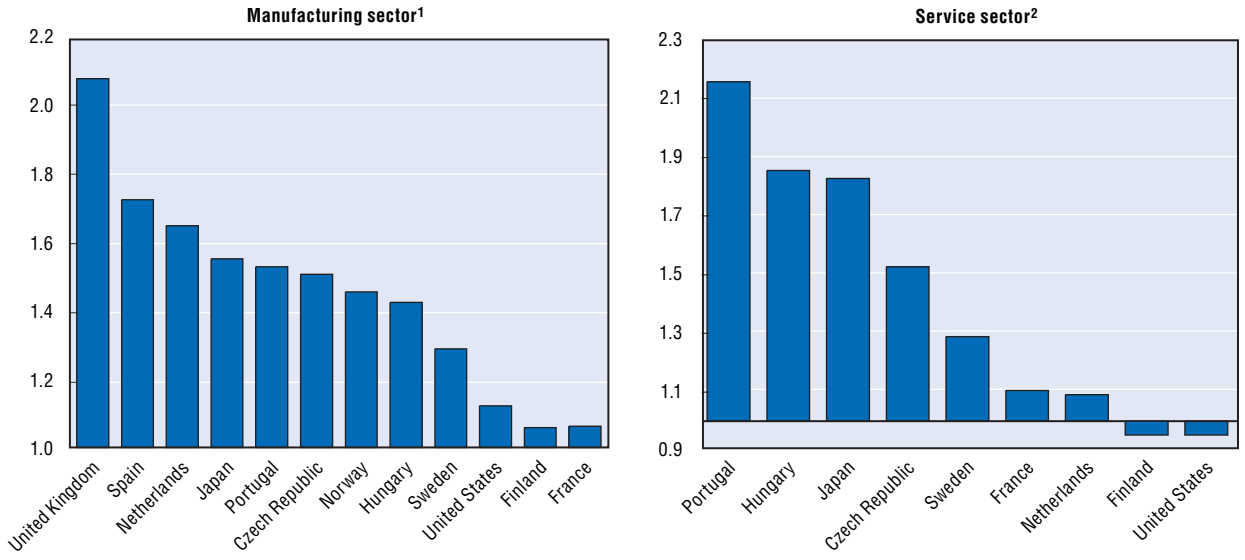
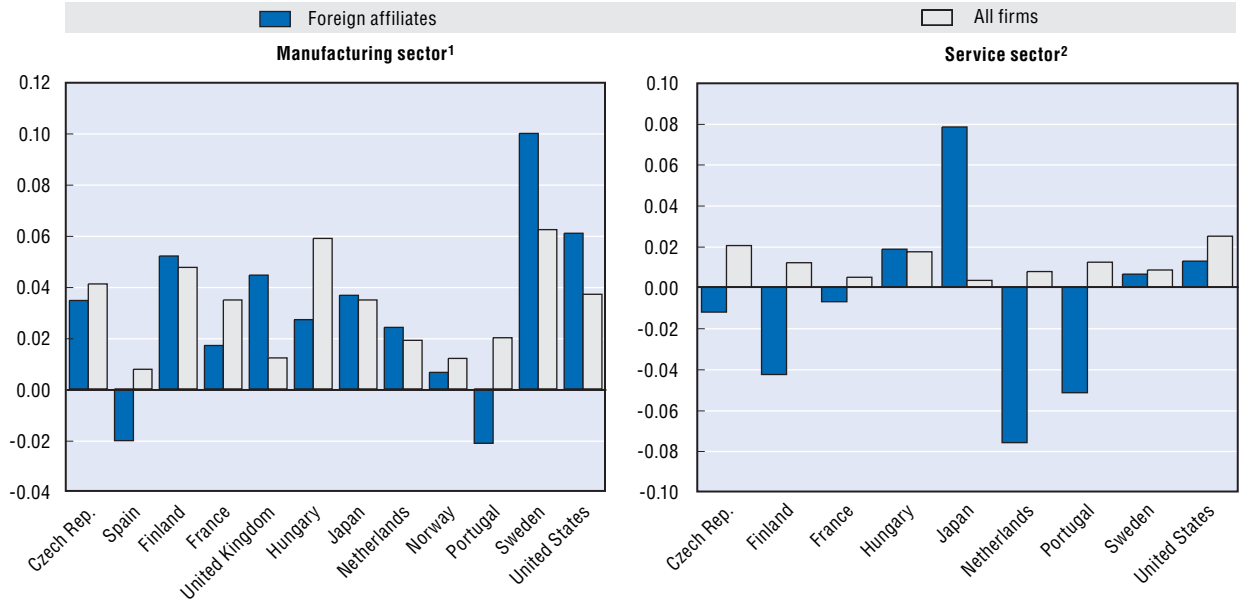


Figure F.2.2. **Average annual labour productivity growth, 1995-2001**

Percentage points



1. Or nearest available year: Czech Republic 1997-2002; United Kingdom 1995-1999; Finland 1995-2002; Hungary 1996-2002; Spain 1999-2001 and Portugal 1996-2002.
2. Or nearest available year: Czech Republic 1995-2002; Sweden 1997-2000; Hungary 1998-2002; Netherlands 1997-2001; Japan 1997-2000 and Portugal 1996-2002.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), Volume II: Services (FATS) and STAN: OECD Structural Analysis Statistics, June 2005.

StatLink: *http://dx.doi.org/10.1787/182286063050*

F.3. The contribution of multinationals to productivity growth

- Multinationals often make an important contribution to productivity growth.
- In the manufacturing sector, foreign affiliates contribute from 6.7% in the Czech Republic to –0.4% in Portugal to annual productivity growth.
- In the Czech Republic, the United Kingdom and Norway, the contribution of foreign affiliates is greater than that of the total manufacturing sector. This is due to sharp growth in foreign affiliates' share of employment in the Czech Republic and Norway and to negative productivity growth in UK domestic firms.
- The contribution of foreign affiliates most often comes from the "between" effect, *i.e.* the sharp rise in foreign affiliates' share of employment.
- The contribution of foreign affiliates in the services sector ranges from 1.2% in the Czech Republic to –0.2% in Portugal and is much smaller than in the manufacturing sector.
- As in the manufacturing sector, the between effect in the services sector accounts for most of the contribution of foreign affiliates to productivity growth. Hungary is an exception.
- In both the manufacturing and services sector, the contribution of foreign affiliates is largest in the Czech Republic and Sweden and smallest in Japan and Portugal.
- In France and the United States, the contribution of foreign affiliates to labour productivity growth is much smaller in the services sector than in the manufacturing sector.

Calculating foreign affiliates' contribution to productivity growth

To measure the contribution of foreign affiliates to productivity growth, the OECD has put together a database with information from the AFA, FATS and STAN databases. The database contains information on the growth of labour productivity, measured as deflated value added over employment of affiliates and non-affiliates for the manufacturing sector of 12 OECD countries and for the services sector of 9 OECD countries.

Total annualised labour productivity growth is defined as the weighted sum of domestic firms' productivity growth and foreign affiliates' productivity growth, where the weights used are the shares of domestic and foreign affiliates in total employment, as shown in the formula below:

$$\frac{1}{k} * \frac{\Delta LP_t}{LP_{t-k}} = \sum_{i=DOM,FOR} \frac{\frac{EMP_{it}}{EMP_t} LP_{it} - \frac{EMP_{it-k}}{EMP_{t-k}} LP_{it-k}}{LP_{t-k}} * \frac{1}{k}$$

Where *LP* is labour productivity calculated as the ratio of real value added to labour input (EMP), Δ indicates change; *k* indicates the number of years between observations, so that the left-hand side is aggregate annualised labour productivity growth.

For each sector therefore the contribution to labour productivity growth of foreign affiliates can be calculated as:

$$1/k * \left(\left(\frac{EMP_{FOR,t}}{EMP_t} * LP_{FOR,t} - \frac{EMP_{FOR,t-k}}{EMP_{t-k}} * LP_{FOR,t-k} \right) \Big/ LP_{t-k} \right) = \underbrace{\frac{1}{k} * \frac{\Delta LP_{FOR,t}}{LP_{t-k}} * \overline{w}_{FOR}}_{within} + \underbrace{\Delta w_{FOR,t} * \frac{1}{k} * \frac{\overline{LP}_{FOR}}{LP_{t-k}}}_{between}$$

Foreign affiliates' contribution to productivity growth derives from switches in labour resources between domestic and more productive foreign affiliates, the "between effect", and from labour productivity growth within the group of foreign affiliates, the "within effect". The first term of the right-hand side is the "within" effect and the second is the "between" effect. Thus, foreign affiliates' contribution to labour productivity growth might increase if there is an increase in its rate of productivity growth or if their average employment share is higher (from the first term); and if their employment share increases or their labour productivity level is higher relative to the domestic average (from the second term).

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F.3. The contribution of multinationals to productivity growth

Figure F.3.1. **Average contribution of foreign affiliates to annual productivity growth, 1995-2001**

Percentage points

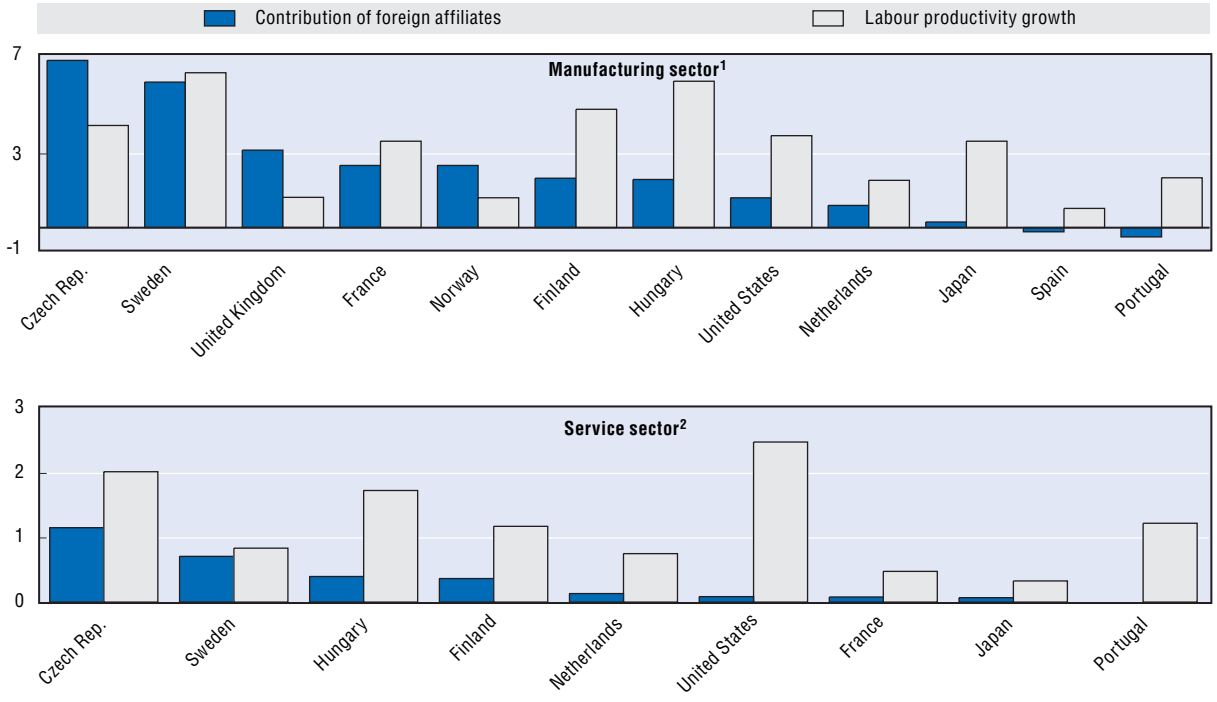
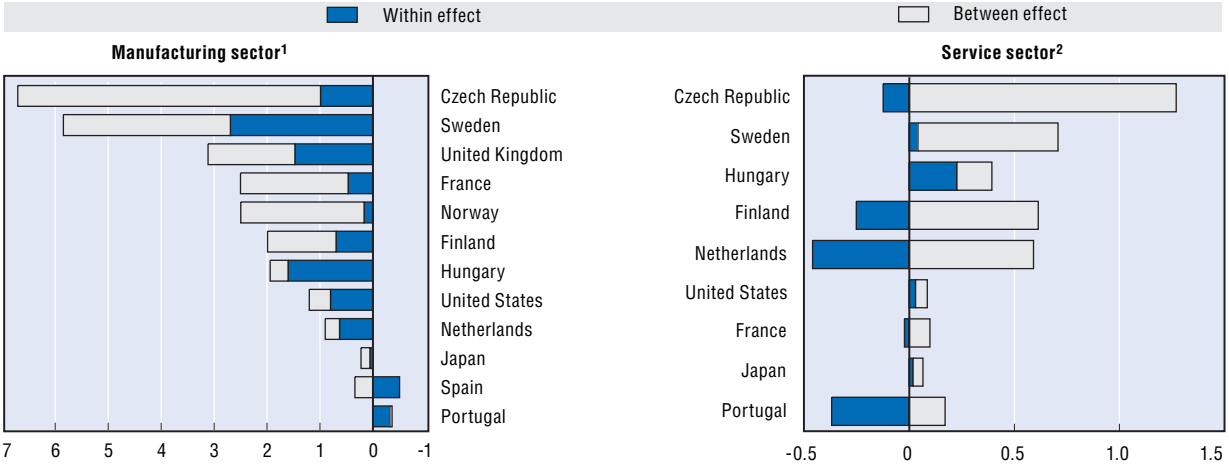


Figure F.3.2. **Breakdown of foreign affiliates' contribution, 1995-2001**

Percentage points



1. Or nearest available year: Czech Republic 1997-2002; United Kingdom 1995-1999; Finland 1995-2002; Hungary 1996-2002; Spain 1999-2001 and Portugal 1996-2002.
2. Or nearest available year: Czech Republic 1995-2002; Sweden 1997-2000; Hungary 1998-2002; Netherlands 1997-2001; Japan 1997-2000 and Portugal 1996-2002.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), Volume II: Services (FATS) and STAN: OECD Structural Analysis Statistics, June 2005.

StatLink: *http://dx.doi.org/10.1787/035438456251*

F.4. Labour productivity of parent companies and affiliates under foreign control in selected OECD countries

■ Comparisons of labour productivity (turnover per employee) in the United States between parent companies and foreign affiliates show that the latter have a higher level of productivity than the parent companies. The gap between the two categories of firms is larger in the case of services than in the manufacturing sector.

■ It should, however, be noted that particularly in the United States some double counting could affect the results, given that parent companies under foreign control are counted twice, once as foreign affiliates and once as parent companies (see also the discussion of this problem in *HMeasuring Globalisation: OECD Handbook on Economic Globalisation Indicators*, Section 5.3.2.4).

■ In France, productivity of parent companies in the manufacturing industry is higher than that of foreign affiliates. Similar trends can also be observed for other industries.

■ In Sweden, labour productivity of foreign affiliates is higher than that of parent companies for all categories of firms. However, in Finland the productivity of parent companies is generally higher than that of foreign affiliates, with the exception of the services sector.

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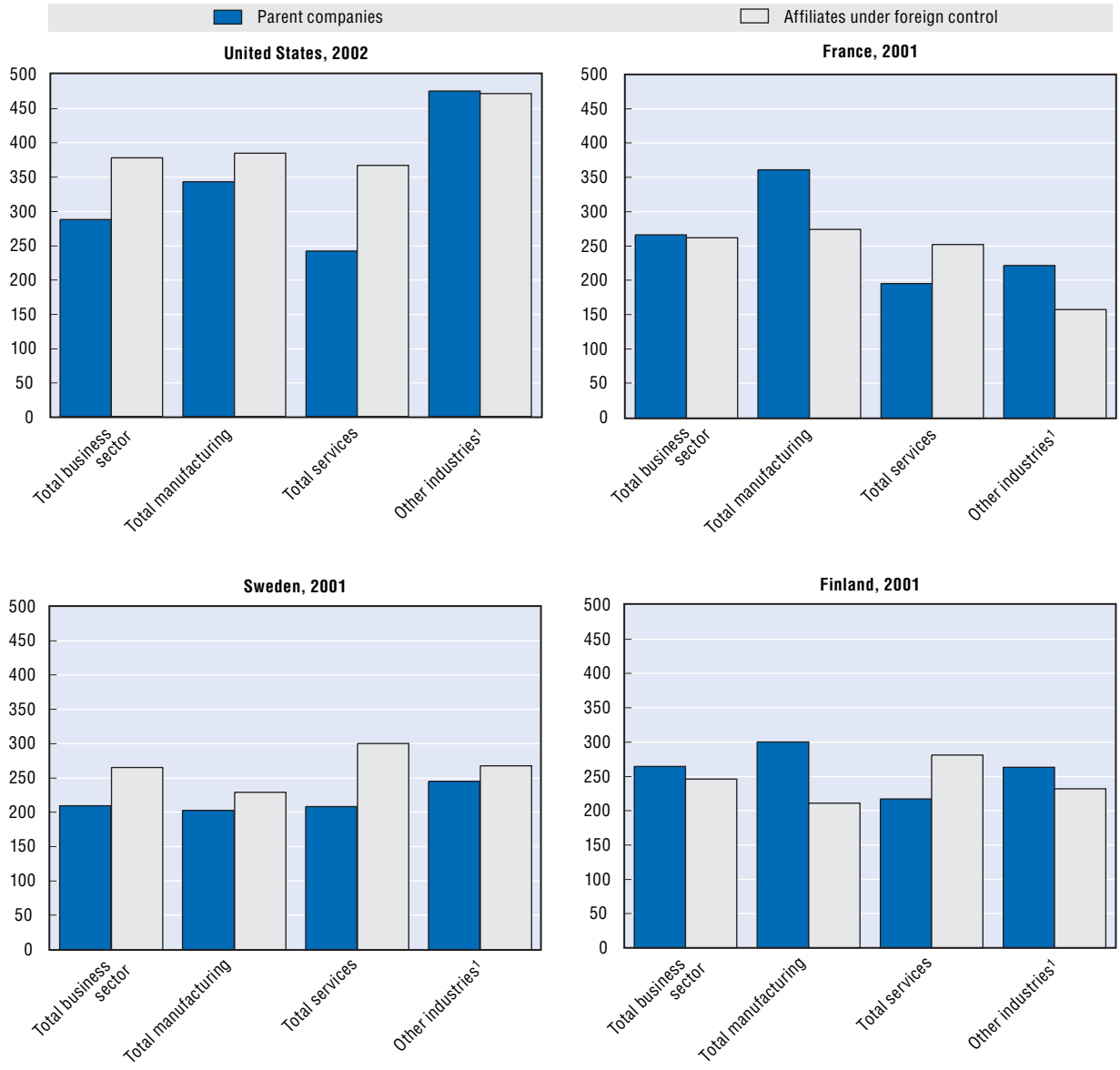
F.4. Labour productivity of parent companies and affiliates under foreign control in selected OECD countries

Figure F.4.1. **Turnover per employee of parent companies and of affiliates under foreign control in thousands of USD**



1. Agriculture, forestry and fishing; Mining and quarrying; Construction; Electricity, gas and water.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA) and Volume II: Services (FATS), April 2005.

StatLink: *http://dx.doi.org/10.1787/017381843270*

PART III

The Internationalisation of Technology

The internationalisation of industrial R&D

The marked growth in R&D expenditures in OECD countries from the first half of the 1980s was accompanied by two major trends:

- First, the growing internationalisation of R&D activities of multinational firms linked to an increase in the number of R&D laboratories located abroad.
- Second, the emergence and development of international networks of co-operation agreements or alliances either between firms or between firms and government or university R&D bodies.

While the first of these trends is restricted to multinationals, the second characterises all innovation-intensive firms. Decentralisation of the R&D activities of multinational firms, *i.e.* the establishment of laboratories outside the home country of the parent company, is by no means a new phenomenon. Decentralised R&D facilities have been used for some time to serve and support overseas production units. Until recently, owing to the absence of data on the R&D activities of multinationals, internationalisation of R&D was thought to be fairly marginal to the general process of economic globalisation. The OECD data, which cover more fully the activities of foreign affiliates (affiliates under foreign control) in OECD countries and of affiliates of parent companies abroad (AFA database), show that R&D performed abroad and by foreign affiliates represents on average well over 16% of total expenditure on industrial R&D in the OECD area. In most OECD countries, the share of foreign affiliates in industrial R&D is increasing. In the United Kingdom, Canada and Ireland, it currently exceeds 35%.

For further information, see OECD, *Internationalisation of Industrial R&D: Patterns and Trends*, Paris, 1998, and *Measuring Globalisation: OECD Handbook on Economic Globalisation Indicators*, Chap. 4, Paris, 2005.

G. THE INTERNATIONALISATION OF INDUSTRIAL R&D

G.1. Trends in R&D expenditure of foreign affiliates in manufacturing

■ The share of foreign affiliates in industrial R&D varies widely across countries, ranging from less than 5% in Japan to over 70% in Hungary and Ireland. At over 40%, the share of R&D conducted by foreign affiliates is also high in the Czech Republic, Portugal, Australia, Spain, the Slovak Republic and Sweden.

■ Between 1995 and 2001, R&D investments of foreign affiliates rose in value from USD 29.1 billion to USD 51.6 billion. This increase was observed in all major countries.

■ The increase of R&D expenditure of affiliates under foreign control between 1995 and 2001 was particularly strong in Germany, which attracted USD 4.3 billion in new R&D foreign investment. This contrasts with the turnover of foreign affiliates in Germany, which declined (see also Figure G.4.3).

■ In 2001, foreign affiliates in the manufacturing sector in the United States accounted for more than USD 21 billion of R&D investment and USD 27 billion for the total business sector, but between 1995 and 2001, their share in the OECD member countries' total expenditure of foreign affiliates declined from 50.6% to 41.7%.

Defining R&D expenditure

R&D expenditure covers all expenditures for activities undertaken for the purpose of discovering or developing new products (goods and services), including improved versions of existing products, or discovering or developing new or more efficient [production processes]. In the context of this document, these expenditures relate exclusively to the enterprise sector, in which are included "all firms, organisations and institutions whose primary activity is the market production of goods and services for sale to the general public at an economically significant price…" (*Frascati Manual*, § 163).

R&D expenditure comprises: *current costs* and *capital expenditure*. Current costs are composed of: labour costs, which are the largest component of current costs, and other current costs, which comprise non-capital purchases of materials, supplies and equipment to support R&D in a given year. Capital expenditure is the annual gross expenditure on fixed assets used in the R&D programmes. It should be reported in full for the period when it took place and should not be registered as an element of depreciation (*Frascati Manual*, § 358, 360, 374). Capital expenditure is composed of expenditure on:

- Land and building.
- Investment and equipment.
- Computer software.

The role of R&D in the activity of multinationals (parent companies and their affiliates), the main reference indicators and a description of all the associated variables are presented in Chapter 4 of *Measuring Globalisation: OECD Handbook on Economic Globalisation Indicators*, entitled "Internationalisation of Technology".

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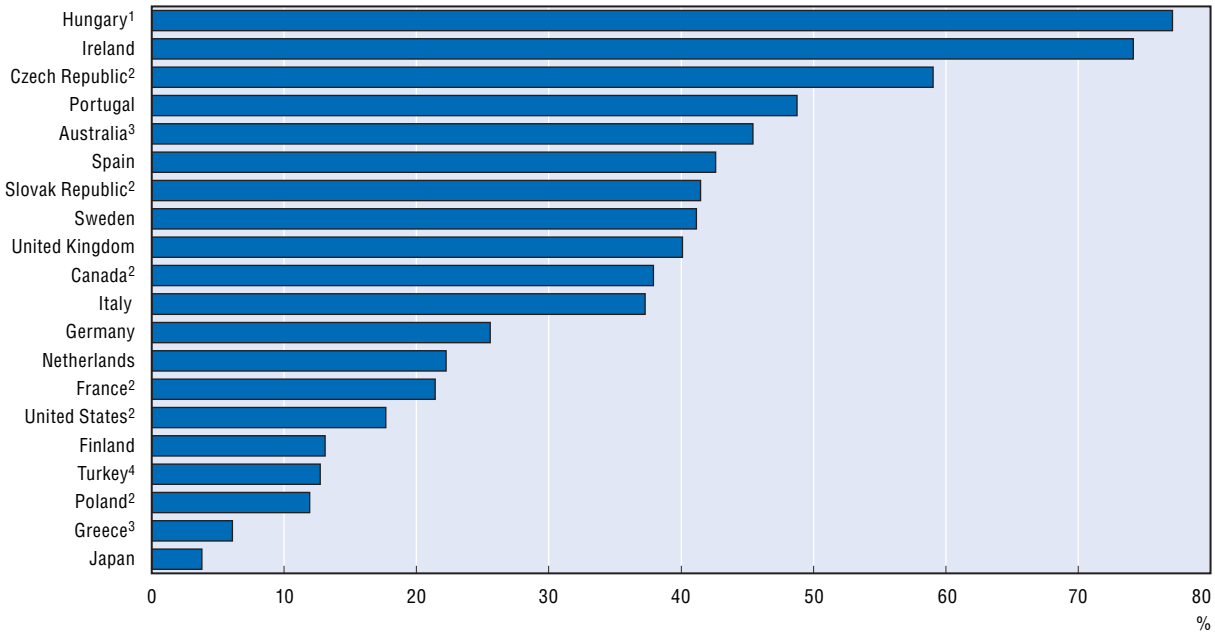
G.1. Trends in R&D expenditure of foreign affiliates in manufacturing

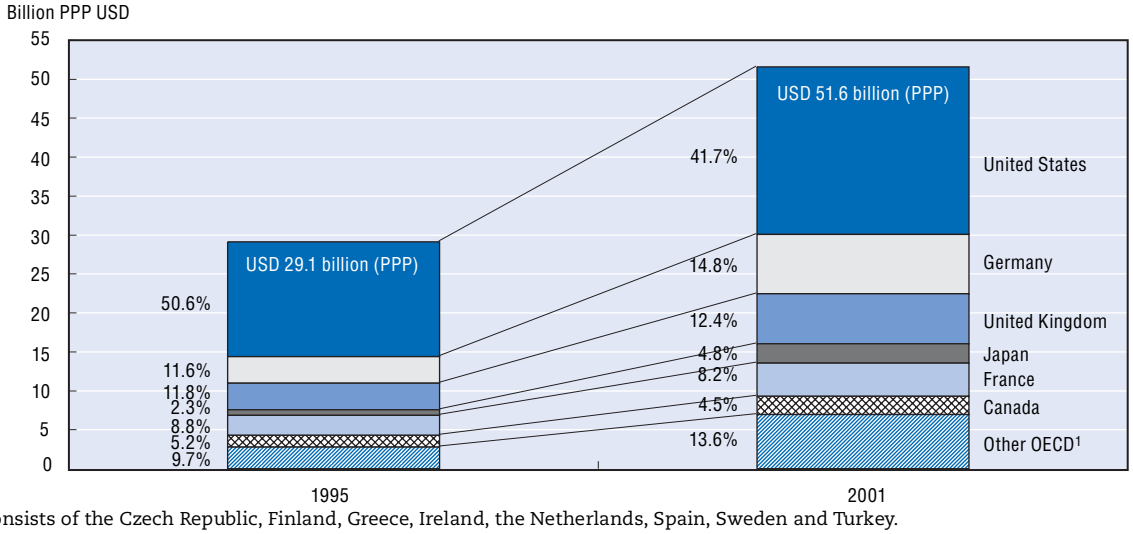
Figure G.1.1. **The share of foreign-controlled affiliates in manufacturing R&D expenditure, 2001**



1. 1997.
2. 2002.
3. 1999.
4. 2000.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), February 2005.

Figure G.1.2. **Trends in the share of R&D expenditure under foreign control in the manufacturing sector in selected OECD member countries between 1995 and 2001**



1. Consists of the Czech Republic, Finland, Greece, Ireland, the Netherlands, Spain, Sweden and Turkey.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA) and OECD estimates, February 2005.

StatLink: *http://dx.doi.org/10.1787/208056164801*

G.2. Growth of foreign affiliates' R&D expenditure in the OECD area

■ Between 1995 and 2001, the increase in R&D expenditure of foreign affiliates in the OECD area was around USD 22.4 billion, 62% of which was absorbed by three countries: the United States, Germany and the United Kingdom (Figure G.2.1).

■ During this period, Germany attracted two-and-a-half times more R&D investment than France. Japan attracted USD 1.8 billion of R&D investment, an important contribution compared with the relatively low level of turnover under foreign control in Japan (see also Figure G.4.2).

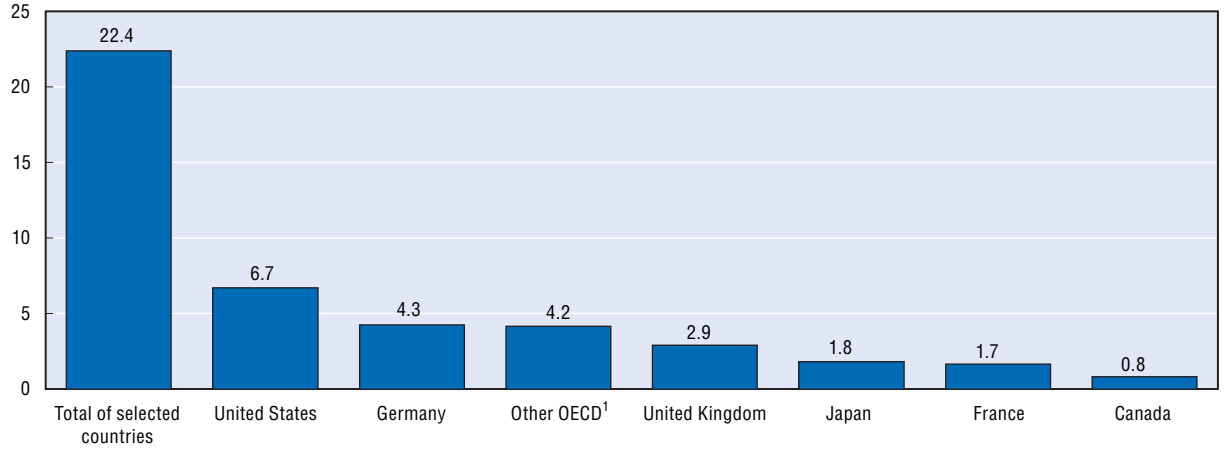
■ During the same period, the growth in R&D investment in real terms of foreign affiliates in the manufacturing sector was twice as high as total manufacturing R&D expenditure in the domestic economy. This was the case in most OECD member countries, particularly in Sweden where R&D of foreign affiliates registers the highest growth (see Figure G.2.2). This means that foreign affiliates were a major factor in the growth of manufacturing R&D expenditure in OECD member countries.

■ With respect to growth in real terms of R&D expenditure, Japan and Canada recorded opposite results: in Japan, R&D expenditure of foreign affiliates grew seven-and-a-half times faster than growth in R&D of all firms. Canada was the only country where R&D in foreign affiliates grew slower than in all firms.

■ The share of R&D expenditure of affiliates under foreign control in total business sector R&D in the OECD area grew between 1993 and 2001, from 12% to 16%.

Figure G.2.1. **Change in manufacturing R&D expenditures of affiliates under foreign control between 1995 and 2001**

USD PPP billion



1. Consists of the Czech Republic, Finland, Greece, Ireland, the Netherlands, Spain, Sweden and Turkey.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA) and OECD estimates, June 2005.

StatLink: *http://dx.doi.org/10.1787/223875028812*

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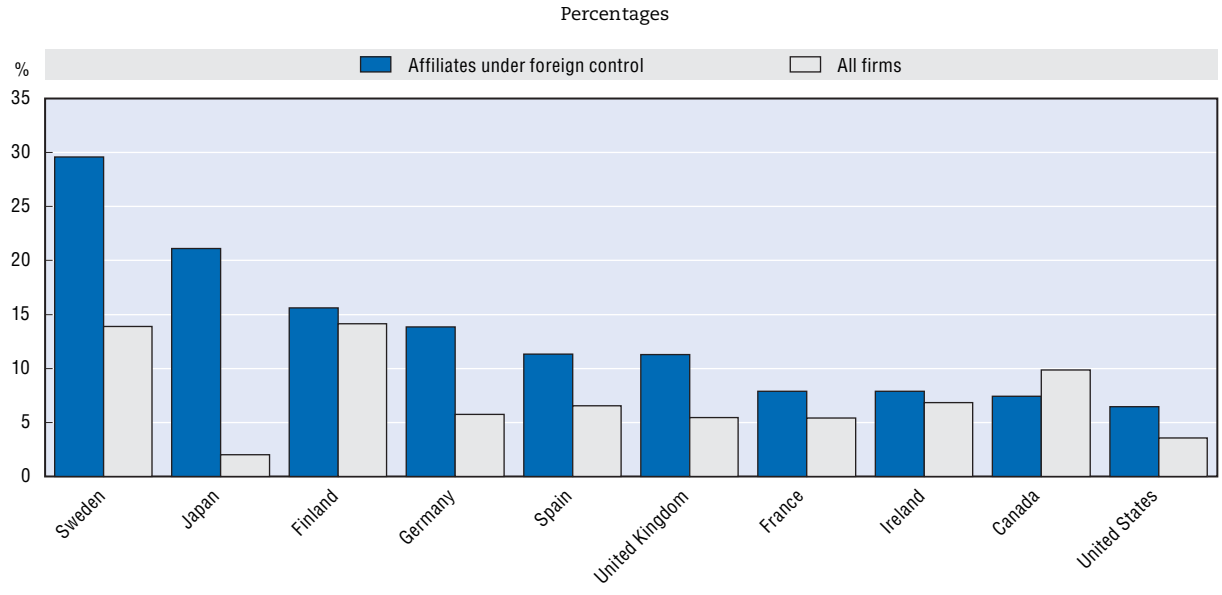
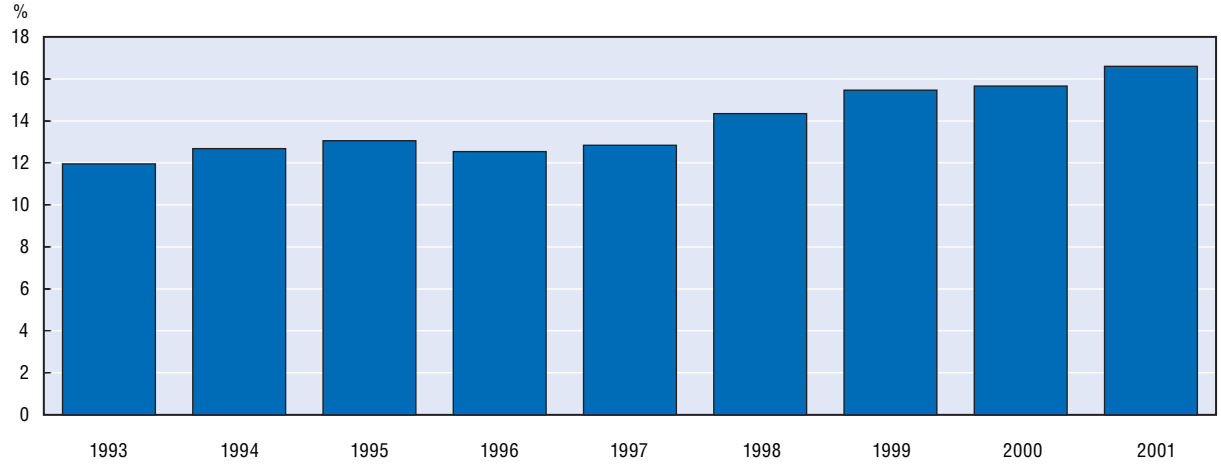
G.2. Growth of foreign affiliates' R&D expenditure in the OECD area

Figure G.2.2. **Comparison between growth in real terms of R&D expenditure of affiliates under foreign control and that of all firms in the manufacturing sector, between 1995 and 2001**



Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), April 2005.

Figure G.2.3. **Foreign-controlled affiliates' share of total business sector R&D expenditure in the OECD area**[1]



1. Consists of Canada, the Czech Republic, Finland, France, Germany, Greece, Hungary, Ireland, Japan, the Netherlands, the Slovak Republic, Spain, Sweden, the United Kingdom and the United States.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA) and OECD estimates, April 2005.

StatLink: *http://dx.doi.org/10.1787/223875028812*

G.3. Number of researchers of affiliates under foreign control

■ In 2001, the share of researchers in affiliates under foreign control in the total number of researchers was a little lower than the equivalent share of R&D expenditure of these affiliates in total manufacturing expenditure. The share was over 40% of all researchers in Portugal, Australia and the Czech Republic. It was less than 5% in Japan.

■ The number of researchers per thousand employees of foreign affiliates in the manufacturing sector in 2001 was very high in Japan and, to a lesser extent, in the United States and in Finland. It was very low in some European countries, particularly Poland and the Czech Republic.

■ This result, which is compatible with Figure G.4.1, indicates that in Japan, where the level of inward investment is the lowest of all OECD member countries, investments in the domestic market are particularly focused on R&D intensive industries (high-tech).

Number of researchers

According to *Frascati Manual* definitions, "researchers are professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems and also in the management of the projects concerned" (*Frascati Manual*, 2002 edition, § 301). "Managers and administrators engaged in the planning and management of the scientific and technical aspects of a researcher's work also fall into this category" (§ 303). "Postgraduate students at the PhD level engaged in R&D should be considered as researchers" (§ 305). "As for the other categories of data on the number of persons in employment, the number of researchers should be calculated in 'full-time equivalents'".

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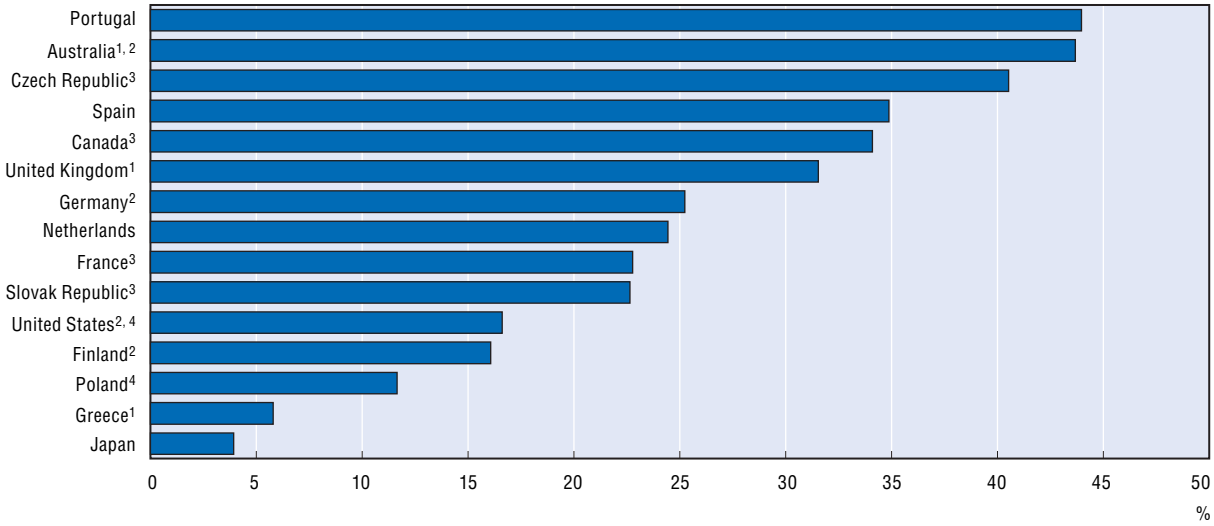
G.3. Number of researchers of affiliates under foreign control

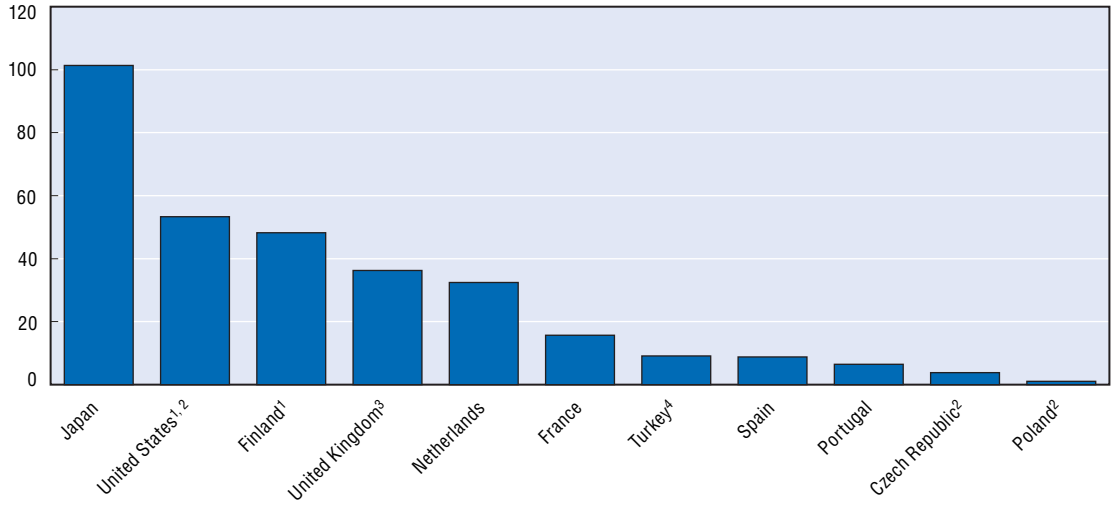
Figure G.3.1. **Share of the number of researchers in foreign-controlled affiliates in the manufacturing sector, 2001**



1. 1999.
2. All employees working on R&D.
3. 2002.
4. 2000.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), March 2005.

Figure G.3.2. **Researchers per thousand employees in affiliates under foreign control in the manufacturing sector, 2001**



1. 2002.
2. All employees working on R&D.
3. 2000.
4. 1999.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), March 2005.

StatLink: *http://dx.doi.org/10.1787/677256516705*

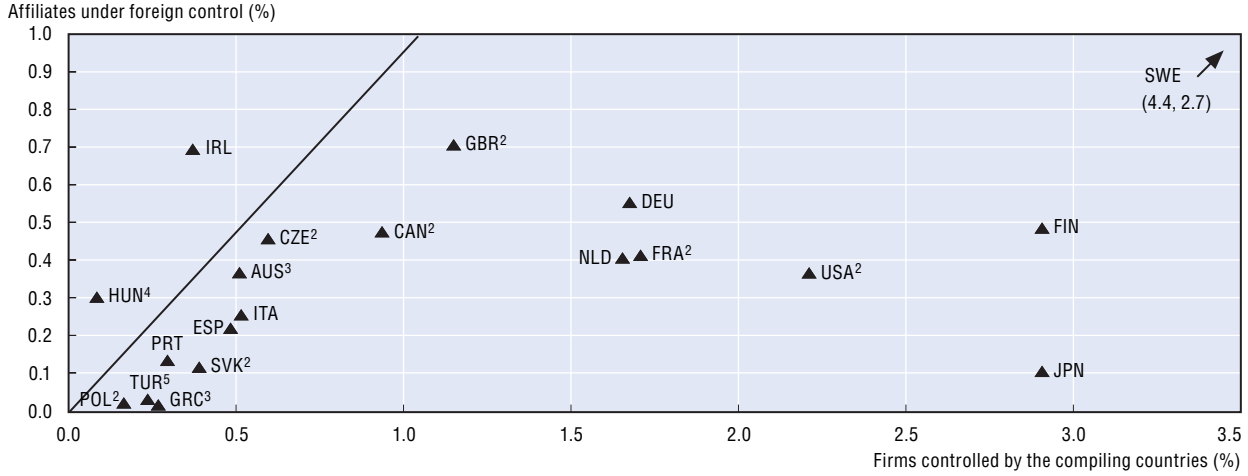
G.4. Links between turnover or value added in R&D expenditure of foreign affiliates in OECD member countries

The scale of the respective R&D efforts of foreign affiliates and firms controlled by residents of the compiling country is illustrated by the R&D intensities (Figure G.4.1) which represent the share of R&D expenditure in the business sector value added of each of the two categories of firms. In some countries, the difference between the R&D intensities of foreign affiliates and firms controlled by residents of compiling countries is largely due to the low R&D intensity of firms controlled by residents (Ireland and Hungary, for example) but also depends on their geographic location. In contrast, in countries with high levels of R&D performed by firms controlled by residents, the R&D intensity of foreign affiliates is lower than that of firms controlled by residents (Sweden, Finland, Japan and the United States, for example). This reflects the industrial mix of the two categories of firms and their policy as regards technology.

Production and R&D are usually fairly closely linked (see Figure G.4.2) although there may be significant divergences in some countries. There are many possible causes for such divergences. Countries where the ratio of R&D manufacturing expenditure of foreign affiliates to total manufacturing expenditure is higher than the equivalent ratio for turnover may be more attractive for R&D investments than for production activities. Other factors could be the modest R&D effort of non-affiliated firms or the location of foreign affiliates in R&D-intensive sectors. In countries where the ratio of R&D expenditure of foreign affiliates to the total R&D expenditure is lower than the equivalent ratio for turnover, a modest R&D performance by foreign affiliates could be the explanation, as their parent companies prefer to transfer technology to them directly.

In Figure G.4.3, it is interesting to observe that Germany is the only OECD member country in which the share of turnover of foreign affiliates in the total manufacturing turnover decreased, while the share of R&D expenditure of foreign affiliates in the national total increased. This indicates that over this period, Germany was more attractive for R&D activities than for manufacturing production.

Figure G.4.1. **R&D intensities[1] of foreign affiliates and firms controlled by the compiling countries, 2001**



1. R&D expenditures as a share of value added in the business sector.
2. 2002.
3. 1999.
4. 1998.
5. 2000.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), March 2005.

StatLink: *http://dx.doi.org/10.1787/768822736437*

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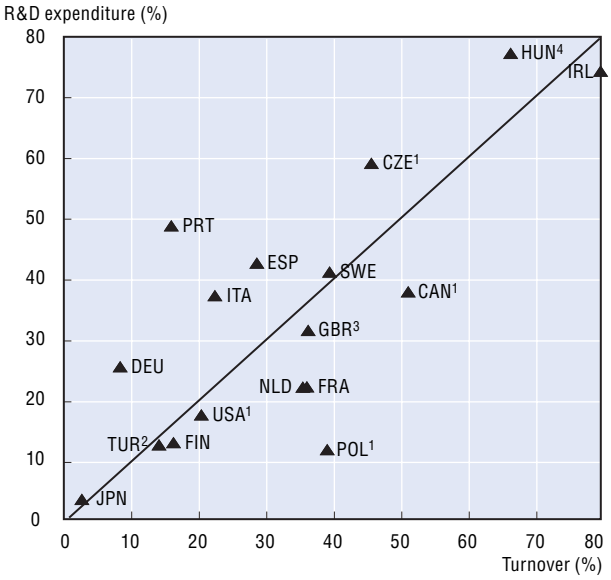
G.4. Links between turnover or value added in R&D expenditure of foreign affiliates in OECD member countries

Figure G.4.2. **Share of R&D expenditure and turnover of affiliates under foreign control in total manufacturing R&D and turnover, 2001**

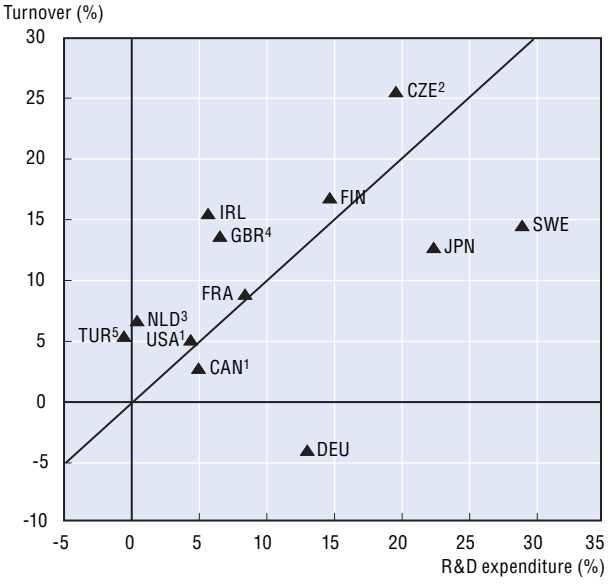


1. 2002.
2. 2000.
3. 1999.
4. 1997.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), February 2005.

Figure G.4.3. **Growth of R&D expenditure and turnover of affiliates under foreign control in the manufacturing sector between 1995 and 2001**

Average annual growth rates (constant prices 1995)



1. 1995-2002.
2. 1997-2002.
3. 1997-2001.
4. 1995-99.
5. 1995-2000.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), April 2005.

StatLink: *http://dx.doi.org/10.1787/768822736437*

G.5. Overseas industrial R&D activities of selected OECD countries

Few OECD member countries collect data concerning the R&D activities of their own multinationals abroad. Among these countries, Switzerland is the only country where R&D expenditure of its affiliates abroad represents more than the R&D expenditure of all firms located in Switzerland (see Figure G.5.1). More than 70% of this expenditure concerns two sectors, pharmaceuticals and electronics. 50% of these R&D laboratories are located in Europe and most of the others in the United States.

In 2001, R&D expenditure of Swedish companies abroad represented more than 42% of total domestic R&D expenditure, although this concerns the manufacturing sector only. 32% of this expenditure abroad was performed in the United States and 47% inside the European Union. German and Finnish affiliates performed more than 25% of their domestic R&D expenditure in the business enterprise sector abroad, while US affiliates performed 11% (16% in the manufacturing sector) abroad.

Figure G.5.2 illustrates the flows of R&D expenditure between the United States, the European Union (15) and Japan. In 2001, American multinationals invested more than 62% of their R&D investment abroad in the European Union (USD 11 billion) and 7% in Japan (USD 1.5 billion), while the European Union invested USD 16.7 billion in the United States and USD 2 billion in Japan. 37% of American R&D investments in the European Union concern the automobile industry, 28% pharmaceuticals and 18% the computer and electronics industry. On the other hand, European R&D investments in the United States, concern mainly pharmaceuticals (30%), wholesale trade, and, in particular, oil distribution (16%), the automobile industry (13%) and computers and electronic equipment (12%).

Japan invested only USD 1 billion in the United States in 2001 and USD 0.6 billion in the European Union. Japanese investments in R&D in the United States are more concentrated in services (60%) than in the manufacturing sector. 35% of this investment is in computers and electronics, 25% in pharmaceuticals and 10% in the automobile industry; while more than 85% of American investment in R&D in Japan concern two sectors: pharmaceuticals and computers.

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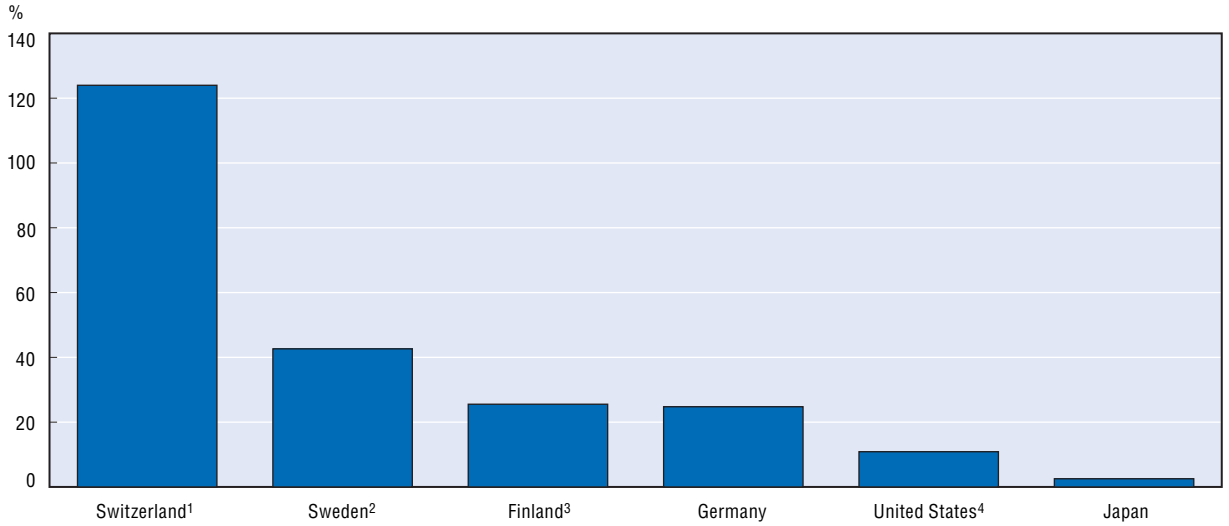
G.5. Overseas industrial R&D activities of selected OECD countries

Figure G.5.1. **Business sector R&D expenditure by affiliates abroad as a percentage of domestic R&D expenditure in selected OECD countries, 2001**

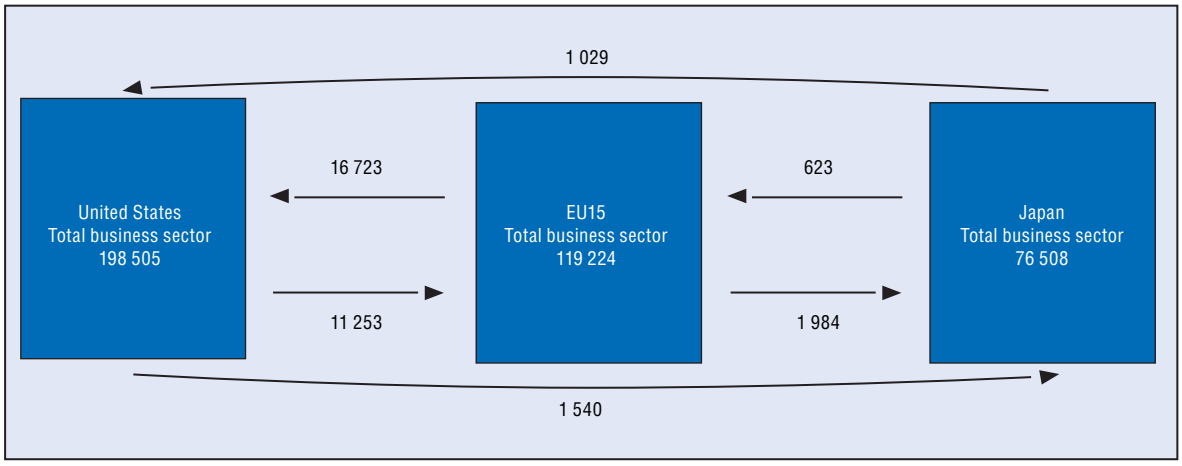


1. 2000.
2. Manufacturing sector only.
3. 1998.
4. 2002.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), March 2005.

Figure G.5.2. **R&D flows between the EU15, the US and Japan, 2001**

USD PPP million



Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA) and OECD estimates, February 2005.

StatLink: *http://dx.doi.org/10.1787/008256680827*

G.6. Comparisons between industrial R&D activities abroad and domestic activities of foreign affiliates

For 5 compiling countries, Figure G.6.1 comparises the R&D activities of affiliates of parent companies abroad and those of affiliates under foreign control located in the compiling country.

In 2001, the R&D expenditure of affiliates under foreign control in the United States, Japan and Sweden was higher than the R&D expenditure of affiliates controlled by these countries abroad.

In Germany and Finland, on the other hand, the R&D expenditure of affiliates of parent companies abroad were higher than that of foreign affiliates located in these countries.

The first results mean that industrial R&D activity in Germany and Finland is more internationalised abroad than in the domestic market, while in the United States, Japan and Sweden, in terms of total industry (including manufacturing and services), R&D is more internationalised in the domestic than in the foreign markets.

With respect to the changes between 1995 and 2001, although the values are relatively small in absolute terms, it is important to mention the high growth of R&D expenditure of affiliates under foreign control in Japan. These changes reflect not only the growing openness of the domestic Japanese market, particularly for foreign R&D investment, but also the fact that the majority of these investments are made in high-tech sectors.

It is important to emphasise that the available figures do not provide information as to whether the growth of R&D expenditure by affiliates under foreign control or affiliates of parent companies abroad is due to the creation of new R&D laboratories or the acquisition of existing ones, which purely reflects a change of ownership.

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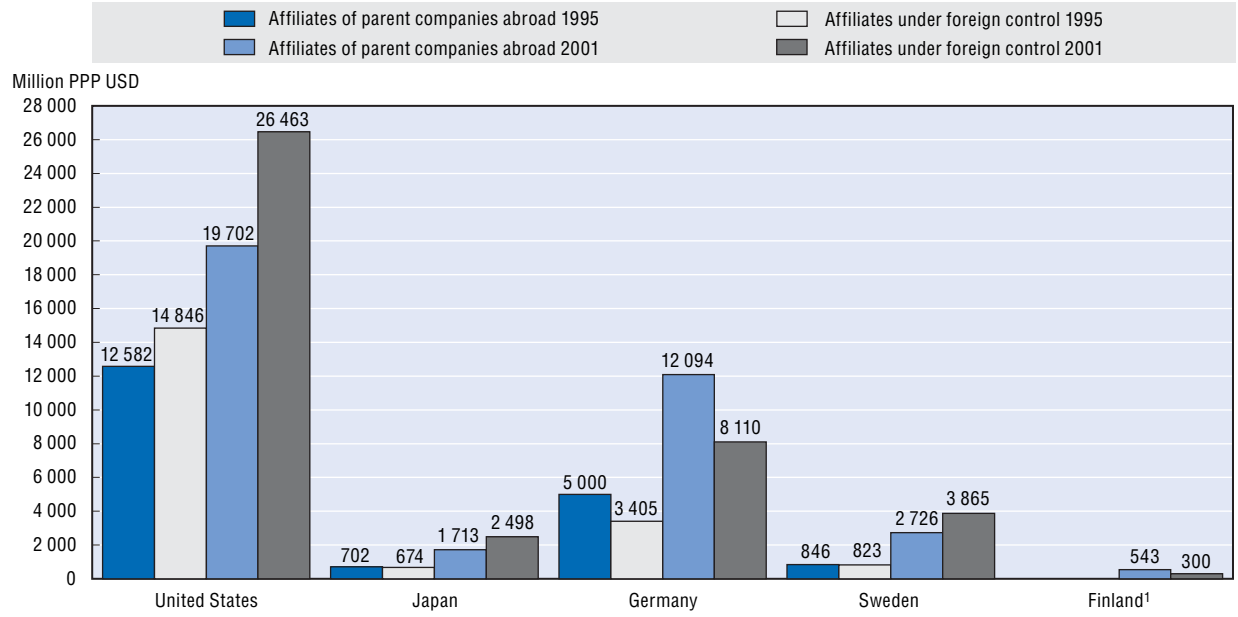
G.6. Comparisons between industrial R&D activities abroad and domestic activities of foreign affiliates

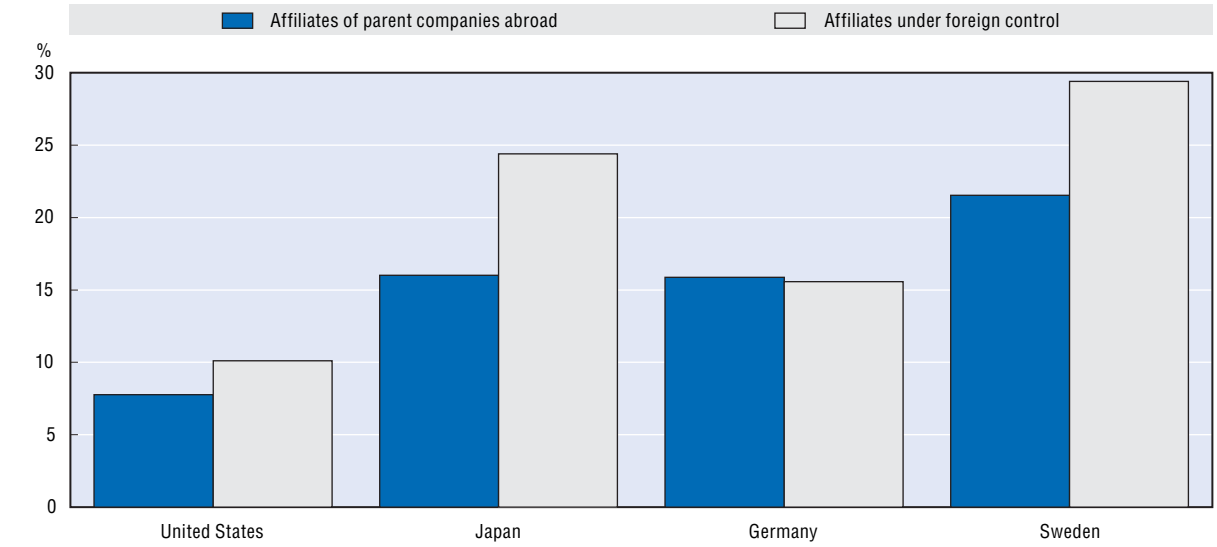
Figure G.6.1. **R&D expenditures by affiliates under foreign control and by the affiliates of their parent companies abroad in selected OECD member countries, 1995 and 2001**



1. 1998.

Figure G.6.2. **Growth of R&D expenditures by affiliates under foreign control and by the affiliates of their parent companies abroad in selected OECD member countries**

Average annual growth rate, 1995-2001



Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), April 2005.

StatLink: *http://dx.doi.org/10.1787/560128134303*

G.7. Sectoral and geographical distribution of industrial R&D expenditure by US subsidiaries abroad

■ Two-thirds of R&D performed abroad in 2002 by US-owned subsidiaries in both manufacturing and services (USD 13.9 billion and USD 21.1 billion) took place in six countries: the United Kingdom, Germany, Canada, France, Japan and Sweden (Figure G.7.2).

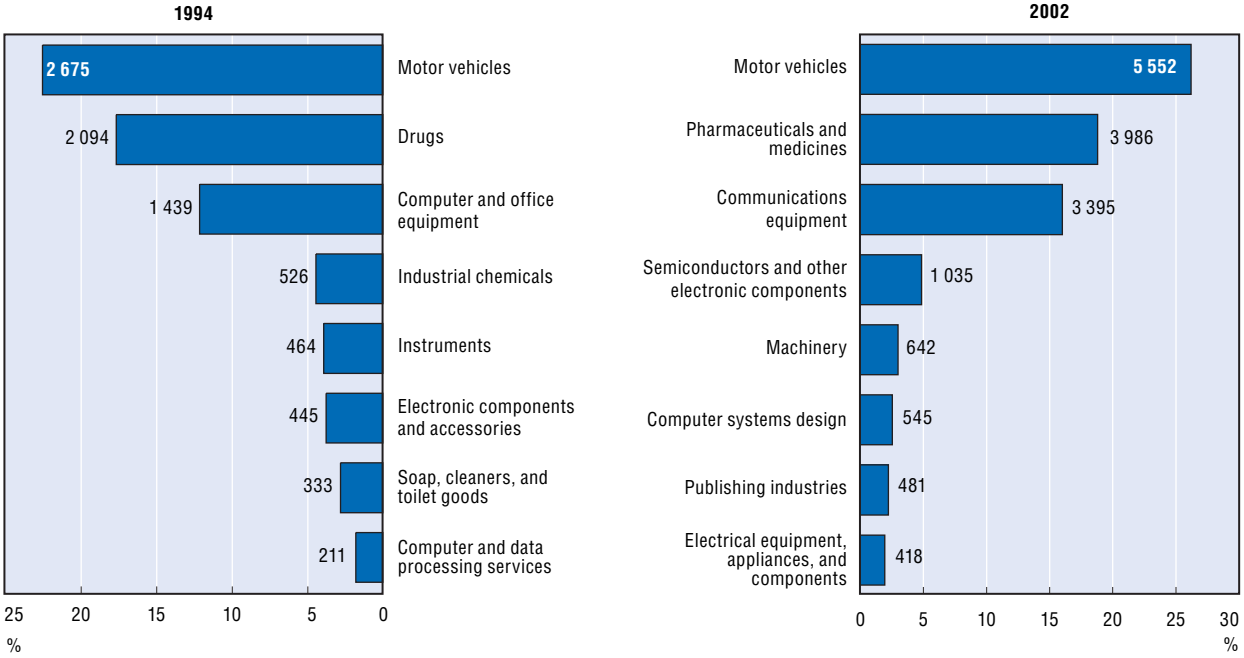
■ On a regional basis, Europe accounted for approximately two-thirds of all US-owned overseas R&D, while Asia accounted for 18.3%.

■ In 2002, the United Kingdom became the first destination for US R&D investment while in 1994 it was Germany. From 1994 to 2001, certain emerging economies have been increasing their share in US-owned overseas R&D, particularly Israel, China and Singapore.

■ In 2002, 63% of overseas R&D activity was performed in three sectors: motor vehicles, pharmaceuticals and communications equipment (Figure G.7.1).

Figure G.7.1. **Sectoral distribution[1] of overseas R&D expenditure by US-owned subsidiaries, 1994 and 2002**

In percentage and in billions of USD



1. The names of industries changed slightly between 1994 and 2002 because of the introduction of a new industrial classification.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), March 2005.

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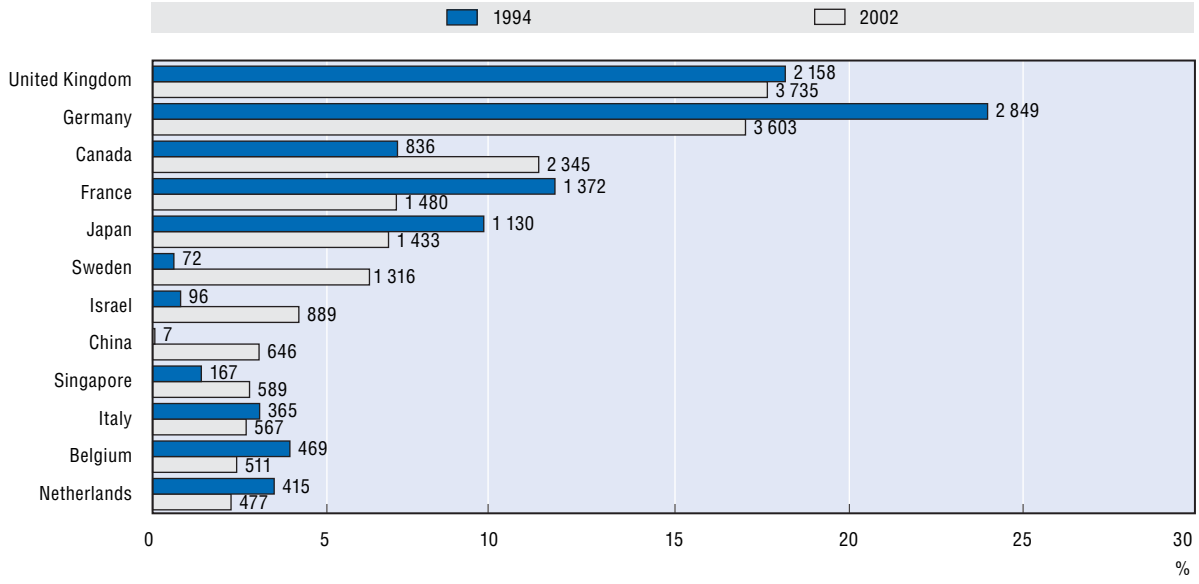
G.7. Sectoral and geographical distribution of industrial R&D expenditure by US subsidiaries abroad

Figure G.7.2. **Geographical distribution of overseas R&D expenditure by US-owned subsidiaries, 1994 and 2002**

In percentages and in billions of USD



Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), March 2005.

StatLink: *http://dx.doi.org/10.1787/544203406542*

H. THE INTERNATIONAL DIFFUSION OF TECHNOLOGY

H.1. Cross-border ownership of inventions

■ An increasing share of technology is owned by firms from a country that is not the inventor's country of residence. This is in line with the general internationalisation strategies of firms which progressively relocate their production and research facilities abroad.

■ Foreign ownership of domestic inventions is high in Iceland, Luxembourg, Belgium, Portugal and Mexico, as well as in Poland, the Czech Republic, and Hungary. Foreign ownership of domestic inventions is also high in Canada and the United Kingdom, where a large share of inventions is owned by companies from the United States and is related to the inventive activity of foreign affiliates in these countries (Figure H.1.1).

■ From the end of the 1990s to early 2000, an average of 15% of all inventions in any OECD country were owned or co-owned by a foreign resident. Likewise, OECD countries owned around 15% of inventions made abroad (Figure H.1.2).

■ Domestic ownership of foreign inventions is high in small open countries. For example, 80% of all inventions owned by residents of Luxembourg have been made abroad. This share is also high in Switzerland (48%) and the Netherlands (30%). Even though the United States, because of its size, is one of the largest owners of patents covering foreign inventions, the share of foreign inventions in its patent portfolio is only 17%.

■ Japan and Korea, on the other hand, seem much less internationalised with respect to cross-border ownership of inventions. Linguistic barriers, low penetration of foreign affiliates and geographical distance from Europe and the United States may help explain the observed differences.

Cross-border ownership of inventions

Patents are increasingly recognised as a rich source of information about technological performance. Patent files show the inventor and the applicant (the owner of the patent at the time of application), their addresses and thus their country or countries of residence. In most cases, the applicant is an institution (generally a firm, university or public laboratory), but sometimes an individual. Inventors are always individuals.

An increasing share of patent applications filed at the European Patent Office (EPO) is owned or co-owned by applicants whose country of residence is different from the country of residence of the inventor(s). Cross-border ownership is mainly the result of activities of multinationals; the applicant is a conglomerate and the inventors are employees of a foreign subsidiary. Patent data thus make it possible to trace the international circulation of knowledge from "inventor" countries to "applicant" countries. Such information can be used to compute two main types of indicators:

- The first category consists in evaluating the extent to which foreign firms control domestic inventions, by dividing the number of domestic inventions controlled by foreign residents by the total number of domestic inventions.
- The second category of indicator provides a mirror image: it evaluates the extent to which domestic firms control inventions made by residents of other countries. The number of foreign inventions controlled by resident applications is divided by the total number of domestic applications. For example, in the event where a multinational from country A has research facilities in both country A and in country B, this indicator provides the share of patents from its facilities in country B in the total number of patents.

The analysis is based on the database of patent applications to the EPO. Patents granted by the United States Patent and Trademark Office (USPTO) and the EPO show similar internationalisation trends.

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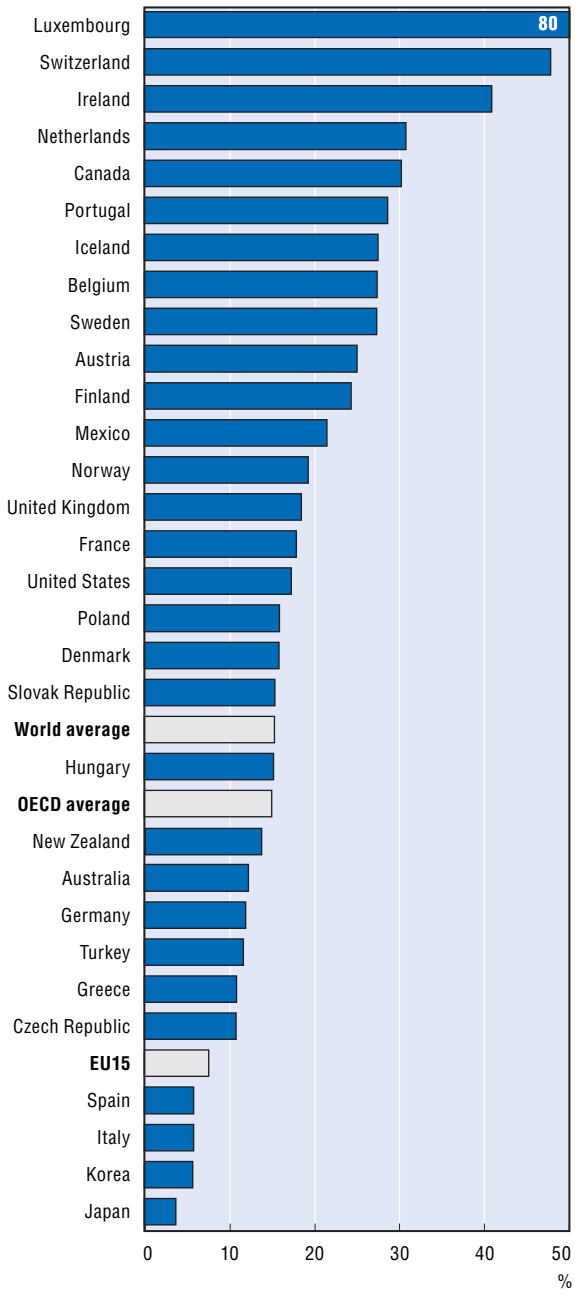
H.1. Cross-border ownership of inventions

Figure H.1.1. **Foreign ownership of domestic inventions**[1]

1999-2001[3]

Figure H.1.2. **Domestic ownership of inventions made abroad**[2]

1999-2001[3]



Note: The European Union is treated as one country; intra EU co-operation is excluded.

1. Share of patent applications to the EPO owned by foreign residents in total patents invented domestically.
2. Share of patent applications to the EPO invented abroad in total patents owned by country residents.
3. Priority years.

Source: OECD, Patent database, March 2005.

StatLink: *http://dx.doi.org/10.1787/031542452338*

H.2. International co-operation in science and technology

■ The production of scientific research and technological know-how increasingly depends on research conducted in other countries. Indicators of cross-border co-authorship of scientific articles and co-invention of patents are intended to shed light on this trend.

■ From the end of the 1990s to early 2000, an average of 7% of patents were the result of international co-operative research.

■ There are significant differences across OECD countries, however. Several factors may affect the degree of a country's internationalisation in science and technology: size, technological endowment, geographical proximity to regions with high research activity, language, industrial specialisation, existence of foreign affiliates, etc.

■ Internationalisation tends to be higher in smaller European countries, where the domestic pool of researchers is limited. 53% of patents have foreign co-inventors in Luxembourg, 32% in Iceland and 35% in Belgium. International co-operation in science and technology is also relatively high in Hungary, Poland and the Czech Republic.

■ When intra-EU co-operation is factored out, researchers in the United States and the European Union have a similar propensity to co-operate with foreign researchers, while international co-operation in science and technology in Japan is rather limited.

Indicators of international co-operation in science and technology

Patent data include the name and address of all inventors (individuals). An increasing share of European Patent Office (EPO) patents involves inventors with different countries of residence (an indication of the increasing level of internationalisation of science and technology). International collaboration by researchers can take place either within a multinational corporation (research facilities in several countries) or through a research joint venture among several firms.

The propensity to collaborate internationally can be derived from the address of the inventors listed in the patent file. Here, it is approximated as the ratio of the number of inventions involving a country's residents and at least one inventor with foreign residence to the total number of inventions involving a country's residents. An increasing share of patents involves inventors with residences in more than two countries.

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H.2. International co-operation in science and technology

Figure H.2.1. **Percentage of patent applications to the EPO with foreign co-inventors**

1999-2001[1]

Note: The European Union is treated as one country; intra EU co-operation is excluded.

1. Priority years.

Source: OECD, Patent database, March 2005.

StatLink: *http://dx.doi.org/10.1787/856342733723*

H.3. Technology balance of payments

■ The technology balance of payments measures international technology transfers: licence fees, patents, purchases and royalties paid, know-how, research and technical assistance. Unlike R&D expenditure, these are payments for production-ready technologies.

■ In most OECD countries, technological receipts and payments increased sharply during the 1990s through the beginning of 2001. Overall, the OECD area maintained its position as net technology exporter *vis-à-vis* the rest of the world.

■ The European Union continued to run a deficit on its technology balance of payments. This is not necessarily a sign of low competitiveness but may be the result of increased imports of foreign technology, which also included intra-EU flows.

■ The most spectacular change occurred in Japan. During the 1980s and 1990s, only new contracts for technology transactions showed a positive trade balance, while total technology transactions were in deficit. In 2003, these transactions showed a very large surplus (receipts-payments) (Figure H.3.2).

Technology balance of payments

Technology receipts and payments constitute the main form of disembodied technology diffusion. Trade in technology comprises four main categories:

- Transfer of techniques (through patents and licences, disclosure of know-how).
- Transfer (sale, licensing, franchising) of designs, trademarks and patterns.
- Services with a technical content, including technical and engineering studies, as well as technical assistance.
- Industrial R&D.

Although the balance reflects a country's ability to sell its technology abroad and its use of foreign technologies, a deficit does not necessarily indicate low competitiveness. In some cases, it results from increased imports of foreign technology; in others, it is due to declining receipts.

Likewise, if the balance is in surplus, this may be due to a high degree of technological autonomy, a low level of technology imports or a lack of capacity to assimilate foreign technologies. Most transactions also correspond to operations between parent companies and affiliates. Thus, it is important to have additional qualitative and quantitative information to analyse correctly a country's deficit or surplus position in a given year.

There is also the difficulty of dissociating the technological from the non-technological content of trade in services, which falls under the heading of pure industrial property. Thus, trade in services may be underestimated when a significant portion does not give rise to financial payments or when payments are not in the form of technology payments.

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H.3. Technology balance of payments

Figure H.3.1. **Trends in technology flows[1] as a percentage of GDP by geographical area**

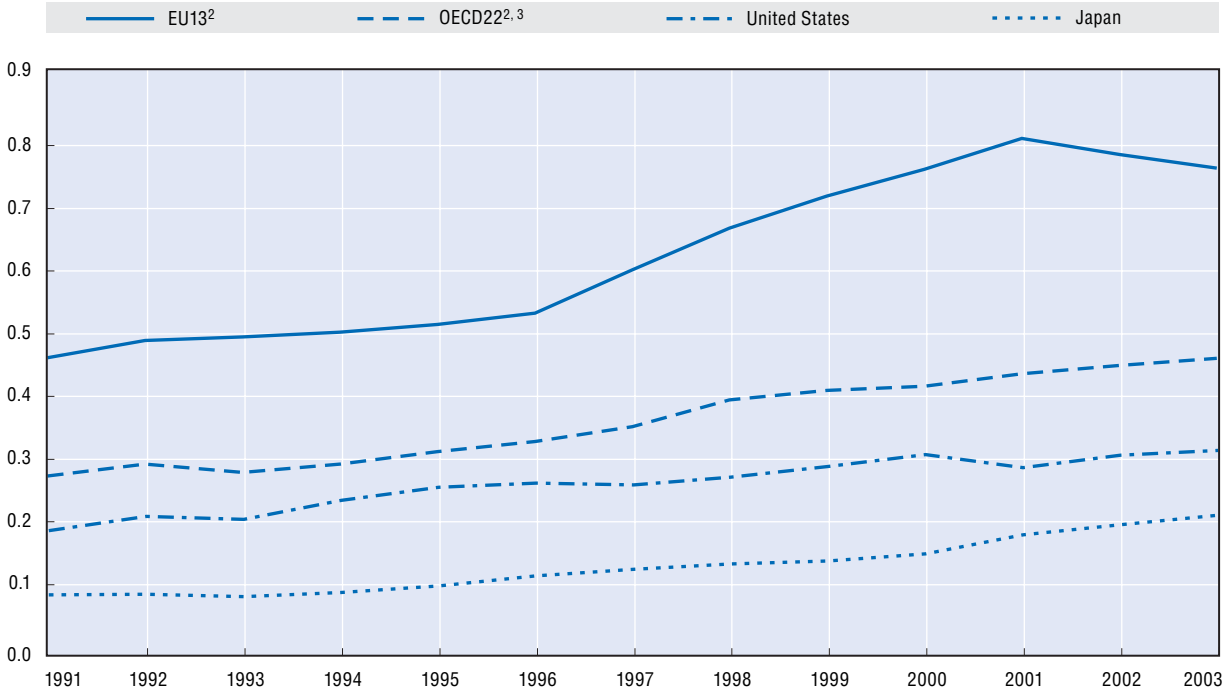
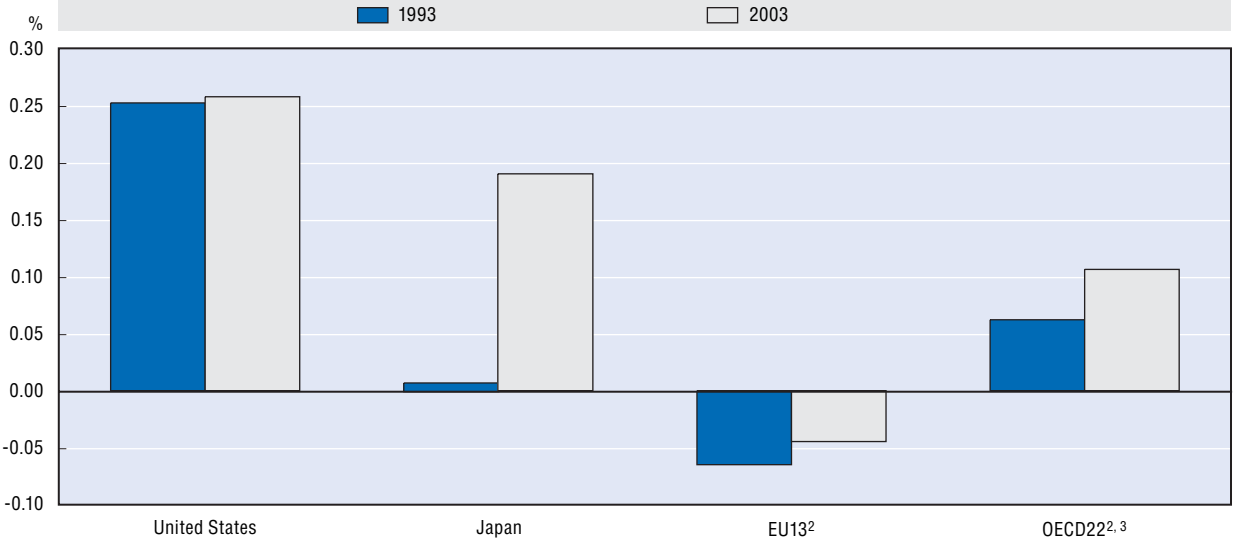


Figure H.3.2. **Changes in the technology balance of payments as a percentage of GDP**



1. Average of technological payments and receipts.
2. Including intra-area flows. Excluding Czech Republic, Denmark, Greece, Hungary, Poland and the Slovak Republic. Data partially estimated.
3. Excluding Iceland and Turkey.

Source: OECD, Technology Balance of Payments database (unpublished), May 2005.

StatLink: *http://dx.doi.org/10.1787/254814653740*

H.4. Technology balance of payments and domestic R&D activity

In 2003, the main technology exporters as a percentage of GDP were the United Kingdom, Belgium, Denmark, the United States, Japan, Canada, Finland, France and Norway. Ireland, Hungary, the Czech Republic, Poland and Korea imported the most technology.

The magnitude of the deficit in Ireland's technology payments is mainly due to the strong presence of foreign affiliates (particularly US and UK firms). The figures may also be affected by intra-firm transactions and transfer pricing.

Technology development can be achieved either through a national R&D effort or the acquisition of foreign technology. In some countries, particularly Ireland, Austria, Poland, Portugal and Hungary, expenditure for foreign technology (technological payments) is greater than expenditure for domestic business enterprise R&D (Figure H.4.3).

Figure H.4.1. **Flows (average of receipts and payments) as a percentage of GDP, 2003**

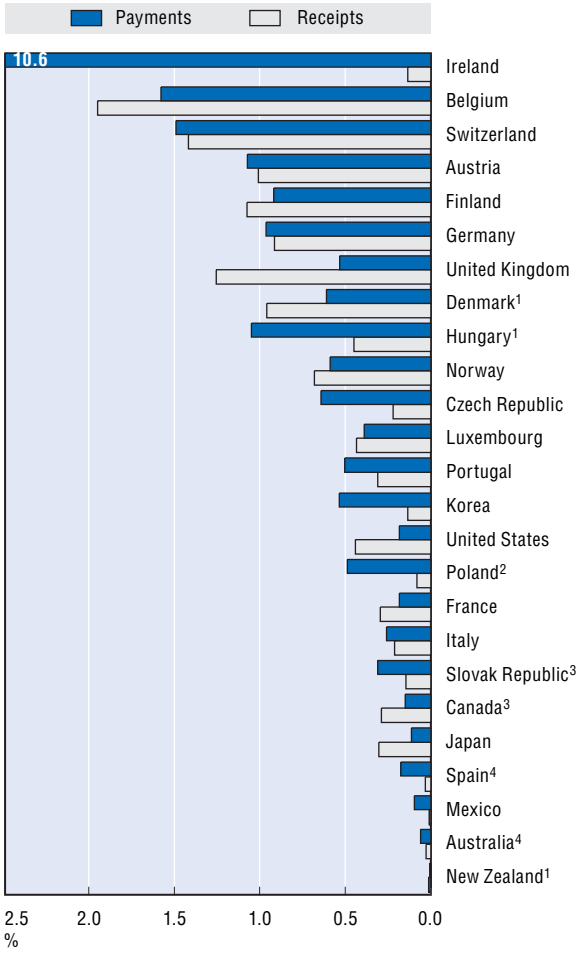
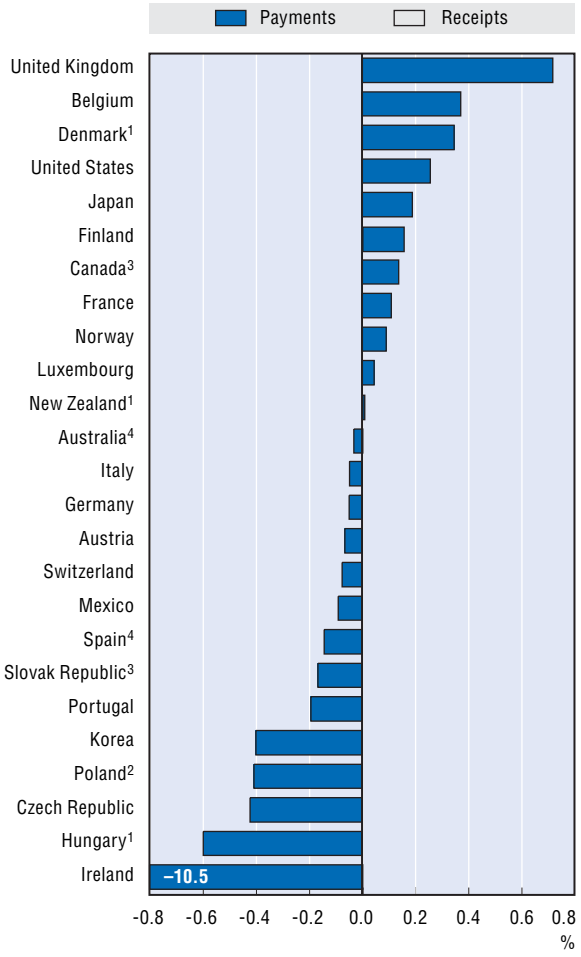


Figure H.4.2. **Technology balance of payments (receipts-payments) as a percentage of GDP, 2003**



1. 1999.
2. 2000.
3. 2001.
4. 1998.

Source: OECD, Technology Balance of Payments database (unpublished), May 2005.

StatLink: *http://dx.doi.org/10.1787/402535138282*

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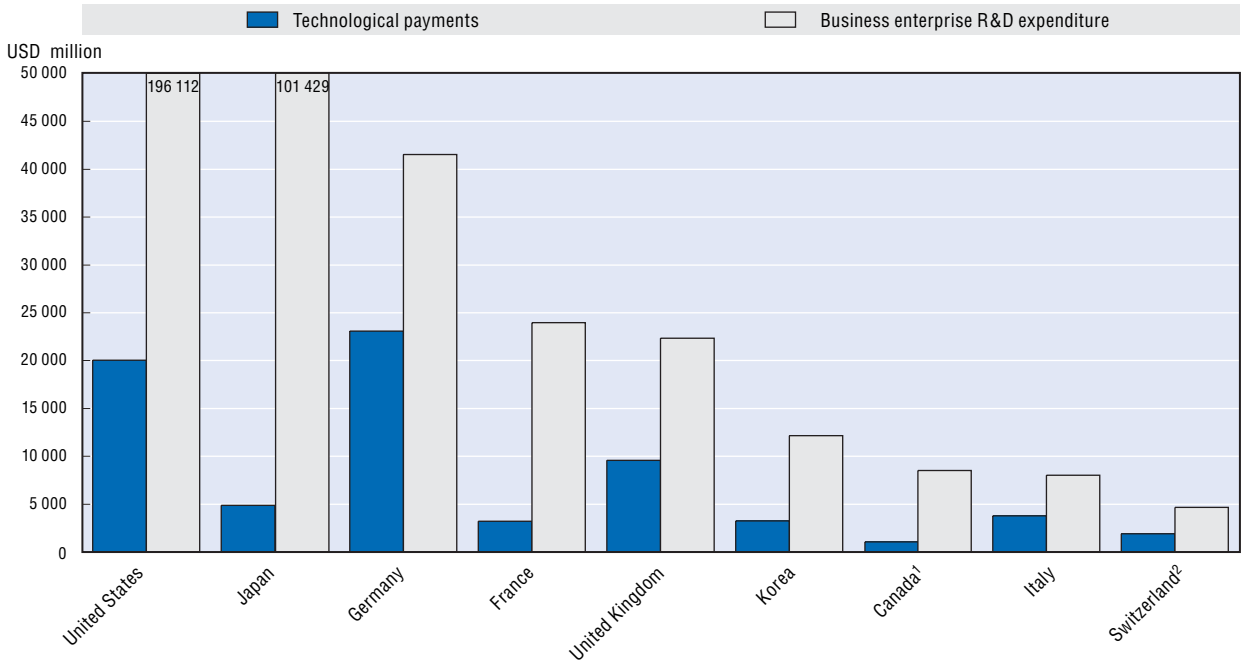
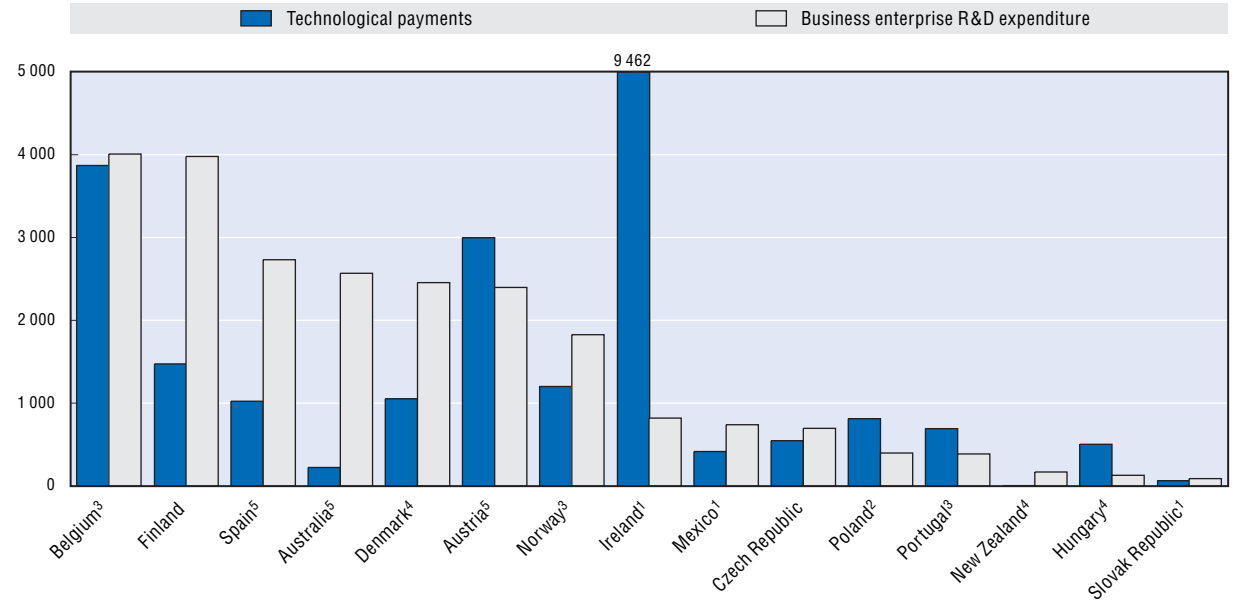
H.4. Technology balance of payments and domestic R&D activity

Figure H.4.3. **Technological payments and business enterprise R&D expenditure, 2003**

Main R&D performers



Other countries



1. 2001.
2. 2000.
3. 2002.
4. 1999
5. 1998

Source: OECD, Technology Balance of Payments database (unpublished) and OECD Science and Technology Statistics (MSTI), May 2005.

StatLink: *http://dx.doi.org/10.1787/402535138282*

H.5. Internationalisation of high-tech manufacturing sectors

■ Figure H.5.3 shows that, in spite of the important role of foreign affiliates in total domestic high-tech turnover, in most countries the majority of foreign investment, and consequently employment, under foreign control, is not concentrated in high-tech manufacturing sectors.

■ The share of foreign affiliates in turnover of total high-tech manufacturing is higher than 90% in Ireland and less than 10% in Finland. In other OECD member countries, more than 50% of turnover attributed to high-tech is generated by foreign affiliates (Figure H.5.1).

■ Similar trends are observed for employment, although the equivalent percentages are lower than in the case of turnover, except in Finland (Figure H.5.2).

Identifying high-technology manufacturing sectors

An industrial sector is defined as a high-technology sector if it is intensively producing and using technology. The quantification of this characteristic was approximated through R&D intensity. For this purpose, an overall R&D intensity (sum of direct and indirect intensity) was used. The direct R&D intensity (R&D expenditure/value added) was constructed for each manufacturing sector in each OECD member country, and an OECD list was obtained by weighting each sector for its share in the value added of all OECD member countries, taking GDP purchasing power parities as exchange rates. For indirect intensity, which corresponds to the use of technology, account had to be taken of technology (R&D expenditure) embodied in intermediate and capital goods purchased on the domestic market or imported. Technology moves from one industry (and one country) to another when the industry performing R&D sells its products embodying that R&D to other industries which use them as manufacturing inputs. To calculate indirect intensity, the technical coefficients of manufacturing industries extracted from input-output matrices were used. On the technical assumption that, for a given type of input and for all groups of products, the proportions of R&D expenditure embodied in production remain constant, the input-output coefficients were multiplied by the direct R&D intensities. On this basis, the proposed list of manufacturing industries classified according to their global R&D intensity (ISIC classification Revision 3) is:

High-technology industries	ISIC Revision 3
1. Aircraft and spacecraft	353
2. Pharmaceuticals	2 423
3. Office, accounting and computing machinery	30
4. Radio, TV and communication equipment	32
5. Medical, precision and optical instruments	33

Among the main limitations of this list, the first concerns criteria employed. Only R&D intensity, be it direct or indirect, has been taken into account. Research is an extremely important characteristic of high technology but it is not the only. Other factors also play a significant role (*e.g.* scientific personnel, technology embodied in patents, licences and *know-how*, technical co-operation, etc.). Another limitation is that R&D intensity can also be skewed because in each sector all research is attributed to the principal activity of the firms making up the sector. Thus, a significant proportion of a particular sector's R&D could concern another sector, which may not necessarily be related to high technology. In addition, the lack of sufficiently aggregated data means that many products manufactured by high-technology sectors could be classified as medium- or even low-tech. Conversely, some products made by medium- or low-technology sectors could be classified as high-tech.

See T. Hatzichronoglou (1997) "Revision of the High-Technology Sector and Product Classification", STI Working Paper 1997/2 and Annex 1 for further details.

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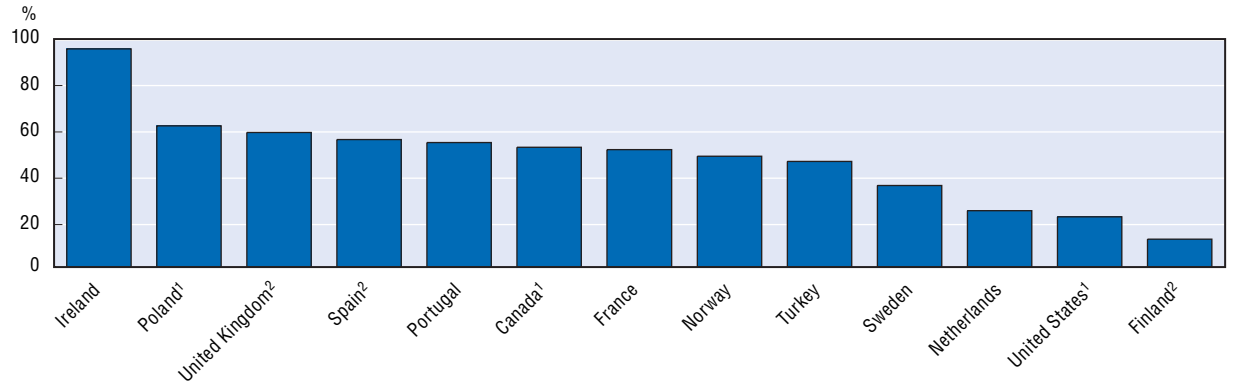
H.5. Internationalisation of high-tech manufacturing sectors

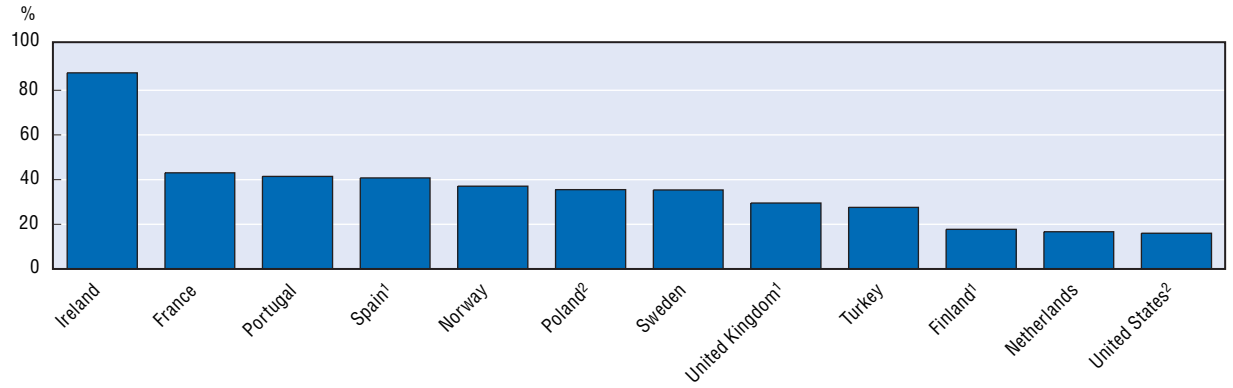
Figure H.5.1. **Share of foreign-controlled affiliates in high-technology manufacturing turnover, 2001**



1. 2002.
2. 1999.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), March 2005.

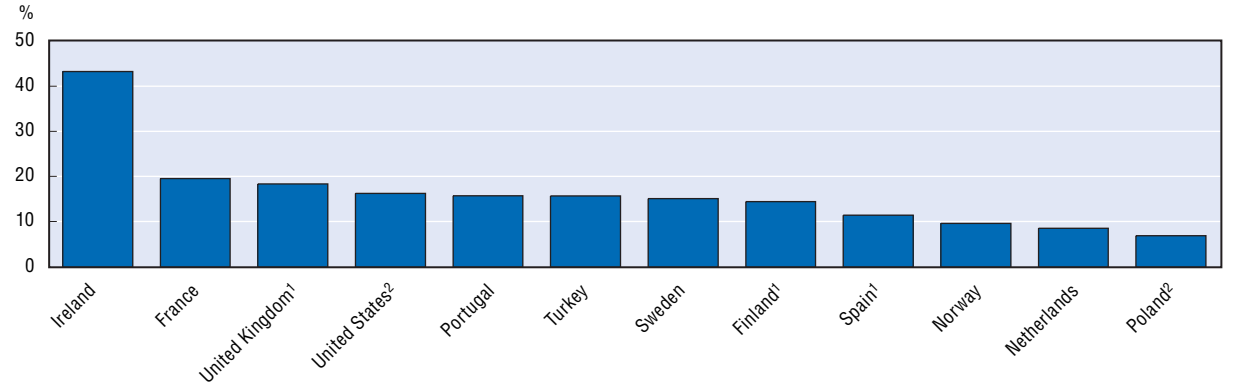
Figure H.5.2. **Share of foreign-controlled affiliates in high-technology manufacturing employment, 2001**



1. 1999.
2. 2002.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), March 2005.

Figure H.5.3. **Share of foreign-controlled affiliates' high-technology manufacturing employment in total foreign-controlled affiliates' manufacturing employment, 2001**



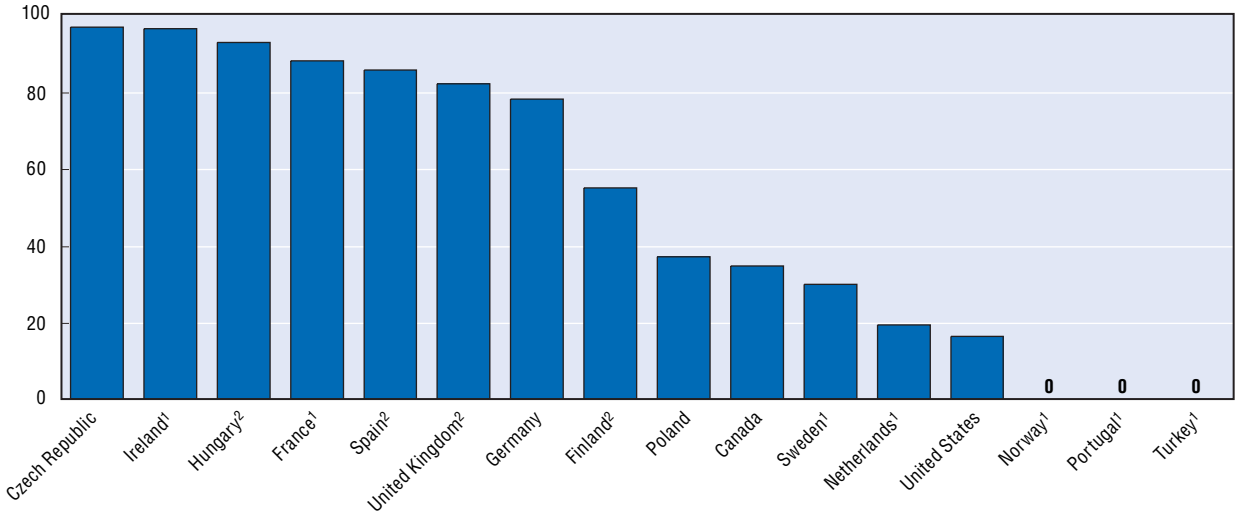
1. 1999.
2. 2002.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), March 2005.

StatLink: *http://dx.doi.org/10.1787/476610401432*

H.6. Foreign-controlled affiliates' share in the turnover of the ICT sector

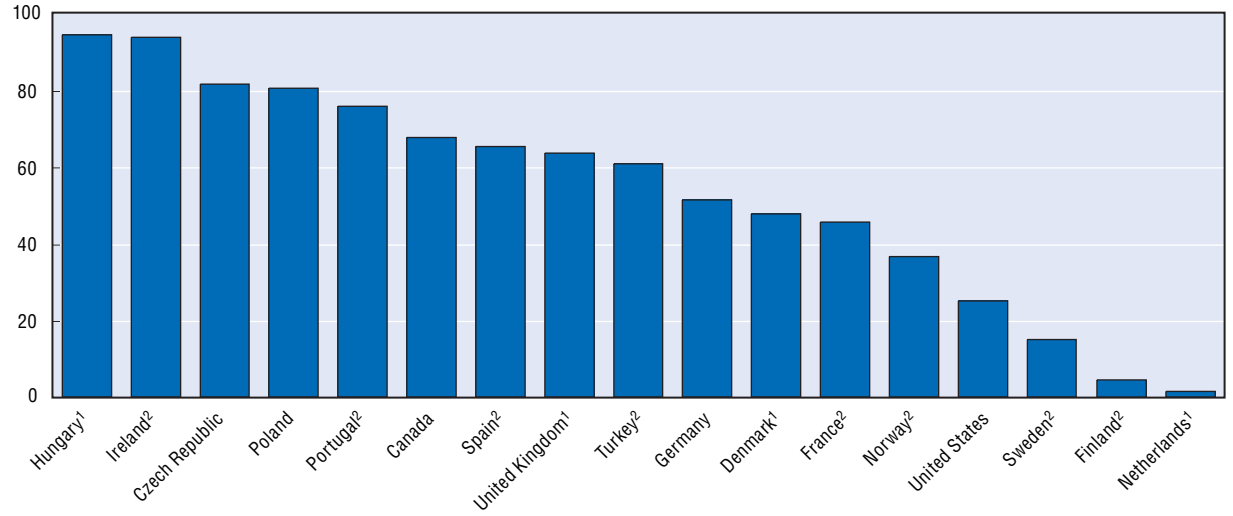
Figure H.6.1. **Computer manufacturing (ISIC 30), 2002**



1. 2001.
2. 1999.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), April 2005.

Figure H.6.2. **Electronic equipment manufacturing (ISIC 32), 2002**



1. 1999.
2. 2001.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), April 2005.

StatLink: *http://dx.doi.org/10.1787/203632546057*

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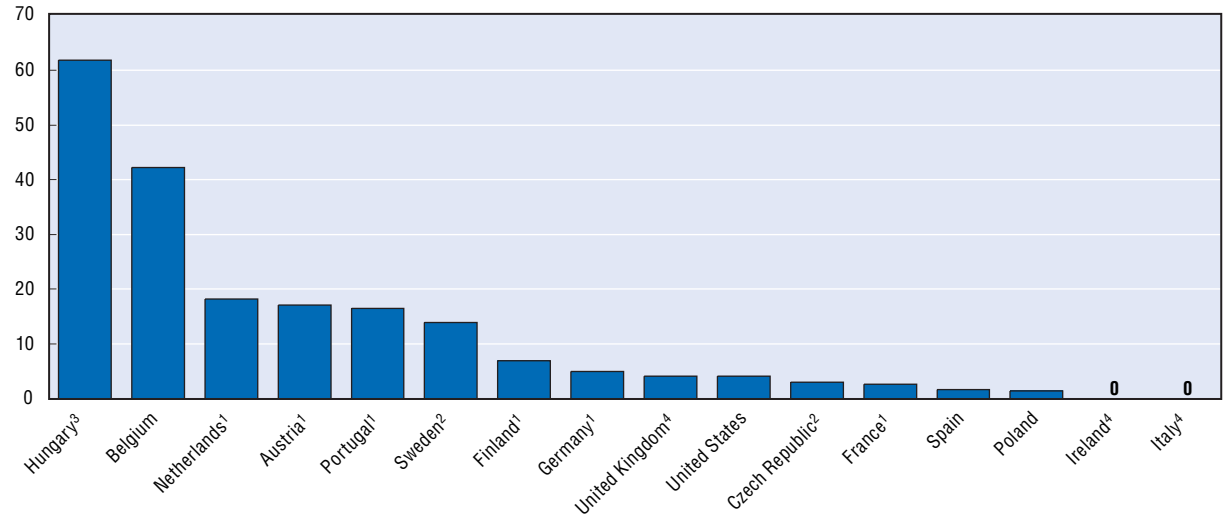
H.6. Foreign-controlled affiliates' share in the turnover of the ICT sector

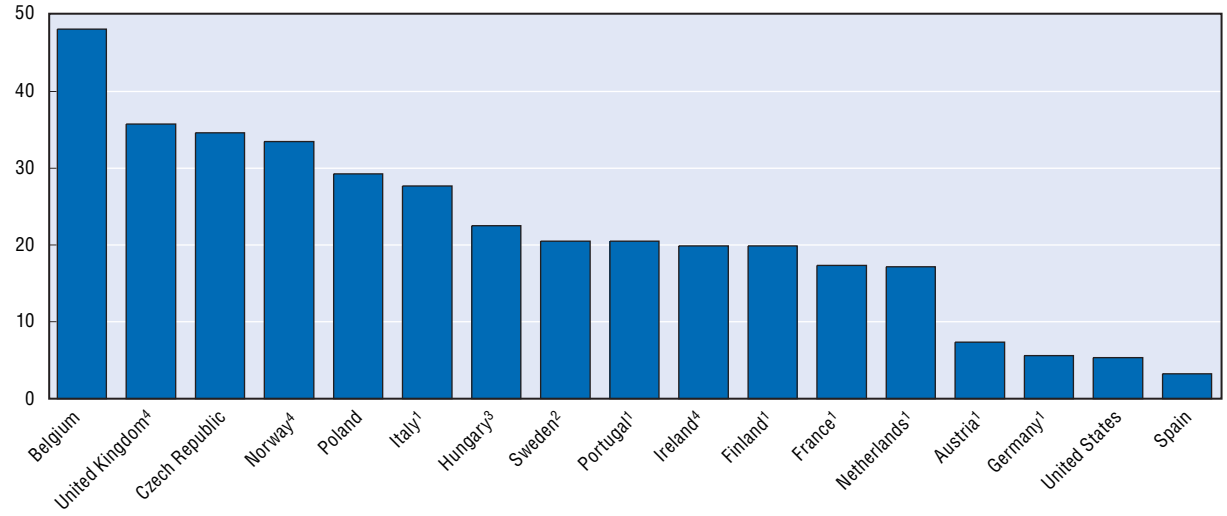
Figure H.6.3. **Telecommunications services (ISIC 642), 2002**



1. 2001.
2. 2000.
3. 1998.
4. 1997.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume II: Services (FATS), April 2005.

Figure H.6.4. **Computer and related services (ISIC 72), 2002**



1. 2001.
2. 2000.
3. 1998.
4. 1997.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume II: Services (FATS), April 2005.

StatLink: *http://dx.doi.org/10.1787/203632546057*

PART IV

Aspects of Trade Globalisation

Aspects of trade globalisation

International trade is the oldest aspect of the internationalisation of economic activity. It remains the principal channel for the integration of domestic economies, even though other transactions such as direct investment, international technology transfers and other categories of investment have become more important.

This part of the report is devoted to different aspects of trade globalisation and distinguishes between:

- General trends in trade in goods and services;
- Intra-firm trade, which is particularly characteristic of trade by multinationals.

Among the general trends in trade, the following are presented: the evolution of trade balances, export market shares, including their geographical distribution, import penetration, the structure of trade in services, the role of high technology in international trade and the import content of exports.

The part devoted to the trade by multinationals presents recent trends in intra-firm trade, *i.e.* trade between firms belonging to the same group, for the OECD countries which collect such data.

I. TRENDS IN INTERNATIONAL TRADE IN GOODS AND SERVICES

I.1. Trade as a percentage of GDP

■ Their international trade in goods and services reflects countries' integration into the world economy. In relation to their GDP, small countries are generally more integrated. They tend to specialise in a limited number of sectors and to satisfy domestic demand they need to import and export more goods and services than larger countries. Size alone, however, does not determine the level of trade integration (Figure I.1.1).

■ The average ratio of exports and imports to GDP, in constant prices of 2000, increased between 1995 and 2003 in all OECD countries. In 2003, it was over 130% in Luxembourg and very high in Ireland, Belgium, the Netherlands, as well as in the Slovak Republic, Hungary and the Czech Republic. In contrast, it was less than 13% in the United States and 11% in Japan, owing in part to their larger size.

■ Traditionally, international trade in goods has been the principal channel for economic integration (see Figures A.1.2 and A.1.3). Over the past 20 years, however, other forms of transactions have become increasing prevalent (*e.g.* foreign direct investment, portfolio investment) as firms increasingly implement global strategies and capital movements are liberalised.

■ In 2003, the average trade-to-GDP ratio of goods in the OECD area was 35.8%, up from 26.4% in 1995, an increase very similar to that for total trade.

■ As a share of GDP in 2003, average trade in services in the OECD area only accounted for around 4.4% of GDP. Luxembourg and Ireland had the highest values. In Luxembourg, financial services played a dominant role in exports, and in Ireland, technology payments were a very important component of total imports.

Average trade-to-GDP ratio

The most frequently used indicator of the importance of international transactions relative to domestic transactions is the trade-to-GDP ratio, which is the average share of exports and imports of goods and services in GDP.

International trade tends to be more important for countries that are small (in terms of size or population) and surrounded by neighbouring countries with open trade regimes than for large, relatively self-sufficient countries or those that are geographically isolated and thus penalised by high transport costs. Other factors also help explain differences in trade-to-GDP ratios across countries, such as history, culture, (trade) policy, the structure of the economy (especially the weight of non-tradable services in GDP), re-exports and the presence of multinational firms (intra-firm trade).

The trade-to-GDP ratio is often called the trade openness ratio. However, the term "openness" to international competition may be somewhat misleading. In fact, a low ratio does not necessarily imply high (tariff or non-tariff) obstacles to foreign trade, but may be due to the factors mentioned above, especially size and geographic remoteness from potential trading partners.

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I.1. Trade as a percentage of GDP

Figure I.1.1. **Average of total exports and imports as a percentage of GDP**

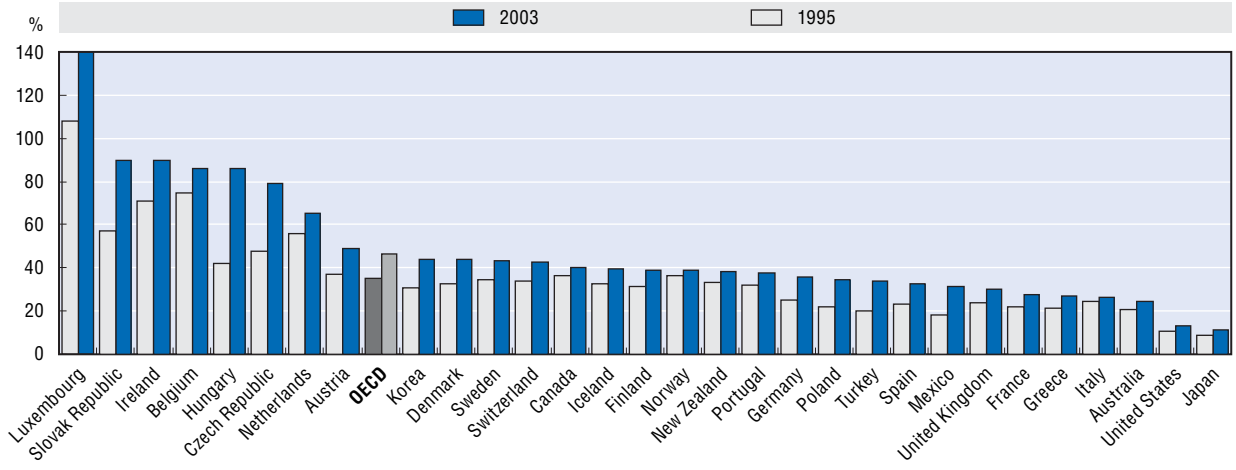


Figure I.1.2. **Average of exports and imports of goods as a percentage of GDP**

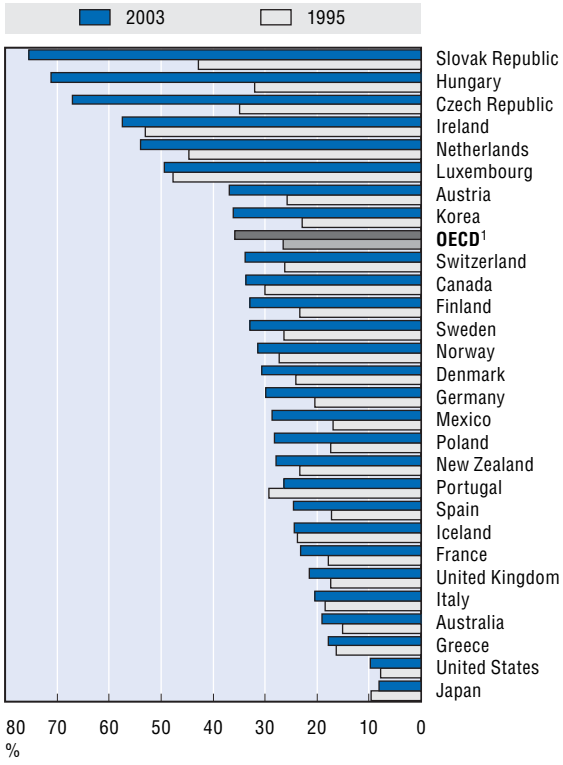
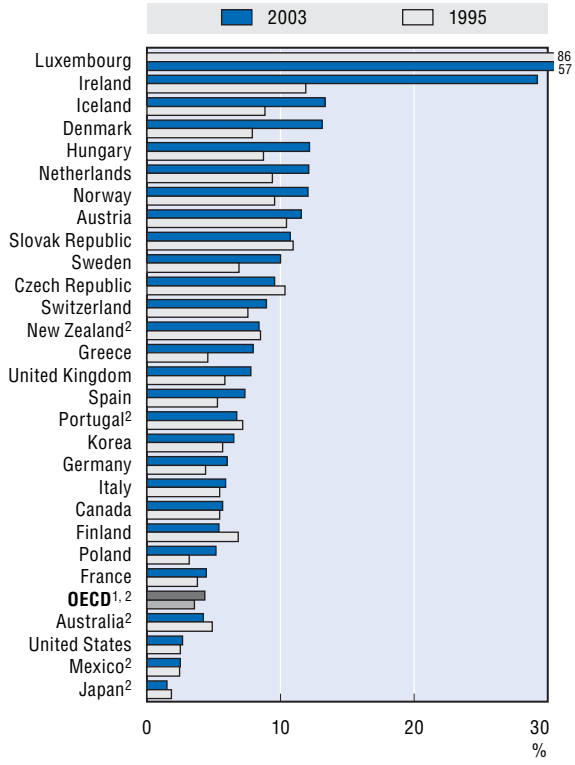


Figure I.1.3. **Average of exports and imports of services as a percentage of GDP**



1. Figures for Belgium and Turkey not available, average figure for OECD relate to OECD without these countries.
2. Data for Australia, Japan, Mexico, New Zealand and Portugal, refer to 2002, with respective effects on the OECD average figures used.

Source: OECD, National Accounts of OECD Countries database (USD, constant prices and exchange rates, OECD base year 2000), May 2005.

StatLink: *http://dx.doi.org/10.1787/815486608322*

I.2. Trade balance as a percentage of GDP

Figure I.2.1 illustrates the changes in the trade balance of goods and services as a percentage of GDP in 1995 and 2003 in current prices. These changes show that some countries are in both years in surplus or in deficit, while these surpluses or deficits deteriorate, improve or remain stable.

These change could be summarised as follows:

- Increase of surplus: Ireland, Luxembourg, Germany and Norway.
- Stable surplus: Finland, Sweden, Denmark, the Netherlands, Switzerland, Canada, Belgium, Japan and France.
- From surplus to deficit: Poland, Mexico and Iceland.
- From deficit to surplus: Korea, the Slovak Republic and Austria.
- Decrease of deficit: Turkey and the Czech Republic.
- Deterioration of deficit: Greece, Portugal, Hungary, Austria, the United Kingdom, the United States and Spain.

The changes are due first to different export and import trends (Figure I.2.2). In some countries, the trade balance improved because of higher growth exports. In others, the trade balance deteriorated because of the sharp rise in imports (*e.g.* the United States). In some countries where the balance registered a deterioration, exports and imports expanded at the same pace but because of an export/import ratio significantly lower than 1, deficits widened (Portugal, Greece).

Trade in goods

Figure I.2.3 shows the change in the balance of trade in goods over 1995 and 2003. It is interesting to observe that Ireland, Finland, Sweden, Germany, the Netherlands, Canada, Denmark, and Japan, are in a situation of an increasing or stable surplus while others are in a situation of growing deficits, as in the United States, the United Kingdom, Australia, Spain and Greece.

Trade in services

Figure I.2.4, illustrating the change in the trade balance of services, provides a different picture of countries' positions. Some countries with a global deficit of their trade balance have a trade surplus in services, for example, the United States, Spain and Greece. In Greece, the spectacular performance could be attributable to tourism and maritime transport receipts while in Spain, tourism could play an important role. Other countries with a global trade surplus recorded a trade deficit in services, particularly Germany, Canada and Finland. Luxembourg and Ireland, which had a global trade surplus, recorded different performances in trade in goods and trade in services. Ireland's global trade surplus was exclusively due to trade in goods, while Luxembourg's global trade surplus was due to trade in services, particularly financial services exports.

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I.2. Trade balance as a percentage of GDP

Figure I.2.1. **Trade balance in goods and services as a percentage of GDP in 1995 and 2003**

Current prices

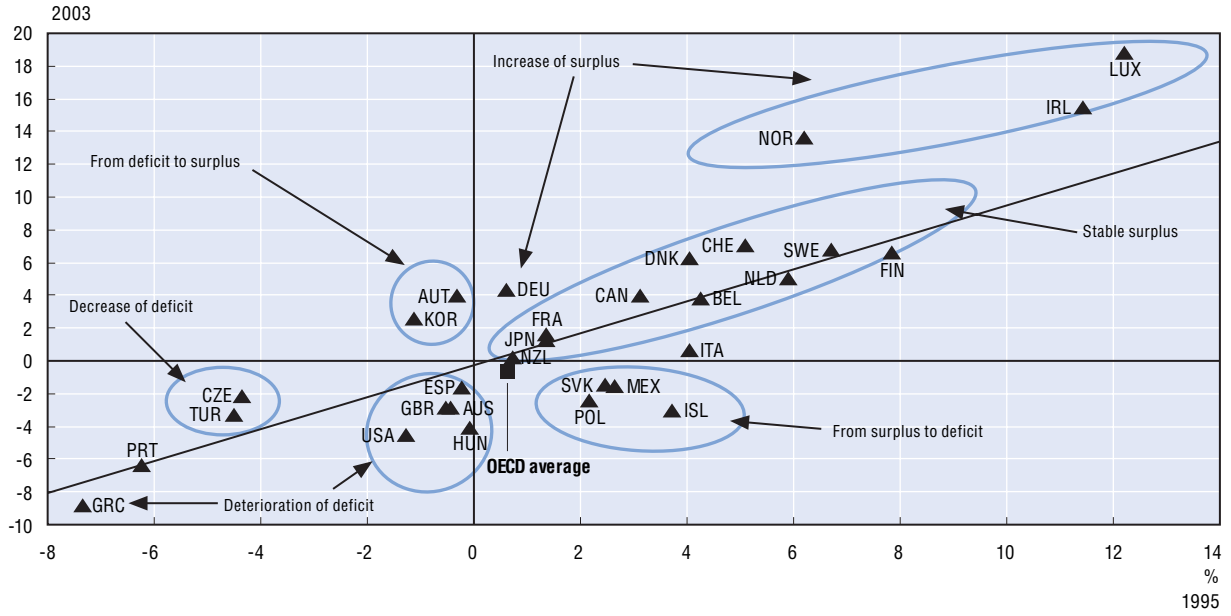
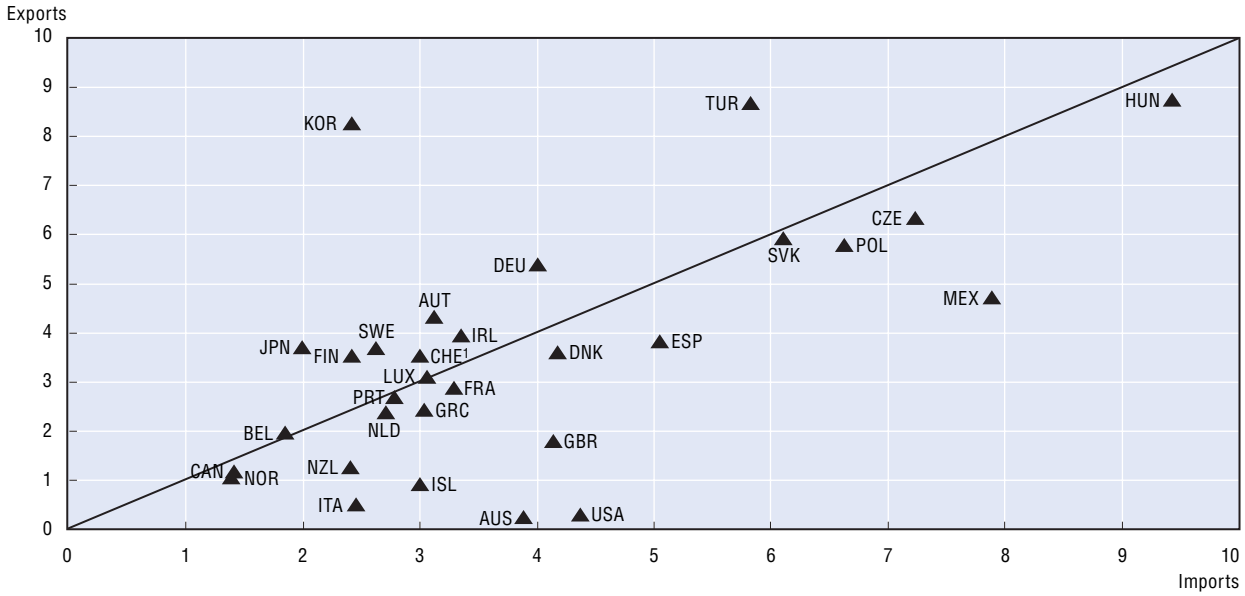


Figure I.2.2. **Trade in goods and services as a percentage of GDP**

Average annual growth rate 1995-2003 (constant prices)



1. 1995-2002.

Source: OECD, National Accounts of OECD Countries database, April 2005.

StatLink: *http://dx.doi.org/10.1787/154203035677*

I.2. Trade balance as a percentage of GDP *(cont.)*

Trade balance, export-import ratio and international competitiveness

The trade balance (exports less imports) is probably the macro-economic indicator that is most frequently used to gauge the competitiveness of a country or of a sector or product at national level. The export-import ratio (exports to imports) is also used but the two measurements are not alternatives, rather they are complementary given that one can improve and the other deteriorate at the same time, and *vice-versa*.

The interpretation of trade balances needs to take account of the factors which influence it. The most important could be:

1. Improvement of price-competitiveness and structural competitiveness

The main question here is to what extent an improved trade balance or import-export ratio may be attributable to improved competitiveness or other factors. An improvement in relative prices can contribute to trade surpluses but this will also depend on the factors responsible. If, for example, the improvement is the outcome of more efficient control of production costs or an improvement in non-price factors (structural competitiveness) such as innovation, product quality, etc., then this result does reflect improved competitiveness. The factors mentioned below, on the other hand, can help improve the trade balance but are unrelated to competitiveness.

2. Cyclical lag

When export market demand grows more rapidly than a country's domestic demand, the trade balance will tend to improve as long as there are no other obstacles preventing export growth (*e.g.* a lack of spare capacity). In the same way, if domestic demand grows faster than export markets, other things being equal, the trade balance will tend to deteriorate. However, a permanently excessive domestic consumption could be due to structural causes, mainly an imbalance between savings and investment.

3. Terms of trade

If the price of imported goods were to rise more slowly than that of exported goods, or if the import price of certain primary commodities were to decline (oil, raw material, food, etc.), the trade balance would improve without the country's competitiveness being in any way responsible for the improvement.

4. Other factors

The introduction of structural adjustment policies made necessary as a result of excessive government borrowing, for example, may be intended to increase exports and massively cut imports. The factors mentioned above are not exhaustive (see also Box I.3), but are among those which should be given prime consideration when analysing the influence of competitiveness on the trade balance.

In the framework of this document, only the main results are presented without analysing the causes and the links between the trade balance trends and competitiveness.

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I.2. Trade balance as a percentage of GDP *(cont.)*

Figure I.2.3. **Trade balance in goods as a percentage of GDP in 1995 and 2003**

Current prices

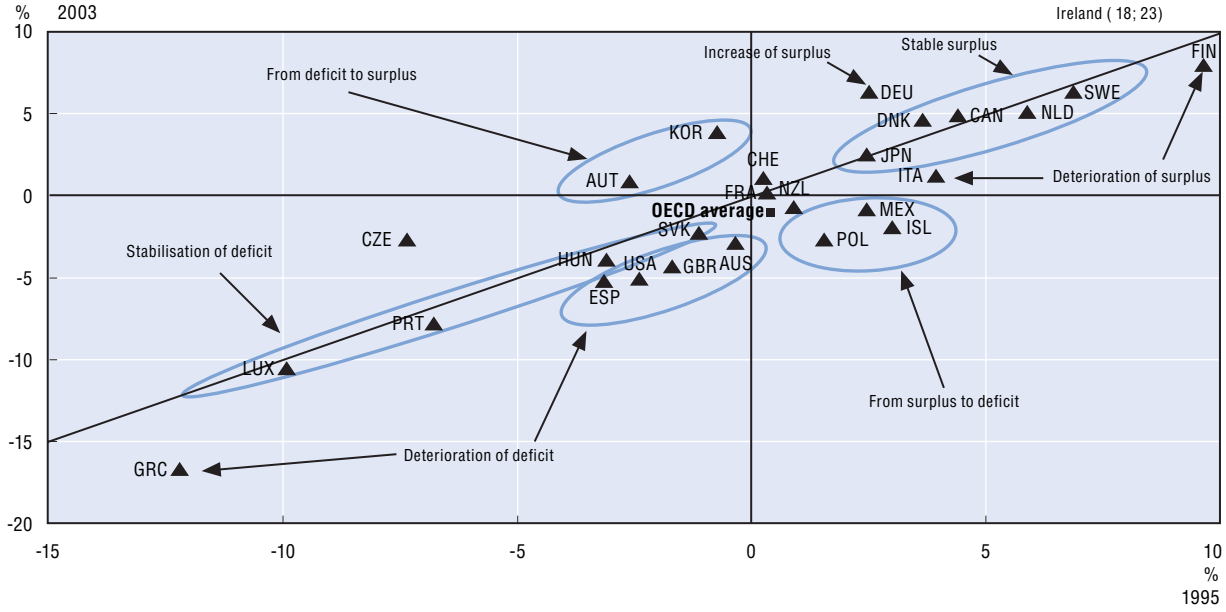
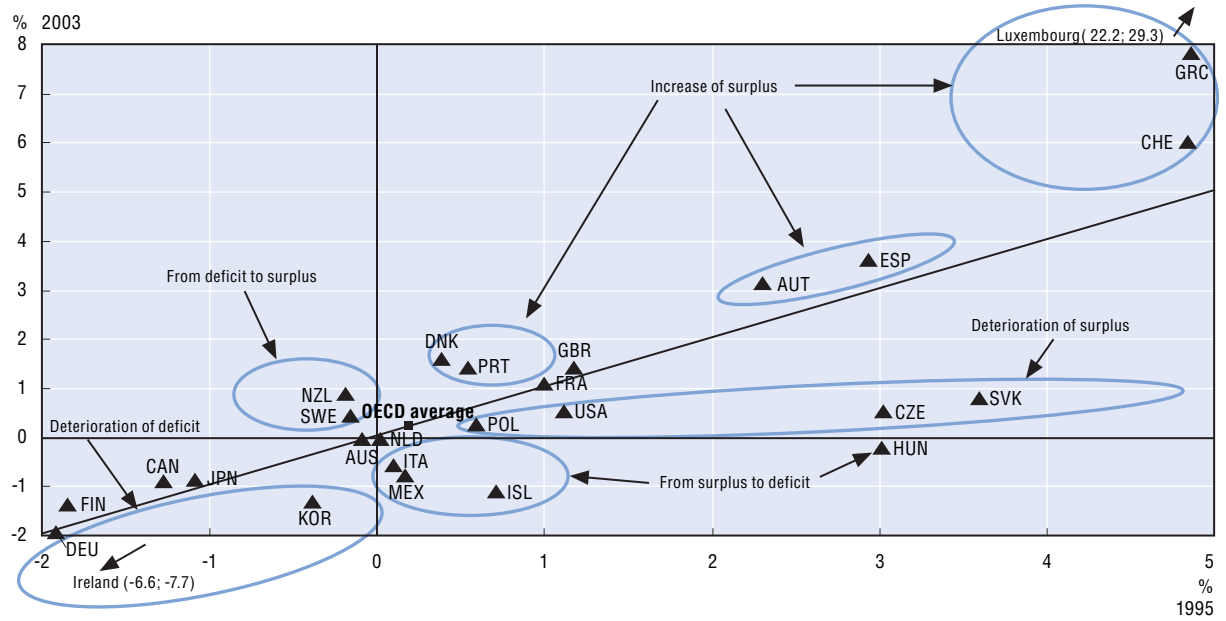


Figure I.2.4. **Trade balance in services as a percentage of GDP in 1995 and 2003**

Current prices



Source: OECD, National Accounts of OECD Countries database, April 2005.

StatLink: *http://dx.doi.org/10.1787/154203035677*

I.3. Export market shares in goods and services

Export market shares and competitiveness

Traditionally, firms have tended to establish a direct link between trends in their export market shares and competitiveness. The question which needs to be looked at there is under what circumstances an improvement in market shares really corresponds to improved competitiveness.

Export market shares (XMS_{ij}) for a country *i* and a product *j* concern the share of exports (X_{ij}) of products *j* by firms in country i in relation to world exports of the product or by reference area (in this document, the 30 OECD countries).

$$XMS_{ij} = \frac{100X_{ij}}{\sum_{l=1}^{30} X_{ij}}$$

It is not easy to establish a direct link between export market shares and competitiveness since many factors directly or indirectly affect export market shares. Some of the most important could be:

1. *Foreign direct investment*

Producing abroad by means of direct investment can generate new exports and supplement existing trade flows. Above a critical threshold, however, particularly if foreign directly investment flows substantially decrease, production abroad can take the place of exports and even turn into important flows back to the country of origin, especially in the case of offshoring activities.

2. *Firms' strategic choices*

Targeting market share growth rather than profit maximization, or *vice-versa*, is a strategic choice for firms. The two strategies, however, can be pursued at the same time provided no attempt is made to optimize each separately. Implementing these strategies obviously depends on shareholders' behaviour and also on firms' initial situation as regards production costs.

3. *Changes in specialisation*

Changes in a country's specialisation can have a direct impact on the market shares of the sectors concerned. Gradual withdrawal, for example, from a low-technology sector, in favour of other, more technology-intensive sectors, will reduce the low-technology sector's market shares and increase those of sectors with a greater degree of specialisation.

4. *Slower growth of export markets*

A country's market shares can be directly affected if its traditional export markets are going through a recession. In principle, this has nothing to do with the competitiveness of the exporting country – at least in the short term – but it is in every country's interest to export products for which there is a strong demand to regions experiencing growth.

5. *Differing growth of domestic demand and foreign demand*

If domestic and foreign demands are growing at different rates, the interpretation of market shares could be distorted. When in a given country, for example, domestic demand is growing faster than export markets, a share of production which ought to be exported may go to satisfy excess domestic demand first of all. This phenomenon makes interpreting indicators all the more difficult in that the ensuing decline in export market shares may be accompanied by a rise in the rate of import penetration.

6. *Exchange rate fluctuations*

Exchange rate movements can influence the way market shares are interpreted in the sense that they alter the structure of relative prices. However, a change in relative prices does not necessarily involve an exchange rate fluctuation.

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I.3. Export market shares in goods and services

Figure I.3.1. **World export market shares in goods and services of OECD countries**

Current prices

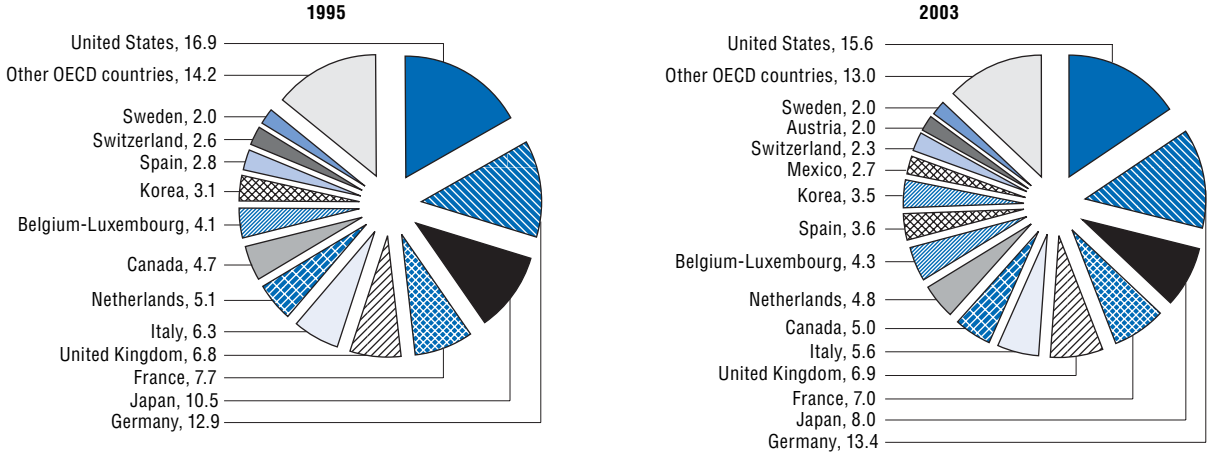
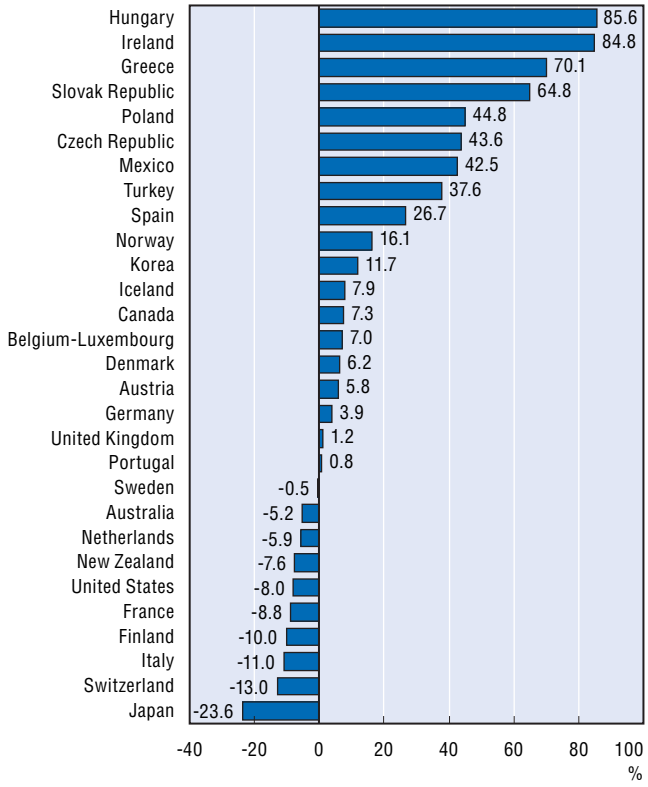


Figure I.3.2. **Growth of OECD countries export market shares in goods and services 1995-2003**

Current prices



Source: IMF, *Balance of Payments Statistics*, April 2005.

StatLink: *http://dx.doi.org/10.1787/822862281448*

I.4. Trends in export market shares in goods and services

■ Over the period 1995 to 2003, among the G7 countries, Japan, the United States, France and Italy lost export market shares while Germany, Canada and the United Kingdom increased theirs (Figures I.4.1 and I.4.2). However, during the same period, the United States and the United Kingdom recorded a trade deficit in goods and services (Figure I.2.1).

■ During the reference period, other OECD countries improved their export market shares in goods and services, particularly Spain, Korea and Belgium-Luxembourg. However, the highest growth of the export market shares was observed in Hungary, Ireland, Greece, the Slovak Republic, Poland, the Czech Republic, Mexico and Turkey (Figure I.3.1). Despite this important growth, in 2003 the market shares of the latter countries (except for Spain, Korea and Belgium-Luxembourg) were less than 10% of total OECD export market shares in goods and services. In addition, except for Ireland, the trade balance of all these countries, was in deficit.

■ The losses of export market shares of Japan and the United States were attributed equally to goods and services, while the losses in France and Italy were mainly due to services (Figures I.4.3 and I.4.4).

■ The increase of export market shares in Germany was attributed mainly to goods, and in the United Kingdom exclusively to services, since the export market shares of goods deteriorated in the United Kingdom. On the other hand, in Canada, the gain of export market shares was more balanced between goods and services.

■ The improvement of export market shares in Korea was attributed exclusively to goods, and in Belgium-Luxembourg to services. In Spain, the growth of export market shares was balanced between goods and services.

■ In Ireland, the export market shares of services recorded an exceptional increase. However, in 2003 they represented only 2.6% in the OECD total. In Greece, the high growth of export market shares in services could be due to its important role in maritime transport and travel (tourism) activities.

■ In the Slovak Republic, Poland, the Czech Republic, Mexico and Turkey, the high growth of export market shares was attributed exclusively to goods, while the export market shares in services recorded negative growth.

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I.4. Trends in export market shares in goods and services

Figure I.4.1. **World export market shares in goods of OECD countries, 2003**

Current prices

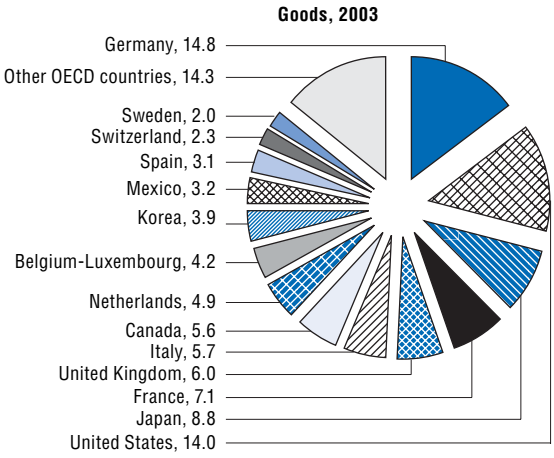


Figure I.4.2. **World export market shares in services of OECD countries, 2003**

Current prices

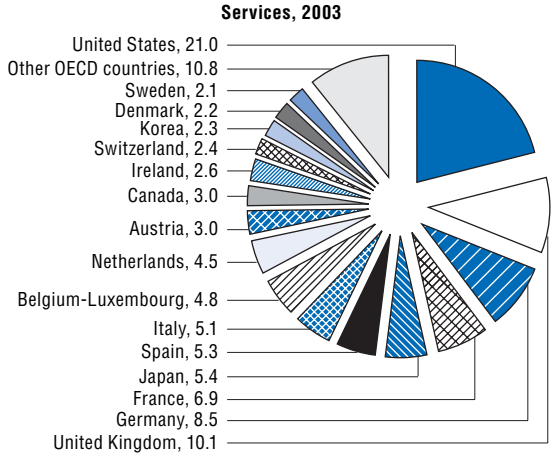


Figure I.4.3. **Growth of OECD countries export market shares in goods between 1995 and 2003**

Current prices

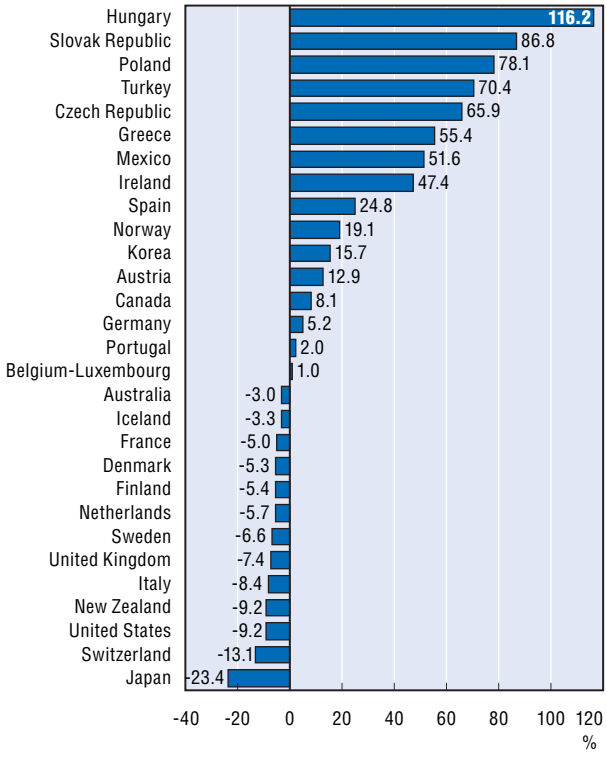
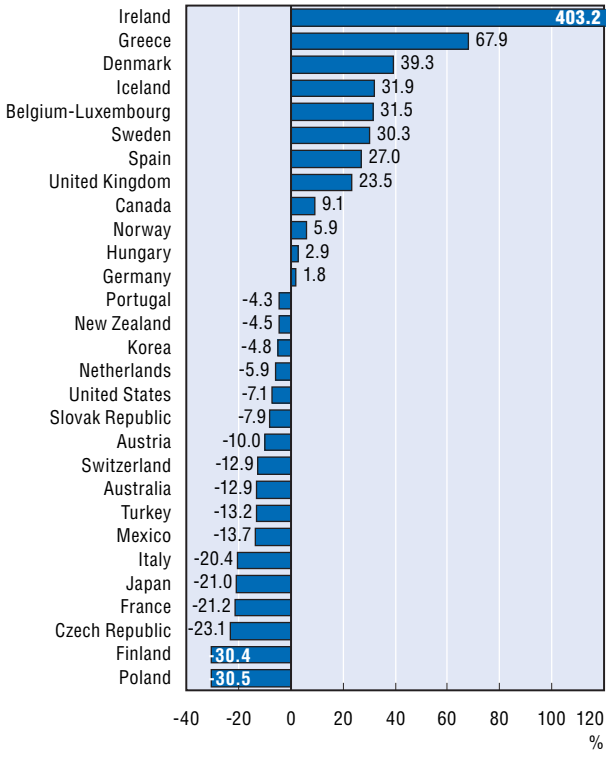


Figure I.4.4. **Growth of OECD countries export market shares in services between 1995 and 2003**

Current prices



Source: IMF, *Balance of Payments Statistics*, April 2005.

StatLink: *http://dx.doi.org/10.1787/160788427704*

I.5. Geographical distribution of export market shares in goods in OECD countries

Germany is the largest exporter of goods distributed to the European Union, maintaining its export market shares at 18.2% between 1995 and 2003 (Figure I.5.1). During the same period, some important exporters to the European Union recorded market share losses, particularly Italy, France, the United States, the United Kingdom and Japan. The export shares of other European countries, however, increased, notably for Ireland, Spain and Norway as well as for a number of Central European countries: Poland, Hungary and the Czech Republic.

In the United States' domestic market, three OECD countries accounted for more than 60% of export shares: Canada, Mexico and Japan. The most important change observed in the export market shares of OECD countries was the important decline of Japanese exports. These losses correspond to the recession period of the Japanese economy which particularly affected the exports of computers, electronics, metals and shipbuilding. NAFTA agreements, on the other hand, permitted a significant increase in the export market shares of Mexico, while the export shares of Canada (the highest of all the OECD countries) remained at the same level: 28.5% (Figure I.5.2).

The Japanese domestic market for imports is almost three times smaller than that of the United States. Three countries, the United States, Germany and Australia hold more than 60% of the export market shares of the OECD countries in Japan. However, between 1995 and 2003 Australia and Germany increased their export market shares while the United States recorded losses. Other main OECD exporter countries to Japan are Canada, the United Kingdom, France and Italy, but only the United Kingdom increased its export market shares during the reference period (Figure I.5.3).

During the reference period, China's domestic economy recorded the highest expansion. From this point of view, it is important to observe the changes in the export market shares of OECD countries in China's domestic market. Japan was the most important exporter, with more than 32% of total OECD exports to China and Hong Kong (China), accounting for USD 57 billion. This represents the equivalent of approximately half of Japanese exports to the United States. Contrary to the trends observed in the American market, the share of Japanese exports to China remained at the same level between 1995 and 2003. Korea and Germany increased their export shares to China significantly while the United States, France, Italy and the United Kingdom recorded losses (Figure I.5.4).

Geographical distribution of export market shares

For each OECD country i, the export market shares XMS_i referring to another OECD country j are measured as follows:

$$XMS^j_i = 100\frac{X^j_i}{\sum_i^n X^j_i} \quad \text{with } n = 30 \text{ (total number of OECD countries) and } i \neq j$$

where:

XMS^j_i: export market shares of country i in country j

$\sum_i^n X^j_i$: total exports of 29 OECD countries i (except exports of country j) destinated to country j (30 OECD countries if j is not an OECD country).

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I.5. Geographical distribution of export market shares in goods in OECD countries

Figure I.5.1. **Trends of export market shares of goods into the European Union-15**

Per cent, current prices

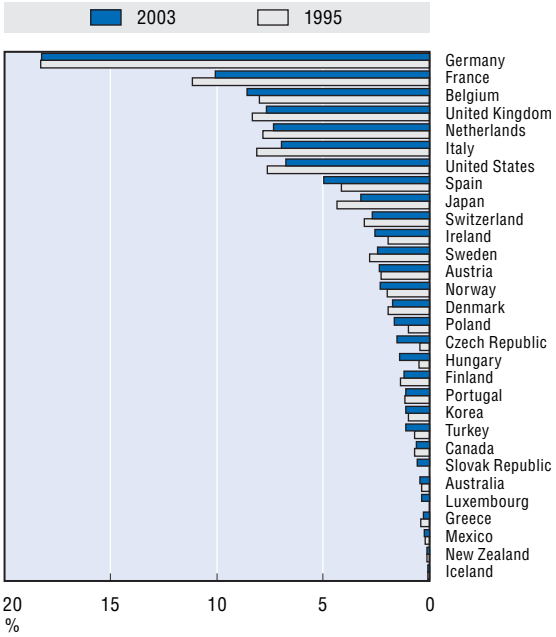


Figure I.5.2. **Trends of export market shares of goods into the United States**

Per cent, current prices

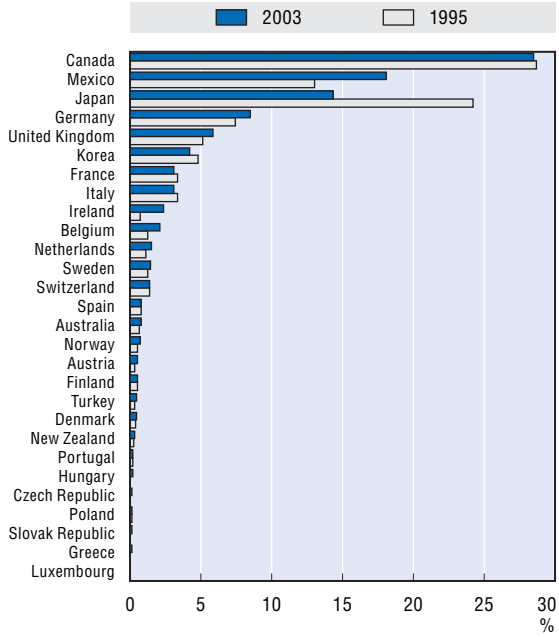


Figure I.5.3. **Trends of export market shares of goods into Japan**

Per cent, current prices

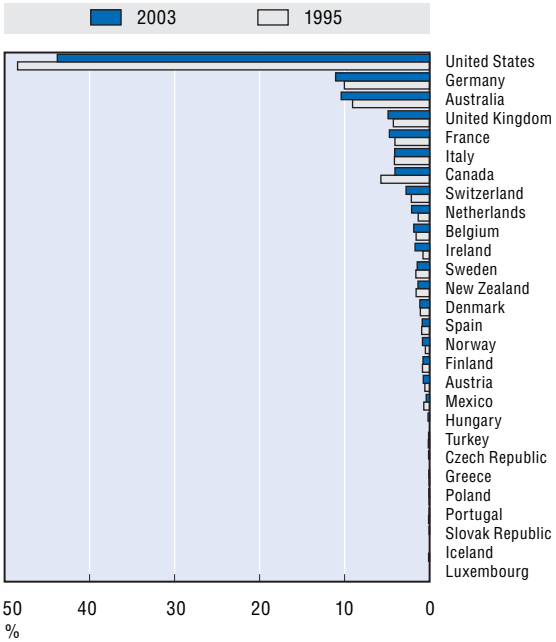
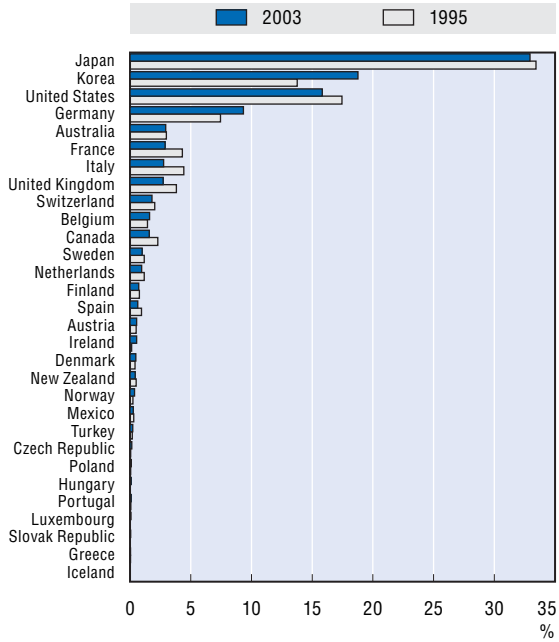


Figure I.5.4. **Trends of export market shares of goods into China and Hong Kong (China)**

Per cent, current prices



Source: OECD, *International Trade by Commodity Statistics* (ITCS), February 2005.

StatLink: *http://dx.doi.org/10.1787/377611808338*

I.6. Import penetration of goods and services

Figure I.6.1 confirms that the highest import penetration of goods and services is observed in the smaller countries like Luxembourg, Belgium, Ireland, Hungary and the Slovak Republic, and the lowest in the bigger countries such as the United States, Japan and Germany. This figure also shows that import penetration is correlated to the export ratio (*X/GDP*) (see Figure I.1.1).

Figures I.6.2 and I.6.3 present the changes in the import penetration of goods and services. In both cases, we can find almost the same countries with the highest and lowest import penetration. In the case of goods, in 2003 the countries which showed the highest growth in import penetration were the Slovak Republic, Hungary and the Czech Republic. In these countries, the increase can be attributed to the European Union which replaced a major part of imports from China.

In 2003, Ireland had the highest level of import penetration for services, more than 80% of which was due to business services, while between 1995 and 2003, Hungary recorded the highest growth in import penetration in the services sector (Figure I.6.3).

The rate of import penetration

The rate of import penetration(MP_{ij}) for a country *i* and a product *j* corresponds to the share of domestic demand (D_{ij}) in country *i* for product *j*, which is met by imports M_{ij}.

$MP_{ij} = 100\ M_{ij}/D_{ij}$. If *P*, *X* and *M* stand respectively for a country's output, export and imports, its domestic demand, D_{ij} will be equal to $D = P - X + M$ and then the import penetration in country *i* for product *j* will be $MP_{ij} = 100\ M_{ij}/(P - X_{ij} + M_{ij})$.

Competitiveness on the domestic market, as measured by the rate of import penetration, is based on the notion that a national industry endeavours to win, or at least keep, its shares in its own market. A low import penetration rate does not necessarily reflect import barriers but may be due to a good matching of output to domestic demand by highly competitive domestic firms capable of confronting foreign competition. Conversely, a high import penetration rate could reflect weak competitiveness on the part of domestic firms, especially when the export ratio is low. The size of the countries involved is also very important. The level of import penetration is usually greater in small countries because they are more open to the world economy and because of the way they specialize. As they are unable to specialise in many sectors, they become more dependent on imports. In the longer term, however, if the import penetration rises faster than domestic demand and is not accompanied by equivalent gains in export markets, this could indicate some deterioration of competitiveness.

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I.6. Import penetration of goods and services

Figure I.6.1. **Import penetration rate and export rate for goods and services, 2003**

Figure I.6.2. **Import penetration rates for goods, 1995 and 2003**

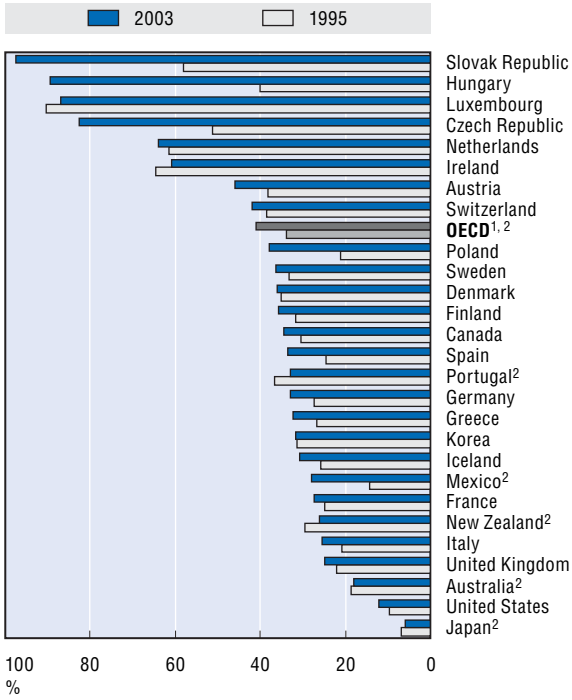
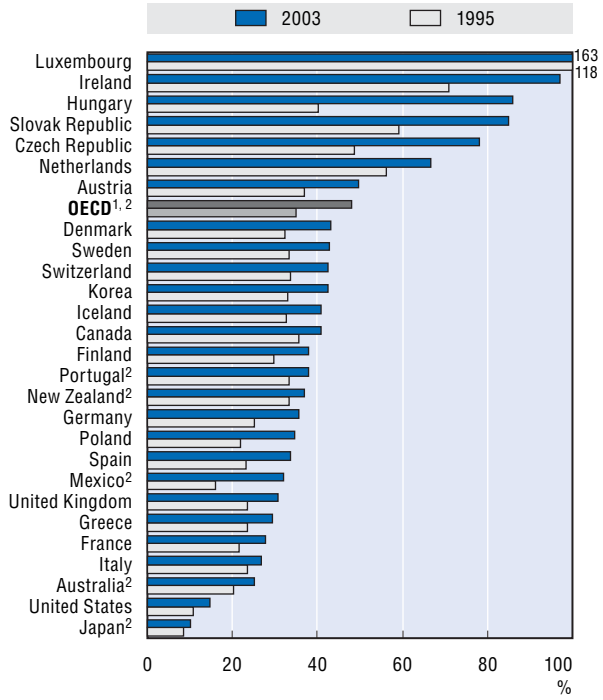


Figure I.6.3. **Import penetration rates for services, 1995 and 2003**



1. Figures for Belgium, Norway and Turkey not available, average figures for the OECD exclude these countries.
2. Data for Australia, Japan, Mexico, New Zealand and Portugal, refer to 2002, with respective effects on the OECD average.

Source: OECD, National Accounts of OECD Countries database (USD, constant prices and exchange rates, OECD base year 2000), May 2005.

StatLink: *http://dx.doi.org/10.1787/108378774216*

I.7. Exposure of domestic markets to foreign competition in manufacturing

■ Figure I.7.1 shows the dependence of domestic demand on imports and on local sales by foreign affiliates. In the first case, the domestic market is exposed to trade competition and in the second case to competition generated by international investment. In all the countries for which data are available, domestic demand in manufacturing is largely satisfied by imports. The United States is the only country where domestic demand was satisfied in the same proportions from imports and from local sales by foreign affiliates. In the case of some countries, such as Ireland and the Netherlands, almost 80% of domestic manufacturing demand is met by imports while less than 8% in Ireland and 20% in the Netherlands is met through local sales by foreign affiliates.

■ Figure I.7.2 shows the positions of OECD countries in 1995 and 2003 on the basis of the export ratio and the import penetration (exposure to foreign and domestic markets). In the space of eight years, all the countries concerned became more exposed to competition either in foreign markets or in the domestic market or in both at once.

■ The smaller countries are more exposed than bigger ones. Countries of the same size, however, can have fairly different degrees of exposure.

■ Some countries were more exposed in foreign markets than in domestic markets, for example Finland and Sweden. In other countries, on the other hand, it was mainly in the domestic market that exposure to competition increased, as was the case in particular, in the United States, Australia and Greece (Figure I.7.2).

Foreign penetration ratio

When affiliates under foreign control are present in a host country's economy, they may be regarded as competitors of firms controlled by the residents of that country. The import penetration ratio which is proposed earlier (Box I.6) could thus be broadened to the notion of foreign penetration ratio. A foreign penetration ratio P_R could take into account the share of foreign firms in local production, then P_R could be:

$$P_R = \frac{(S_F - X_F + M)}{DF}$$ where:

S_F = local sales of affiliates under foreign control.

X_F = exports of affiliates under foreign control.

M = total imports.

DF = final domestic demand.

This measure may be a little overestimated if a significant part of foreign affiliates' production is due to imports which are already included in total imports.

If imports by foreign affiliates intended for their own production are available (M_{FP}), then the foreign penetration ratio could be: $P'_R = (S_F - X_F + M - M_{FP})/DF$.

(See also *Measuring Globalisation: OECD Handbook on Economic Globalisation Indicators*, Chap. 5, § 588-589.)

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I.7. Exposure of domestic markets to foreign competition in manufacturing

Figure I.7.1. **Exposure of domestic manufacturing markets to foreign competition, 2001**

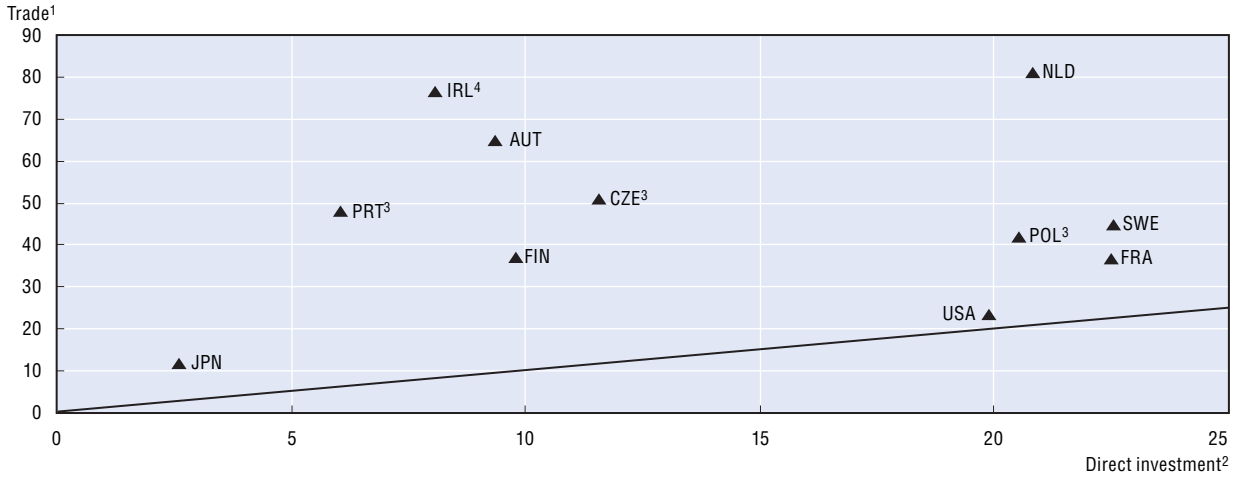
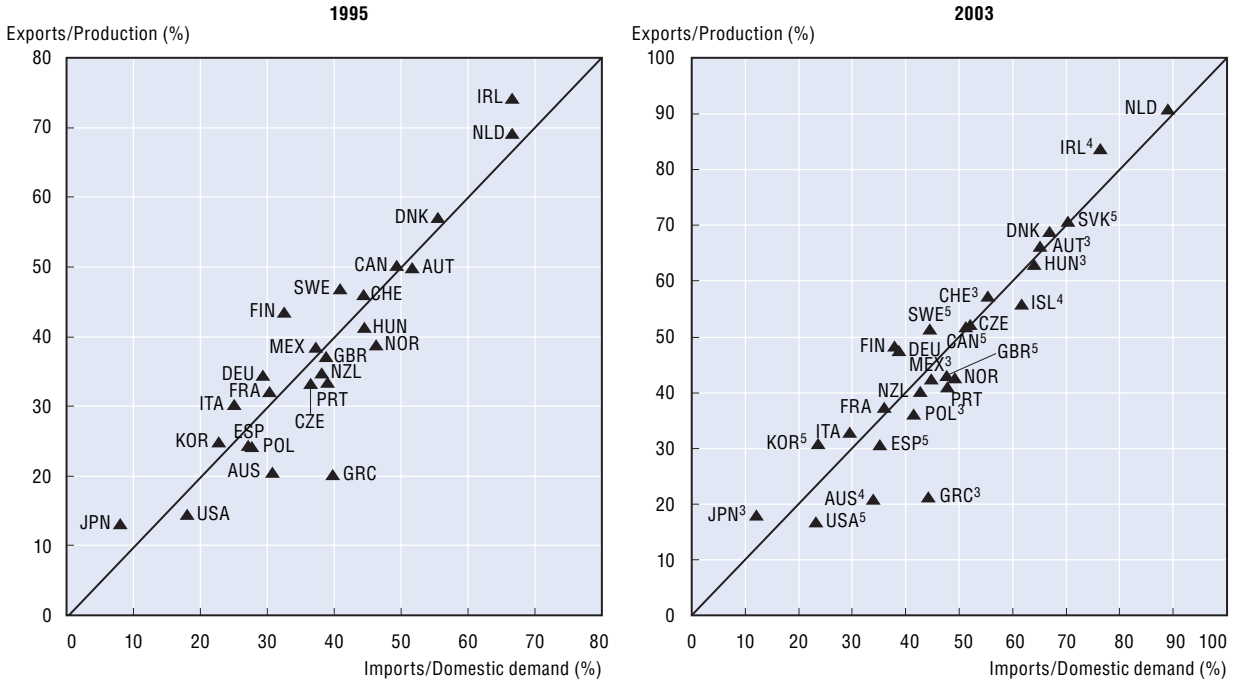


Figure I.7.2. **Export propensity and import penetration in the manufacturing sector, 1995 and 2003**



1. Imports/domestic demand.
2. (Turnover-exports) of foreign affiliates/domestic demand.
3. 2002.
4. 1999.
5. 2001.
6. 1998.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), Volume II: Services (FATS) and STAN: OECD Structural Analysis Statistics, April 2005.

StatLink: *http://dx.doi.org/10.1787/873285208881*

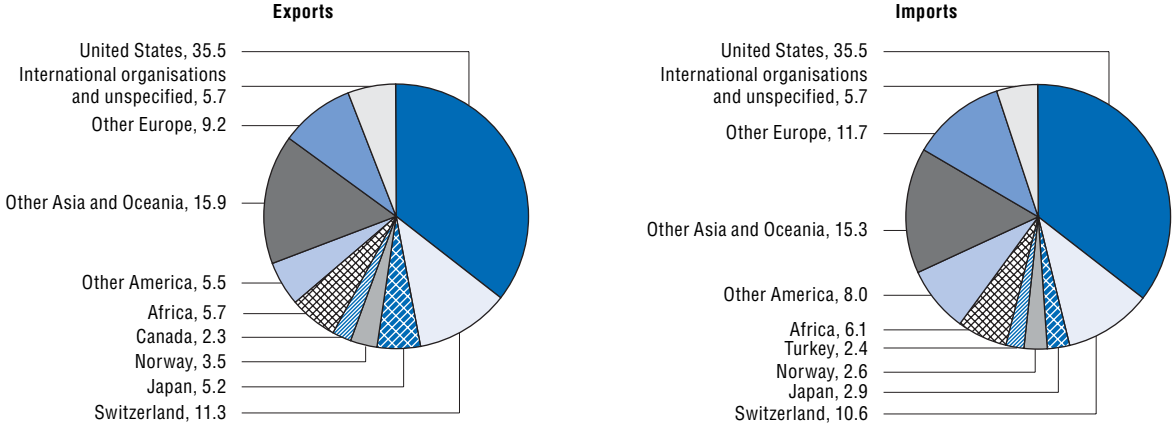
I.8. Main trade partners in services of the European Union, the United States and Japan

In 2002, for the European Union, the United States was the main trading partner in services with more than 35% of EU exports and imports. It is important to emphasise the weight of Switzerland in EU trade in services, which is two and three times greater for exports and imports respectively than that of Japan (Figure I.8.1). This result contrasts with that for trade in goods.

The European Union was the most important trading partner of the United States in 2002, with 33.5% of American exports going to the European Union and 37.8% of American imports coming from the European Union, particularly from the United Kingdom and Germany, which together account for half of US imports from the European Union (Figure I.8.2). Canada is also a major trading partner of the United States, with more than 8% of US exports and imports. Japan, contrary to its position *vis-à-vis* the European Union, is an important trading partner of the United States, more important than Canada even, at least in the case of exports. Switzerland trading does not play a significant role in US trade in services.

For Japan, the main trade partner in services was the United States, with 32.8% of exports and 31.3% of imports, while the European Union (EU-15) corresponded to 19.1% and 20.1% of exports and imports respectively. It is important to note the weight of other Asian trade partners such as Korea, Singapore and Hong Kong (China). The weight of China in exports and imports was the same as that of Korea and Singapore, around 5%. Because of their geographical proximity to Japan, other trading partners from Asia and Oceania have the same weight as the European Union (Figure I.8.3).

Figure I.8.1. **Trade partners of the European Union in services, 2002**



Source: OECD, International Trade by Commodity Statistics (ITCS) and OECD Statistics on International Trade in Services, March 2005.

StatLink: *http://dx.doi.org/10.1787/778346312308*

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I.8. Main trade partners in services of the European Union, the United States and Japan

Figure I.8.2. **Trade partners of the United States in services, 2002**

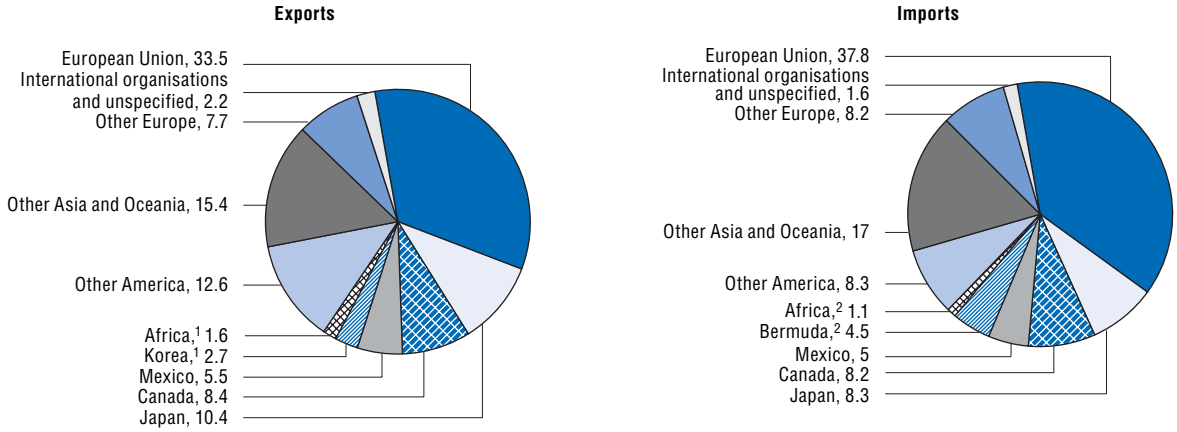
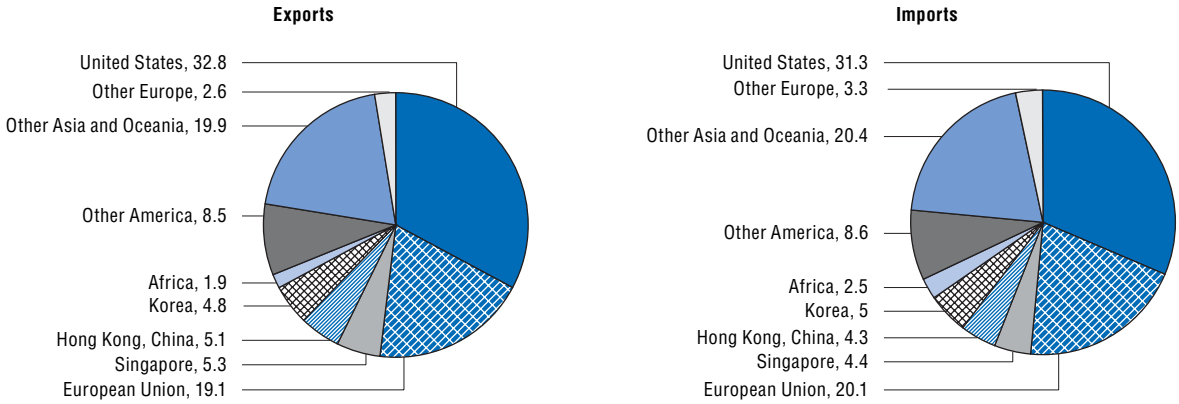


Figure I.8.3. **Trade partners of Japan in services, 2002**



1. The US exports of services to Korea and Africa refer to private services only. The US exports of government services for Africa are included in Other Asia and Oceania.
2. The US imports of services from Bermuda and Africa refer to private services only. The US imports of government services from Africa are included in Other Asia and Oceania.

Source: OECD, International Trade by Commodity Statistics and OECD Statistics on International Trade in Services, March 2005.

StatLink: *http://dx.doi.org/10.1787/778346312308*

I.9. Exposure to foreign competition by industry

■ While the importance of international trade compared to domestic production or demand has risen for virtually all industries between 1992 and 2001 in OECD countries, high- and medium-high-technology industries are generally more internationalised than less technology-intensive industries.

■ The average of the export ratio and the import penetration is highest – and has generally risen fastest – for computers, professional goods, aircraft, chemicals, and electronic equipment, but also for textiles, whereas resource-based industries are less internationalised. Strong regulation in the pharmaceuticals industry in many countries favours foreign direct investment rather than trade.

■ By country, these ratios give an indication of the export orientation and exposure to foreign trade competition in particular industries.

■ Owing to international sourcing and intra-industry trade, strongly export-oriented industries can also have high import penetration ratios. This is the case for computers in the United States, and to a lesser extent in Japan and the European Union.

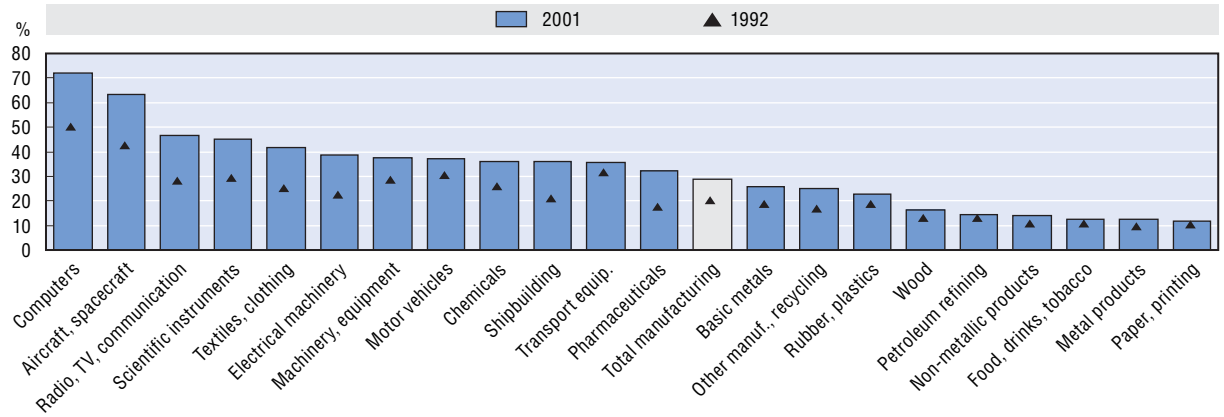
■ A strong difference between export ratio and import penetration shows national specialisation patterns, such as the strong export orientation of aircraft and the high import penetration of textiles in the United States and the European Union.

Export ratio and import penetration

The *export ratio* indicates the share of output *Y* which is exported, *i.e.* *X/Y*, and the *import penetration rate* shows to what degree domestic demand *D* is satisfied by imports *M*, *i.e.* *M/D = M/(Y – X + M)*. As for the trade-to-GDP ratio, a low penetration rate does not necessarily imply the existence of high import barriers. In fact, it may reflect industry-specific characteristics unfavourable to international trade, such as high transport costs for goods with low value per ton. A low penetration rate may also reflect the presence of highly competitive domestic firms capable of resisting foreign competition, especially if the export ratio is high at the same time. Conversely, a high import penetration rate may reflect weak competitiveness of domestic firms, especially if the export ratio is low. Both indicators are high for some industries and reflect their internationalisation, especially owing to sourcing of intermediate goods, intra-industry trade and intra-firm trade.

Figure I.9.1. **Exposure to international trade competition for manufacturing industries in selected OECD[1] countries**

Average of export ratio and import penetration



1. Including Austria, Canada, Denmark, Finland, France, Germany, Italy, Japan, Korea, Netherlands, Norway, Portugal, Spain, Sweden, United Kingdom and United States. Data include intra-OECD trade.

Source: OECD, STAN: OECD Structural Analysis Statistics (STAN Indicators and STAN Bilateral Trade database), April 2005.

StatLink: *http://dx.doi.org/10.1787/613712560631*

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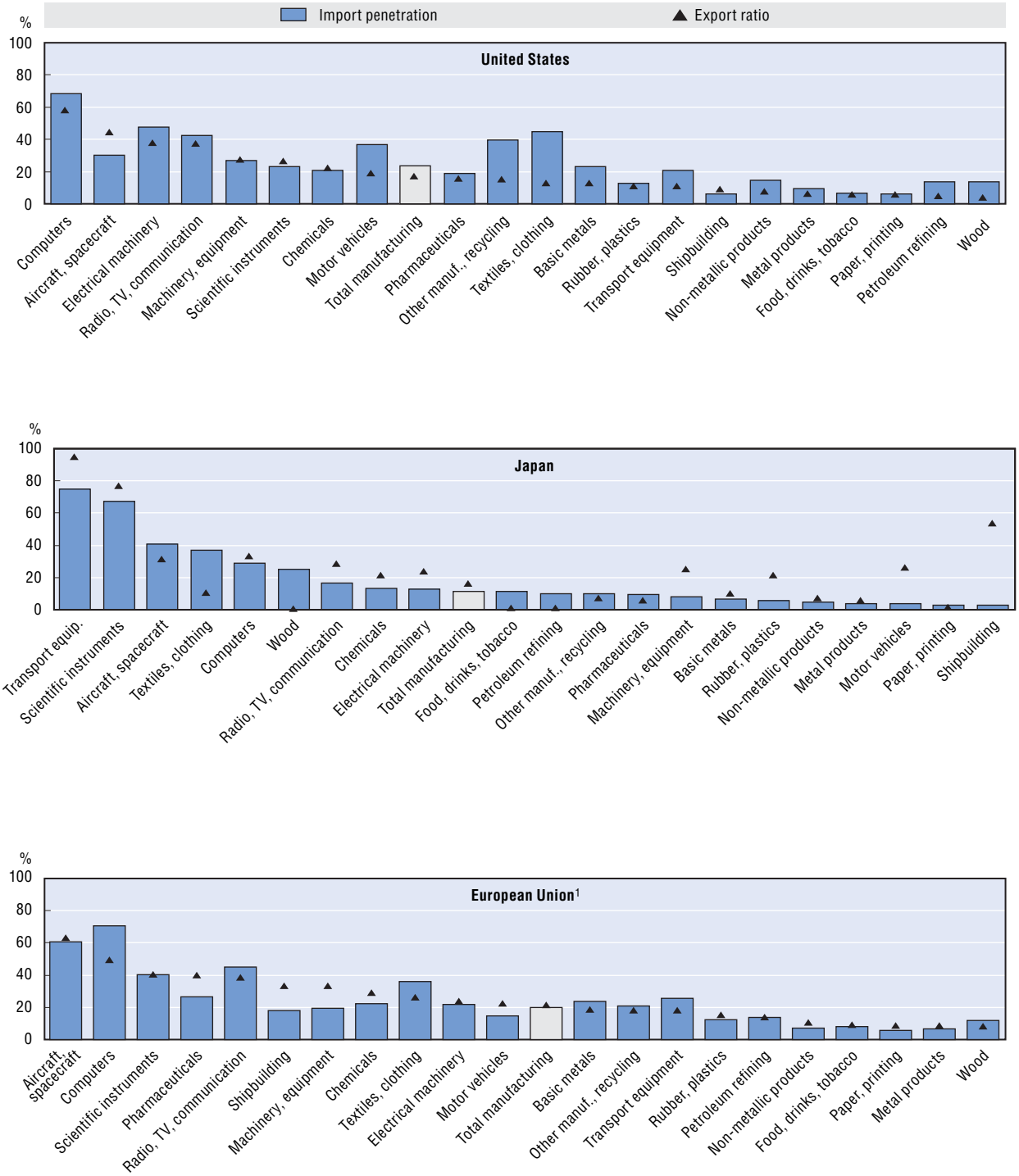
I.9. Exposure to foreign competition by industry

Figure I.9.2. **Exposure of manufacturing industries, 2001**



1. Including Austria, Denmark, Finland, France, Germany, Italy, Netherlands, Portugal, Spain, Sweden and the United Kingdom. Intra-EU trade is excluded.

Source: OECD, STAN: OECD Structural Analysis Statistics (STAN Indicators and STAN Bilateral Trade database), April 2005.

StatLink: *http://dx.doi.org/10.1787/613712560631*

I.10. Role of high-technology industries in international trade

High-technology industries (see definition in Box H.5) play an increasingly important role in international trade of manufactured goods. International demand is rising particularly fast for products of these key industries, as their use throughout the economy can have significant positive effects on productivity and competitiveness.

High-technology industries are in general more internationalised than less technology-intensive industries. While they still only account for 25% of total OECD trade, their annual growth rate largely outstrips the manufacturing average.

The industries with the highest growth rates in OECD manufacturing trade between 1994 and 2003 are classified as high-technology industries: pharmaceuticals, scientific instruments, aircraft and spacecraft and electronic equipment (radio, TV, communication).

While high-technology industries are the most dynamic manufacturing industries, they represent, at present in absolute terms, about one-quarter of total OECD trade. They account for more than medium-low-technology industries (such as rubber and plastic products and fabricated metal products), as well as low-technology industries such as textile, food and ferrous metals.

Together with medium-high-technology industries (especially motor vehicles, chemicals and machinery and equipment), these industries account for the bulk of OECD manufacturing trade (slightly more than 60%).

In 2003, 13 OECD countries recorded a trade balance in surplus concerning manufacturing high-technology industries. Japan, Ireland, Korea and Switzerland are the main countries with an important trade surplus: Japan, Ireland and Korea in computers and electronics, Switzerland in pharmaceutical goods. On the other hand, the trade deficit of the United States represents more than the cumulative trade deficit of Australia, Canada, Spain and Italy (USD –54.5 billion).

Figure I.10.1. **OECD[1] manufacturing trade[2] by technology intensity**

Index 1994 = 100

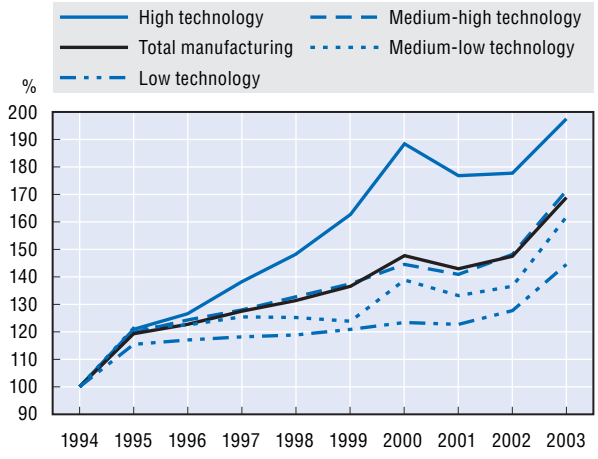
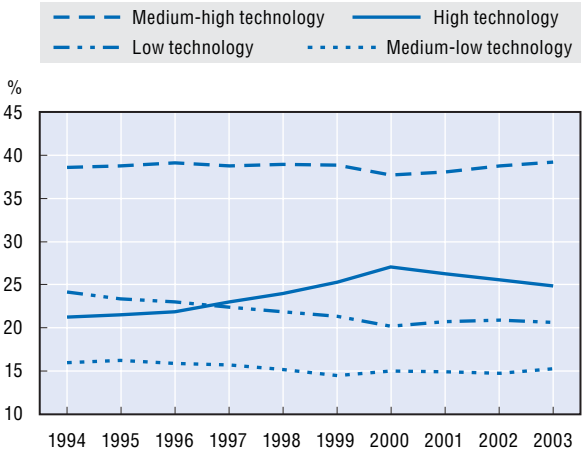


Figure I.10.2. **Structure of OECD[1] manufacturing trade[2] by technology intensity**

Share in total manufacturing trade



1. Excluding Luxembourg and Slovak Republic.
2. Average value of total OECD exports and imports of goods.

Source: OECD, STAN: OECD Structural Analysis Statistics (STAN Indicators database), March 2005.

StatLink: *http://dx.doi.org/10.1787/812170054228*

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I.10. Role of high-technology industries in international trade

Figure I.10.3. **Growth of OECD[1] manufacturing trade[2] by industry and technological intensity**

Average annual growth rate, 1994-2003

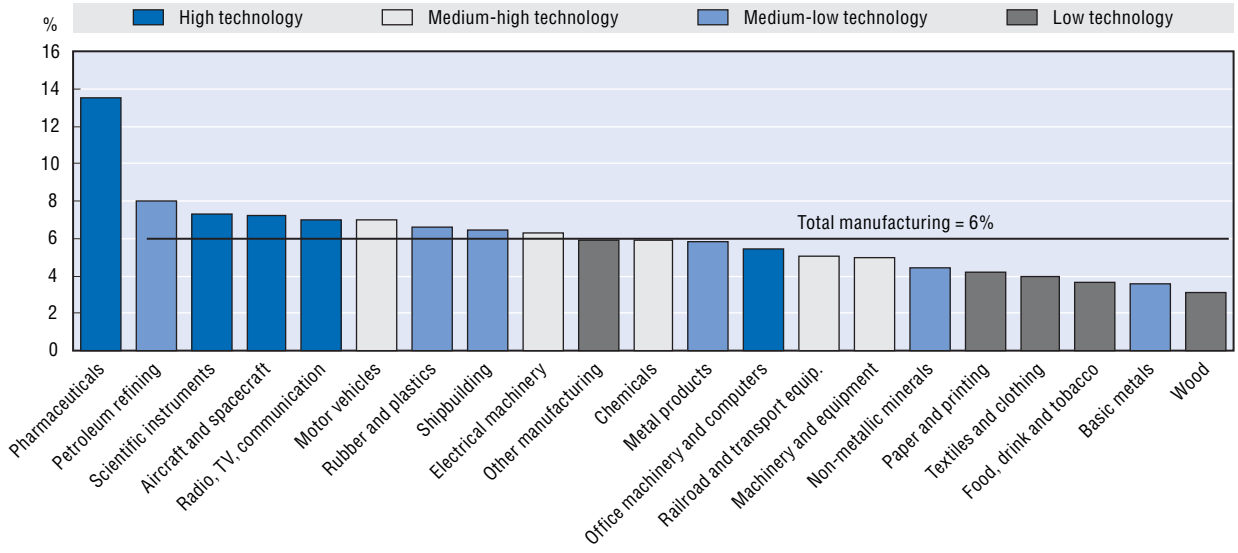
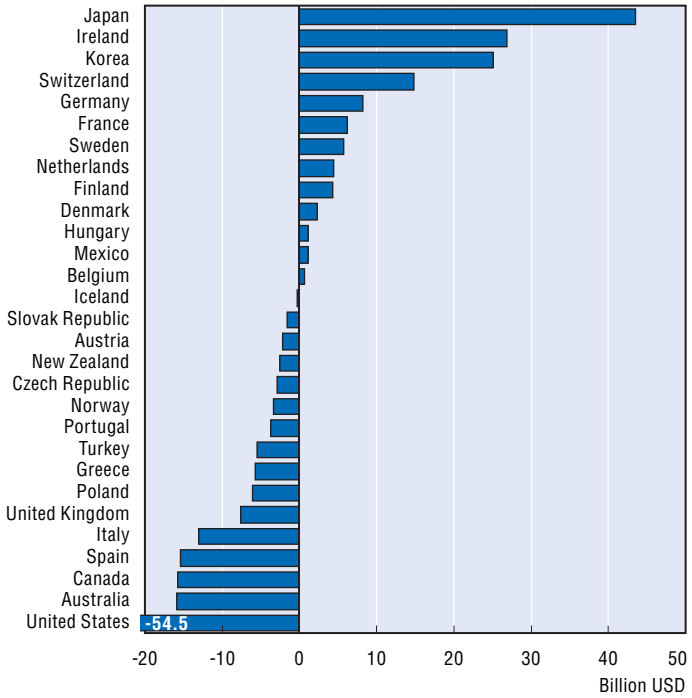


Figure I.10.4. **Trade balance of manufacturing high-technology industries in 2003**

Current billion USD



1. Excluding Luxembourg and Slovak Republic.
2. Average value of total OECD exports and imports of goods.

Source: OECD, STAN: OECD Structural Analysis Statistics (STAN Indicators database), March 2005.

StatLink: *http://dx.doi.org/10.1787/812170054228*

I.11. Ratio of high-technology production in manufacturing to domestic demand

High-technology industries play an increasingly important role in international trade of manufactured goods. International demand is rising particularly fast for products of these key industries as their use throughout the economy can have significant positive effects on productivity and competitiveness.

Figure I.11.1 shows how the high-tech production of countries satisfies domestic demand and in what proportion this demand is satisfied by imports. Several countries recorded a structural trade surplus in high technology (*e.g.* Ireland, Finland, Denmark) while others recorded a structural deficit (*e.g.* Greece, Portugal, Spain, Australia).

Countries like Canada and Austria improved their situation, even if their trade deficit was not reduced, in the sense that a greater part of their production met domestic demand.

Figure I.11.2 compares the export specialisation of high technology industries (share of high technology exports in total manufacturing exports) with the R&D intensity of each country. From this point of view, the results conform to the results of Figure I.9.1. Countries like Greece, Portugal, Poland and Spain, for example, are characterised by a relatively weak R&D effort and also by relatively poor export performance in high-technology industries.

The case of Ireland requires some explanation since it has the highest trade surplus in high-tech manufacturing, particularly exports, a situation which contrasts with its low level of industrial R&D. The main reason for these results is the presence in Ireland of many foreign affiliates (particularly from the United States) in high technology. However, the technology for these firms is largely transferred from the investing countries to Ireland without any major R&D being performed locally.

Ratio of production to domestic demand (S)

The ratio of production Y to domestic demand D indicates which proportion of domestic demand could be satisfied by production or imports.

Consequently, for a country *i* and a product *j* (*e.g.* high-tech products), the above-mentioned ratio is:

$$S_{ij} = \frac{Y_{ij}}{D_{ij}} = \frac{Y_{ij}}{Y_{ij} - X_{ij} + M_{ij}} .$$

If $S_{ij} = 1$, it does not meant that all the domestic demand is satisfied by imports (M) but the value of imports needed for the domestic demand is equal to exports (X) $\longrightarrow X_{ij} = M_{ij}$.

If $S_{ij} > 1$, then the trade balance is in surplus $\longrightarrow$ $X_{ij} > M_{ij}$, *if* $S_{ij} < 1$, the trade balance is in deficit $\longrightarrow X_{ij} < M_{ij}$.

An improvement of the adaptation of production to domestic demand corresponds to a higher proportion of production going to the domestic market, even if the trade deficit is not reduced. One possible explanation could be that part of the exported production is oriented to the domestic market. The trade deficit could be reduced if a significant part of the production were to replace imports.

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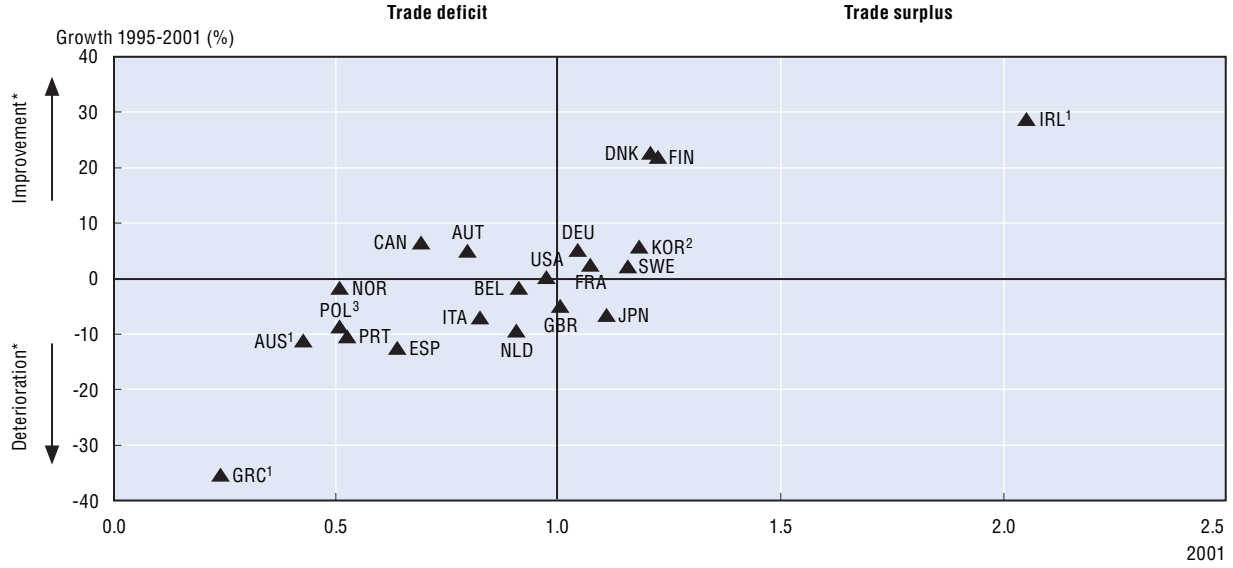
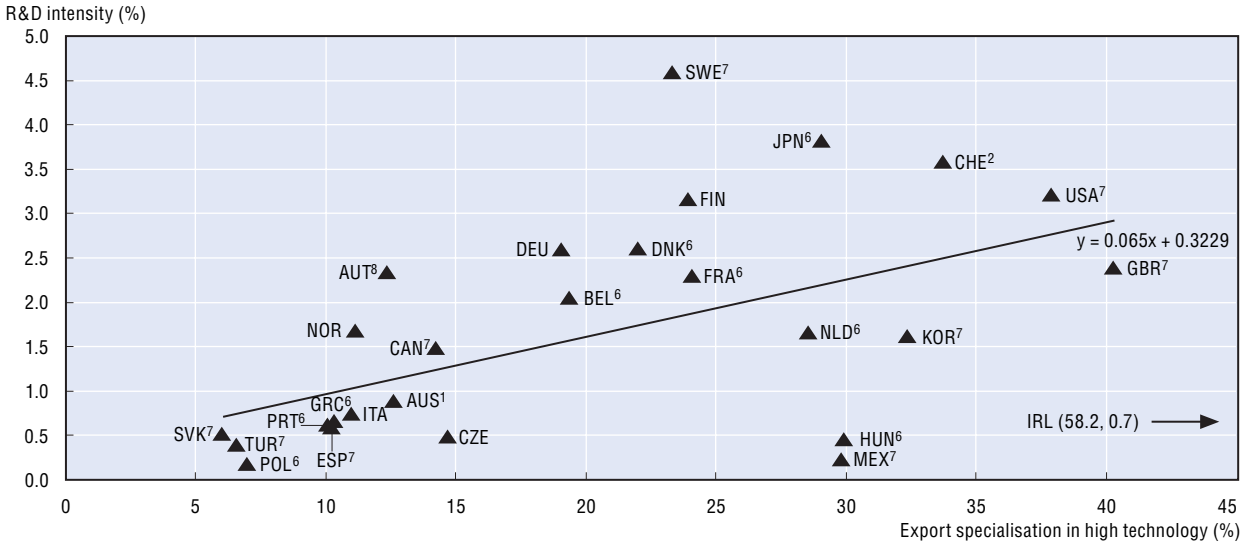
I.11. Ratio of high-technology production in manufacturing to domestic demand

Figure I.11.1. **Trends of high-technology production to domestic demand**



* With respect to the adaptation of production to domestic demand.

Figure I.11.2. **R&D intensity[4] and export performance[5] in high-technology manufacturing industries, 2003**



1. 1999 and 1995-99.
2. 2000 and 1995-2000.
3. 1996-2001.
4. R&D expenditure/production.
5. Share of high-technology exports (X_{HT}) in manufacturing exports (X_M): X_{HT}/X_M.
6. 2002.
7. 2001.
8. 1998.

Source: OECD, STAN: OECD Structural Analysis Statistics [STAN R&D (ANBERD) and STAN Indicators] and OECD Science, Technology and R&D Statistics (Research and Development Statistics), May 2005.

StatLink: *http://dx.doi.org/10.1787/424724116583*

I.12. Import and compensation of employees content of exports

The need to import in order to export is an essential characteristic of economic integration and the globalisation of production. The imports vital to the production of exported goods may come from affiliates controlled by the reporting country or from non-affiliated firms. In some countries, such as the Netherlands, the import content of exports exceeds 40%. In contrast, Japan and the United States are the least dependent on imports for their exports.

Between the mid-1980s and the mid-1990s, the import dependency of exports increased in Canada, Australia, the Netherlands and the United States. In contrast, it decreased in Japan, Denmark and France. If energy imports needed to manufacture the exported goods are excluded, the above percentages are reduced by 2 to 3 points.

In some countries, such as the United States, the compensation of employee (CofE) content of exports exceeds 50%, and indeed increased slightly between 1985 and 1997. In contrast the share fell in Japan from over 45% to less than 40% over the same period. There are many possible explanations for these trends but perhaps chief amongst them is that, in the main, increases (decreases) in CofE shares mirror decreases (increases) in the import content of exports (Figure I.12.1). This also explains the relative differences across countries. For example the CofE content of exports in the Netherlands is the lowest of the 8 countries shown, but the import content of exports is the highest.

Figure I.12.1. **Import content of exports of manufactured goods**

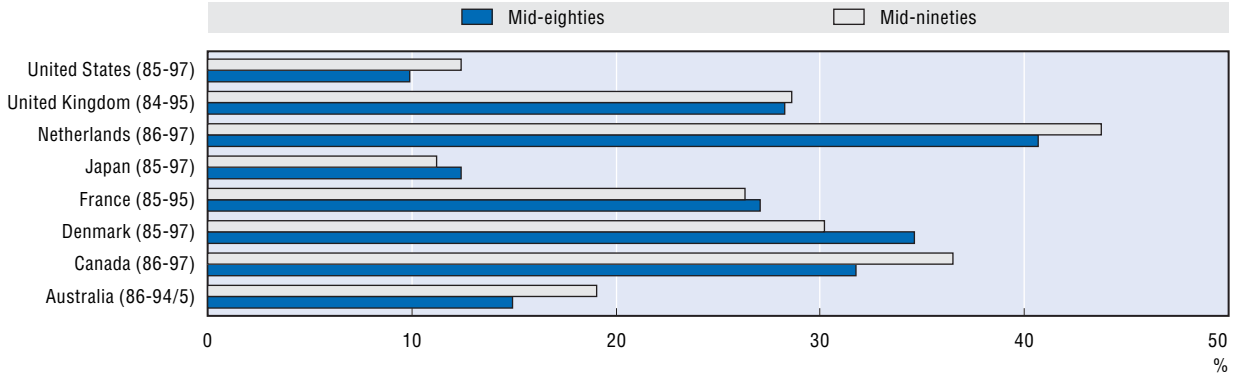
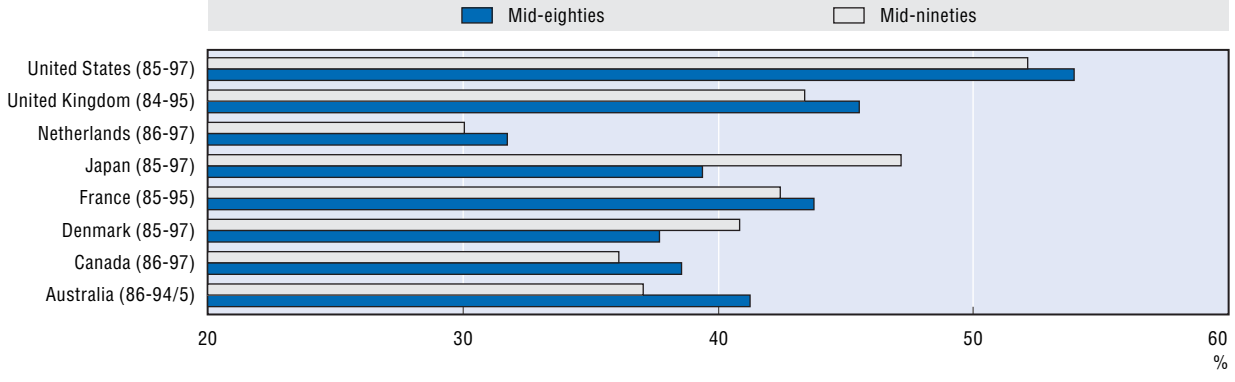


Figure I.12.2. **Compensation of employee content of exports of manufactured goods**



Source: OECD, STAN: OECD Structural Analysis Statistics (STAN tables), May 2005.

StatLink: *http://dx.doi.org/10.1787/341756353218*

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I.12. Import and compensation of employees content of exports

Import and compensation of employees content of exports

An important aspect of globalisation is the link between a country's exports and imports. This link may be complex if a number of countries are producing parts of the same final goods and services.

One way of measuring the relationship is through the use of input-output tables. Input-output tables measure the interrelationships between the producers of goods and services (including imports) within an economy and the users of these same goods and services (including exports). In this context they can be used to estimate the contribution that imports make in the production of any good (or service) for export. For example, if a motor car manufacturer imports certain components (*e.g.* the chassis) the direct import contribution will be the ratio of the value of the chassis to the total value of the car. And if the car manufacturer purchases other components from domestic manufacturers, who in turn use imports in their production process, those imports must be included in the car's value. These indirect imports should be included in any statistic that attempts to measure the contribution of imports to the production of motor cars for export. The total direct and indirect imports are known as "embodied imports".

In an input-output framework, the relationship between producers and consumers can be simply described as follows:

$g = A^*g + Y$, where g is an n*1 vector of the output of n industries within an economy; A is an n*n matrix describing the interrelationships (or production function) between industries (known as the Leontief matrix), where A_{ij} is the ratio of inputs from industry i used in the output of industry j and Y is an n*1 vector of final demand for domestically produced goods and services, including exports.

Assuming that no other imports (re-exports) are recorded, total imports embodied within exports can be shown as $m^*(1 - A)^{-1*}e$, where m is a 1*n vector with components m_j (the ratio of imports to output in industry j) and e is a vector of exports by industry.

And so the "import content of exports" (the share of imports used in production to make one unit of exports) is equal to $m^*(1 - A)^{-1*}e/E$, where $E = \Sigma\, e_i$ (total exports).

Similarly, the embodied imports in exports by industry j can be shown as $\Sigma\, m_i{}^*L_{ij}$ where L_{ij} is the ij^{th} element of the Leontief inverse $(1 - A)^{-1}$.

In addition the share of imports used in the production process to produce exports is equal to $m^*(1 - A)^{-1*}e/M$, where $M = m^*g$ (total imports).

In the same way, one can estimate the total indirect and direct contribution of exports to compensation of employees by replacing the import vector m with an equivalent vector that shows the ratio of compensation of employees to output (c). So, the contribution of exports to compensation of employees is equal to:

Contribution of exports to compensation of employees = $c^*(I - A)^{-1*}e$, and the compensation of employees content of exports = $c^*(I - A)^{-1*}e/E$, and the share of compensation of employees embodied within exports = $c^*(I - A)^{-1*}e/C$, where C = total compensation of employees.

A further extension of this method, not attempted here but which could be the subject of future work, is to investigate the number of indirect and direct jobs dependent on exports. This could be calculated easily by replacing (c) above by the ratio of jobs to output.

See also OECD, *Measuring Globalisation: OECD Handbook on Economic Globalisation Indicators*, Chap. 5, Section 5.3, Paris, 2005.

I.13. Intra-industry trade

■ Simultaneous exports and imports within the same industry are generally labelled as intra-industry trade. It typically occurs among rich countries with similar levels of development which are geographically close, and is often regarded as a corollary of smooth economic integration.

■ Countries in which intra-industry trade is high in relation to aggregate manufacturing trade (over 70%) and has also increased in recent years are the Czech Republic, Hungary and Portugal. In some other countries, such trade remains fairly brisk but has not increased significantly. These countries include France, Canada, Austria and Switzerland.

■ The high level and fast growth of intra-industry trade in some Central and Eastern European countries may stem from the large volume of direct investment in those countries, from Germany in particular. The shift to these countries of numerous activities of foreign multinationals was conducive to a relatively swift rise in intra-industry trade over the course of the 1990s. The low level of intra-industry trade in Japan may be due to the fact that Japanese exports are concentrated in a number of high-technology sectors that generate substantial trade surpluses.

The measurement of intra-industry trade

Intra-industry trade flows are conventionally defined as the two-way exchange of goods within standard industrial classifications. The extent of intra-industry trade is commonly measured by Grubel-Lloyd indexes based on commodity group transactions. Thus, for any particular product class i, an index of the extent of intra-industry trade in the product class i between countries A and B is given by the following ratio:

$$IIT_{i.AB} = \left(\frac{(X_i + M_i) - |X_i - M_i|}{(X_i + M_i)} \right) \bullet 100 \qquad [1]$$

This index takes the minimum value of zero when there are no products in the same class that are both imported and exported, and the maximum value of 100 when all trade is intra-industry (in this case Xi is equal to Mi). Bilateral indices of intra-industry trade in the product class i between country A and all its trading partners are obtained as a weighted average of the bilateral indices [1] for each partner country B, using as weights the share of total trade of A accounted for by trade with B. Bilateral indices of intra-industry trade between country A and country B for total manufacturing are the weighted average of the indexes in [1] for all product classes i, with weights given by the share of total trade of i over total manufacturing trade:

$$IIT_{AB} - \sum_i \left(\frac{(X_i + M_i) - |X_i - M_i|}{(X_i + M_i)} \right) \bullet \left(\frac{(X_i + M_i)}{\sum_i (X_i + M_i)} \right) \bullet 100 \qquad [2]$$

A degree of caution must be used when comparing and interpreting intra-industry indices because their measurement crucially depends on the level of disaggregation chosen for the analysis. In the current context of assessing the importance of the division of the production process across countries, it should be recognised that, as well as measuring trade in intermediate goods at various stages of production, much intra-industry trade is trade in similar, but often highly differentiated, finished products (OECD, *Economic Outlook*, June 2002).

For the needs of the present document, the formula of the Balassa index is used. Concerning the industry i of a country k with the rest of the world, this index is:

$$IIT^k = \left[1 - \frac{\sum_i \left| \left(X_i^k - M_i^k \right) \right|}{\sum_i \left(X_i^k + M_i^k \right)} \right] \bullet 100 \qquad [3]$$

The limitations of the intra-industry trade indicators are presented in *Measuring Globalisation: OECD Handbook on Economic Globalisation Indicators*, Chap. 5, Section 5.3.5.

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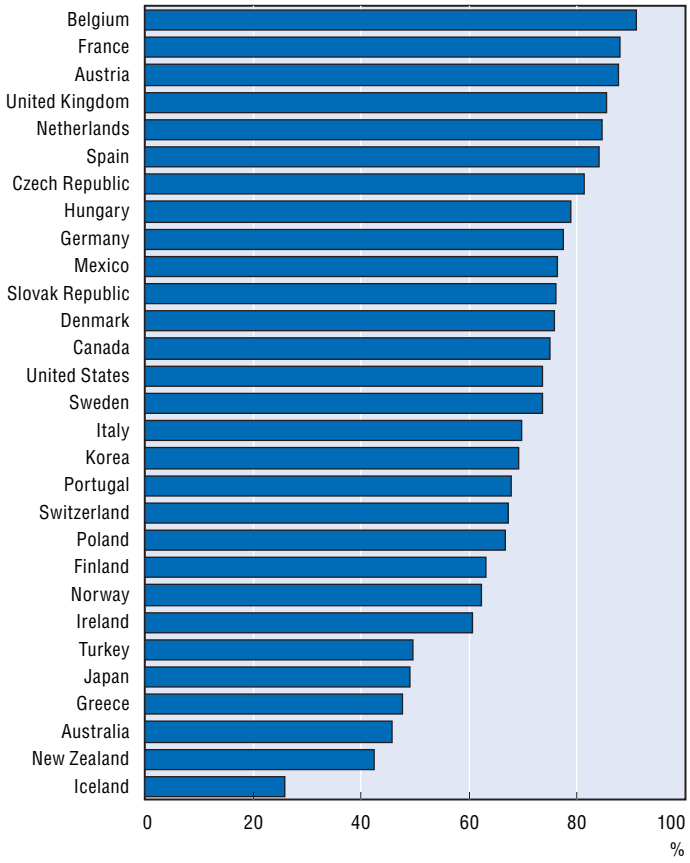
I.13. Intra-industry trade

Figure I.13.1. **Manufacturing intra-industry trade as a percentage of total manufacturing trade**

Average 1996-2003[1]



1. Average 1997-2003 for the Slovak Republic.

Source: OECD, STAN: OECD Structural Analysis Statistics (STAN Indicators database), April 2005.

StatLink: *http://dx.doi.org/10.1787/704042673725*

I.14. Export and import propensity of affiliates under foreign control

■ It might be supposed that the main task of affiliates under foreign control is to meet local demand in the host country, with exports being a secondary objective, yet the vast majority export more than the average domestic firm.

■ This is particularly true in manufacturing. In Ireland, for example, over 90% of the manufacturing output of foreign affiliates is exported, and in Austria and Finland the proportion is over half (Figure I.14.3).

■ In a majority of countries, the import propensity of affiliates under foreign control is lower than their export propensity. In the United States, however, the trade balance of affiliates under foreign control is in deficit, as is the trade balance of manufacturing firms as a whole.

■ In the case of services, all affiliates under foreign control record significantly greater propensities to import than to export. This highlights the fact that service affiliates contribute to a widening of trade deficits, or at least to a reduction of trade surpluses.

Figure I.14.1. **Trade balance of affiliates under foreign control in the manufacturing sector, 1996 and 2001**

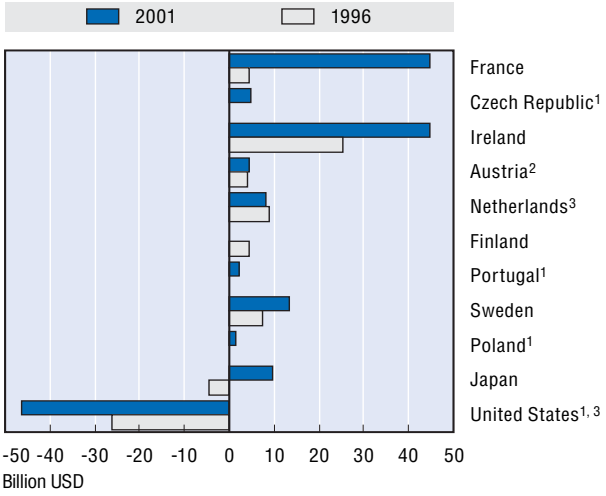
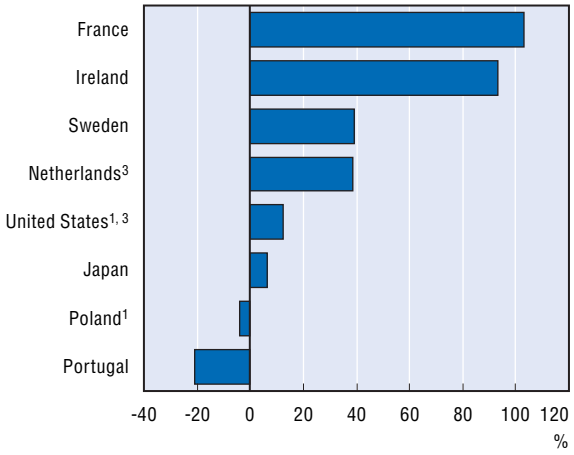


Figure I.14.2. **Share of the trade balance of affiliates under foreign control in the global trade balance of host countries in the manufacturing sector, 2001**



1. 2002.
2. 1995.
3. Trade in goods only.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), Volume II: Services (FATS) and STAN databases, May 2005.

StatLink: *http://dx.doi.org/10.1787/463552101811*

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I.14. Export and import propensity of affiliates under foreign control

Figure I.14.3. **Export and import propensity[1] of affiliates under foreign control in the manufacturing sector, 2001**

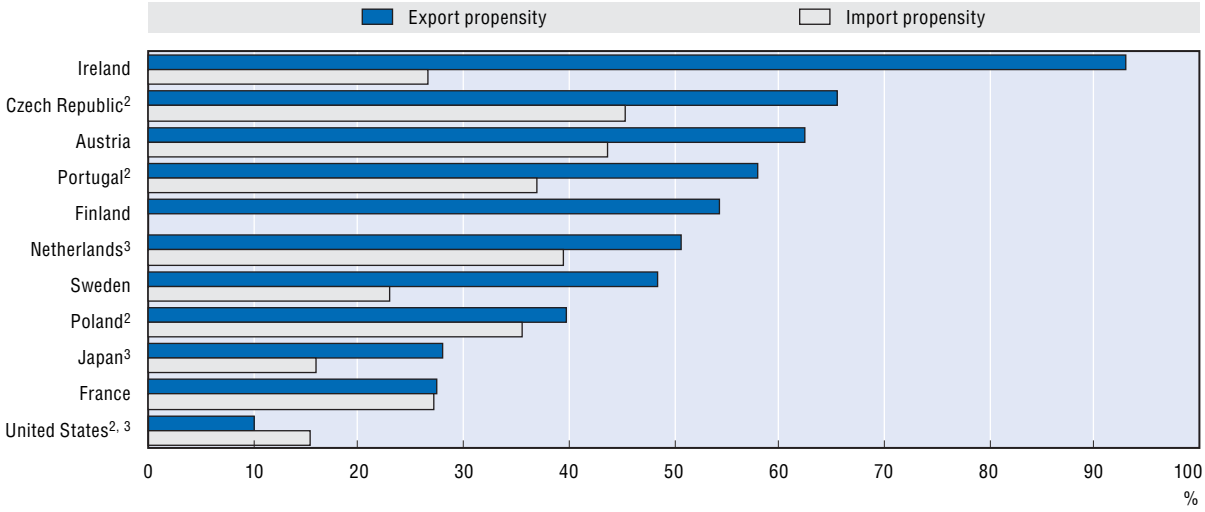
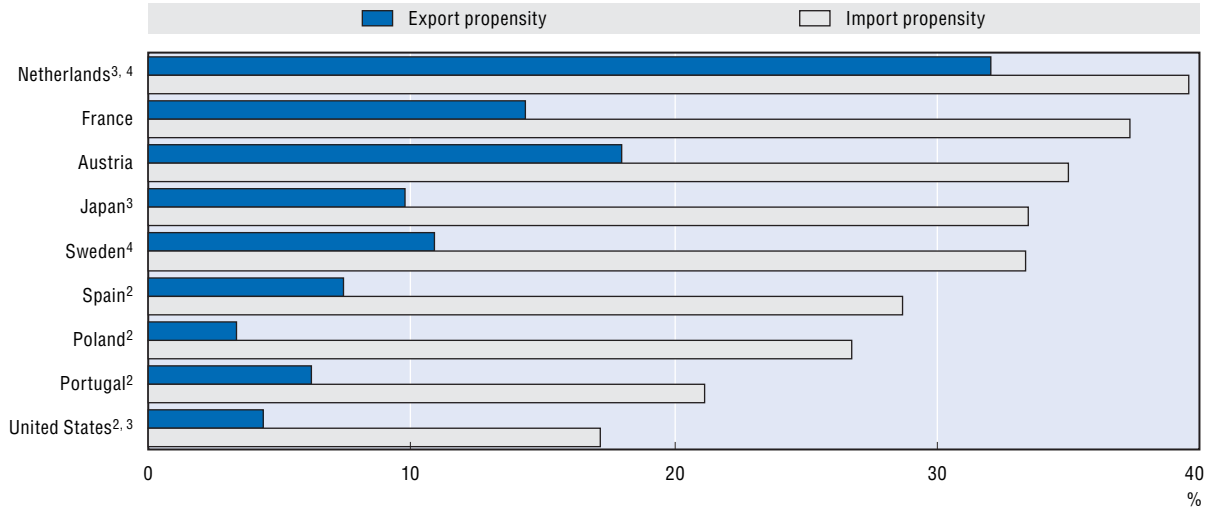


Figure I.14.4. **Export and import propensity[1] of affiliates under foreign control in the services sector, 2001**



1. Exports and imports as a percentage of turnover (or production for Ireland).
2. 2002.
3. Trade in goods only.
4. 2000.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA) and Volume II: Services (FATS), May 2005.

StatLink: *http://dx.doi.org/10.1787/463552101811*

J. INTRA-FIRM TRADE OF MULTINATIONAL ENTERPRISES

J.1. Intra-firm trade in selected OECD countries

■ The share of intra-firm exports in total exports of manufacturing affiliates under foreign control ranges between 15% and 60% in the OECD countries for which such data are available (Figure J.1.1).

■ Throughout the 1990s and the beginning of the present decade, this proportion held steady at around 50% in the United States, Canada and the Netherlands, but rose sharply in Sweden (from 35% to 75%) and declined in Japan (from 35% to 15%). In other words, in 2001, only 30% of the exports of affiliates under foreign control in Sweden were destined for non-affiliates, while in Japan the corresponding proportion was 85%.

■ The share of intra-firm imports in the total imports of affiliates under foreign control remained stable during the 1990s in the United States, while it decreased in Japan. At the beginning of the 2000s, in both countries intra-firm imports in the total imports of foreign affiliates increased slightly, while it decreased in the Netherlands.

Measuring intra-firm trade

Intra-firm trade refers to trade between enterprises belonging to the same group that are located in different countries. The ratio of intra-firm trade to the total trade of countries publishing the relevant data is quite high. Once foreign investments have been made, these transactions reflect centralised decisions that are part of a group's global strategy.

A significant portion of intra-firm trade may reflect affiliates' better understanding of local market demand. Parent corporations and other firms in the group often prefer to export to their own affiliates, which then sell the goods they receive to local consumers. In fact, parent corporations could sell these products directly to local distributors, without involving affiliates. It is difficult to determine whether there would be fewer transactions if they did not pass through affiliates.

Four basic indicators are proposed: two for inward investment and two for outward investment.

Inward investment: Exports (X_F^{intra}) and imports (M_F^{intra}) by the foreign-controlled affiliates in compiling countries with parent companies and other affiliates located abroad to total exports (X) and imports (M) of the compiling countries:

$$\frac{X_F^{intra}}{X}, \quad \frac{M_F^{intra}}{M}$$

Outward investment: Exports (X_{out}^{intra}) and imports (M_{out}^{intra}) by parent companies in the compiling country with their affiliates abroad to total exports and imports:

$$\frac{X_{out}^{intra}}{X}, \quad \frac{M_{out}^{intra}}{M}$$

These indicators might also be calculated in terms of total exports and imports by these firms, and by industrial sector and by country of origin and destination.

In the case of imports by affiliates under foreign control in host countries and by parent companies controlled by residents of compiling countries, it would also be very useful to distinguish between imports destined for use in their own production, those resold as same-state goods on the domestic market, and those re-exported, either in the same state or after further processing.

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J.1. Intra-firm trade in selected OECD countries

Figure J.1.1. **Share of intra-firm exports in total exports of affiliates under foreign control**

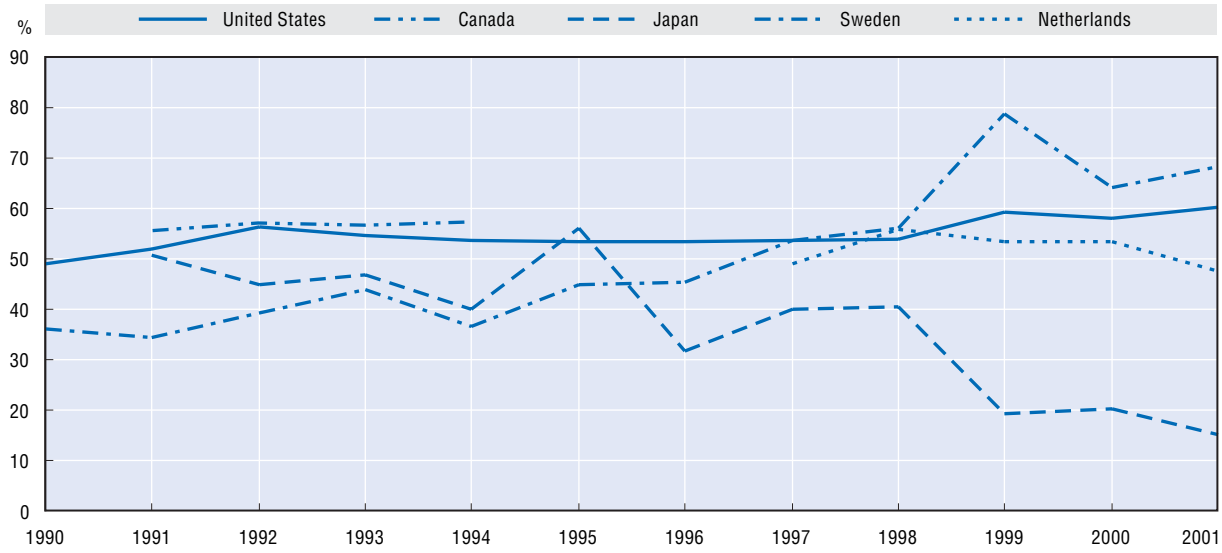
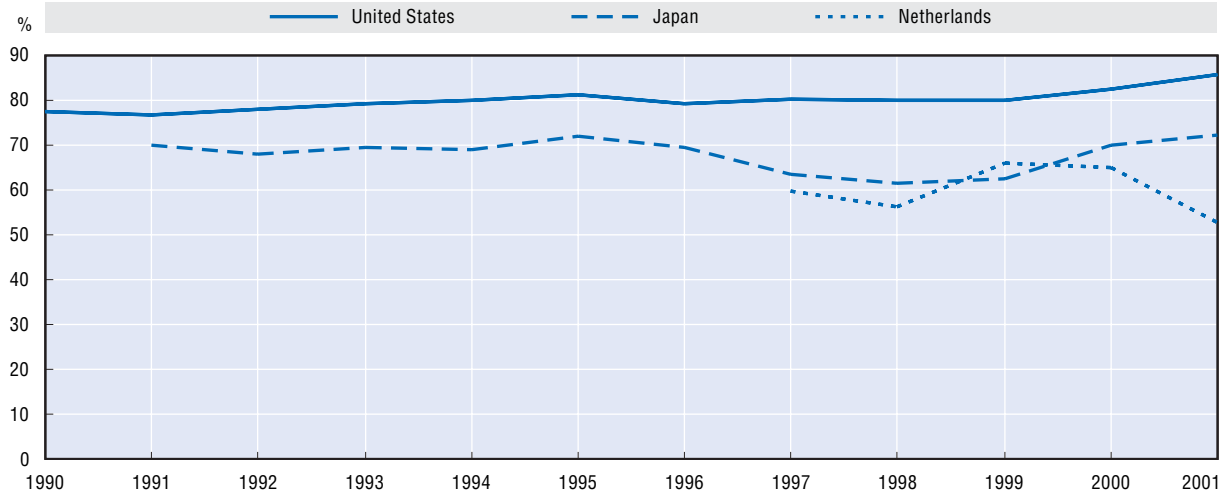


Figure J.1.2. **Share of intra-firm imports in total imports of affiliates under foreign control**



Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), February 2005.

StatLink: *http://dx.doi.org/10.1787/310340123464*

J.2. US trade balance and intra-firm trade in goods in total US trade and by partner country

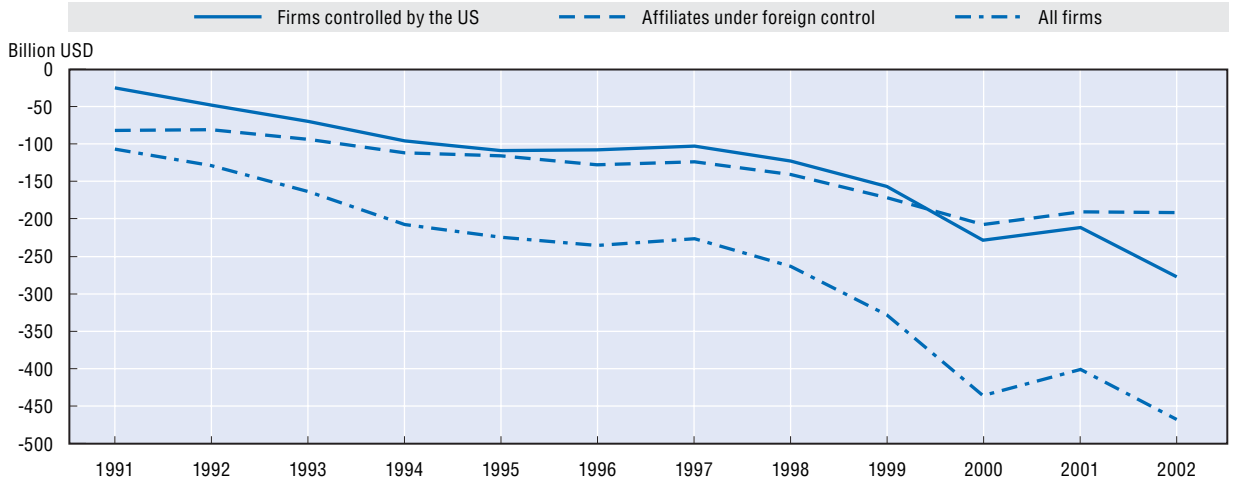
In the United States, affiliates under foreign control in the manufacturing sector contribute little to the global trade deficit. On the other hand, foreign affiliates in the service sector contribute to a substantial widening of the trade deficit (Figures J.2.1 and J.2.2).

In 2002, the economies in which the ratio of intra-firm trade of US parent companies was highest were: Switzerland, Argentina, Panama and Singapore, with respect to exports, and Singapore, Ireland and Hong Kong (China), with respect to imports.

Almost 80% of US parent company exports to their affiliates in Switzerland involve wholesale trade. *Vis-à-vis* their affiliates in Argentina, US parent companies also export chemicals (32%) and other products linked to wholesale trade (46%). Exports to Singapore include computers and electronics (44%) and products related to wholesale trade (39%), while imports comprise mainly computers and electronics (82%). Imports from Ireland involve chemicals (72%) and from Hong Kong wholesale trade (73%) and computers and electronics (21%).

Nevertheless, it must be borne in mind that ratios of intra-firm trade with partner countries, even if they attain substantial values, may account for only a small percentage of overall intra-firm trade. For example, intra-firm imports from Canada account for less than 30% of aggregate US imports, as opposed to almost 60% in the case of Singapore. In absolute value, however, intra-firm imports from Canada account for 36% of aggregate US intra-firm imports (*i.e.* double the intra-firm imports from the European Union) and scarcely 5.1% in the case of Singapore.

Figure J.2.1. **Trade balance of the US total economy**



Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA) and STAN: OECD Structural Analysis Statistics, February 2005.

StatLink: *http://dx.doi.org/10.1787/078136401462*

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J.2. US trade balance and intra-firm trade in goods in total US trade and by partner country

Figure J.2.2. **Trade balance of the US manufacturing sector**

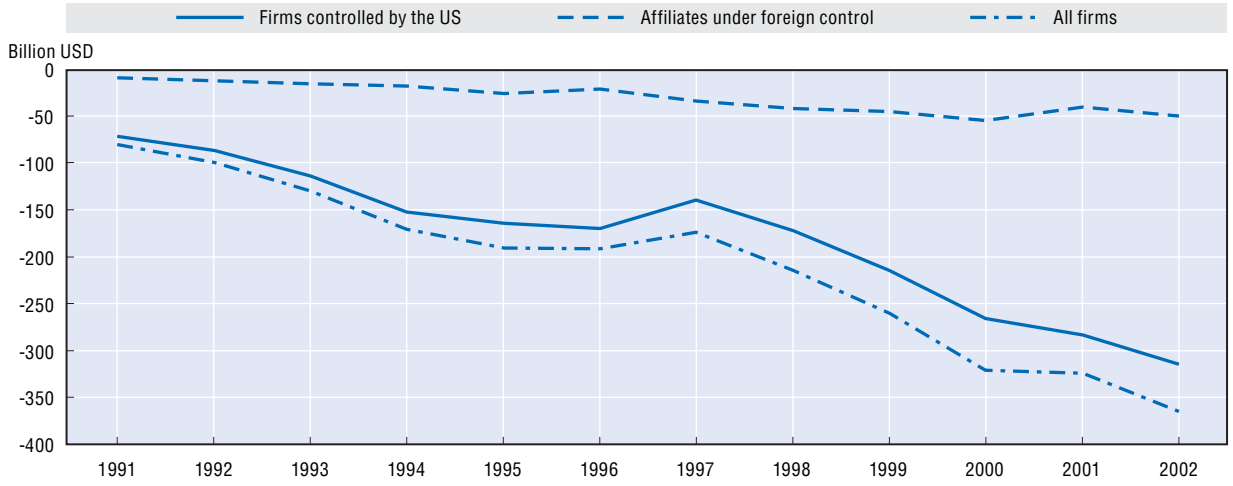


Figure J.2.3. **Share of intra-firm exports of goods by the US in total exports of goods to partner economy, 2002**

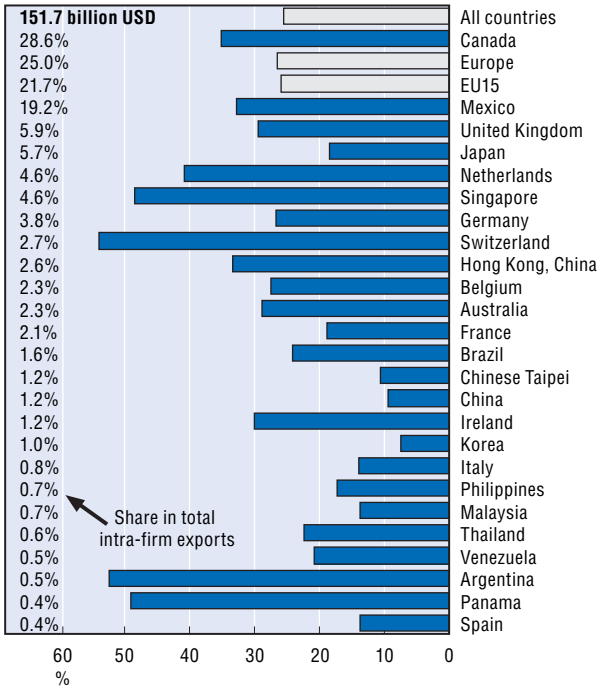
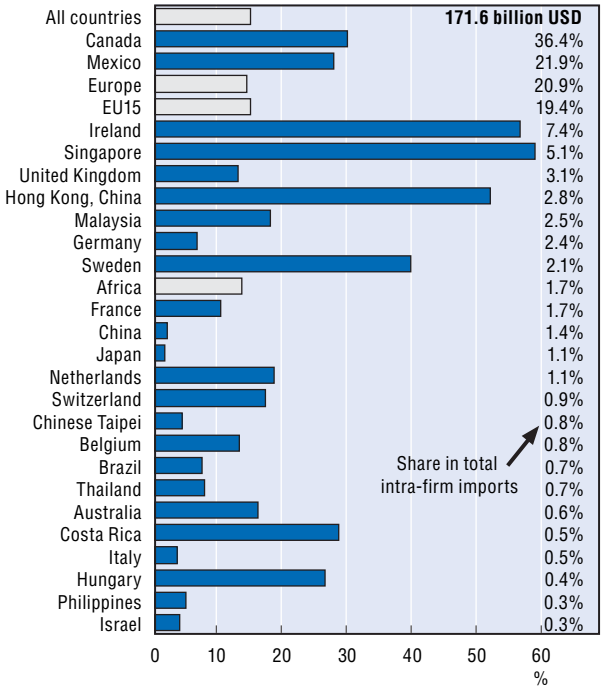


Figure J.2.4. **Share of intra-firm imports of goods by the US in total imports of goods from partner economy, 2002**



Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), STAN: OECD Structural Analysis Statistics and International Trade by Commodity Statistics (ITCS), February 2005.

StatLink: *http://dx.doi.org/10.1787/078136401462*

J.3. Japanese trade balance and intra-firm trade in total Japanese trade by partner country and by industrial sector

In 2001, the share of exports of foreign affiliates in Japan in total exports was 7%, and 9.4% for imports. From this point of view, the trade of foreign affiliates in Japan did not play an important role in the Japanese international trade.

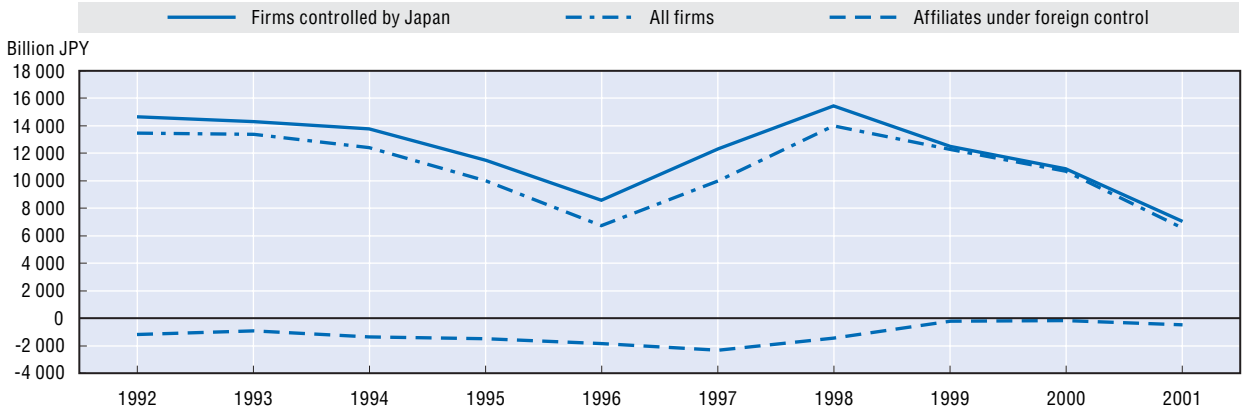
The trade balance of foreign affiliates concerning the total economy was in deficit during all the period under review (1992-2001), but this deficit, after a highest peak attained in 1997, was reduced, and from 1999 the trade balance for foreign affiliates was almost in equilibrium (Figure J.3.1).

Regarding the manufacturing sector, the trade balance of foreign affiliates was in deficit until 1998, and recorded a surplus afterwards. According to this result, it is possible to deduce that the trade balance of foreign affiliates in the service sector continued to be in minor deficit (Figure J.3.2).

In 2001, more than 80% of the exports of foreign affiliates were destined to the United States, which were at the origin of more than 60% of their imports. On the other hand, more than 80% of the exports of the US affiliates in Japan are destined to their parent group abroad, while the share of European affiliates' exports to their parent group was less than 10% and the imports more than 30%. The main countries involved were Germany, the Netherlands and France.

Concerning the sectoral distribution of the intra-firm trade of foreign affiliates, the motor vehicles industry represents more than 50% of exports, while in the case of imports, sectors such as non-metallic mineral products, motor vehicles, other transport equipment and instruments play an important role.

Figure J.3.1. **Trade balance of the Japanese total economy**



Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA) and STAN: OECD Structural Analysis Statistics, February 2005.

StatLink: *http://dx.doi.org/10.1787/435571501427*

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J.3. Japanese trade balance and intra-firm trade in total Japanese trade by partner country and by industrial sector

Figure J.3.2. **Trade balance of the Japanese manufacturing sector**

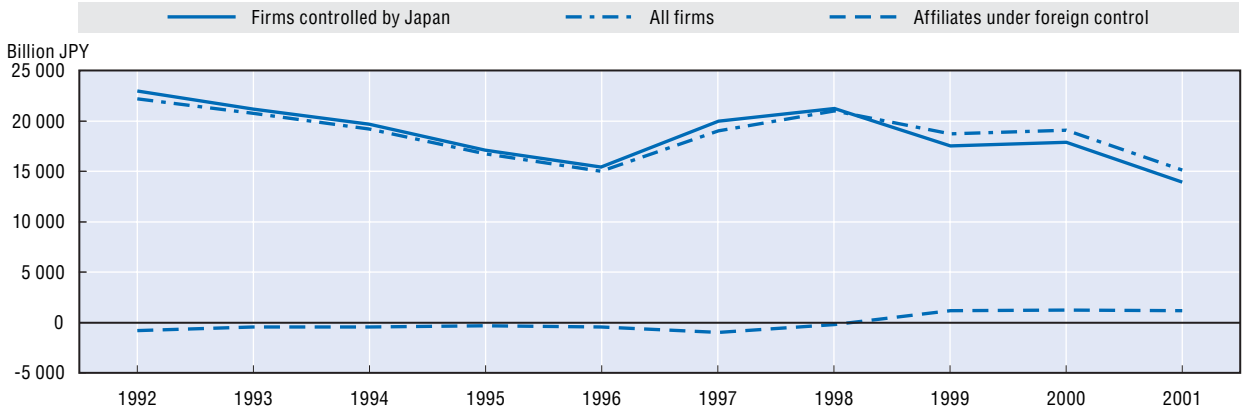


Figure J.3.3. **Intra-firm exports of affiliates under foreign control in Japan by country of origin in the manufacturing sector, 2001**

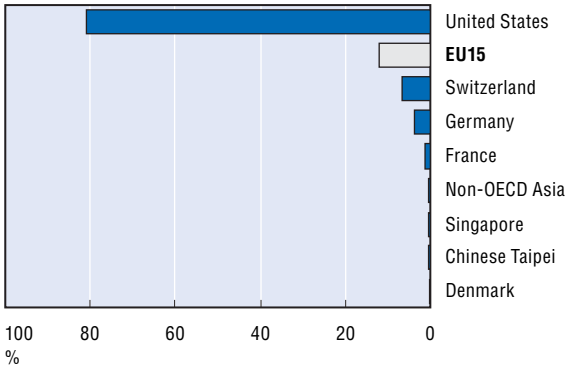


Figure J.3.4. **Intra-firm imports of affiliates under foreign control in Japan by country of origin in the manufacturing sector, 2001**

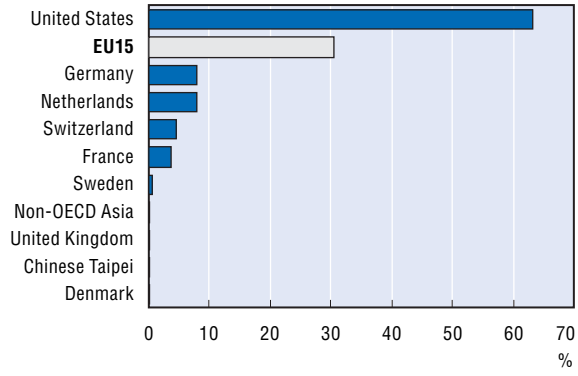


Figure J.3.5. **Intra-firm exports of affiliates under foreign control in Japan by industry, 2001**

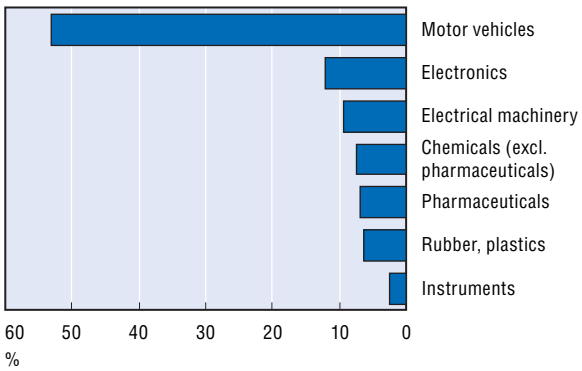
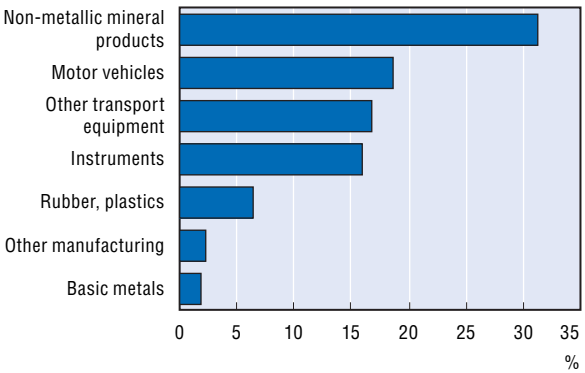


Figure J.3.6. **Intra-firm imports of affiliates under foreign control in Japan by industry, 2001**



Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), STAN: OECD Structural Analysis Statistics and *International Trade by Commodity Statistics* (ITCS), February 2005.

StatLink: *http://dx.doi.org/10.1787/435571501427*

J.4. French intra-firm trade in total French trade by partner country and by product

■ In 1999, 73% of French industrial exports and 64% of imports were performed by multinational firms, 44% of exports and 27% of imports by French multinationals and 29% of exports and 39% of imports by foreign affiliates located in France. The rest of exports and imports were performed by non-multinationals or non-industrial international groups (Figures J.4.1 and J.4.2).

■ Most of intra-firm trade of multinationals located in France was realised inside the European Union (70%). It concerned mainly the motor vehicle sector (31%) and the chemical sector (13%). These two sectors also correspond to the bulk of trade between France and the European Union. These trends were reinforced after the conclusion of the single market.

■ Intra-firm trade as well as the direct investment were also important for other areas, particularly NAFTA and Japan. The share of intra-firm exports in total exports within both areas was the same as with the European Union, almost 45% (Figure J.4.3). For Japan, intra-firm imports were the most important (50%), while they were less important for the European Union (38%) and NAFTA (33%) (Figure J.4.4).

■ The intensity of intra-firm exports was also important for other geographical areas, particularly Eastern European countries and Latin America (Figure J.4.3).

Figure J.4.1. **Exports of international industrial groups in total French exports of industrial products, 1999**

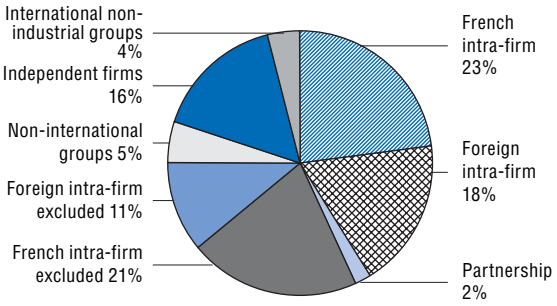
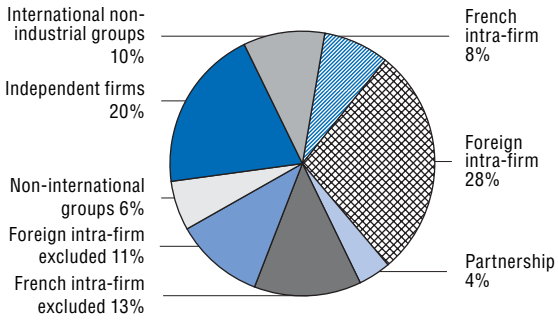


Figure J.4.2. **Imports of international industrial groups in total French imports of industrial products, 1999**



Source: Survey on intra-firm international trade (SESSI, SCEES, INSEE).

StatLink: *http://dx.doi.org/10.1787/044727037657*

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J.4. French intra-firm trade in total French trade by partner country and by product

Figure J.4.3. **Intra-firm exports of affiliates under foreign control in France by country of origin, 1999**

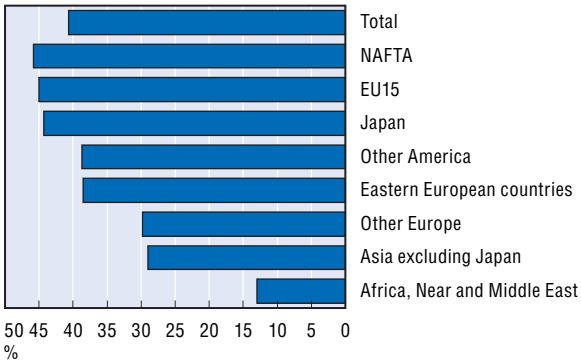


Figure J.4.4. **Intra-firm imports of affiliates under foreign control in France by country of origin, 1999**

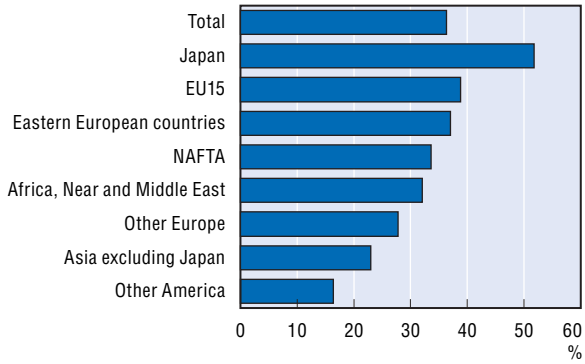


Figure J.4.5. **Intra-firm exports of affiliates under foreign control in France by product, 1999**

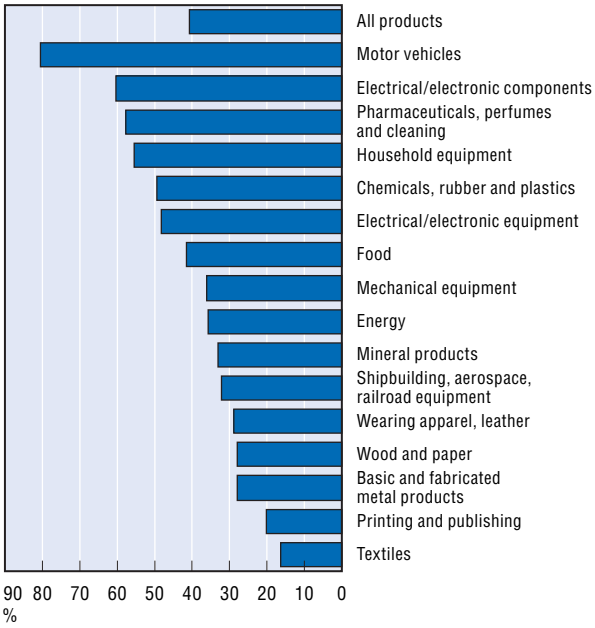
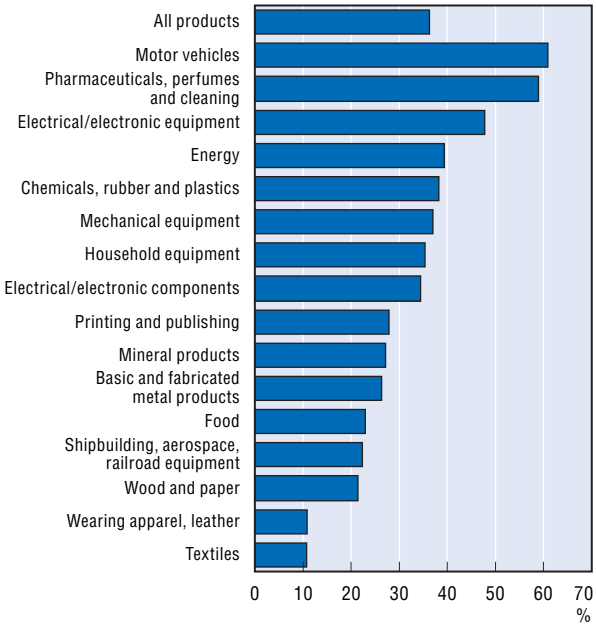


Figure J.4.6. **Intra-firm imports of affiliates under foreign control in France by product, 1999**



Source: Survey on intra-firm international trade (SESSI, SCEES, INSEE).

StatLink: *http://dx.doi.org/10.1787/044727037657*

J.5. Dutch intra-firm trade in total Dutch trade by partner country and by industrial sector

■ The share of intra-firm exports of goods by multinationals located in the Netherlands in total exports of goods between 1997 and 2001 was stable around 15%. The share of intra-firm imports of goods in total imports in 1997 was a little higher, although the trend is declining.

■ Almost 70% of intra-firm exports of foreign affiliates were destined to the United States and 20% to the European Union. The same trend was observed for intra-firm imports. These results reflect the presence of about 19 000 American affiliates and 9 000 European affiliates in the Netherlands (Figures J.5.3 and J.5.4).

■ With respect to the country of origin of intra-firm exports, the main European countries are the United Kingdom, Germany and France. The share of intra-firm imports in total imports is less important in the case of the European Union than the equivalent ratio for exports.

■ The most important sectors concerning intra-firm exports were the chemicals, food and pharmaceuticals industries. In the case of intra-firm imports, they were the petroleum refining, the chemicals (excluding pharmaceuticals) and the food industry.

Figure J.5.1. **Share of intra-firm exports of goods by the Netherlands in total exports of goods**

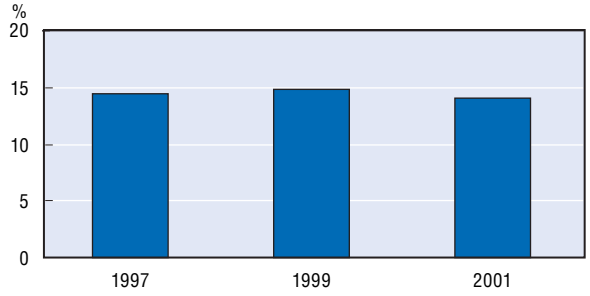
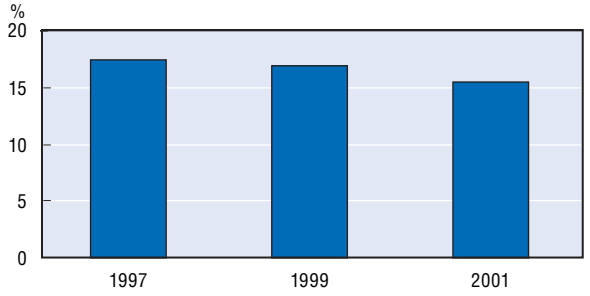


Figure J.5.2. **Share of intra-firm imports of goods by the Netherlands in total imports of goods**



Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), February 2005.

StatLink: *http://dx.doi.org/10.1787/527763184215*

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J.5. Dutch intra-firm trade in total Dutch trade by partner country and by industrial sector

Figure J.5.3. **Intra-firm exports of affiliates under foreign control in the Netherlands by country of origin in the manufacturing sector, 2001**

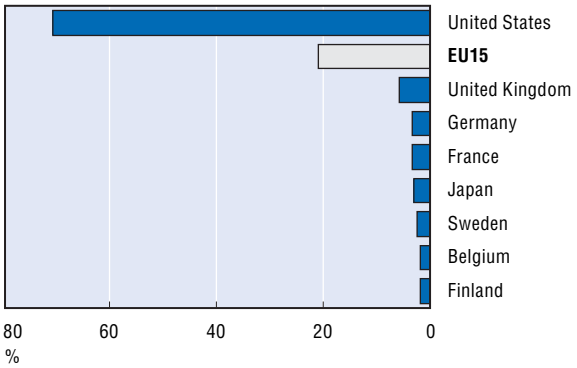


Figure J.5.4. **Intra-firm imports of affiliates under foreign control in the Netherlands by country of origin in the manufacturing sector, 2001**

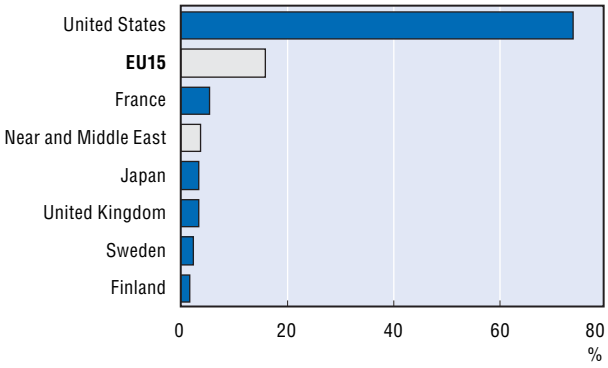


Figure J.5.5. **Intra-firm exports of affiliates under foreign control in the Netherlands by industry, 2001**

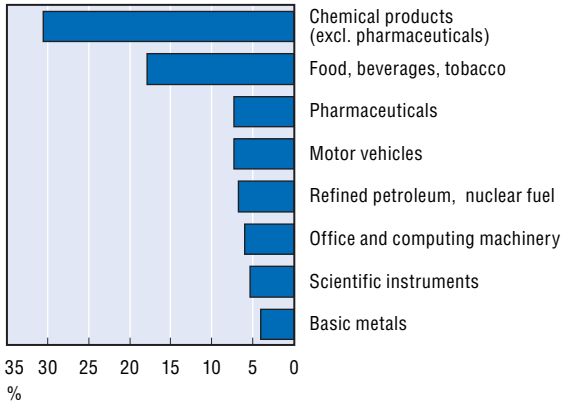
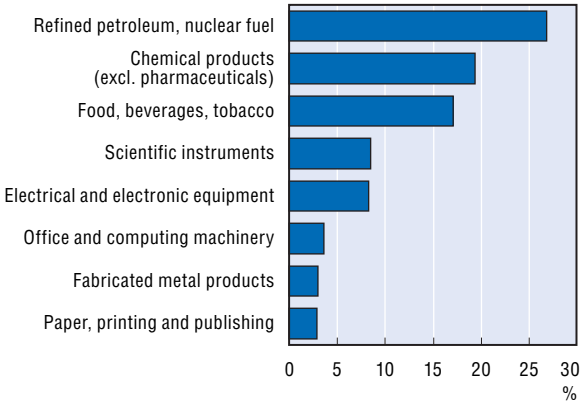


Figure J.5.6. **Intra-firm imports of affiliates under foreign control in the Netherlands by industry, 2001**



Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), February 2005.

StatLink: *http://dx.doi.org/10.1787/527763184215*

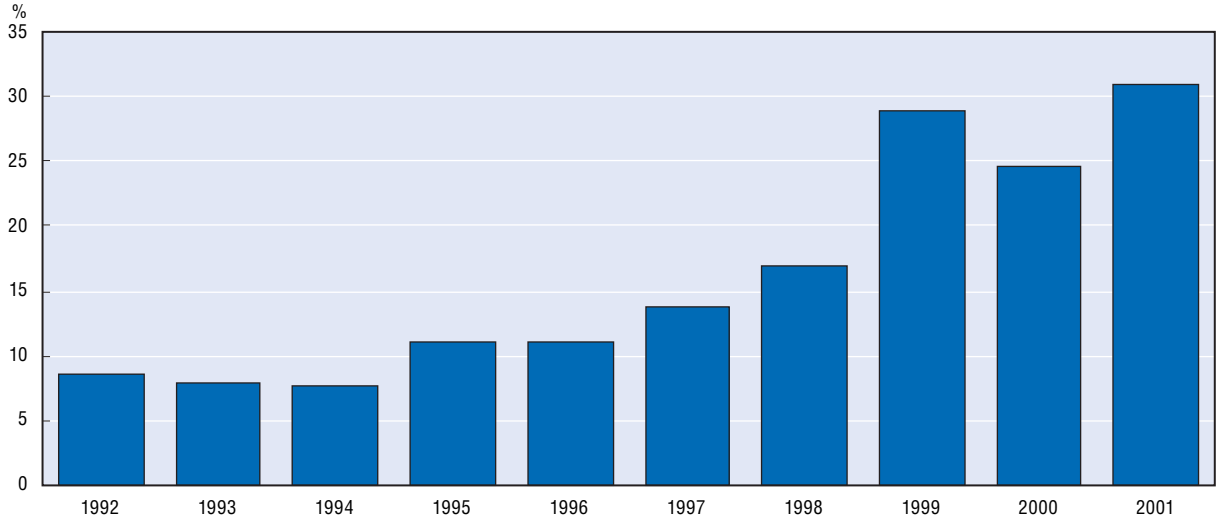
J.6. Swedish intra-firm exports in total Swedish exports by partner country and by industrial sector

■ Between 1992 and 2001, the share of intra-firm exports of foreign affiliates in Sweden in total exports increased considerably from 8% to more than 30%. Unfortunately, the equivalent figures for intra-firm imports are not available (Figure J.6.1).

■ The main countries of origin of these intra-firm exports were the United States and the European Union (EU-15) countries, particularly the United Kingdom and Finland. With respect to other European countries that are not members of the European Union, Switzerland and Norway are important.

■ The most important sectors involved in intra-firm exports of foreign affiliates in Sweden were motor vehicles, pharmaceuticals and non-electrical machinery (Figure J.6.3).

Figure J.6.1. **Share of intra-firm exports of affiliates under foreign control in Sweden in total exports**



Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), February 2005.

StatLink: *http://dx.doi.org/10.1787/344600470837*

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J.6. Swedish intra-firm exports in total Swedish exports by partner country and by industrial sector

Figure J.6.2. **Intra-firm exports of affiliates under foreign control in Sweden by country of origin in the manufacturing sector, 2001**

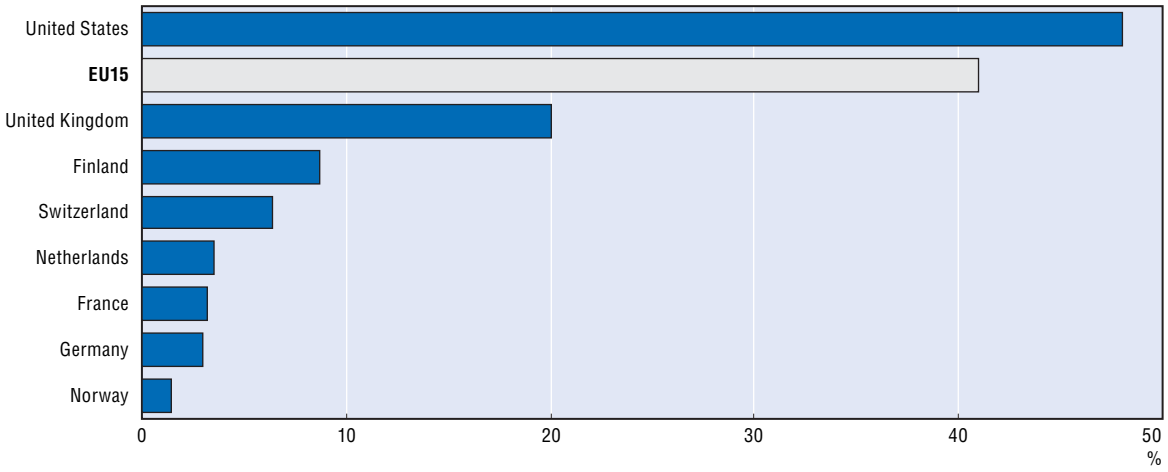
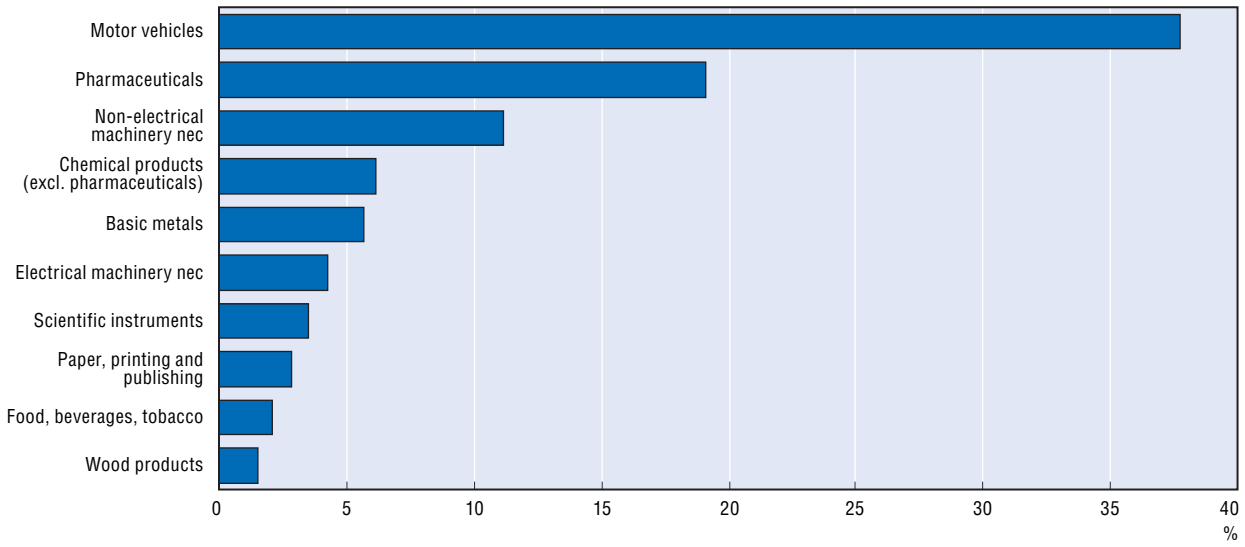


Figure J.6.3. **Intra-firm exports of affiliates under foreign control in Sweden by industry, 2001**



Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), February 2005.

StatLink: *http://dx.doi.org/10.1787/344600470837*

J.7. Intra-firm imports in total imports in high-technology industries

■ High-technology manufacturing imports represent more than 35% of total manufacturing imports in the United States, and almost 28% in Japan and the Netherlands (Figure I.11.2).

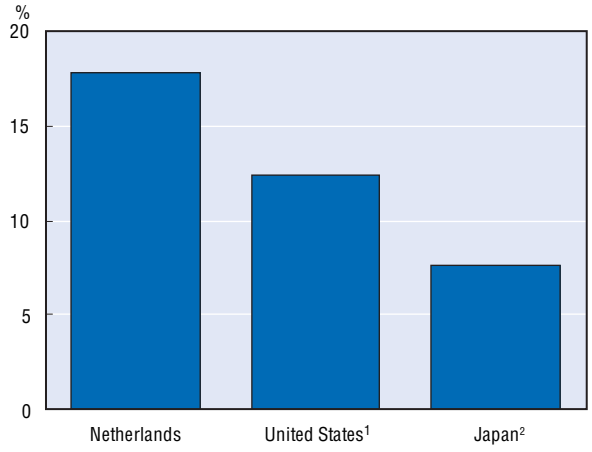
■ A part of these high-technology manufactured goods are imported by foreign affiliates: 18% in the Netherlands, 13% in the United States and less than 10% in Japan (Figure I.12.1).

■ With respect to sectors involved, in the United States, more than 30% of the pharmaceuticals goods are imported by foreign affiliates, 13% of electronics and precision instruments and less than 5% of computers. However, electronics and precision instruments imports represent almost 60% of the high-technology imports from foreign affiliates, while pharmaceuticals goods represent only 32% and computers 8%.

■ In Japan, imports of electronics and precision instruments correspond to 8%of total imports of these goods and they represent almost 55% of the total high-technology intra-firm imports by foreign affiliates.

■ In the Netherlands, foreign affiliates' imports of electronics and precision instruments from foreign affiliates represent 19% of the total imports of these goods and 66% of their total high-technology intra-firm imports.

Figure J.7.1. **Share of intra-firm high-technology imports of affiliates under foreign control in total high-technology imports, 2001**



1. Data refer to 2002 and do not include aerospace.
2. 2000.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), May 2005.

StatLink: *http://dx.doi.org/10.1787/787840422722*

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J.7. Intra-firm imports in total imports in high-technology industries

Figure J.7.2. **Share of intra-firm imports of affiliates under foreign control in total imports of the pharmaceuticals sector, 2001**

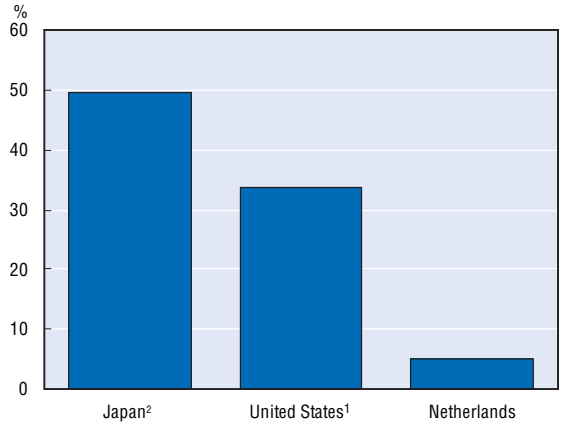


Figure J.7.3. **Share of intra-firm imports of affiliates under foreign control in total imports of the office machinery and computers sector, 2001**

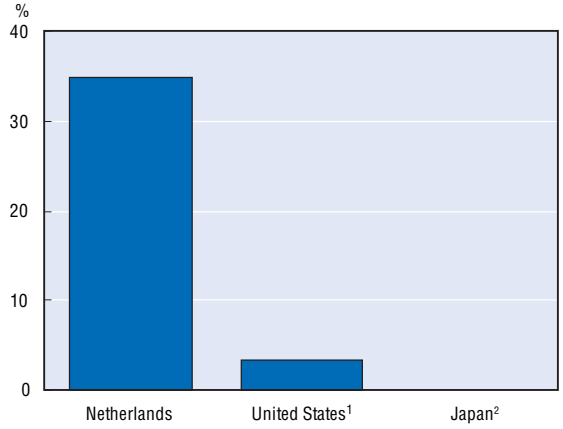
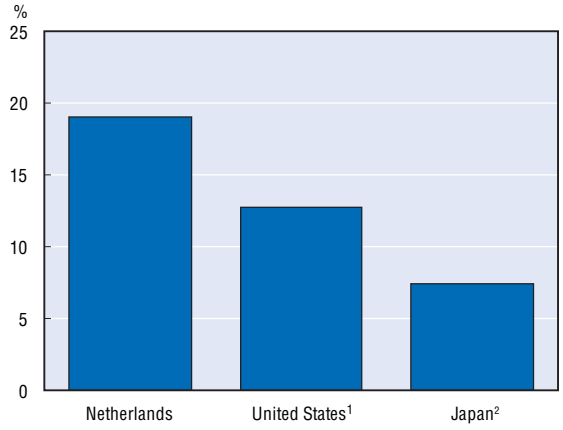


Figure J.7.4. **Share of intra-firm imports of affiliates under foreign control in total imports of the electronics and precision instruments sector, 2001**



1. 2002.
2. 2000.

Source: OECD, OECD Statistics on Measuring Globalisation, Volume I: Manufacturing (AFA), May 2005.

StatLink: *http://dx.doi.org/10.1787/787840422722*

ANNEX

Main OECD Databases Used

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 country of origin and by industrial sector (based on ISIC Rev. 3) for 23 OECD countries.

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

FATS: This database gives detailed data on the **activities of foreign affiliates** in the **services** 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 21 OECD countries.

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

STAN – Industry: The STAN database for **Industrial Analysis** includes annual measures of output, labour input, investment and international trade by economic activity 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 based on the International Standard Industrial Classification (ISIC) Rev. 3, provides sufficient details to enable users to highlight high-technology sectors and is compatible with those lists used in related OECD databases in the "STAN" family (see below). STAN-Industry 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. See: *www.oecd.org/sti/stan*.

Publication: STAN-industry is available on line *via* SourceOECD (*www.sourceoecd.org*) where it is regularly updated (new tables are posted as soon as they are ready). A "snapshot" of STAN-industry is also available on CDROM together with the latest versions

of STAN – R&D (ANBERD), STAN – Bilateral Trade and a set of derived STAN Indicators. See *www.oecd.org/sti/stan/indicators*.

STAN – Bilateral Trade (BTD): This database presents 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 1988-2003. The data have been derived from the OECD database *International Trade by Commodities Statistics* (ITCS). 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, compatible with those the OECD's STAN-Industry, Input-Output tables and ANBERD databases. See: *www.oecd.org/sti/btd*.

Publication: OECD (2005), *Bilateral Trade Database, 2004*. BTD is available on line *via* SourceOECD (under the STAN heading) as well as on the STAN family CD-ROM.

STAN – I-O: The latest set of OECD **Input-Output** tables consists of matrices of inter-industrial transaction flows of goods and services (domestically produced and imported) in current prices for 18 OECD countries and two non-member OECD economies (Brazil and China) covering one or more years around the mid-1990s. The tables are based on ISIC Rev. 3 and are available in zipped Excel format. See: *www.oecd.org/std/io-tables/data*.

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 nine non-member economies (Argentina, China, Israel, Romania, Russian Federation, Singapore, Slovenia, South Africa, 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.

Publication: OECD (2005), *Main Science and Technology Indicators 2005/1*, Biannual. Also available on CD-ROM as *OECD Science and Technology Statistics*.

TBP: The **TBP** database presents information on the **technology balance of payments**. The database serves, *inter alia*, as raw material for the MSTI database and publications.

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). See: *www.oecd.org/sti/ipr-statistics*.

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

Other OECD databases

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

ANA: SNA93 – Annual National Accounts (Statistics Directorate).

ITCS: International Trade by Commodity Statistics (Statistics Directorate).

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

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PRINTED IN FRANCE
(92 2005 09 1 P) ISBN 92-64-01238-9 – No. 54267 2005

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Related reading

OECD Handbook on Economic Globalisation Indicators

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ISBN 92-64-01238-9
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