BENCHMARKING

Benchmarking the framework conditions

A systematic test for Belgium

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Greet De Vil

March 2001

Federal Planning Bureau
Economic analyses and forecasts

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Word of thanks

This study would never have been possible without a lot of people's help. We owe many thanks to all the members of the Federal Planning Bureau who made a contribution to this work. Their comments and suggestions were an important driving force behind this study.

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I Introduction

A. Executive summary

Belgium has traditionally been a country that has attracted a lot of foreign investment. Both in absolute terms, as in a share of GDP, the Belgian-Luxembourg Economic Union has for a long time been among the 10 most popular countries to invest in for an international investor. Even when Luxembourg is excluded from the data, this remains the case (see Federal Planning Bureau, Short Term Update 2001-1, February 2001). The reasons for this popularity are manifold. The Economist Intelligence Unit gives a list of possible determinants of foreign investment: the size of the host-country market, expected growth, input costs, geography, natural resources and the policy framework (EIU, World Investment Prospects, 2001). Most European countries provide sound economic conditions for foreign direct investments (FDI) and are, compared to the rest of the world, improving their attractiveness (AT Kearny, FDI confidence index, February 2001). The monetary stability due to the introduction of the euro, a healthy macro-economic situation and reforms in product and labour markets can be cited as positive factors of European's attractiveness.

Within Europe, Belgium is a relatively small country that has to compete with its traditional trading partners to remain interesting to invest in. This study focuses on the advantages and disadvantages of Belgium compared to its main trading partners to attract foreign investment. The determinants that are taken into account are at the same time smaller and larger than the traditional competitiveness indicators. Larger because it does not only look at factors as economic growth and its determinants but also social welfare issues, such as income distribution and the quality of life for the citizens. In this way, it gives an overview of the most important framework conditions. A foreign investor, however, is also interested in more detailed questions as the availability of land, the fiscal situation, the regulatory framework and the effectiveness of the public administration. This study does not look into these problems as they are well documented by international consultancy bureaux.

This is the second report of the Federal Planning Bureau concerning a general benchmarking of the framework conditions in Belgium. It is an update and a completion of the first Belgian benchmarking study published in July 1999 on the site of the Federal Planning Bureau (http://www.plan.be). The original idea for this study came from the Belgian Minister of Economy in December 1997 after a meeting of the Council of Ministers on the theme "Investment climate in Belgium". The FPB was asked to carry out a performance assessment exercise of Belgium in which the aim was to look at key conditions that govern its competitiveness in general and the investment climate in particular. The technique of benchmarking is used in this study because there is the belief that Belgium will benefit in its pursuit of its policy objectives by learning from the experience of other countries with high performing economic structures. Benchmarking has been

defined as “a continuous, systematic process for comparing performances of organisations, functions or processes against the best in the world, aiming not only to match those performance levels, but to exceed them” (European Commission, DG-Enterprise). The benchmarking method has traditionally been applied at the firm and sector level to evaluate the performance of management processes and the effect of specific regulations. But, for some years now, it has been extended to the identification and the evaluation of the key factors and structural conditions affecting the environment in which companies have to operate. This extension is called the Benchmarking of Framework Conditions.

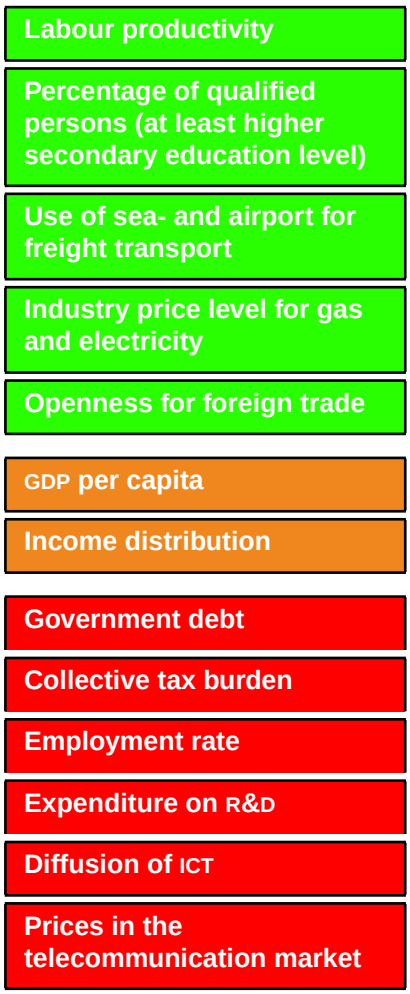
The viewpoint of the foreign investor limits necessarily the scope of the study. Other important viewpoints could also be taken and prove very worthwhile. In taking the point of view of the foreign investor, this study gives a high weight to traditional efficiency considerations. Other factors like social issues and a healthy environment are equally important. Political authorities have to trade-off efficiency, social and other considerations in their final decision.

The report is aimed at the general reader. It consists of the collection, presentation and discussion of a wide range of information relating to welfare creation. Therefore, the purpose of the study is not to provide an in depth analysis of each of the areas addressed, but rather to bring them together and present them in one document. The ten areas, for which a range of information will be presented, are:

- The macroeconomic environment
- Taxation
- The labour market
- Education
- Transport
- Energy
- Environment
- Innovation and Research and Development (R&D)
- Information and Communication Technology (ICT)
- Foreign trade and foreign direct investment.

The study can be seen in the context of benchmarking studies carried out in other countries of the European Union (for instance: The Netherlands (1995, 1997, 2000): Benchmarking the Netherlands; Denmark (1997, 2000): Structural Monitoring - International Benchmarking of Denmark;...). We position the performance of Belgium relative to other countries or to the average performance of these countries. We also try to give a score to Belgium for the most important indicators. In order to do this in the most consistent way possible, we evaluate the indicators from a fixed point of view, i.e. the foreign investor. Contrary to the studies in the context of benchmarking in some other countries (for instance the Netherlands in 2000), we do not make a profound analysis of the data and do not examine the causes lagging behind the “good or best practices”. The choice of a fixed point of view (the foreign investor) is linked to the original question asked. However, whenever the position of an indicator is clearly influenced by the point of view, this is indicated in the text.

1. Belgium's comparative position



The results of this comparison show a diversified picture of Belgium's competitive position (as mentioned earlier, the word "competitiveness" is used in a very broad sense). In a number of areas that are crucial for welfare creation, Belgium's position is favourable. However, in other areas, efforts remain to be made in order to achieve the performance of the best practising countries.

A high standard of living that is highly redistributed

This study confirms that the standard of living in Belgium is high. This standard of living is achieved through high macroeconomic labour productivity (as measured by the GDP per person employed or per hour worked) and a low employment rate.

Another marked feature of the Belgian economy is the strong redistribution effect from the country's tax and transfer system (as measured by the percentage change in the GINI indicator of income distribution due to taxes and transfers). As a consequence, disposable income appears to be relatively equally distributed.

A high unemployment rate but a restricted poverty rate

Looking at the labour market, the situation in Belgium, and more generally within the European Union, is not satisfactory. Europe's labour market is characterised by a low employment rate and a high unemployment rate in comparison with Japan and the United States. Although the growth in the employment rate was very high in Belgium during the nineties, the Belgian employment rate as well as the participation rate is even lower than the European average. This is partly due to a very low employment rate for the people between 55 and 64 year as a result of early retirement, to a rather low female participation rate and to high unemployment in a broad sense. In terms of the unemployment rate Belgium performs slightly better than the European average. But, the share of total unemployment that is made up by long-term unemployment is the highest among the countries compared. This is linked particularly to the high unemployment rate of the low skilled (below upper secondary education level).

It is however interesting to note that, even with a high unemployment rate in Belgium, the share of the population living under the poverty threshold (which is defined as half of the median disposable income) stays limited.

Good export performance but under constant pressure

The assessment of Belgian foreign trade performance confirms that competitiveness remains high: the share of exports in final demand is the highest among the countries compared, and the current account balance is positive. Market shares, however, have been lost. This is linked to the relatively small share of "high-tech" exports in total exports and to the strong competition with newly industrialising economies.

Healthy macroeconomic conditions...

In Belgium, the restrictive budgetary policy, reinforced during the last period of the convergence programme, has clearly proved beneficial. Currently, Belgium experiences a balanced budget, a high primary surplus, a fast decreasing public debt to GDP ratio, a low inflation rate and interest rates that converge to the level of its neighbouring countries. The reduction in public debt accompanied by the substantial fall in interest rates allowed a considerable reduction in interest payments on the government deficit.

... but with constraints

Some selected indicators reveal that these restrictive budgetary measures, which were necessary to ensure Belgium's participation to the European Economic and Monetary Union under optimal conditions, have constrained the Government's room to manoeuvre in a number of important matters relating to competitiveness. Public investment has remained very weak during the nineties. The share of R&D expenditures funded by the Government was significantly lower than in most of the other countries compared.

However, public expenditures remained high in the field of education and labour market programmes. In particular, public expenditures on active measures to reduce unemployment were higher than in the other countries under review. The proportion of people receiving at least secondary education is particularly high.

High level of taxation

The tax burden in Belgium remains one of the highest of the countries compared. The particularly high taxation level of labour income creates a large wedge between the wage cost for employers and the workers pay. However, it should be noted that recently social security contributions are being reduced in Belgium and personal income taxes are planned to fall.

Research and development (R&D) lags behind

In the field of R&D, the performance of Belgium appears to be poor. In terms of innovation inputs, Belgium is characterised by the lowest gross domestic expenditures on R&D. The intervention of the Government in the financing of innovation was rather limited and business expenditures on R&D were among the lowest of the countries compared. However, higher education sector expenditures on R&D were relatively high. In Belgium, the innovation of industrial research, measured as the number of patent applications in a country by the residents of this country, was rather low for the period covered by the study. Patent applications were largely oriented towards foreign mar-

kets. These characteristics should be interpreted in the context of the small size of the country and the small number of Belgian multinational groups. The share of innovative firms (another indicator for innovative output) is also low in Belgium.

New technology is long in coming

Although information and communication technology takes a growing place in daily life in Belgium, its diffusion is rather low in comparison with our neighbouring countries and especially with the United States. The use of computers and the Internet for instance is low in households as well as schools and the development of business to consumers (B2C) e-commerce lags behind. One of the main reasons for the poor performance of Belgium is the high access charge for ICT. However, recent price modifications at the Belgian telecom market and the opening of the telecom market should improve the diffusion of the new technologies.

Environmental conditions under pressures

In a small country with a high population density, like Belgium, the environment is subject to many pressures from human activities. In the field of air quality and waste management (except for the recycling rates for paper and cardboard), the selected indicators seem to indicate an average performance for Belgium. This is clearly in contrast with the poor water management in Belgium. This situation is characterised by a very high intensity of fresh water abstraction coupled with a rather low share of population connected to waste water treatment plants in comparison with our neighbouring countries.

Attractiveness for foreign investors

Belgium is an attractive location for foreign direct investment. Besides the Netherlands, Belgium attracted the highest volume of direct investments from abroad as a percentage of GDP, during the period under review. This result is maybe surprising since Belgium had an average or low performance on most of the precedent indicators. However, the qualifications of the labour force and its productivity in relation to its cost are considerable strengths of the Belgian economy. The cost of energy for the industrial sector is also one of the lowest among the countries compared. Transport infrastructure is highly developed in Belgium. In terms of tons transported, the port of Antwerp is the second largest port in Europe. Brussels National airport is the fifth biggest cargo airport in Europe. A very dense road and railway network covers Belgian territory. Even with the high population density, the development of road and railway infrastructures allows the aggregated risk of congestion in Belgium to be maintained at a relatively low level. However, this aggregated figure neglects the temporal and spatial dimension of the congestion problem.

B. Methodology

1. Definition of competitiveness

A country's competitiveness, as set out in this report, should be understood in broad terms. It involves not only a country's position in foreign markets, but also its ability to create an environment that favours the production of a sustainable value added.

Two explanatory comments are required on this definition:

First of all, although companies create value added and therefore have a central part to play in the study presented in this report, they are not themselves the object of the competitiveness test. In fact the analysis is carried out along the lines of the Dutch and Danish study, identifying the key factors and structural conditions which affect business competitiveness in a country.

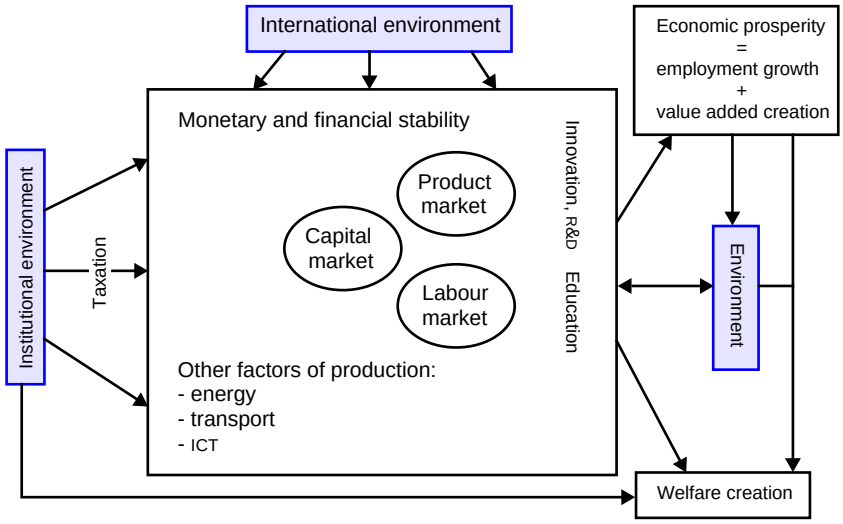
Secondly, the use of the term "sustainable" means that not only the economic dimension (creation of value added) but also the environmental and social dimensions are taken into account. In fact the aim of creating long-term competitiveness cannot be pursued through producing value added and neglecting the social and environmental consequences.

Taking these dimensions into account in a competitiveness study is justified from the point of view of the government seeking to promote investment in a country as well as from the point of view of the company seeking to make an investment. First of all this is because the objectives of the society as a whole cannot be limited to growth in value added but they must also seek to achieve social welfare in a more general sense. So economic prosperity (i.e. growth in value added that creates employment) as well as an improvement in the quality of life is required. From this perspective, the government of a country will only seek to promote the creation of value added by companies if it is accompanied with respect to a number of standards intended to maintain social cohesion and uphold environmental conditions. Another reason why the different dimensions are taken into account is because environmental and social conditions can influence investment decisions by companies in various ways.

2. Scope of the competitiveness test

The following figure illustrates the way in which the various areas considered in the study interact and how they influence a country's competitive performance.

Scope of the competitiveness



An environment that favours investment and the creation of value added should, among others, have the following characteristics:

- It should offer attractive prospects in terms of the market for products and services. The primary motivation for investment is the desire to acquire market share;
- It should offer sufficient well-qualified, inexpensive labour in relation to productivity;
- It should offer a developed capital market and financial system, making it possible to finance new activities and expand existing businesses;
- It should enjoy a stable, predictable macroeconomic framework and low interest rates (monetary and financial stability). Interest rates are a significant factor in determining the profitability of a project;
- Other production factors should be available at a competitive price. Access to raw materials and energy sources and availability of industrial land are also decisive factors affecting investment. These production factors and other elements of infrastructure such as ICT and transport (shown in the above figure in the background to the various markets) have a fundamental part to play in the development of the various markets;
- It should offer a good quality of life. Environmental and social conditions, cultural affinities and being multilingual are all important considerations, particularly when it comes to attracting the type of foreign investment that requires employees to relocate their activity.

The role of governments in the area of improving national competitiveness includes a number of aspects. One of these involves creating conditions that allow market mechanisms to function under the best possible conditions. Among others, these include policies in the area of competition regulation, which allows the products and services market to produce the best results, and technological policies (for example intended to compensate for the failure of markets to encourage businesses to invest in R&D). But also budget and monetary policies can influence the market mechanism since they are intended to stabilise the macroeconomic context in order to facilitate investment decisions and policies to ensure that the capital and labour markets function well. A second important aspect of the role of governments lies in building the infrastructure required for the development of certain markets like policies in the area of transport, town and country planning, communication, etc. A third aspect of the role of governments involves the provision of public services (health care, social security, etc.) which ensure that a certain degree of social cohesion and quality of life is maintained.

This study provides a range of indicators, covering various areas that determine the standard of living and the creation of welfare. Although this study gives the fullest possible picture of the factors determining Belgium's competitiveness, it cannot claim to be exhaustive. There are a number of areas that deserve to be considered in more detail in the future like indicators relating to the social and cultural infrastructure, town and country planning and indicators relating to the creation of welfare by public administrations.

3. Choice of countries

In order to evaluate its strengths and weaknesses in the area of competitiveness, Belgium has been compared with three of its neighbouring countries (France, Germany and the Netherlands), with Japan, with the United States, and, where data are available, with an average for the fifteen countries of the European Union (EU-15 (since 1995) = Austria, Belgium, Denmark, Finland, France, Germany, Great-Britain, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain and Sweden; EU-12 (before 1995) = EU-15 minus Austria, Finland and Sweden).

These countries are the same as the former benchmarking study and have been chosen for the following reasons:

- The countries compared with Belgium have a level of development and a standard of living (measured, for example, in terms of GDP per capita) similar to those in Belgium. Among the European countries, France, Germany and the Netherlands have been included because these countries are Belgium's main trading partners.
- The selection of countries makes it possible to position Belgium's performance in comparison with the three large economic blocks (an average of the EU member countries, Japan and the United States) so that the influence of institutional differences on countries' competitive performance can be isolated.

4. Presentation of results

The ten domains of this report are presented in ten chapters and every chapter consists of a range of indicators that describe the situation in the countries under review concerning that specific domain. The chapters have the same structure: they start with a description of the position of Belgium in the domain based on a selected number of indicators followed by a more extensive discussion of all the indicators. In this second part, every indicator has been presented in a table and most of them also in a graph. The countries are presented in the same order throughout every chapter of the report (first Belgium, next the three neighbouring countries, and finally the three major economic blocks).

Each chapter begins with an overview of Belgium's position in a selected number of indicators. When we try to give a score for a country, it is very important to have a clear and consistent viewpoint to evaluate the indicators. In this report we position Belgium relative to the other countries under review from the point of view of the foreign investor. The results are presented in a "traffic light diagram": if Belgium belongs to the countries that perform best (worst) on an indicator, the indicator gets a green (red) colour. If Belgium has an average score for an indicator, it gets an orange colour. The classification of an indicator is based on the divergence from the average of the countries in the comparison, excluding the European Union. An indicator is therefore classified as being above (below) the average of the countries if the Belgian level is higher (lower) than the average plus (minus) 1/3 of the standard deviation. The position is worked out on the basis of the last available year for an international comparison. The score for the indicator (whether a higher value than the average is good (green) or bad (red)) is based on the point of view of the foreign investor. For instance, relatively low prices for electricity and gas in the industry sector are good for the Belgian competitiveness and through this also for an investor who wants to invest in Belgium.

It should be noted however that there are shortcomings to this way of presentation. First of all, Belgium gets its score relative to the other countries under review, so a relatively good score does not mean a good position in itself. Moreover the choice of the indicators is rather subjective and the data are not always the best available data at the country level, but they are the best available data for international comparison. Most of the time for instance the data concern a few years ago and through that it does not represent the most recent changes in policy or economic structure. The country's relative position may also be influenced by the cyclical conditions in the country at the period for which data are available. Another problem that occurs when one gives a score is that it depends on the position one takes. Here we evaluate the indicators from the point of view of a foreign investor and the score may change for some indicators if another point of view is used (for instance the environmental perspective). But we have tried to hold onto the same viewpoint throughout all chapters. When giving a score to the countries, one presupposes that they have common objectives. However, countries may have important differences in their aims or in the weightings of the indicators in this report. In terms of taxation, for example, it is known that the countries in the study use different reference models, which can be referred to very broadly as the "Continental European model" and the "Anglo-Saxon model". The study does not seek to express any views on these models. An interpretation at the level of taxation must, however, take into consideration the position of the country in relation to these models. Countries referring to the first model are characterised by a high state interventionism and the responsibility

of individuals is expected to be lower than in the "Anglo-Saxon" model. As a result, taxation levels are structurally higher than in the "Anglo-Saxon" model, without necessarily resulting in lower disposable incomes for the individuals.

We therefore consider that the primary aim of this study is not to result in an agenda of policy recommendations. Our aim, however, is to offer a range of indicators covering a large number of elements which may influence the foreign investor and which are intended to give rise to a detailed, critical study of the differences observed between the countries.

5. Sources used

The data used come almost exclusively from international bodies (OECD, Eurostat, the European Commission etc.). Although using statistical data from national sources often makes it possible to describe the real situation more accurately, the use of data from international sources offers greater homogeneity for the purpose of comparing data, because it is collected on the basis of standard questionnaires. In most cases the data used cover the last five or six years for which data is available on an international level. Sometimes we make a comparison of the average over a period (indicated as "year_t ^ year_t+n") or by using the yearly average growth rate over a period (indicated as "year_t / / year_t+n).

II Macroeconomic environment

A. Belgium's position

Labour productivity as GDP per man-hour

GDP (based on PPP) per capita for 1998

Income distribution

Government deficit cyclically adjusted - % of GDP

Inflation

Nominal long term interest rate

Private sector gross saving - % of GDP

Employment rate

Government debt - % of GDP

Total gross fixed capital formation - % of GDP

A country's overall competitiveness, as set out in this report, is evaluated by its ability to achieve a high standard of living that is equitably distributed across individuals as well as to provide a good quality of life for its citizens. For years, Belgium has been performing well in terms of the living standard. This can be explained partly by the high Belgian labour productivity which more than compensates the low employment rate. Due to the strong redistribution effect of the Belgian tax and transfer system, the income after taxes and transfers is relatively equally distributed. However, when analysing a country's performance it is necessary to look beyond the country's GDP. A stable macroeconomic environment is considered a key condition for a competitive economy because it reduces the level of uncertainty. This is an important element in the decision process of economic agents (households and enterprises) characterised by a certain degree of risk aversion. The instability of the economic environment has a negative impact on saving and investment. So, overall macroeconomic conditions play a role in the creation of a favourable environment for growth. In order to meet the Maastricht Criteria and to participate in the Economic and Monetary Union (EMU), Belgium has followed a strict macroeconomic policy. Although Belgium has achieved a high level of convergence, it still has a very high ratio of government debt to GDP. Especially in the light of the ageing of the population, it is important to keep this further under control.

B. Standard of living

In this first part we will analyse living standards and in part two we will refine this somewhat by taking a closer look at the social conditions.

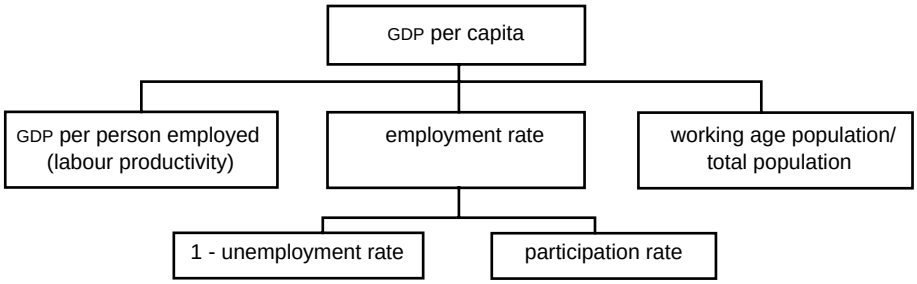
The economic prosperity (standard of living) of a country is usually evaluated by the value in money of the GDP per capita. To make a comparison between the countries, price ratios to convert GDP in national currency into a common unit have to be used. We use Purchasing Power Parities (PPPs) for this purpose because we analyse living standards here and PPPs measure the relative prices of the same basket of consumption goods in different countries. Normal exchange rates could over- or undervalue purchasing power.

1. GDP (based on PPP) per capita for 1998

In 1998, GDP per capita in Belgium amounted to 22.470 ECU and was higher than that of its neighbouring countries and that of the EU. On average, the income of a Belgian citizen was also slightly higher (by 1.5%) than that of a Japanese citizen but lagged well behind that of an American citizen (by 30%) in 1998. The EU lagged far behind both Japan and the United States.

To explain these differences, we can decompose GDP per capita into three factors:

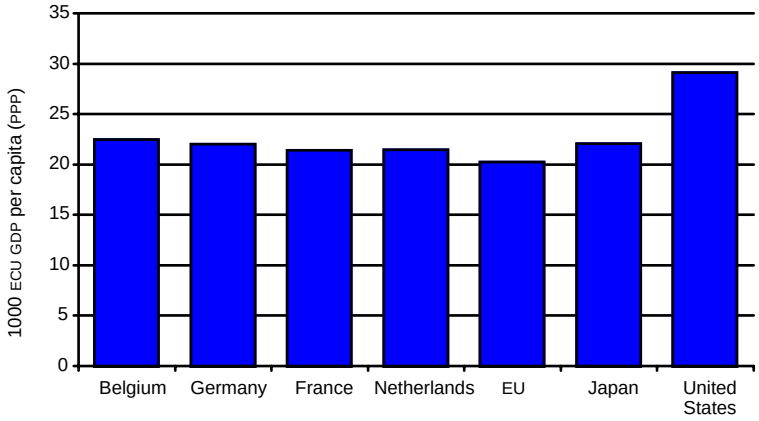
Decomposition of GDP



So the differences in living standards may result from a combination of differences in labour productivity, in the employment rate and / or in the share of the total population that is employed. It should be mentioned that the labour productivity here is measured as value added per employed person. A more preferred measure of labour input would be the total number of hours worked, which would reflect the differences in average hours worked and of part-time employment across countries. For Belgium, the decomposition reveals that the higher GDP per capita compared to its neighbouring countries and to the EU average can be explained by the higher labour productivity as GDP per person employed. This higher labour productivity more than compensates the lower employment rate, i.e. the share of working age population who actually works. The lower per capita GDP in Belgium compared to the United States cannot be explained by a lower labour productivity. GDP per person employed was at about the same level as in the United States. Moreover, also the productivity level measured as GDP per man-hour

relative to the United States is the highest for Belgium among the countries under review. It is even higher than for the United States. This in contrast with the employment rate which is much lower for Belgium than for the United States and even than for all the benchmarked countries. The share of the population of working age in the total population does not differ significantly among the compared countries, so it has a minor role in the explanation of the differences in GDP per capita. It is however slightly lower in Belgium than in most of the countries compared, indicating a higher proportion of older people. So, the relative low employment rate seems to be the major component to explain the difference between the Belgian and the American GDP per capita. The employment rate can further be decomposed into two terms: the share of the employed labour force in the total labour force (rewritten as one minus unemployment rate) and the participation rate. The latter is the share of the population who works, or would like to work, in the working age population. In the chapter "Labour market" we will see that the low employment rate observed in Belgium (the lowest of the countries under review) is largely explained by the lower participation rate.

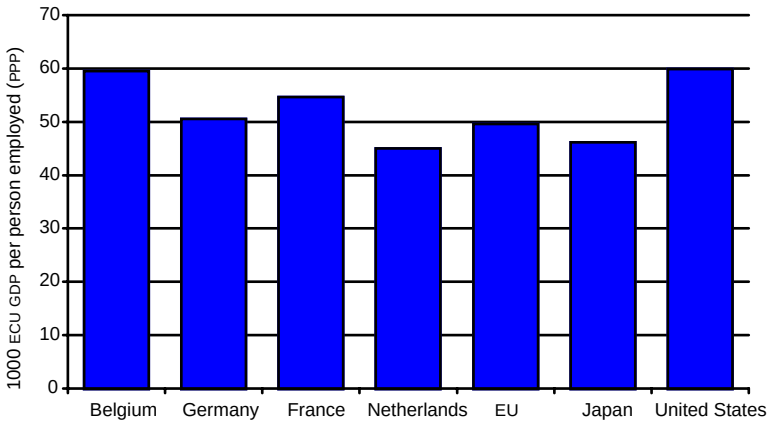
	98
Belgium	22.47
Germany	22.00
France	21.41
Netherlands	21.44
EU	20.24
Japan	22.05
United States	29.10



Source: GDP and GDP purchasing power parities: European Commission (DG-II): AMECO database; Labour force employed and population: European countries: Eurostat (1999), Labour force survey; Japan and US: OECD (1999), Employment outlook and OECD (2000) Labour force statistics. Own calculations.

2. Labour productivity for 1998 - as GDP (in PPP) per person employed

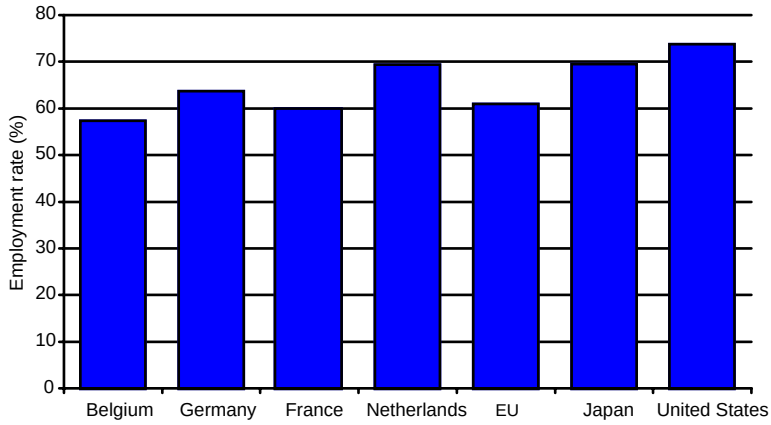
	98
Belgium	59.51
Germany	50.58
France	54.68
Netherlands	45.04
EU	49.61
Japan	46.17
United States	59.88



Source: GDP and GDP purchasing power parities: European Commission (DG-II): AMECO database; Labour force employed and population: European countries: Eurostat (1999), Labour force survey; Japan and US: OECD (1999), Employment outlook and OECD (2000) Labour force statistics. Own calculations.

3. Employment rate for 1998

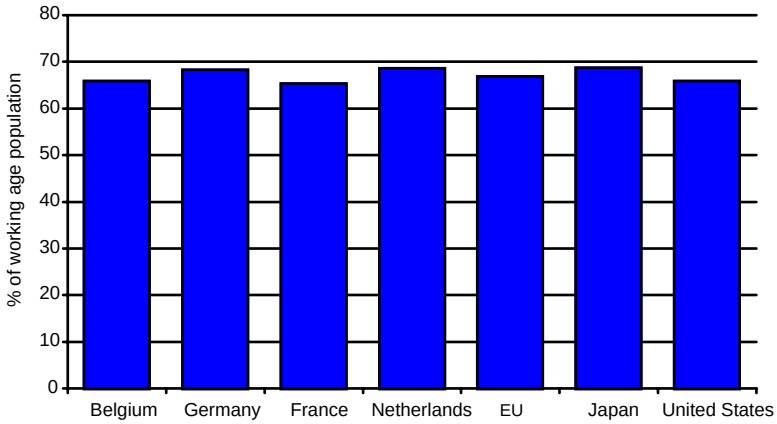
	98
Belgium	57.30
Germany	63.74
France	59.94
Netherlands	69.36
EU	61.01
Japan	69.50
United States	73.80



Source: GDP and GDP purchasing power parities: European Commission (DG-II): AMECO database; Labour force employed and population: European countries: Eurostat (1999), Labour force survey; Japan and US: OECD (1999), Employment outlook and OECD (2000) Labour force statistics. Own calculations.

4. Share of working age population for 1998

	98
Belgium	65.90
Germany	68.24
France	65.31
Netherlands	68.64
EU	66.88
Japan	68.72
United States	65.85



Source: GDP and GDP purchasing power parities: European Commission (DG-II): AMECO database; Labour force employed and population: European countries: Eurostat (1999), Labour force survey; Japan and US: OECD (1999), Employment outlook and OECD (2000) Labour force statistics. Own calculations.

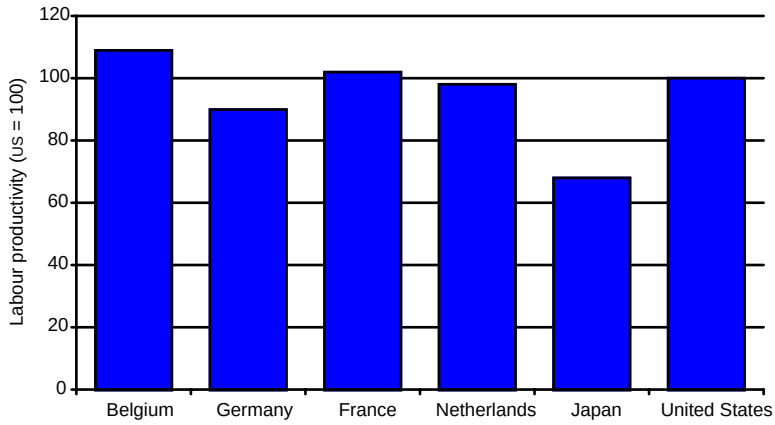
5. Labour productivity - as GDP per man-hour relative to US - 1998

In a more recent study, the OECD calculated the relative levels of GDP per man-hour worked for the OECD countries (US = 100). It seems that Belgium had the highest relative labour productivity (109) among the compared countries in 1998.

Definition

Labour productivity is measured as GDP per man-hour relative to the United States (US = 100). Estimates of hours-worked are based on a country-specific adjustment to data from the European Labour Force Survey or from national accounts / enterprise surveys.

	98
Belgium	109.00
Germany	90.00
France	102.00
Netherlands	98.00
EU	-.-
Japan	68.00
United States	100.00



Source: OECD (2000), "Economic growth in the OECD area: recent trends at the aggregate and sectoral level", ECO/CPE/WP (2000) 6.

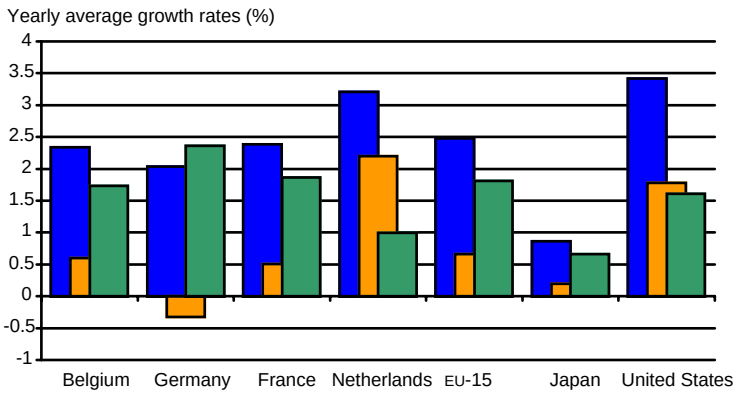
6. Decomposition of GDP: yearly average growth rates (1993-1998)

Over the period 1993-1998, the contribution of GDP growth to employment growth has varied among the countries under review. In Europe, GDP growth was achieved by a strong growth in labour productivity combined with a moderate employment growth. In the United States GDP growth was accompanied by a very significant rise in total employment as well as in labour productivity. It is however important to note contrasting results among the European countries. For example, a slightly lower GDP growth in Germany than in Belgium was accompanied by job destruction in Germany but job creation in Belgium. As a result, the labour productivity has grown faster in Germany than in Belgium.

Labour productivity growth is influenced by both total factor productivity growth (resulting from the improvements in the quality of labour, skills, organisation and technical progress for a given amount of inputs) and capital/labour substitution. The jobless growth in Europe is related to the choice of more capital intensive techniques. This evolution may depend on the evolution in the relative price of labour in Europe and in the United States.

Note Labour productivity is defined as the ratio of the GDP (at 1990 prices) to the total employment for all ages.

	GDP (at 1990 prices)	Total employ-ment	Labour produc-tivity
Belgium	2.34	0.60	1.73
Germany	2.03	-0.32	2.36
France	2.38	0.51	1.87
Netherlands	3.21	2.20	0.99
EU	2.48	0.66	1.81
Japan	0.86	0.20	0.66
United States	3.42	1.78	1.61



Source: GDP: European Commission: AMECO database; Employment: Eurostat (1999), Labour force survey.

C. Income and living conditions

GDP per capita may be the main indicator of the standard of living. But to obtain information about under what circumstances this standard of living is obtained, it is important that this measure is used in conjunction with measures of income distribution and the quality of life. The distribution of income and poverty across social groups can be compared across countries using the GINI indicator of income distribution and the poverty rate, respectively. The degree of life quality is impossible to summarise in one indicator. A number of factors like the health status, the degree of environmental protection and the amount of leisure time determine the degree of life quality. Some of these factors are studied in the next chapters (e.g. Labour market, Environment).

1. GINI indicator of income inequality after taxes and transfers

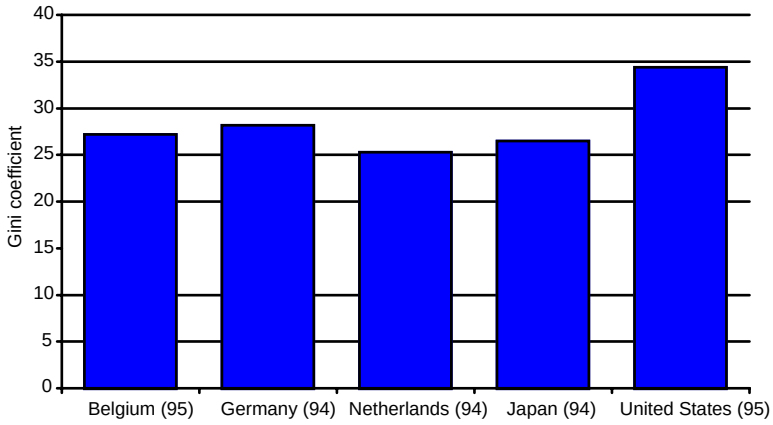
A common indicator to measure the income distribution is the GINI coefficient. A coefficient of "0" indicates a perfect equality in the income distribution while a coefficient of "100" indicates a perfect inequality.

The GINI coefficient of the countries compared ranges between 25.3 (the Netherlands) and 34.4 (United States). In general, we observe that income distribution is less unequal for the European countries compared in this study than it is for the United States. The high GINI coefficient observed in the United States is mainly the result of a large increased of income inequality during the 1980s (see Carnoy M. and Castells M., "Sustainable Flexibility: a Prospective Study on Work, Family and Society in the Information Age", Stanford University, University of California at Berkeley, April 1995 and K.M Murphy and F. Welch (1999), "Recent trends in wage inequality", AEA Annual meeting, New York, January 3-5 1999).

With a GINI coefficient of 27.20, the position of Belgium is intermediate between that in the Netherlands (25.3) and that in Germany (28.2).

Note GINI indicator using equivalence scale elasticity of 0.5. For more details about the methodology, see: OECD (1998), Income distribution and poverty in selected OECD countries.

	95
Belgium (95)	27.20
Germany (94)	28.20
Netherlands (94)	25.30
Japan (94)	26.50
United States (95)	34.40



Source: OECD (1998), Income distribution and poverty in selected OECD countries.

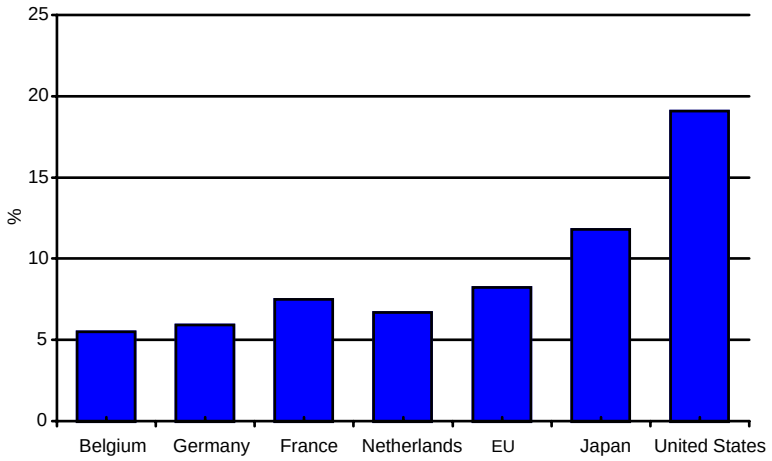
2. Poverty rate - % for 1990

With income rather equitably distributed in Belgium, the poverty rate (measured as the share of the population with a disposable income of less than 50% of the median income) is also low. In the United States, about a fifth (19.1%) of the population was estimated to dispose of very low income in 1990. In Europe, this share was much lower and amounted to 8.21%. The low-income rate in Japan is somewhat intermediate between the EU average and the United States. Within the European countries compared, Belgium had the lowest share (5.5%) of population being made up by poor individuals. However, this indicator should be interpreted with caution. Although the figure seems to be rather outdated it is the latest figure available that makes a comparison between these seven counties under review possible. Note however that there are different definitions of the poverty rate and they can give different results. Eurostat (2000) proposes a poverty rate measured as the share of the population below the poverty line of 60% of median equivalised income as one of the "Structural indicators" for describing social cohesion. With an "equivalised income" they try to take into account the differences in household size and composition (for more information on the definition see Eurostat). For 1996 this gives a poverty rate after social transfers of 17% for Belgium and the average of the European Union member countries, 16% for Germany and France and 12% for the Netherlands (no data available for Japan and the United States) (Source: Eurostat (2000), New Cronos database).

Definition Poverty rate is the ratio of the number of "poor" individuals to the total population. "Poor" are individuals with disposable income below 50 per cent of median disposable income.

Note The figure for the EU is a weighted average of the poverty rate in 11 European countries (data for Greece, Austria, Luxembourg and Portugal are not available). The weight of a country is based on its share of population in the total population of the 11 countries.

	90
Belgium	5.50
Germany	5.90
France	7.50
Netherlands	6.70
EU	8.21
Japan	11.80
United States	19.10



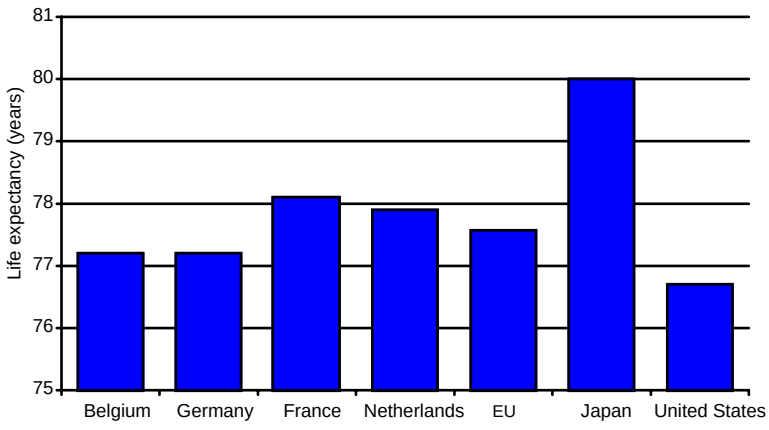
Source: World Bank (1998), World Development Indicators.

3. Life expectancy at birth (years) - 1997

Life expectancy at birth is one indicator for the current health status of a community and it is often cited as a measure of the population's welfare or quality of life. We see that the life expectancy at birth in Belgium is around 77 year in 1997. This is nearly the same as the average of the EU. Someone born in Japan is expected to live till the age of 80, whereas a person born in the US will live on average till he is 76. When we take a closer look at life expectancy, we see that in the countries under review, women live on average longer than men do. In Belgium, a woman is expected to live till she is 80 whereas life expectancy for men is 73 year.

Note The figure for the EU is the average of the life expectancy at birth in the 15 European countries, weighted by its share of population in the total population of EU-15.

	97
Belgium	77.20
Germany	77.20
France	78.10
Netherlands	77.90
EU	77.57
Japan	80.00
United States	76.70



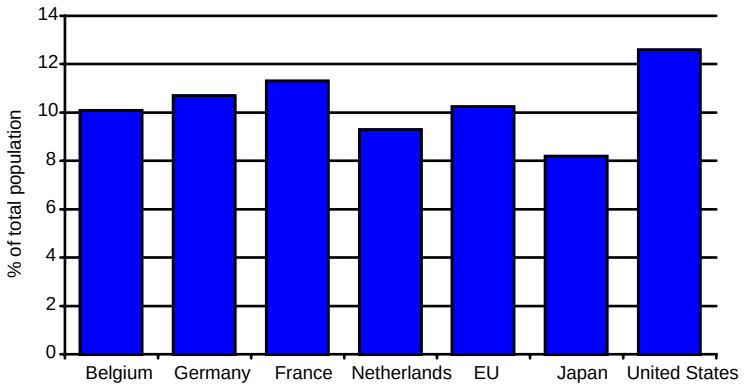
Source: Human Development Report 1999.

4. People not expected to survive to age 60 (% of total population) - 1997

When we want to investigate the vulnerability to death at a relatively early age, we take a look at the percentage of people not expected to survive to age 60. In 1997, 10% of the Belgians was expected to die before the age of 60. This is less than in the United States, France, Germany and the European Union as a whole.

Note The figure for the EU is the average of the % of people not expected to survive to age 60 in the 15 European countries, weighted by its share of population in the total population of EU-15.

	97
Belgium	10.10
Germany	10.70
France	11.30
Netherlands	9.30
EU	10.24
Japan	8.20
United States	12.60



Source: Human Development Report 1999.

D. Macroeconomic indicators

Some macroeconomic results of Belgium may be estimated with respect to the convergence criteria that have been determined by the Maastricht Treaty and the Stability and Growth Pact. A stable monetary and budgetary policy is very important because instability affects business confidence and the willingness of entrepreneurs to take risks. By satisfying the Maastricht criteria, Belgium has achieved a high level of sustainable convergence and belongs to the group of countries which participates in the third and final stage of the Economic and Monetary Union (EMU). This implies that the exchange rates of the currencies of the Member States participating in the Euro area are irrevocable locked. Moreover, there is now a single monetary policy among these countries under the responsibility of the ECB (European Central Bank). The primary objective of the central bank is to maintain price stability and to define and implement the monetary policy of the Community. Therefore it is no longer useful to look at Belgium's monetary performance in terms of exchange rate in comparison with our neighbouring countries. Due to the EU convergence criteria we observe converged inflation rates and long-term interest rates. So, the inflation rate in Belgium is comparable with the average inflation rate for the countries considered. The long-term interest rate is decreasing but stays at a slightly higher level than our neighbouring countries. In the context of the Stability and Growth Pact adopted in Amsterdam, EMU Members committed themselves to respect a medium-term budgetary target which is "close-to-balance or in surplus". In the budgetary stability program for the period 2000-2003 the Belgian Government keeps the commitment to stabilise the primary surplus at about 6% of the GDP. Over the last couple of years, the strict budgetary policy brought down government budget deficit.

However, despite the decreasing trend, the government debt is still the highest among the countries in this study.

1. Convergence criteria

a. Government deficit (surplus) - % of nominal GDP

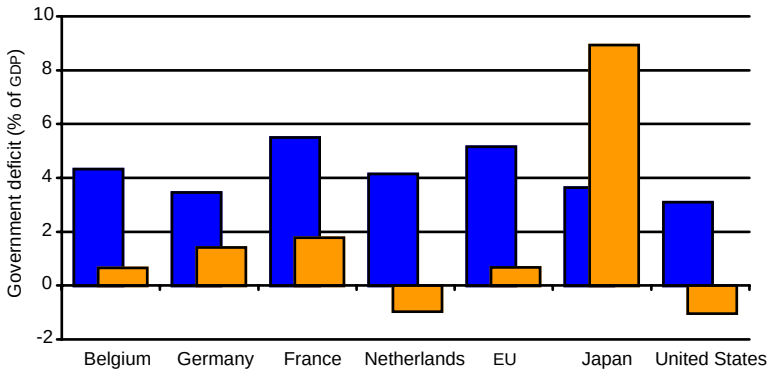
Since the beginning of the 1980s, Belgium has introduced measures to reduce the government deficit that was higher than 12% of GDP in 1981. But due to adverse economic conditions, the Belgian government deficit still deteriorated between 1992 and 1993 from 6.89% of GDP to 7.12%. Therefore significant adjustment measures were adopted since 1993 in the framework of the two convergence programmes. The government deficit has been reduced continuously to reach 0.65% in 1999.

The sustainability of the government financial position is influenced by structural factors. However, the cyclical position of the economy has an impact on the government budget. This influence was negative during the recession of the early 1990s. The cyclical conditions improved with the recovery of 1994 and 1995 but worsened again between mid-1995 and mid-1996. The improvement of cyclical conditions in 1997 helped to reduce the government deficit in most Member States. Belgium is since 1996 part of the group of Member States that have a government balance that is better than or equal to the reference value for the deficit (3% of GDP). The structural deficit (the deficit adjusted for cyclical fluctuations) gives a better view of the real efforts of the government to keep the budget under control. In 1993, the structural deficit in Belgium amounted more than 6% of GDP, which was the highest among the countries under review. But this rate has fallen down and reached less than 4% of GDP in 1995 and it decreased further to achieve almost a balance budget in 1999. In accordance with the Stability Programme for the period 2000-2003, the proceeds deriving from stronger growth in 2000 will be assigned, as a matter of priority, to reducing the deficit. In order to achieve this objective, the government has among other things committed itself to maintain the primary surplus of the general government at around 6% of GDP.

Definition

Government deficit is the ratio of general government net borrowing (+) or net lending (-) to GDP at current market prices.

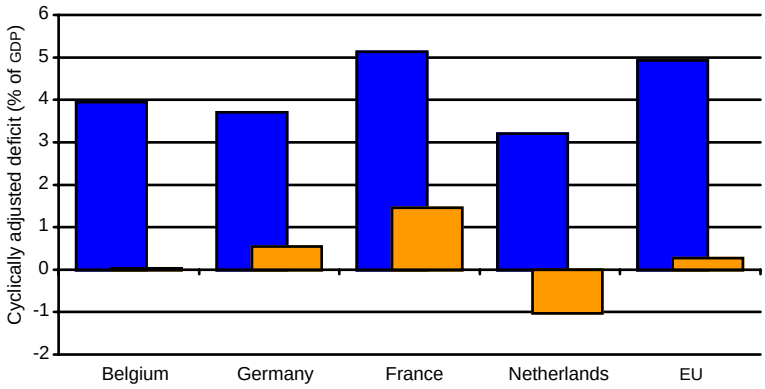
	95	99
Belgium	4.32	0.65
Germany	3.46	1.42
France	5.51	1.78
Netherlands	4.15	-0.96
EU	5.17	0.67
Japan	3.64	8.93
United States	3.09	-1.03



Source: (Adjusted) Government deficit: European Commission (DG-II): AMECO database.

b. Government deficit (surplus) cyclically adjusted - % of GDP

	95	99
Belgium	3.95	0.03
Germany	3.71	0.54
France	5.13	1.46
Netherlands	3.20	-1.02
EU	4.93	0.27



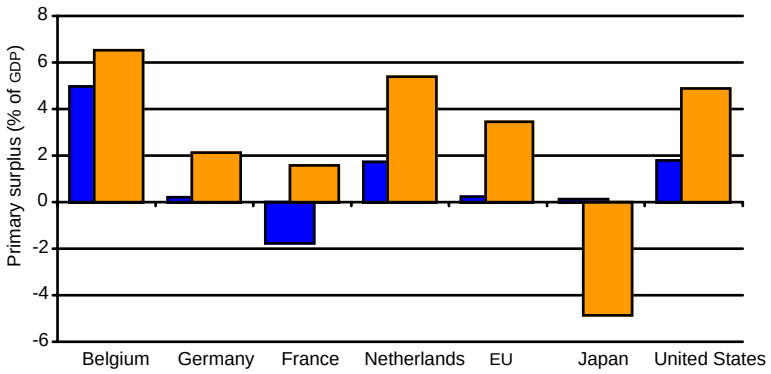
Source: (Adjusted) Government deficit: European Commission (DG-II): AMECO database.

c. Primary surplus (deficit) - % of nominal GDP

In Belgium, the high level of primary surplus has resulted in a considerable reduction of the government indebtedness. The reduction of the public debt accompanied by the substantial reduction of the interest rate on the public debt allowed a considerable reduction of interest payments on the government deficit. The "snowball effect" is now inverted consolidating the decreasing trend of the government indebtedness. The future budgetary policy of the Belgian government will be guided by the objective to maintain the primary surplus at 6% of the GDP

Definition Ratio of general government net lending (+) or net borrowing (-) excluding interest payments to GDP at current market prices.

	95	99
Belgium	4.97	6.53
Germany	0.21	2.12
France	-1.76	1.57
Netherlands	1.73	5.39
EU	0.23	3.46
Japan	0.13	-4.84
United States	1.78	4.89



Source: European Commission (DG-II): AMECO database.

d. Government debt - % of nominal GDP

A high government debt in a country can lead to increased interest rates and have a negative impact on investment and therefore on the capital stock. Moreover, high debt means high debt service. Interest payments bear heavily on the budget and reduce fiscal room for manoeuvre.

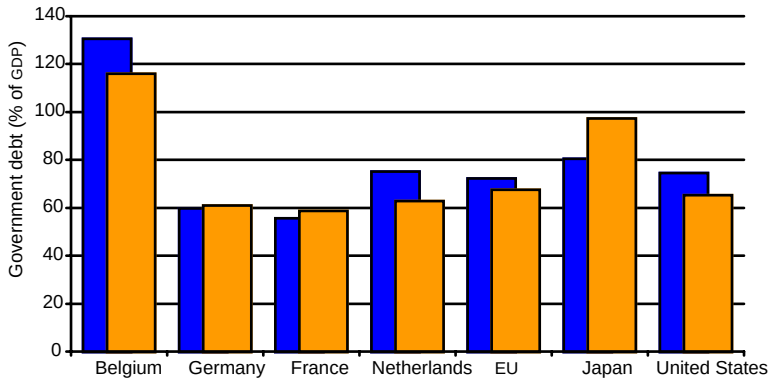
The government debt ratio in Belgium is still at a very high level even though it fell continuously since 1993 and the overall reduction was important. Bringing this ratio down is therefore a priority of budgetary policy. Although the government debt ratio has declined to 115.89% in 1999, it remained well above the reference value of 60% of GDP. The level of the debt ratio for the European Community as a whole amounted to 67.53% of GDP in 1999, while it reached 97.40% in Japan (in 1998) and 66.24% in the United States.

It can be stressed that there is a similar trend to a reduced government debt ratio in the Netherlands over the period under review, whereas the trend is to a growing government debt ratio in Germany and in France.

Definition Ratio of general government consolidated gross debt to GDP at current market prices.

Note The figure for Japan is for 1998.

	96	99
Belgium	130.53	115.89
Germany	59.78	61.06
France	55.67	58.62
Netherlands	75.23	62.87
EU	72.16	67.52
Japan	80.49	97.40
United States	74.50	65.24



Source: European Commission (DG-II): AMECO database.

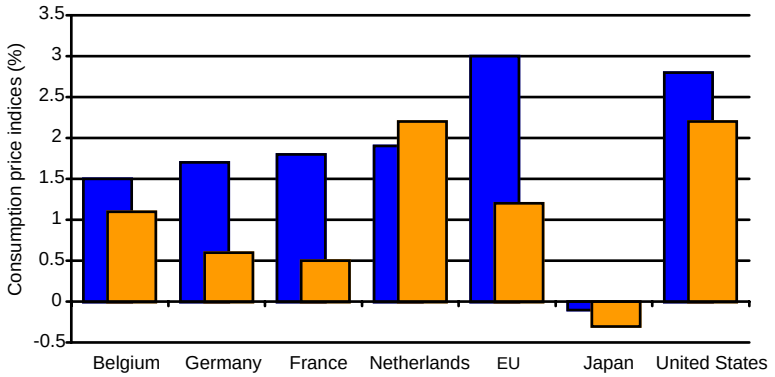
e. Consumption price indices - annual percentage change

During the period under review, there is a clear convergence towards low inflation throughout the European Union. Convergence between Member States in price inflation was already remarkable at the end of 1996 and has strengthened further over the last period. This evolution was the result of the progress achieved more recently by a few EU countries (the United Kingdom, Italy, Portugal, Spain and to a lesser extent Greece) in terms of price stability. The Belgian inflation rate has been low during the whole period. In comparison with the neighbouring countries, the annual rate of inflation in Belgium in 1999 (1.1%) was between that in France (0.5%) or in Germany (0.6%) and that in the Netherlands (2.2%).

Definition Consumption price indices are compiled from monthly price figures.

Note The aggregate for the EU is "computed using weights based on the consumer expenditure in 1997 expressed in private consumption purchasing power parities" (see OECD (2000), OECD Economic Outlook N°67).

	95	99
Belgium	1.50	1.10
Germany	1.70	0.60
France	1.80	0.50
Netherlands	1.90	2.20
EU	3.00	1.20
Japan	-0.10	-0.30
United States	2.80	2.20



Source: OECD (2000), OECD Economic Outlook Nr67.

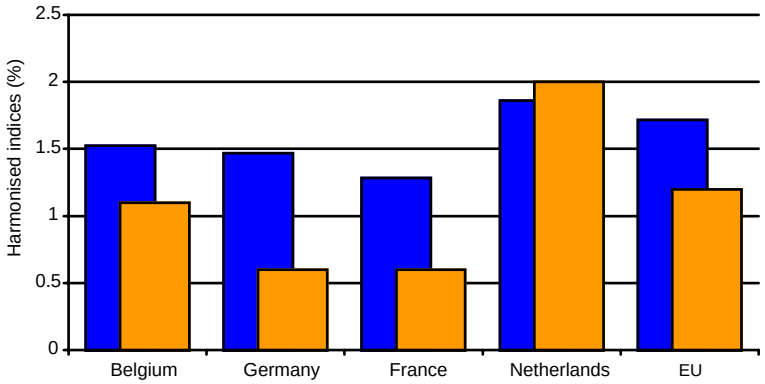
f. Harmonised indices of consumer price - annual percentage change

Since national consumer price indices (CPIs) diverge substantially in terms of concepts and methods they do not constitute the most appropriate means to meet the requirement that inflation must be measured on a comparable basis. Therefore, harmonised indices of consumer prices (HICPs) based on harmonised methodologies for the Member States were introduced with a coverage of goods and services as similar as possible.

The first set of HICPs was published in March 1997 with historical series dating back to January 1995. It is noticeable that over the last years inflation rates converged throughout the European Union. In Belgium where the annual inflation rate was 1.53% in 1997, inflation decreased to reach 0.91% in 1998 and 1.1% in 1999.

Note The European index of consumer prices is calculated as a weighted average of the harmonised consumer price indices of the 15 European member countries. The weight of a member state is its proportion of final consumption expenditure of households (expressed in term of purchasing power parities) in the EU total.

	97	99
Belgium	1.53	1.10
Germany	1.47	0.60
France	1.28	0.60
Netherlands	1.86	2.00
EU	1.72	1.20



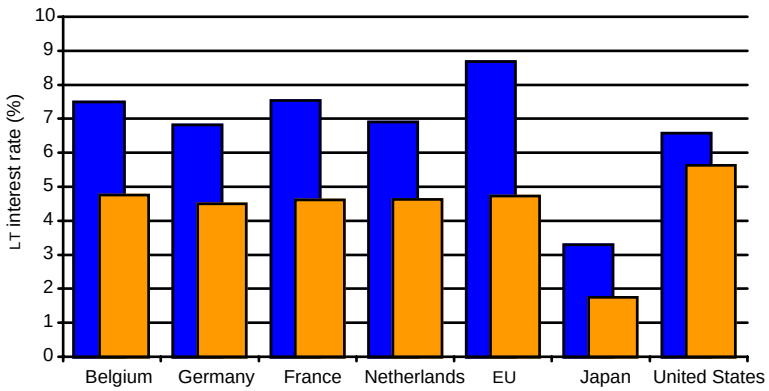
Source: Datastream and Eurostat (for 1999).

g. Nominal long term interest rate - %

The average long-term interest rate in Belgium was 7.49% in 1995. It has been reduced to 4.75% in 1999. The long-term interest rate differential to the Member States with the lowest interest rates has narrowed for Belgium during the period under review. However, due to a high level of government debt, the Belgian interest rate remained slightly higher than in the Netherlands, France and Germany. With the introduction of the Euro, interest rates in the Euro-zone tend to converge further. The average long-term interest rate for the European Union as a whole in 1999 (4.73%) was lower than that in the United States (5.63%) but substantially higher than in Japan (1.75%).

Note The figure for the EU is calculated as a weighted average of 15 EU member countries interest rates. Weightings of interest rates are based on the share of each country's GDP in the total GDP of the 15 EU countries taken into account.

	95	99
Belgium	7.49	4.75
Germany	6.82	4.50
France	7.54	4.61
Netherlands	6.91	4.63
EU	8.67	4.73
Japan	3.29	1.75
United States	6.58	5.63



Source: European Commission (DG-II): AMECO database.

2. Macroeconomic saving and investment

The size and quality of investment in physical assets and intangible assets such as education and skills is very important for economic growth. The strength of investment performance is also more generally an indicator of the economic environment. Macroeconomic stability and growth, labour market problems, the transparency and liquidity of capital markets all influence the investment incentives and the ability to invest.

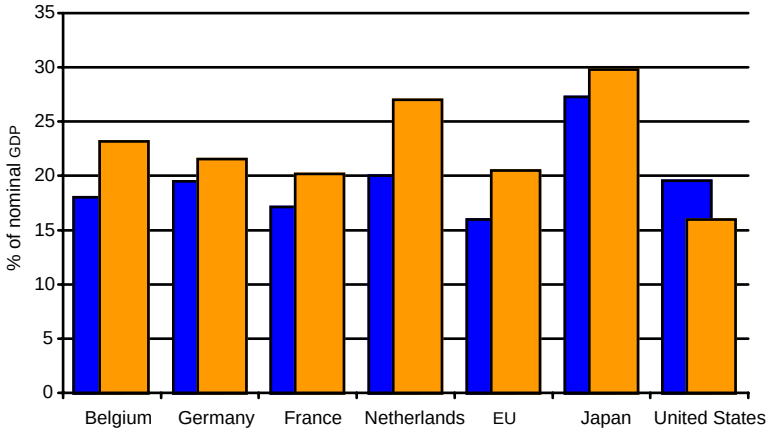
a. Total saving and investment - % of nominal GDP (1998)

Gross investments are rather sensitive to cyclical fluctuations so comparisons between countries have to be made with caution. However, since 1996, the total investment rate in Belgium is slightly going upward and reaches 18.03% of GDP in 1998. This is more than in France and than the average of the EU. The gross national saving rate has on average an upward trend since more than a decade. In 1985 it was less than 15% of GDP but the national saving rate climbed till 23.16% of GDP in 1998. Only Japan (27.20%) and the Netherlands (25.95%) have higher saving rates in 1998.

Note

The total gross fixed capital formation is the sum of the private (business and residential fixed investments) and the government gross fixed capital formation. The figure for the EU gives the ratio of the total fixed capital formation of 14 EU member countries (the figure for Luxembourg is not available) to the total GDP of these countries. The figure for the EU for total saving gives the ratio of the total gross savings of 15 member countries to the total EU GDP.

	Total gross fixed capital formation	Gross national saving
Belgium	18.03	23.16
Germany	19.50	21.55
France	17.14	20.21
Netherlands	20.02	27.01
EU	15.97	20.50
Japan	27.30	29.81
United States	19.54	15.99



Source: European Commission (DG-II): AMECO database (1999). Own calculations.

b. Private saving and investment - % of nominal GDP (1998)

We can decompose total gross fixed capital formation into the private and the government gross fixed capital formation. The private gross fixed capital formation includes fixed capital formation by enterprises (expenditure in durable production goods) and households (housing investments). Over the last years, business fixed investment has remained increasing and private investment has strengthened. In 1998, the private gross investment rate is slightly lower than in Germany, the Netherlands and the US (for the

first time in ten years), but substantially higher than in France and the average of the EU. This in contrast with the government fixed capital formation. Whereas this rate reached 4% in Belgium in the beginning of the eighties, it remained under 2% over the last 10 years. This was a consequence of the restrictive budgetary policy introduced in the beginning of the 1980s and reinforced by the adoption of budgetary adjustment measures during the last years in the framework of the convergence program. In 1998, the public investment rate amounted 1.47% of GDP.

Gross national saving includes saving of the private sector and the public sector. Since 1994, we can notice a fall in the saving ratio in the private sector, as consumer confidence has rebounded in Belgium. This is possibly the result of the remarkable progress in the reduction of the government deficit and better prospects in the labour market. But in spite of this reduction in private saving rate, Belgium's saving rate is high in comparison with the EU average level. Among the neighbouring countries, only the Netherlands had a higher saving rate but this is influenced by the choice of a funded pension system. In Belgium, the private savings largely finance the private sector investments. The private sector financing capacity (i.e. the difference between the private sector gross saving and the private sector gross fixed capital formation) is positive for all countries under review except for the US. Public saving, measured by the government surplus, is negative for all countries in this study, except for the US.

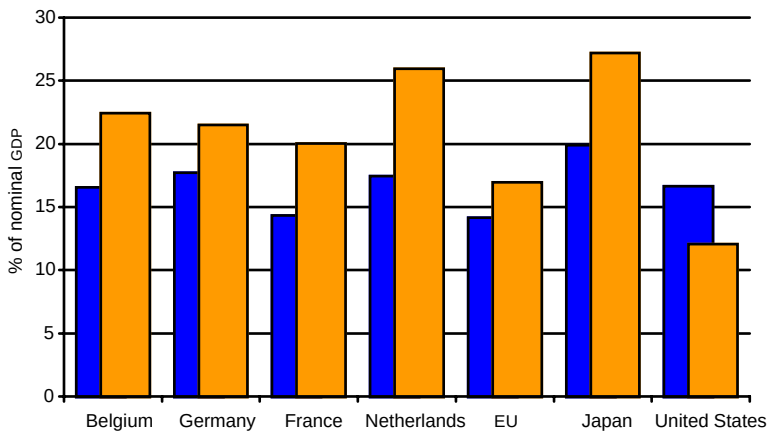
Note

The investment is measured by the gross fixed capital formation. For the private sector, it includes business and household (mainly residential) fixed investments. The figure for the EU gives the ratio of the total private fixed capital formation of 14 member countries (the figure for Luxembourg is not available) to the total GDP of these countries.

Definition

The private sector financing capacity is defined as the difference between the private sector gross saving and the private sector gross fixed capital formation. The figure for the EU gives the ratio of the total financing capacity of 14 EU member countries (the figure for Luxembourg is not available) to the total GDP of these countries.

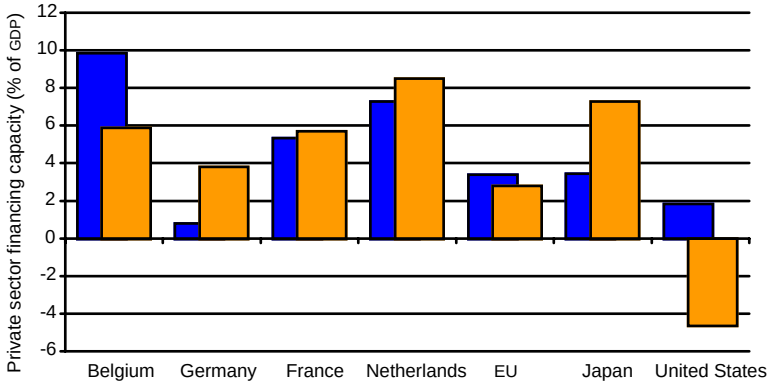
	Private sector gross capital formation	Private sector gross saving
Belgium	16.55	22.44
Germany	17.70	21.50
France	14.33	20.03
Netherlands	17.45	25.95
EU	14.15	16.94
Japan	19.91	27.20
United States	16.66	12.05



Source: European Commission (DG-II): AMECO database (1999). Own calculations.

c. Private sector financing capacity - % of nominal GDP

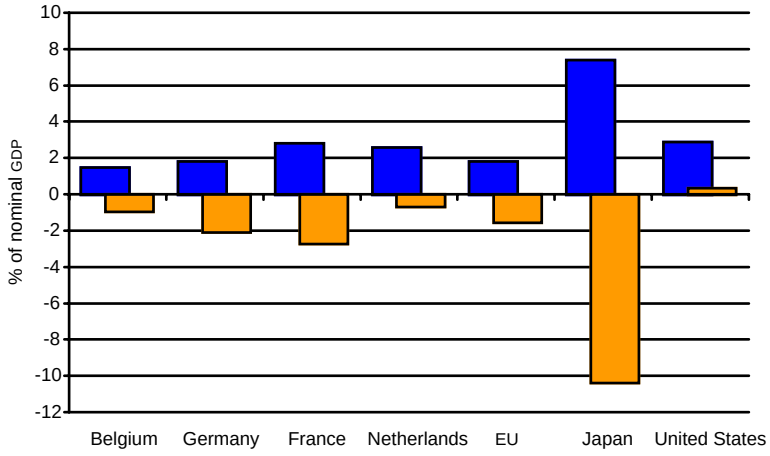
	93	98
Belgium	9.85	5.88
Germany	0.80	3.80
France	5.33	5.70
Netherlands	7.29	8.50
EU	3.40	2.79
Japan	3.45	7.29
United States	1.83	-4.61



Source: European Commission (DG-II): AMECO database. Own calculations.

d. Public saving and investment - % of nominal GDP (1998)

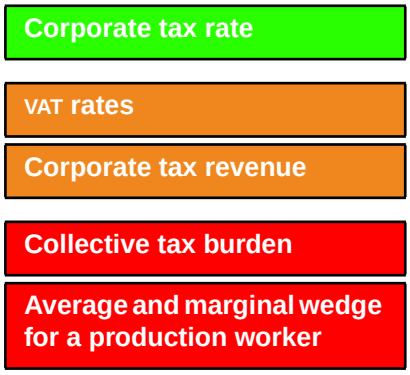
	General government gross fixed capital formation	Government surplus (deficit)
Belgium	1.47	-0.94
Germany	1.80	-2.06
France	2.81	-2.71
Netherlands	2.58	-0.68
EU	1.82	-1.54
Japan	7.39	-10.37
United States	2.88	0.35



Source: European Commission (DG-II): AMECO database. Own calculations.

III Taxation

A. Belgium's position



Taxation is an important element of competitiveness. In a welfare state, the design of taxation systems requires a constant trade-off between equity and efficiency considerations. The level of taxation depends on national policy priorities and international constraints.

On the one hand, taxation policy has to ensure the financing of public sector expenditures and to promote income redistribution. On the other hand, it must provide sufficient incentives to stimulate employment and economic growth.

Throughout history, societies and countries gave their own content to this trade-off. Even within the EU, important differences between member states still exist. Belgium has a high collective tax burden. Especially taxes on employed labour are high. Taxes on labour income play an important role in a company's decision to establish in a country because it determines the wage costs for the employer. In Belgium, the wedge between the wage cost for employers and the workers net take-home pay is remarkably high. The taxation on income, the profits and capital gains of companies can also be an important burden on companies. This corporate tax rate is low in Belgium. The taxes on environment are rather low in Belgium. In the short run this is positive for the competitiveness of the corporations but in the long run this can turn against competitiveness. Since some economic activities can lead to deterioration of the environment, it is important to reduce this negative impact. The environmental legislation can stimulate the investment in cleaner and more efficient production methods and this can lead in the longer term to competitive advantages.

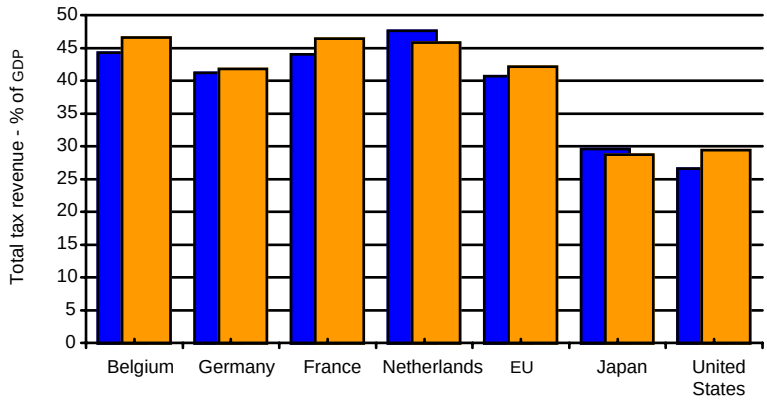
B. Total fiscal burden

1. Total tax revenue - % of nominal GDP

In 1997, the overall share of taxes and social contributions in GDP varies widely among the compared countries, ranging from 28.7% for Japan to 46.6% for Belgium. In Belgium, France and the Netherlands this ratio was higher than the EU average level (42.1% in 1997). Compared to the tax rates of the other countries, Belgian tax rates are very high. It is difficult to interpret these differences without relating them to the public expenditure side. Differences in taxation levels can be related to differences in tax-financed expenses for services like education and health care. In terms of disposable income of individuals or industries, a lower taxation burden will to a certain extent be compensated by higher individual expenditures. So, tax revenues measured as a percentage of GDP should be interpreted with caution.

Note For reasons of data availability, only the results for Europe-12 are presented.

	91	97
Belgium	44.30	46.60
Germany	41.20	41.80
France	44.00	46.40
Netherlands	47.60	45.80
EU	40.70	42.10
Japan	29.58	28.69
United States	26.59	29.37



Source: Tax revenue: European countries: Eurostat (2000), Structures of the Taxation Systems in the European Union 1970-1997; United States and Japan: OECD (1999), Revenue statistics 1965-1998; GDP: European Commission: AMECO-database.

2. Structure of the total tax revenue - % of the total tax revenue for 1997

In Belgium, the most important source of fiscal revenue is levied via direct taxes (corporate and individual taxes accounted for more than 38% of the total taxation in 1997) followed by social security contributions (nearly 32% of total taxation). In the neighbouring countries and for the EU as a whole, social security contributions account for a larger share of the total taxation than direct taxes. The share of indirect taxes in total taxation in Belgium is the lowest among the EU countries compared. Currently, the fiscal policies in our neighbouring countries emphasise a reduction of the total tax burden. Among other things, this shall be accomplished especially by a reduction in taxes on labour. In contrast, environmental taxation will be increased in most countries. These tendencies also exist in Belgium, the Netherlands, Germany and France. In 1999, the Netherlands introduced a plan for the reform of the taxation system in 2001. One of their goals is a shift of the taxation burden from direct taxation towards indirect taxation (by an increase in VAT and environmental taxes). Since 1999, Germany wants to stimulate the growth of investments and employment through the reform of the corporation tax.

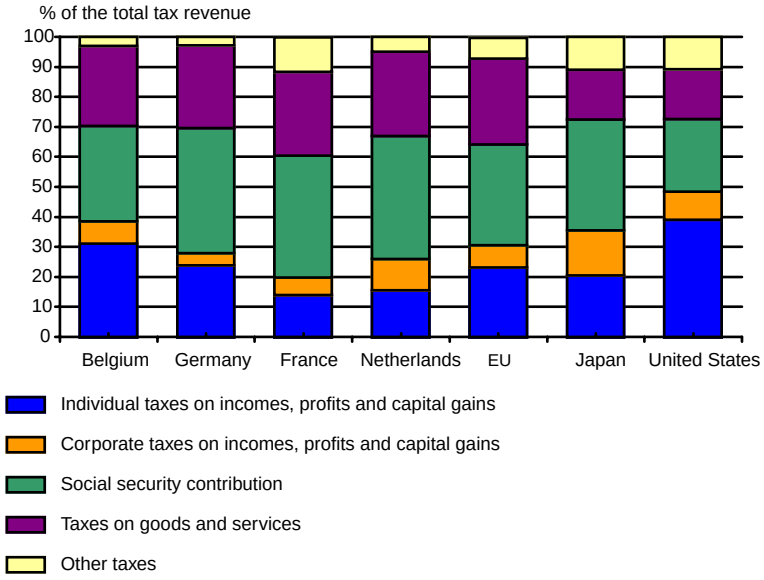
Moreover, there will also be an ecological tax reform, which contains, without going further in detail, an increase in the taxation burden for the energy intensive sectors through the excises on fuels. The French government wants to reform the fiscal structure to get more employment, more fiscal justice, more ecological awareness and more simplification.

Note

The figure for the EU provides the splitting of the total tax revenue of the 15 member countries. Other taxes include taxes on property, taxes on payroll and workforce (i.e. "taxes paid by employers, employees or the self employed either as a proportion of payroll or as a fixed amount per person, and which are not earmarked for social security contributions"), and other taxes (i.e. taxes levied on a base or bases other than those described above and in the graph). For more information, see OECD (1999), Revenue statistics 1965 / 1998.

97

Belgium	31.02	7.47	31.81	26.71	3.01
Germany	23.90	4.03	41.63	27.69	2.75
France	14.02	5.84	40.61	27.85	11.55
Netherlands	15.57	10.46	40.95	27.99	5.03
EU	23.17	7.36	33.58	28.67	6.94
Japan	20.49	15.03	36.93	16.54	11.01
United States	38.99	9.43	24.19	16.65	10.75



Source: OECD (1999), Revenue statistics 1965-1998; EU: own calculations.

C. Taxation of income from labour

Taxation of income from employed labour includes mainly three components:

1) The taxation of individuals via the personal income tax;
2) The social security contribution paid by employees;
3) The social contribution paid by employers.

Those levies create a wedge between the wage cost for employers and the workers net income. In the following paragraphs we will take a closer look at several indicators of the taxation on labour income.

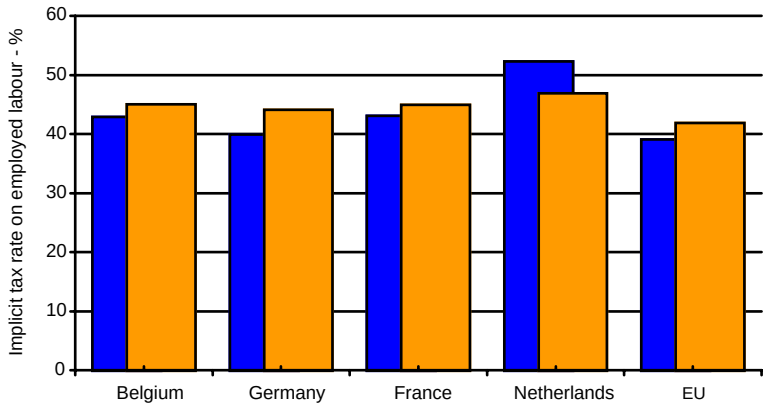
1. Implicit tax rate on employed labour - %

Average or implicit tax rates are defined from a macroeconomic point of view. These tax rates are calculated by dividing the revenues from taxes on a specific activity or good by an appropriate corresponding aggregate tax base from national account statistics. In 1997, the average tax rates on employed labour in Belgium and in its neighbouring countries were close to the EU average. In Belgium, the implicit tax rate on employed labour amounted to 45%. This rate was nearly the same in France (44.9%), higher in the Netherlands (46.9%) and slightly lower in Germany (44.1%). In the Netherlands, the implicit tax rate on employed labour decreased from 53.0% in 1991 to 46.9% in 1997. This decrease was the result of a variety of measures aimed at reducing levies on low-income workers. This in contrast with the other countries under review where the implicit tax rates on employed labour slightly increased since the beginning of the nineties. In Japan and the United States the implicit tax rate on labour is lower than in the European Union member countries. Over the period 1991-1997, the implicit labour tax rate amounted on average 26.7% in the United States and 28.3% in Japan. The average for the European Union over this period was 42.8% (Source: OECD (2000), Average effective tax rates on capital, labour and consumption).

Definition

The implicit tax rate on employed labour is the "ratio of the taxes on employed labour to compensation of employees. The compensation of employees consists of gross wages and thus also the amount paid as social insurance contributions and wage taxes. In addition, the social contributions paid by employers are included as well as imputed social contributions" (see Eurostat (2000), Structures of the taxation systems in the European Union 1970-1997).

	91	97
Belgium	42.90	45.00
Germany	39.90	44.10
France	43.10	44.90
Netherlands	52.30	46.90
EU	39.10	41.90



Source: Eurostat (2000), Structures of the taxation systems in the European Union 1970-1997. For the US and Japan: OECD (2000), Average effective tax rates on capital, labour and consumption.

2. Average wedge for a production worker - % for 1998

The marginal and average tax wedges are computed from microeconomic data like households or business surveys. They can diverge substantially from the implicit tax rates, which are defined from a macroeconomic point of view.

As already mentioned, social contributions and personal income tax create a wedge between the wage cost for employers and the workers net take-home pay. This gap is calculated as the social contributions (from employees as well as employers) and personal income tax minus transfer payments as a percentage of gross labour costs. In Belgium this wedge for a production worker at the average wage level amounted to almost 57% of the gross labour cost, which was the highest among the compared countries in 1998. Moreover, over the period 1979-1999, Belgium has, besides Germany, the largest increase in the tax wedge (by 9.5 percentage points). This high non-wage labour cost can result in a higher rigidity of total labour cost that constrains the employer's willingness to create jobs. In its "1998 Action Plan for employment", the Belgian government committed itself to reduce the employer's social security contribution level to the average of the three neighbouring countries within a six years delay.

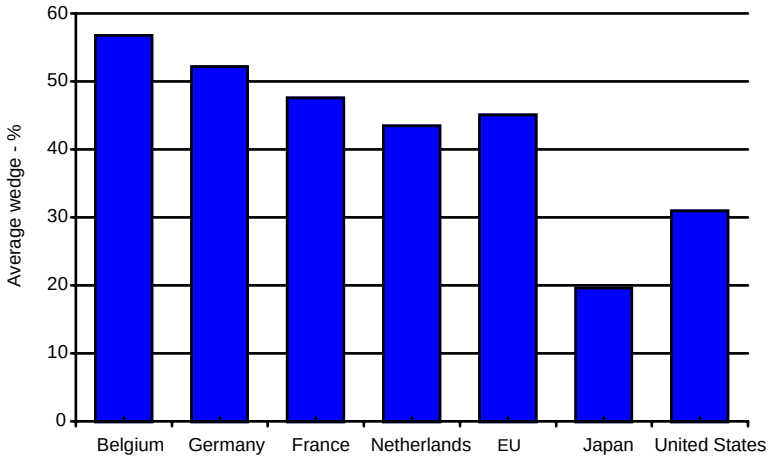
Definition

The data concern a single individual at the average production worker wage level (APW). This is an adult full-time production worker in the manufacturing sector whose wage earnings are equal to the average wage earnings of such workers. Gross labour costs are gross wage earnings plus employers' social security contributions (see OECD (2000), Taxing wages 1998-1999 for further methodological details).

Note

The data for the EU is a weighted average of tax wedges for an average production worker in each of the 15 member countries. Weightings of tax wedges are based on the share of each country total compensation of employees in the total compensation of employees of the 15 member countries.

	98
Belgium	56.80
Germany	52.20
France	47.60
Netherlands	43.50
EU	45.09
Japan	19.60
United States	31.00



Source: OECD (2000), Taxing wages 1998-1999; EU: own calculations.

3. Marginal wedge for a production worker - % for 1998

Because they ensure the function of primary income redistribution between high and low-income individuals, progressive taxes are desirable from an equity point of view (see table showing the GINI indicator of income distribution before and after taxes and transfers). On the other hand, very progressive rates discourage high-income workers to increase their supply of labour.

The marginal wedge shows the percentage of the rise in labour costs that is levied through taxation when gross labour cost increases marginally. In Belgium, for a single individual at an average production worker wage level, the marginal wedge amounted to more than 67% in 1998. This rate was the highest of the countries under review. In 1998, the marginal tax rate in Belgium was 4 percentage points higher than in Germany, up to 14 percentage points higher than in France or than the EU average and nearly 20 percentage points higher than the Netherlands. In 1998, the marginal wedge in Japan and in the United Sates amounted to 26.9% and 34.9%, respectively.

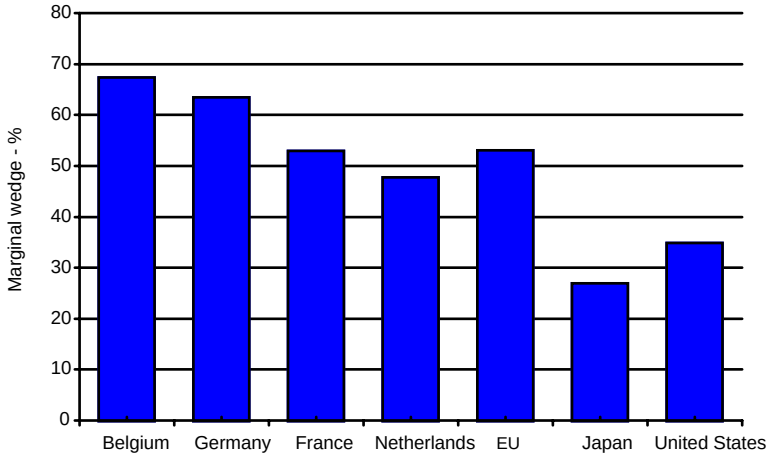
Definition

Marginal tax rates covering employees' and employers' social security contributions and personal income tax, with respect to a change of gross labour costs. The data concern a single individual at the average production worker wage level. An average production worker is an adult full-time production worker in the manufacturing sector whose wage earnings are equal to the average wage earnings of such workers. Gross labour costs are gross wage earnings plus employers' social security contributions (see OECD (2000), Taxing wages 1998-1999 for further methodological details).

Note

The data for the EU is a weighted average of marginal tax wedges for an average production worker in each of the 15 member countries. Weightings of tax wedges are based on the share of each country total compensation of employees in the total compensation of employees of the 15 member countries (Source: European Commission: AMECO database).

	98
Belgium	67.30
Germany	63.40
France	52.90
Netherlands	47.70
EU	53.02
Japan	26.90
United States	34.90



Source: OECD (2000): Taxing wages 1998-1999; EU: own calculations.

4. Increase in net income after a one percent increase in gross wage earnings - % for 1998

The progressiveness of the tax system can be measured by the elasticity of income after taxes and social security contributions. This elasticity measures the percentage increase in net income when gross earnings increase by 1 percent. In a proportional tax scheme, the elasticity would be equal to 1. The more progressive the tax system, the lower the elasticity of income after taxes will be. If we consider a worker with a wage level at 67% of an average production worker (APW), Belgium has the most progressive tax on labour (elasticity of 0.68) reflecting the high marginal tax rate experienced by this category of income earners. For the same income category, Germany, the Netherlands and France have a less progressive tax structure reflected by an elasticity of 0.75, 0.81 and 0.87, respectively. Moreover, Belgium has also the most progressive tax rate for a wage level at 167% of an average production worker. In Belgium, France, Germany and the EU-average, the progressiveness of taxation decreases when the wage categories (as % of APW) increase. Other countries show a different pattern.

Interpreting the differences across countries and across wage levels goes beyond the scope of the study. However, the personal income taxes as well as the social security contributions are taken into account in the elasticity, so we do have to take into account the following elements:

- The personal income tax schedule. The tax rate depends on the slice of taxable income the taxpayers are in. In some countries the top marginal tax rate begins quite close to the income of an average production worker. For example, despite a change in the Dutch benefit system in 1998, the Netherlands applies the top tax rate (60%) at an income level that is about 200% of an average production worker. This is faster than in countries like Belgium, Germany and France. In Belgium a marginal tax rate of 45% is operated for an average production earner. This is relatively close to the top marginal tax rate of 55%.
- The social security taxes schedule. Due to contribution ceilings, social-security taxes are regressive in many countries (France, Germany and the Netherlands for example), counterbalancing the progressiveness of personal income taxes. In Belgium, social security contributions are proportional and no contribution ceiling is operated. The income level at which the social security contributions ceiling is applied influences also the progressiveness of the taxation scheme since it determines the income level from which the regressiveness of social security taxes begins.

Definition

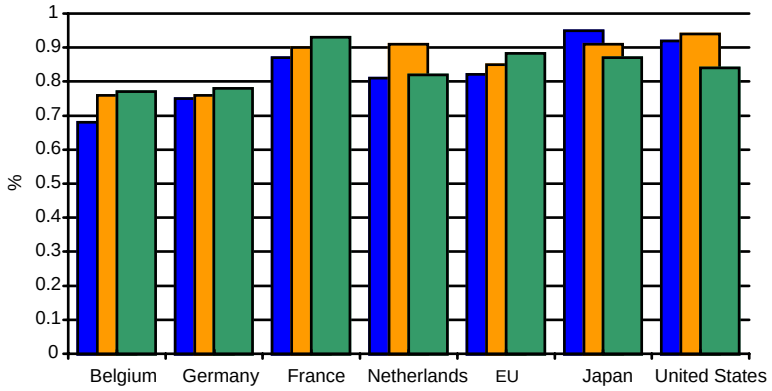
The graph reports the percentage increase in net income (gross wage earning minus employees' social security contributions and personal income tax) when gross wage earnings rise by 1 per cent.

Note

APW = average production worker. The data for the EU is a weighted average of net income elasticity in each of the 15 member countries. Weightings of tax wedges are based on the share of each country total compensation of employees in the total compensation of employees of the 15 member countries.

98

	67 % of APW*	100 % of APW	167% of APW
Belgium	0.68	0.76	0.77
Germany	0.75	0.76	0.78
France	0.87	0.90	0.93
Netherlands	0.81	0.91	0.82
EU	0.82	0.85	0.88
Japan	0.95	0.91	0.87
United States	0.92	0.94	0.84



*APW = average production worker.

Source: OECD (2000), Taxing wages 1998-1999; EU: own calculations.

5. GINI indicator of income inequality before and after taxes and transfers

Taxation in Belgium is a major tool of income redistribution. The percentage change of the GINI indicator of income distribution due to taxes and transfers indicates the extent of this equalising effect. In Belgium, the GINI indicator for 1995 decreased by 48.4 percentage points due to taxes and transfers. Note that in the Netherlands and in Germany, this reduction was limited to 39.9% and 35.3%, respectively.

The United States are characterised by the highest income inequality after taxes and transfers. This is partly due to a substantial diminution of earnings from the lower-skilled labour during the 1980s (see Carnoy M. and Castells M., "Sustainable Flexibility: a Prospective Study on Work, Family and Society in the Information Age", Stanford University, University of California at Berkeley, April 1995 and K.M Murphy and F. Welch (1999), "Recent trends in wage inequality", AEA Annual meeting, New York, January 3-5 1999).

Note

GINI indicator using equivalence scale elasticity of 0.5. For more details about the methodology, see: OECD (1998), Income distribution and poverty in selected OECD countries.

	Before taxes and transfers	After taxes and transfers	% change due to t. and t.
Belgium (95)	52.7	27.2	-48.4
Germany (94)	43.6	28.2	-35.3
Netherlands (94)	42.1	25.3	-39.9
Japan (94)	34	26.5	-22
United States (95)	45.5	34.4	-24.5

Source: OECD (1998), Income distribution and poverty in selected OECD countries.

D. Taxation on consumption

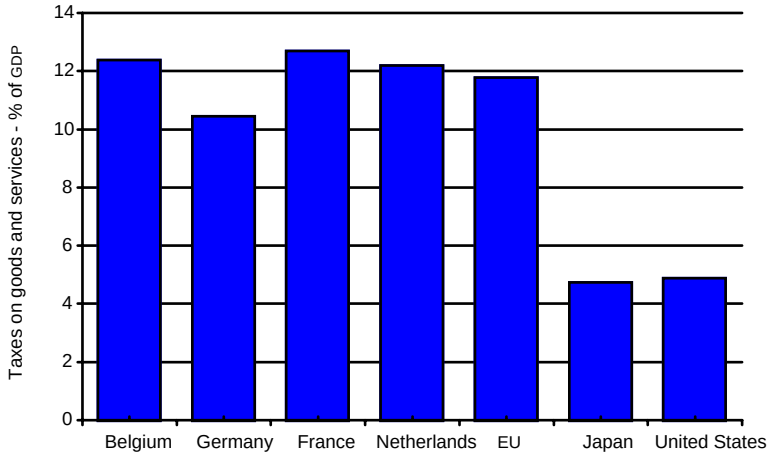
1. Taxes on goods and services - % of nominal GDP in 1997

In the European countries, indirect taxation represents an important share of the total tax revenue (see table on the structure of the total tax revenue). In Belgium, taxes on goods and services amounted to more than 12% of the GDP in 1997. This share was quite close to that in the neighbouring countries and to the EU average while remaining one of the lowest in the European Union. In countries like Japan and the United States taxes on consumption amounted to 4.7% and 4.9% of the GDP, respectively.

Note

The figure for the EU gives the ratio of the total taxes on goods and services of the 15 member countries to the total GDP of these countries.

	97
Belgium	12.37
Germany	10.44
France	12.70
Netherlands	12.20
EU	11.78
Japan	4.74
United States	4.89



Source: Tax revenue: OECD (1999), Revenue statistics 1965/1998; GDP: European commission, AMECO-database. EU: own calculation.

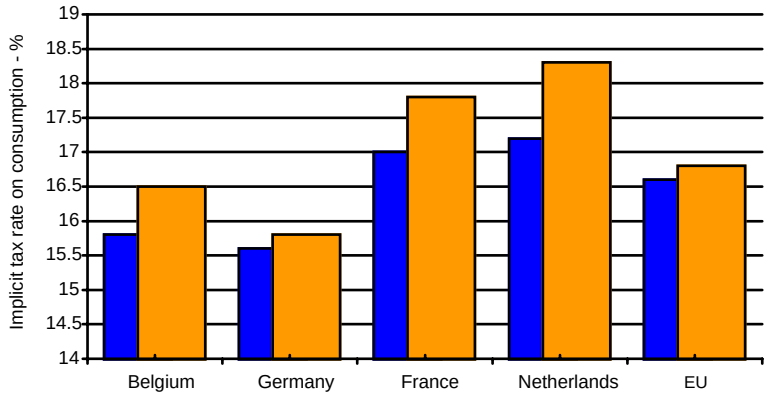
2. Implicit tax rate on consumption - %

The implicit tax rate on consumption is the ratio of revenues from taxes on consumption by its corresponding aggregate tax base. The rate for Belgium (16.5%) is around the European average (16.8%) and is exceeded by France and the Netherlands. In general, taxation on consumption measured by the implicit tax rate on consumption has remained relatively stable in Europe over the last two decades (Eurostat (2000), Structures of the taxation systems in the European Union 1970-1997). The effective tax rate on consumption is lower in Japan and in the United States than in the member countries of the European Union. Over the period 1991-1997, the average implicit tax rate on consumption is 5.2% for the United States and 6% for Japan. According to this source (OECD (2000), Average tax rates on capital, labour and consumption) the average implicit tax rate on consumption for the European Union was 19.3% over the period 1991-1997.

Definition

The implicit tax rate on consumption is the ratio of taxes on consumption to private consumption on the economic territory plus government consumption net of government salaries.

	91	97
Belgium	15.80	16.50
Germany	15.60	15.80
France	17.00	17.80
Netherlands	17.20	18.30
EU	16.60	16.80



Source: Eurostat (2000): Structures of the taxation systems in the European Union 1970-1997; For the US and Japan: OECD (2000), Average effective tax rates on capital, labour and consumption.

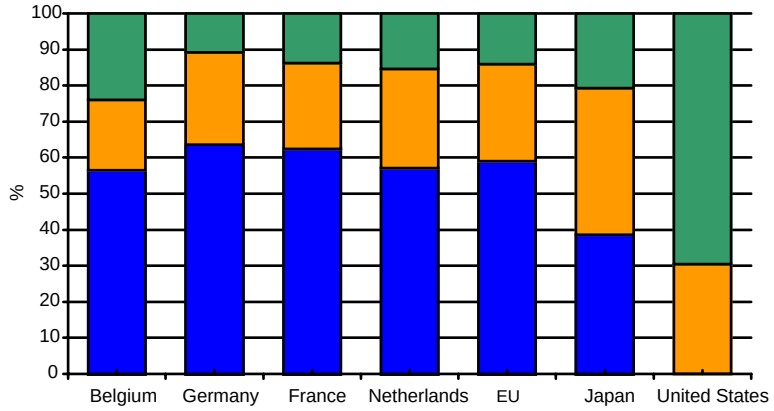
3. Structure of the taxes on goods and services - % of total taxes on goods and services for 1997

In the European countries, a high share of the consumption tax is levied by value added taxes (VAT). VAT is typically a European tax. In the United States no value added taxes are perceived like in the European countries, but indirect taxes are levied through sales taxes. Those taxes represent a high share of taxes on goods and services. Japan has recently introduced VAT taxes but the system differs considerably from the European system. In Belgium, excises account for a lower share of the total taxes on goods and services than other consumption taxes. Among the other compared countries, this pattern is only found in the United States.

Note

The figures for the EU give the ratios for each type of taxes on goods and services for the 15 member countries to the total taxes on goods and services of these countries. Other taxes include for a great proportion, taxes on use of goods and perform activities such as taxes paid by households in respect of motor vehicles.

	97		
	VAT	Excises	Others
Belgium	56.48	19.57	23.95
Germany	63.65	25.62	10.73
France	62.48	23.80	13.72
Netherlands	57.16	27.45	15.39
EU	58.96	27.05	13.99
Japan	38.68	40.58	20.74
United States	-.-	30.51	69.49



Source: Tax revenue: OECD (1999), Revenue statistics 1965-1998; GDP: European Commission: AMECO-database. EU: Own calculations.

4. Standard and reduced VAT rates - % at 1 January 1999

In Europe VAT rates are, to some extent, at the discretion of member states and the systems are not harmonised. However, to encourage harmonisation, a minimum VAT rate of 15% was introduced. Moreover, reduced rates of at least 5% can be operated on an agreed list of basic items like food, pharmaceutical products, public services like passenger transport, water distribution, etc. But, member states do not operate the reduced rate for the same items of the list. To avoid excessive tax competition, which could be detrimental for the financing of public goods, inter-community exports are taxed under the principle of destination, i.e. the tax system of the consumer.

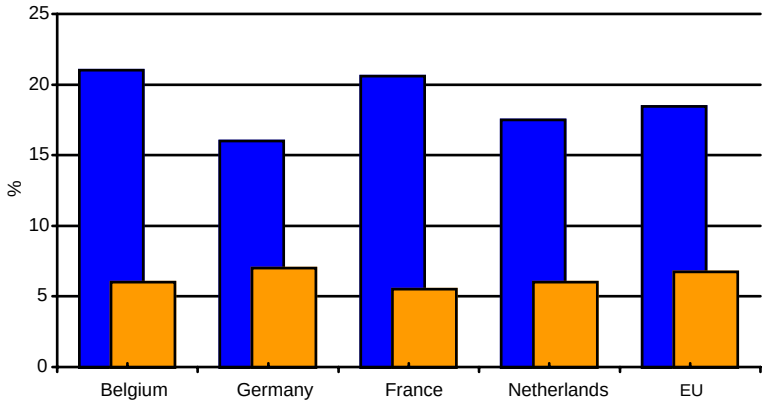
Actual standard VAT rates vary widely among the countries under review, ranging from 16% in Germany to 21% in Belgium. The reduced rates amount to 6% in Belgium and in the Netherlands. It is slightly lower in France (5.5%) and slightly higher in Germany (7%).

Note

The figure for the EU is a weighted average of the VAT rates applied in the 15 EU countries. Weightings are based on the share of each country's total consumption in the total EU consumption.

99

	Standard rate	Reduced rate
Belgium	21.00	6.00
Germany	16.00	7.00
France	20.60	5.50
Netherlands	17.50	6.00
EU	18.44	6.73



Source: European Commission.

E. Corporate taxation

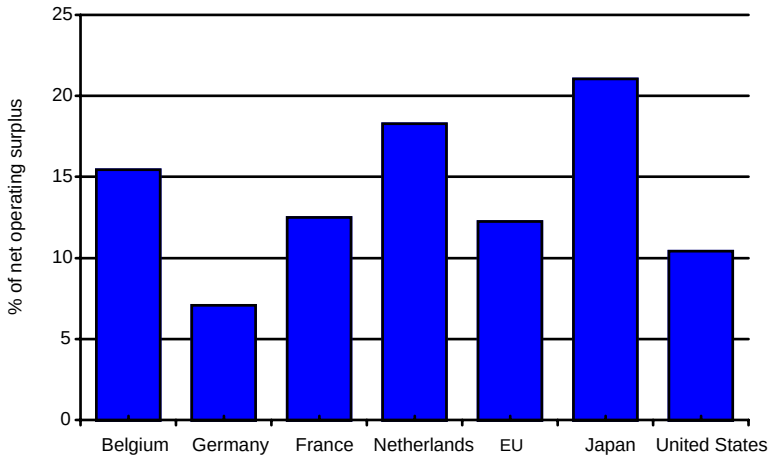
1. Corporate tax revenue - % of net operating surplus in 1997

The taxation on the income, the profits and capital gains of companies can be an important burden on companies. As business and capital become more mobile, corporations may migrate to lower tax jurisdictions. So, it is very important for a country to stay alert to keep corporate taxation competitive. In Belgium, tax paid by corporations amounted to more than 15% of the net operating surplus. Japan and the Netherlands exceeded this share. The levels of corporate taxation in France, in Germany and in the United States were largely below that of Belgium.

Definition Corporate tax revenue refers to taxes on income, profits and capital gains of corporations.

Note The figure for the EU gives the ratio of the total corporate tax revenue of the 15 member countries divided by the total net operating surplus of these countries.

	97
Belgium	15.43
Germany	7.07
France	12.49
Netherlands	18.27
EU	12.25
Japan	21.04
United States	10.41



Source: Tax revenue: OECD (1999), Revenue statistics 1965-1998; Net operating surplus: European Commission, AMECO-database; EU: own calculation.

2. Statutory corporate tax rate - % at 1 January 1999

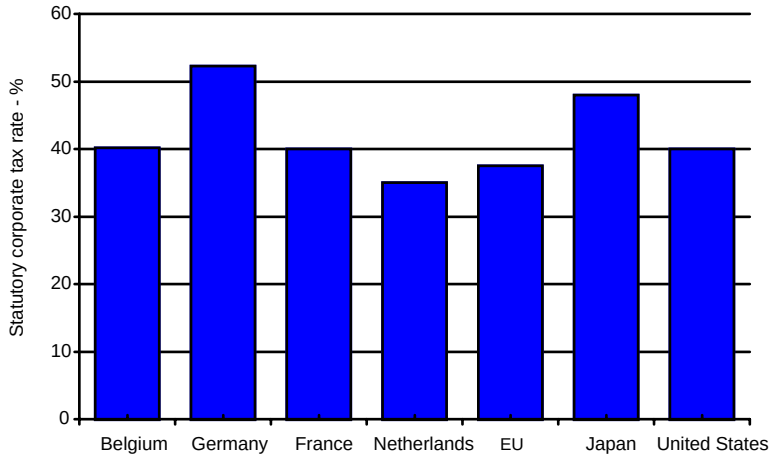
The Belgian corporate tax rate amounts to 40.17% at the first of January in 1999. It corresponds to the maximum rate operated in France and is exceeded by those of Germany and Japan. In Belgium, a lower rate of corporate taxation applies for small and medium sized enterprises under strict conditions (e.g. companies have to be owned for more than 50% by individuals). Similar practices also exist in other countries. France for example operates the standard income tax of 33.33% for all companies that fulfil certain conditions. So it's clear that each country has its own corporation tax system. This makes it difficult to compare the statutory corporate tax rates. Between the first of January 1998 and the first of January 1999, corporate tax rates fell in France, Germany and Japan and were steady in the other countries under review. There seems to be a trend towards lower corporate taxation among OECD countries. In its "KPMG corporate tax rate

survey" (January 1999), KPMG shows that the average statutory corporate tax rate among OECD countries has dropped by almost 3 percentage points from 1995 till January 1999. Part of the explanation for this trend can be found in the mobility of business and capital. Developed countries have to stay alert to keep their corporate tax rate competitive. Otherwise, they risk that the corporations migrate to lower tax jurisdictions. Saintrain M. and Jägers T. (1999) observed a reduction in the spread of national corporate taxation rates in Europe. However, this trend to convergence started already before the formation of the single market in 1993.

Note

The figure for the EU is a weighted average of the corporate rates applied in the 15 EU countries. Weightings are based on the share of each country's net operating surplus in the total EU net operating surplus.

	99
Belgium	40.17
Germany	52.31
France	40.00
Netherlands	35.00
EU	32.06
Japan	48.00
United States	40.00



Source: KPMG Corporate tax survey - January 1999.

3. Effective corporate tax rate - % (average 1990-1996)

Because corporate taxation is accompanied by tax deductions related to investments and financing arrangements, statutory corporate tax rates are poor guides to compare the relative tax burdens imposed by the government in the different countries. Moreover, they do not take into account the differences between countries in the tax base definition. To encounter these difficulties, one can calculate the effective tax rate. This measures the ratio of the corporation tax to the income before tax for a firm. This can give different results on the tax burden for the companies in a country. When we look at the data we see indeed a large difference between the statutory and the effective corporation rate for Belgium. Whereas Belgium had one of the highest statutory tax rates, it has the lowest effective tax rate between 1990 and 1996 among the countries under review (about 21%). Moreover, Belgium is, together with Germany (38.5%), one of the countries with the highest difference between the two rates. It seems that countries with a relatively high statutory tax rate provide more tax incentives to their companies.

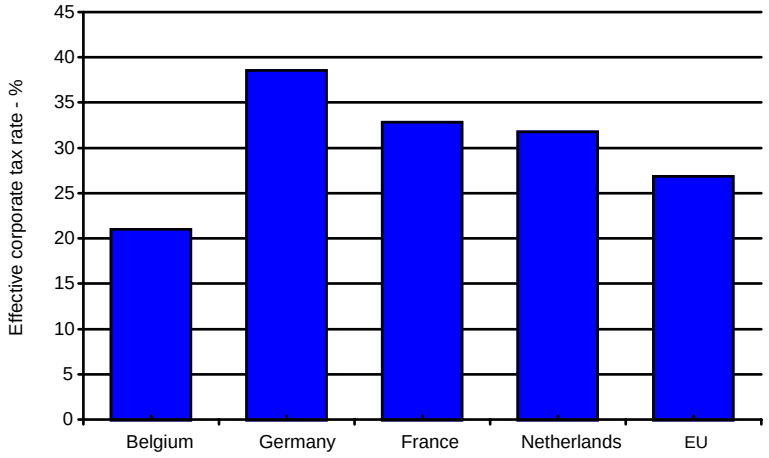
Definition

The corporate effective tax rate is the ratio of the corporation tax to the financial accounting income before taxes.

Note

The corporate effective tax rate is calculated over the period 1990-1996. Due to a not normally distributed sample, the filtered (i.e. without the extreme observations) median is used (for more information, see MARC (1999), Corporate effective tax rates in the European Union).

	1990-1996
Belgium	20.99
Germany	38.53
France	32.82
Netherlands	31.80
EU	26.86



Source: MARC (Maastricht Accounting and Auditing Research and Education Centre) (1999), Corporate effective tax rates in the European Union.

F. Taxation on other factors of production

1. Implicit tax rate on other factors of production - %

The implicit or effective tax rate on other factors of production than labour employed has a quite diversified numerator. It includes taxes that are levied on capital and taxes on self-employed labour (mainly social contributions paid by non- or self-employed persons but also income taxes). The position of Belgium (30.9%) is around the average of the EU (31.1%). The effective tax rate on other factors of production than labour is higher for France (42.1%) than for the other countries under review. This is mainly due to a temporary increase in the corporate tax rate in France. The implicit tax rates show strong cyclical movements in many countries as a result of the volatility of the tax base (i.e. the sum of net operating surplus of the economy and the consolidated government interest payments). Moreover, differences between Member States are still relatively high regarding the taxation of other factors of production (see Eurostat (2000), Structures of the taxation systems in the European Union).

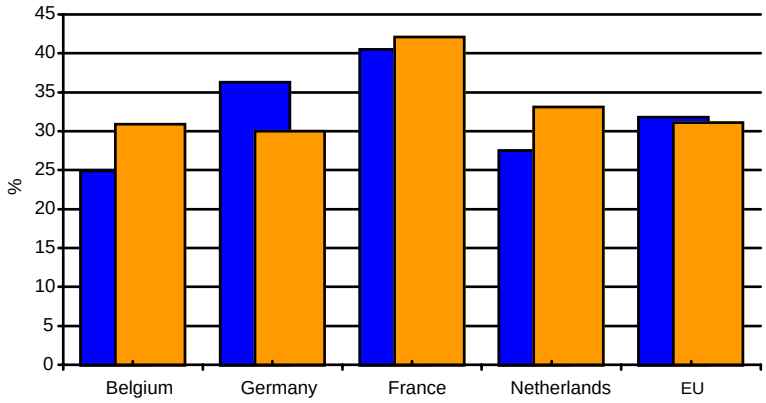
Definition

The implicit tax rate on other factors of production is the ratio of the taxes on self-employed persons plus taxes on capital to the net operating surplus of the economy plus the consolidated government interest payments. The category capital includes taxes on different forms of capital, which are used or could be used in the productive process such as land, buildings and real capital like cars and equipment. Also included are more abstract forms of capital like monetary capital (e.g. saving and shares), licences or wealth taxes. The net operating surplus of the economy is equivalent to the earnings from entrepreneurial activities and interest (see Eurostat (2000), Structures of the taxation systems in the European Union 1970-1997).

Note

The figure for the EU is provided by the source mentioned and calculated as a weighted average of implicit tax rates of the 15 member countries. Weightings are based on the share of each country tax base in the total tax base of the EU.

	91	97
Belgium	24.90	30.90
Germany	36.30	30.00
France	40.50	42.10
Netherlands	27.50	33.10
EU	31.80	31.10



Source: Eurostat (2000), Structures of the taxation systems in the European Union 1970-1997.

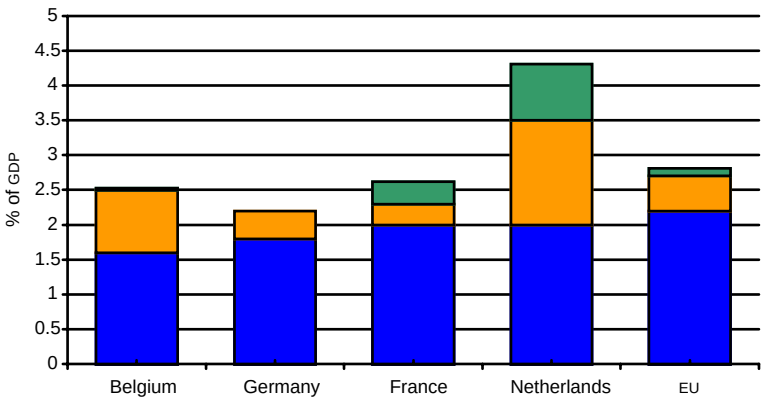
2. Decomposition of environmental taxes - as % of GDP for 1997

Apart from the Netherlands where total environmental taxes amounted to 4.3% of GDP in 1997, the environmental taxes are rather low in the compared countries (all under 3% of GDP). However, over the last decade, revenues from environmental taxes as % of GDP increased slightly in the countries under review and the European Union in general. This is almost exclusively the result of higher energy taxes. Energy taxes include specific taxes on energy sources and energy consumption. In Belgium, the most important energy taxes are excise duties on mineral oils. Among the countries under review, Belgium has the lowest energy tax to GDP ratio but there is an increasing trend. In 1990 the energy taxes amounted to 1.2% of GDP whereas in 1997 it was 1.6% of GDP. The observed increase is partly due to the introduction in 1993 of new taxes (particularly excise duties) levied on fuel consumption and on other energy products consumed by households. The Netherlands have also the highest taxation of transport (e.g. annual taxes on vehicles or vehicles registration duties). In the other countries under review transport taxes are less than 1% of GDP in 1997. Other environmental taxes like taxes on pollution or the use of natural resources are negligible at the European level, except for the Netherlands where these taxes account for 0.81% of GDP in 1997. This can partly be attributed to the high number of special levies in connection with water pollution, waste disposal, sewerage charges,... (see Eurostat (2000), Structures of the taxation systems in the European Union).

Definition

Environmental taxes are special taxes that are levied on environmentally harmful bases. They are divided into taxes on energy (e.g. taxes on petroleum products or taxes on the use of energy), taxes on transport (mainly vehicle duties and registration duties) and taxes on pollution and taxes on (the use of) resources. It should be noted that taxes on fuels for vehicles are accounted for as energy taxes. The revenues from VAT on environmentally harmful products are not considered to be environmental taxes since they have no discriminating effect (Eurostat (2000), Structures of the taxation systems in the European Union 1970-1997).

	Total	Taxes on energy	Taxes on trans-port	Other
Belgium	2.60	1.60	0.90	0.03
Germany	2.20	1.80	0.40	0.00
France	2.60	2.00	0.30	0.32
Nether-lands	4.30	2.00	1.50	0.81
EU	2.90	2.20	0.50	0.11



Source: Eurostat (2000): Structures of the taxation systems in the European Union - 1970-1997.

IV Labour market

A. Belgium's position

- Active labour market measures
- Labour productivity - as GDP per man-hour
- Proportion of part-time work
- Participation rate
- Employment rate
- Total unemployment rate
- Long term unemployment
- Hourly compensation costs for production workers in manufacturing

According to our definition of competitiveness at a country level, the ultimate goal of economic policy is growth in well being. Among others, it includes high standards of living and high rates of employment. In reference to the latter the situation in Belgium as well as in the European Union is not satisfying. But, although the employment rate is very low in Belgium, the total volume of employment in 1998 is one of the highest ever known. Moreover, the growth of the employment rate between 1990 and 1998 was larger than that of our main trading partners (with exception of the Netherlands) and the European average. However there is still a gap between the Belgian and the European employment rate. On the one hand, this can partly be explained by the relative low participation of women at the labour market. On the other hand, the employment rate for older people (age category 55-64) is very low in Belgium, which is mainly due to early retirement.

Despite a high level of unemployment, some enterprises or sectors in Belgium and in particular in the Flemish community have serious problems in finding appropriate personnel. This is mainly the result of a gap between the low level of education of the job seekers and the quality requirements that the employer wants. So, some groups, especially women with a lower educational attainment, are faced with difficulties in finding a job even when they are available. This is particularly true for Belgium that has a very high long-term unemployment rate. The level of public expenditures in active labour market programmes can help people into employment. Although Belgium has already a relative high level of labour market expenditures for passive as well as active measures, it is important to re-focusing them towards more active measures in stead of passive measures.

Although the proportion of people in the total employment who work part-time increased during the nineties, it remains primarily a female employment form. The low proportion of part-time work in Belgium is due to the low rate of part-time work among men, contrary to the Belgian women who works more part-time than the average European woman.

The labour productivity measured as GDP per man-hour is high in Belgium. But the average hourly compensation cost for a Belgian manufacturing production worker is also high in comparison with the other countries under review.

B. Participation rate

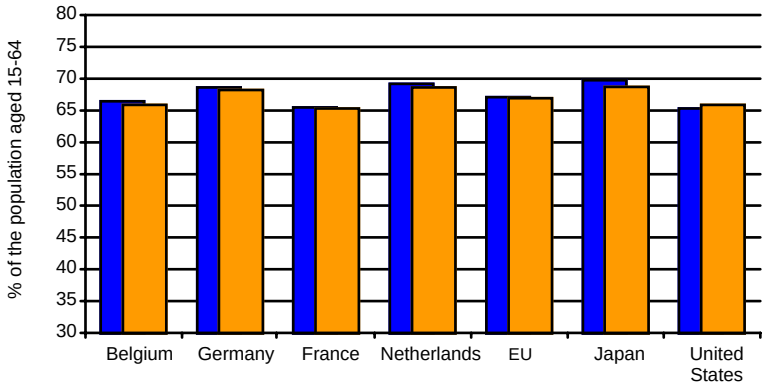
The participation rate and the demography determine the labour supply. The analysis of the participation rates must take a certain number of socio-economic elements into account, such as compulsory school attendance, the existence of a network of supportive institutions for families and the programmes of early retirement. Fiscal policy can also encourage or discourage labour force participation.

1. Population for ages 15-64

a. Population for ages 15-64 - % of total population

Before analysing the participation rates we have to take a look at the demographic situation of a country. We can do this by the working-age population, this is the population aged between 15 and 64. But not everybody of the working-age population works or wants to work. The labour force in a country or the supply of labour consists of employed and unemployed people. Those unemployed people of the labour force are not all the inactive people of working age. Indeed, there are a lot of inactive people of working age who are not counted as unemployed. They include people who stop working before the age of 64, housekeepers, full-time students aged 16 and more and people who would like to work but have given up looking.

	93	98
Belgium	66.43	65.90
Germany	68.64	68.24
France	65.46	65.31
Netherlands	69.20	68.64
EU	67.10	66.95
Japan	69.75	68.72
United States	65.32	65.85



Source: European countries: Eurostat (1999), Labour force survey; Japan and US: European Commission (DG-II): AMECO database. Own calculations.

2. Decomposition of the participation rate

a. Participation rate for all ages - %

Belgium is characterised by a low participation rate by international standards even though it increased from 60.90% in 1993 to 63.23% in 1998. Compared to the average European level the overall participation rate in Belgium in 1998 was lower by around 4 percentage points.

The overall increasing participation rate is the result of a diverging evolution in the participation rate of women and men. The participation rate of women in the labour force has increased continuously. In Europe it has been encouraged by the development of a well-functioning network of supportive institutions (accessible childcare, good public schools and local transport system). This evolution has more than compensated the decreasing participation rate of men due to the introduction of early retirement programmes.

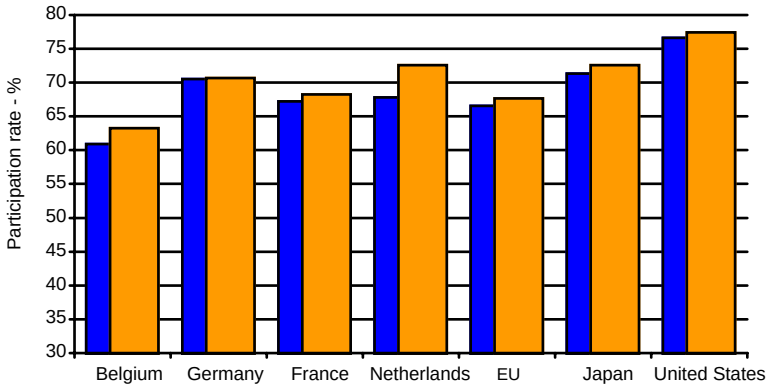
Definition

The participation rate for all ages is defined as the total labour force (employed and unemployed) for ages 15-64 (16-64 for the United States) divided by the total population for ages 15-64 (16-64 for the United States).

Note

The participation rate of the EU is defined as the total labour force for ages 15-64 of the EU member countries to the total EU population for ages 15-64. For reasons of data availability, only results for Europe-12 are presented in this graphic.

	93	98
Belgium	60.90	63.23
Germany	70.55	70.71
France	67.24	68.25
Netherlands	67.82	72.58
EU	66.56	67.65
Japan	71.30	72.60
United States	76.60	77.40



Source: European countries: Eurostat (1999), Labour force survey; Japan and US: OECD (1999), Employment outlook. Own calculations.

b. Participation rate for men and women - % for 1998

We can take a closer look at the participation rate by decomposing it by gender and age categories. The difference between the participation rate in Belgium and our neighbouring countries was slightly lower for men than women. In 1998, the participation rate of Belgian women was even about 8 percentage points lower than in the neighbouring countries. But also the male participation rate was the lowest among the countries under review. Only Japan exceeded the gender gap in Belgium, which indicates a higher participation rate for men than for women.

Definition

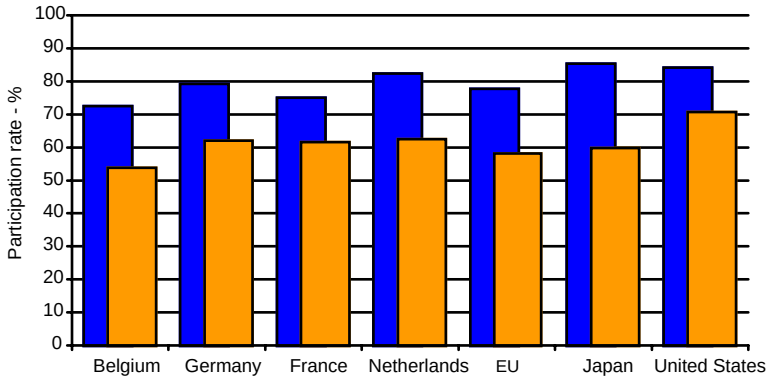
The participation rate for men (women) is defined as the total male (female) labour force (employed and unemployed) for ages 15-64 (16-64 for the United States) divided by the total male (female) population for ages 15-64 (16-64 for the United States). The gender gap is defined as the ratio of the male to the female participation rate.

Note

For the EU, the participation rate for men (women) is defined as the ratio of the total male (female) labour force for ages 15-64 of the 15 EU member countries to the total male (female) population for ages 15-64 of these countries.

98

	Men	Women	Gender gap
Belgium	72.50	53.86	1.35
Germany	79.16	62.10	1.27
France	75.08	61.60	1.22
Netherlands	82.36	62.49	1.32
EU	77.78	58.21	1.34
Japan	85.30	59.80	1.43
United States	84.20	70.70	1.19



Source: EU countries: Eurostat (1999), Labour force survey: results for 1998. Japan and US: OECD (1999), Employment outlook. Own calculations.

c. Participation rate by age group - % for 1998

The analysis of the participation rates by age group show that the lower participation rate in Belgium concerns mainly the youngest and the oldest age groups.

The participation rate of the population aged between 15 and 24 in Belgium in 1998 was much lower than that in the Netherlands, in Germany and the European Union but only slightly lower than that in France. The participation rate for the population aged between 25 and 54 was lower than that in France and Germany but similar to that in the European Union as a whole. The participation rate of the population aged between 55 and 64 in Belgium in 1998 was much lower than that in the other countries under review.

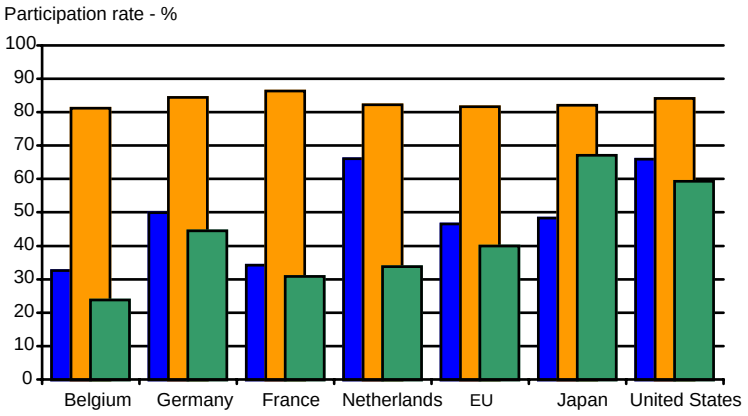
Definition

The participation rate for a given age group is defined as the ratio of the labour force for the age group to the population of the age group.

Note

For the EU, the participation rate of a given age group is defined as the total labour force of the 15 EU member countries for the age group to the total EU population for the age group. For United States, the first category of age refers to 16-24 years (instead of 15-24 years as it is for the other countries compared).

	98		
	15-24 years	25-54 years	55-64 years
Belgium	32.64	81.22	23.80
Germany	50.00	84.46	44.50
France	34.17	86.37	30.84
Netherlands	66.12	82.30	33.80
EU	46.55	81.62	39.97
Japan	48.30	82.10	67.10
United States	65.90	84.10	59.30



Source: EU countries: Eurostat (1999), Labour force survey: results for 1998. Japan and US: OECD (1999), Employment outlook. Own calculations.

d. Gender gap in participation rate by age group for 1998

When we make a combination of the age groups and gender, we see in all the countries compared a lower participation rate for women than for men in all the age categories. However, the gender gap was especially important for the category of ages 55-64.

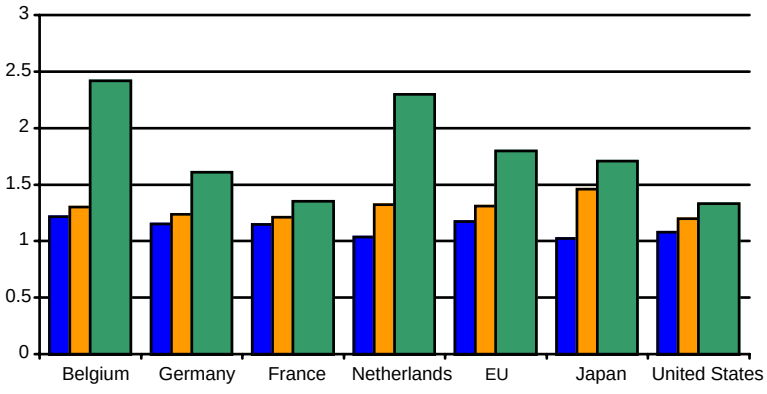
Definition

The gender gap for a given age group is defined as the ratio of the male to the female participation rate of the age group. The participation rate for a given age group for men (women) is defined as the ratio of the male (female) labour force for the age group to the male (female) population of the age group.

Note

For the EU, the participation rate of a given age group for men (female) is defined as the total male (female) labour force of the 15 EU member countries for the age group to the total male (female) population for the age group of these countries. For the United States, the first category of age refers to 16-24 years (instead of 15-24 years as it is for the other countries compared).

	98		
	15-24 years	25-54 years	55-64 years
Belgium	1.21	1.30	2.42
Germany	1.15	1.24	1.61
France	1.15	1.21	1.35
Netherlands	1.04	1.32	2.30
EU	1.17	1.31	1.80
Japan	1.02	1.46	1.71
United States	1.08	1.20	1.33



Source: EU countries: Eurostat (1999), Labour force survey: results for 1998. Japan and US: OECD (1999), Employment outlook. Own calculations.

C. Employment rate

1. Decomposition of the employment rate

The employment rate (number of employed aged between 15 and 64 relative to the population of working age) is a key measure of the performance of an economy in the sense that it shows how the economy succeeds in providing jobs for all those of working age who live on its territory. It focuses attention both on employment as well as on the employment potential of the non-employed, including both "economically inactive" people and the unemployed. So, the employment potential goes beyond the unemployed to include the economically inactive people.

In its Employment Rates Report (1998), the European Commission says that high overall employment rates in the European countries depend on various factors.

- High employment rates are associated with high employment rates of women.
- High employment rates in the EU countries are associated with high employment rates of youth population. Youth participation could be enhanced by a dual system combining education and training courses with part-time jobs.
- The employment rates in the older age group of the population are either low (women) or decreasing (men). Reversing trend towards early retirement would have a positive impact on the employment rates.
- High employment rates are often associated with an important part-time work or other forms of flexibility in working time.
- High rates of educational attainment also contribute to high employment rates.
- Other factors as the taxation system, the regulations on business and labour may also influence the employment rate.

a. Employment rate for all ages - %

The employment rate in Belgium in 1998 was the lowest of the countries under review even though it has been increasing continuously since 1990. Among the neighbouring countries, the Netherlands had the highest employment rate (69.4% in 1998). This result must be interpreted with caution because there is a very high rate of part-time work in the Netherlands. A better indicator would be the employment rate in full-time equivalent (FTE). According to this measure Belgium had about the same employment rate (53%) than the Netherlands in 1997 (European Commission (DG-V) (1999), Employment in Europe 1998). Germany and France had higher employment rates in full-time equivalent than Belgium but the gap has been reduced compared to 1990.

In 1998 the EU employment rate was 60.64%, whilst that of the US was 73.80%, a spread of more than 13 percentage points. For the same year, the employment rate in Japan was nearly 10 percentage points higher than in the EU. A change of this situation would be favourable for the following reasons (European Commission (1999), Employment in Europe 1998).

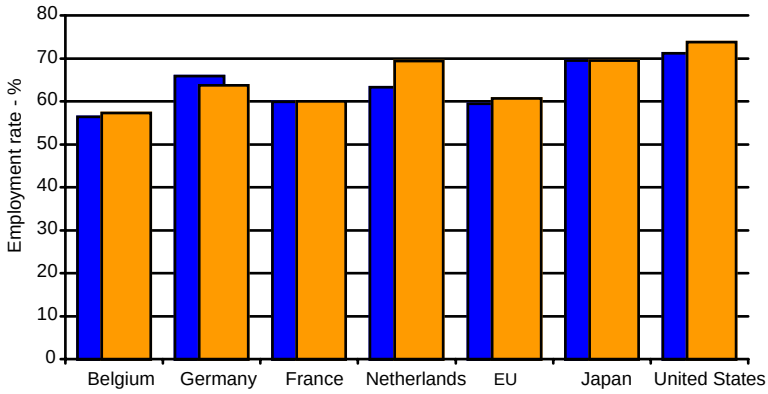
- The low employment rate in Europe and particularly in Belgium means that there is a high level of unused potential labour stock. To bring such potential to work would of course contribute to economic growth.

- While on the one hand we notice that life expectancy for men has increased in Belgium and in Europe as a whole, on the other hand we can notice a decline in employment rates for men above the age of 55 years. Higher employment would help to greatly alleviate difficulties in public finances and bring social security systems to a more sustainable basis when faced with an ageing population.
- It is important for as many individuals as possible to participate in active society and enjoy the benefits of progress and prosperity.
- It is important also to close the gender gap: in 1998, the gap between male and female employment rates amounted around 20 percentage points, although it had declined from 26% in 1990. Women and men should be able to participate in work on equal terms with equal responsibilities in order to develop the full growth potential of our economies.

Definition The employment rate for all ages is defined as the total employed labour force for ages 15-64 (16-64 for the United States) divided by the total population for ages 15-64 (16-64 for the United States).

Note The employment rate for the EU is defined as the total employed labour force of the EU member countries for ages 15-64 to the total population for ages 15-64 of these countries. For reasons of data availability, only results for Europe-12 are presented in this graphic.

	93	98
Belgium	56.37	57.30
Germany	65.84	63.74
France	59.87	59.94
Netherlands	63.28	69.36
EU	59.43	60.64
Japan	69.50	69.50
United States	71.20	73.80



Source: European countries: Eurostat (1999), Labour force survey; Japan and US: OECD (1999), Employment outlook. Own calculations.

b. Employment rate for men and women - % for 1998

In the European Union, the employment rate for women was about 20 percentage points lower than for men. This represented a gender gap (indicating a higher employment rate for men than for women) of 1.38 in 1998. For the same year, Belgium had the highest gender gap (1.41) of the countries compared (exclusive Japan).

Definition The employment rate for men (women) is defined as the total male (female) employed labour force for ages 15-64 (16-64 for the United States) divided by the total male (female) population for ages 15-64 (16-64 for the United States). The gender gap is defined as the ratio of the male to the female employment rate.

Note The figure for the EU gives the ratio of the total employed labour force for ages 15-64 of the 15 EU member countries to the total EU population for ages 15-64.

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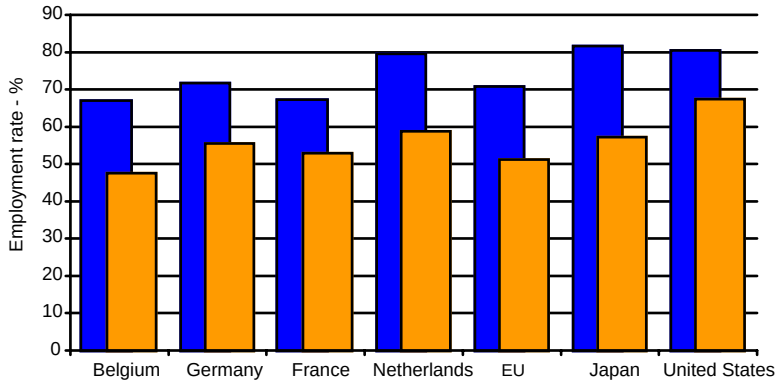
	Men	Women	Gender gap
Belgium	66.98	47.55	1.41
Germany	71.74	55.57	1.29
France	67.22	52.85	1.27
Netherlands	79.57	58.84	1.35
EU	70.80	51.24	1.38
Japan	81.70	57.20	1.43
United States	80.50	67.40	1.19



Source: EU countries: Eurostat (1999), Labour force survey: results for 1998. Japan and US: OECD (1999), Employment outlook. Own calculations.

c. Employment rate by age group - % for 1998

The analysis of the employment rate by age groups in 1998 shows some similarities and some differences between Belgium and the other countries.

- The employment rate of people aged between 15 and 24 is rather low in Europe since college attendance postpones labour market entry to the mid-twenties for an increasing part of youth. In Belgium this rate (25.95%) is very similar to that in France (25.21%) but much lower than that in Germany (45.10%) in the Netherlands (60.29%) and in the European Union (37.51%). In the period 1985-1997, there seamed to be an average trend towards lower employment for young people in the European countries, except in the Netherlands, where it increased. The relative high youth employment in the Netherlands can partly been explained by the possibility of combining education or training courses with part-time jobs. This allows a relatively high number of young people over 18 to remain in education or training beyond basic schooling and to start working. Also in Germany this combined system of education, training and work seems to facilitating and encouraging the integration of young people into the labour market (European Commission (1999), Employment rates report).
- The employment rate of people aged between 25 and 54 is slightly lower in Belgium than in the neighbouring countries but slightly higher than in the European Union as a whole.
- The employment rate of people aged between 55 and 64 is rather low in Europe because of the early leave from the labour market of older people. In Belgium this rate is lower than in the other countries under review.

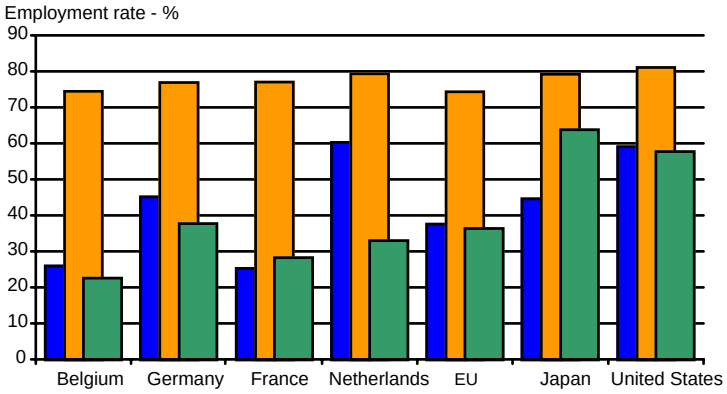
Definition The employment rate for a given age group is defined as the ratio of the employed labour force for the age group to the population of the age group.

Note

For the EU, the employment rate for a given age group is defined as the total employed labour force of the 15 EU member countries for the age group divided by the total EU population for the age group. For United States, the first category of age refers to 16-24 years (instead of 15-24 years as it is for the other countries compared).

98

	15-24 years	25-54 years	55-64 years
Belgium	25.96	74.42	22.54
Germany	45.11	76.92	37.66
France	25.21	77.00	28.28
Netherlands	60.29	79.26	33.00
EU	37.51	74.36	36.36
Japan	44.60	79.20	63.80
United States	59.00	81.10	57.70



Source: EU countries: Eurostat (1999), Labour force survey: results for 1998. Japan and US: OECD (1999), Employment outlook. Own calculations.

d. Gender gap in employment rate by age group for 1998

In all the countries compared, the gender gap (indicating a higher employment rate for men than for women) is rather low for people aged between 15 and 24 and substantially higher for people aged between 55 and 64. For these two age groups, Belgium had the highest gender gaps (1.29 and 2.38, respectively) among the countries compared.

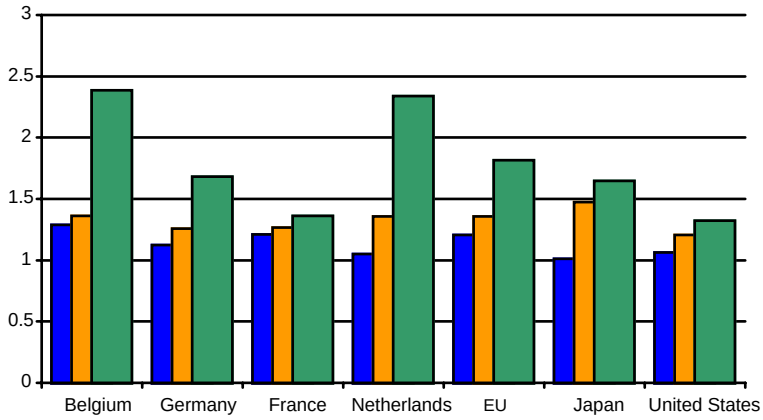
Definition

The gender gap for a given age group is defined as the ratio of the male to the female employment rate of the age group. The employment rate for a given age group for men (women) is defined as the ratio of the male (female) employed labour force of the age group to the male (female) population for the age group.

Note

For the EU, the employment rate of a given age group for men (women) is defined as the total male (female) employed labour force of the 15 EU member countries of the age group divided by the total male (female) population for the age group of these countries. For the United States, the first category of age refers to 16-24 years (instead of 15-24 years as it is for the other countries compared).

	98		
	15-24 years	25-54 years	55-64 years
Belgium	1.29	1.36	2.38
Germany	1.12	1.26	1.68
France	1.21	1.26	1.36
Netherlands	1.05	1.36	2.34
EU	1.21	1.36	1.82
Japan	1.01	1.47	1.65
United States	1.06	1.21	1.32



Source: EU countries: Eurostat (1999), Labour force survey: results for 1998. Japan and US: OECD (1999), Employment outlook. Own calculations.

2. Employment characteristics

a. Average annual working hours of wage and salary earners (per head)

The average working time (per head) in the manufacturing industry as well as in the market services in Belgium in 1994 was slightly lower than in France but higher than in Germany and much higher than in the Netherlands. This indicator can be decomposed in the "number of hours worked per full-time worker" and the proportion of part-time work.

	Manufacturing industry	Market services	Market sector (agriculture excl.)	Manufacturing industry	Market services	Market sector (agriculture excl.)
		94		94//87	94//87	94//87
Belgium	1721.72	1548.31	1617.84	0.00	-0.19	-0.17
Germany	1654.08	1540.87	1596.45	-0.39	-0.94	-0.69
France	1763.27	1655.16	1698.81	-0.07	-0.22	-0.20
Netherlands	1650.86	1367.44	1446.09	0.07	-0.61	-0.50

87//94 = Yearly average growth rate between 1987 and 1994.

Source: Federal Planning Bureau, ESER-calculations, Labour force survey (EUROSTAT) and Ministry of Labour and Employment.

b. Average annual working hours of wage and salary earners (per full-time worker)

The average working time (per full-time) in the manufacturing industry in Belgium was higher than in Germany but slightly lower than in France and in the Netherlands. In the market services, it was the lowest in Belgium.

	Manufacturing industry	Market services	Market sector (agriculture excl.)	Manufacturing industry	Market services	Market sector (agriculture excl.)
		94		94//87	94//87	94//87
Belgium	1750.27	1708.44	1726.04	0.00	0.08	0.03
Germany	1714.20	1776.15	1744.09	-0.27	-0.26	-0.24
France	1799.30	1805.55	1802.93	0.03	0.02	0.02
Netherlands	1791.10	1804.74	1800.40	0.16	-0.08	0.01

87//94 = Yearly average growth rate between 1987 and 1994;

Source: Federal Planning Bureau, ESER-calculations, Labour force survey (EUROSTAT) and Ministry of Labour and Employment.

c. Proportion of part-time work - % of total employment for 1998

The massive diffusion of new information technologies and the globalisation of the economies are transforming work and employment towards greater flexibility. The existence of a wide range of employment opportunities is also likely to benefit potential workers by making it easier to combine work with other interests or commitments. There is slow erosion of traditional forms of work based on full-time employment.

In most OECD countries part-time work (defined as jobs of less than 30 hours per week) increased rapidly in total employment. The proportion of part-time work in Belgium in 1998 (16.30%) was slightly higher than that in Germany, in France and in the European Union as a whole. Only the Netherlands had a much higher proportion of part-time work (30% of total employment) than in the other countries. This explains in part that the average working time per full-time equivalent in Belgium is much higher than the average working time per head in the Netherlands.

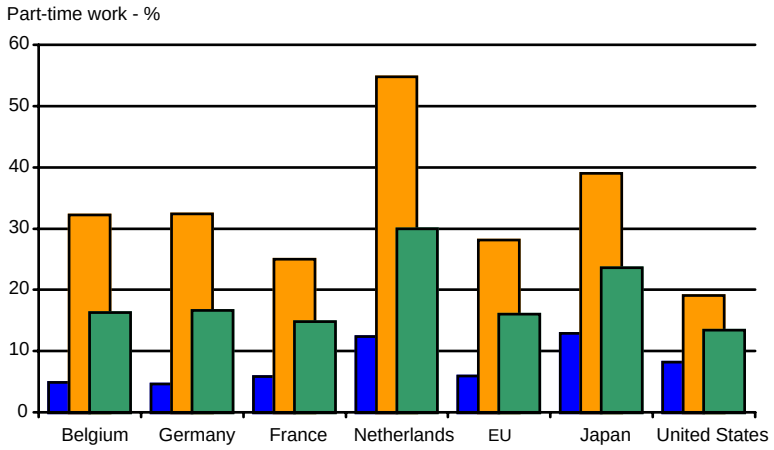
In all the countries under review part-time work remains primarily a female employment form. In Belgium part-time work concerned 5% of men against 32% of women, a result very similar to that in the European Union as a whole. In the Netherlands part-time work reached 12.40% of men and 54.80% of women. This particularly high proportion of part-time work for women in the Netherlands should possibly be attributed to a rather low level of public infrastructures in family services.

Note

Data refer to total employment, i.e., wage and salary earners and self-employed. Part-time work is here defined as jobs of less than 30 hours per week (35 for Japan). For more details about the definition of part-time work, see van Bastelaer et al. (1997), “The definition of part-time work for the purpose of international comparisons”, Labour Market and Social Policy, OECD Occasional Papers - N°22.

98

	Men	Women	Total
Belgium	4.90	32.20	16.30
Germany	4.60	32.40	16.60
France	5.80	25.00	14.80
Netherlands	12.40	54.80	30.00
EU	5.90	28.10	16.00
Japan	12.90	39.00	23.60
United States	8.20	19.10	13.40



Source: OECD (1999), Employment outlook.

d. Working days lost through strikes and lockouts - per 1.000 employees

The number of working days lost through strikes and lockouts per 1.000 employees is an indicator of the socio-political environment. It can be considered as an element of the competitive position of a country to the extent that it may have a certain role in the decision of a foreign investor. Indeed, the level of collective disputes provides one indicator of the general employer-employee relations' climate. Moreover, it is a necessary, but not a sufficient, condition for good relations and improved business performance.

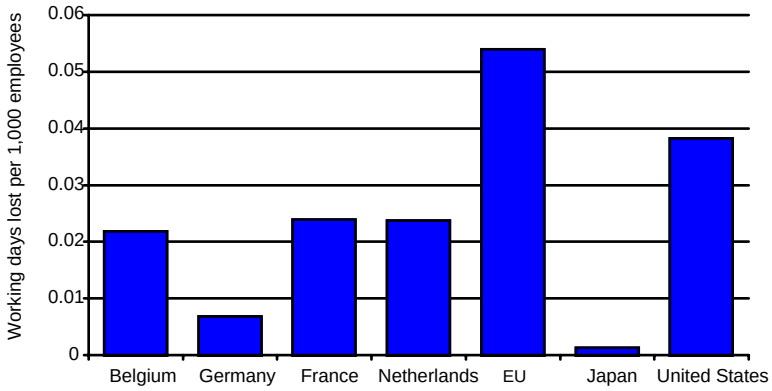
The number of working days lost in Belgium over the period 1993-97 was 22 days per 1.000 employees. This was higher than in Germany, similar to that in France and the Netherlands and much lower than in the European Union as a whole or the United States (38 days per 1000 employees).

The interpretation of this indicator should however be very careful because of the numerous inconsistencies in the definitions used by the different countries.

Note

The figure for the EU gives the ratio of the total number of days not worked for 11 EU member countries divided by the total employment of these countries. For reasons of data availability, only the results for Europe-12 are presented and data for Luxembourg on working days not worked are not available. For Belgium data for the public sector are excluded. The figure for the United States excludes work stoppages involving fewer than 1000 workers and lasting less than a full day or shift. Only data for Belgium, the Netherlands and the United States include secondary effects of strikes (i.e. the number of working days lost by a company or organisation affected by a firm on strike) in their statistics.

	93^97
Belgium	0.02
Germany	0.01
France	0.02
Netherlands	0.02
EU	0.05
Japan	0.00
United States	0.04



Source: Days not worked: International Labour Office: Yearbook of Labour Statistics 1999; Total employment: European countries: Eurostat (1993-1998), Labour force survey. Japan and US: European Commission (DG-II), AMECO database. Own calculations.

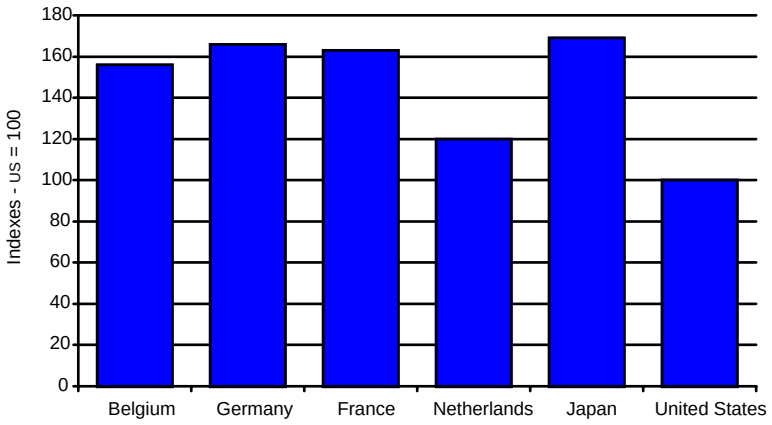
3. Determinants of employment

a. Relative levels of unit labour costs in manufacturing - US = 100 (based on 1990 PPP*) for 1996

The absolute level of unit labour costs is of first concern for price competitiveness, which is an important determinant of the competitiveness from emerging countries (South-Eastern Asia and Eastern and Central European Countries).

Even though intra-EU trade is mainly influenced by non-price competitiveness factors, it should be noticed that the relative level of unit labour costs in manufacturing (based on 1990 PPP* - US = 100) in Belgium is much higher than in the Netherlands. However, it is slightly lower than in Germany and in France.

	96
Belgium	156.00
Germany	166.00
France	163.00
Netherlands	120.00
EU	-.-
Japan	169.00
United States	100.00



*PPP = purchasing power parities.

Source: M. Durand, C; Madaschi and F. Terribile (1998), "Trends in OECD countries international competitiveness: the influence of emerging market economies", OECD Working Paper Nr 195.

b. Hourly compensation costs for production workers in manufacturing - in USD for 1999

In 1999, the average hourly compensation costs in US dollar for a manufacturing production worker were rather high in Belgium in comparison with the other countries under review. Only Germany has a higher hourly compensation cost for its production workers, in contrast with France that had a much lower compensation cost per hour in 1999.

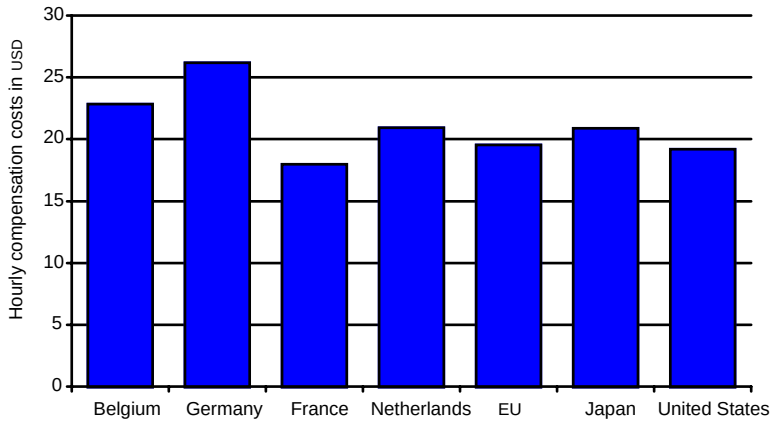
Definition

Total compensation costs include pay for time worked, other direct pay (including holiday and vacation pay, bonuses, other direct payments, and the cost of pay in kind), employer expenditures for legally required insurance programs and contractual and private benefit plans, and, for some countries, other labour taxes.

Note

The compensation measures are computed in national currency units and are converted into US Dollars at prevailing commercial market currency exchange rates. They are appropriate measures for comparing levels of labour costs, but they do not indicate relative living standards of workers or the purchasing power of their incomes.

	99
Belgium	22.82
Germany	26.18
France	17.98
Netherlands	20.94
EU	19.54
Japan	20.89
United States	19.20



Source: United States Department of Labor (2000), International comparisons of hourly compensation costs for production workers in manufacturing, 1999 (http://stats.bls.gov/flshome.htm).

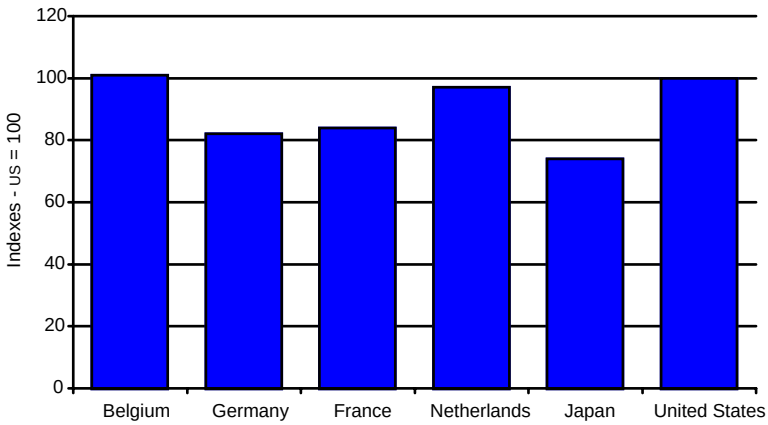
c. Relative labour productivity levels in manufacturing - US = 100 for 1996*

The high level of productivity allows Belgium to compensate for high labour costs. In 1996, the relative labour productivity (value added per hour worked - US=100) level in manufacturing in Belgium was quite high in comparison to that in Germany and in France. It was also slightly higher than that in the United States.

Definition

The indicator gives an estimate of the relative (with respect to the United States) productivity levels (value added per hour worked) in the manufacturing industry. The conversion in common units is based on a mixed approach combining the production approach (where conversion factors are derived from production prices) and the expenses approach (where conversion factors are derived from purchasing power parities). For more details about the methodology, see Pilat, D. (1996), "Labour productivity levels in OECD countries: estimates for manufacturing and selected service sectors", OECD Economic Department Working Papers, Nr. 169.

	96
Belgium	101.00
Germany	82.00
France	84.00
Netherlands	97.00
EU	-.-
Japan	74.00
United States	100.00



* or latest year available, i.e., 1995 for Belgium and the Netherlands.

Source: M. Durand, C; Madaschi and F. Terribile (1998), "Trends in OECD countries international competitiveness: the influence of emerging market economies", OECD Working Paper Nr 195.

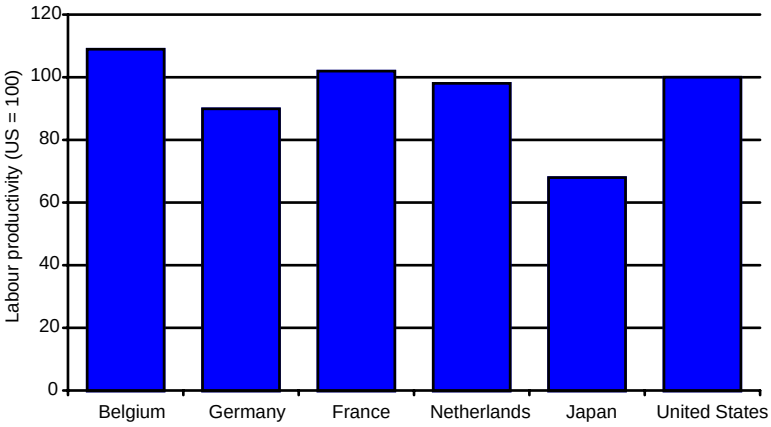
d. Labour productivity as GDP per man-hour relative to US - 1998

In a more recent study, the OECD calculated the relative levels of GDP per man-hour worked for the OECD countries (US = 100). It seems that Belgium had the highest relative labour productivity (109) among the compared countries in 1998.

Definition

Labour productivity is measured as GDP per man-hour relative to the United States (US = 100). Estimates of hours-worked are based on a country-specific adjustment to data from the European Labour Force Survey or from national accounts / enterprise surveys.

	98
Belgium	109.00
Germany	90.00
France	102.00
Netherlands	98.00
EU	-.-
Japan	68.00
United States	100.00



Source: OECD (2000), "Economic growth in the OECD area: recent trends at the aggregate and sectoral level", ECO/CPE/WP (2000) 6.

e. Public expenditures in labour market programmes - % of nominal GDP for 1997

In 1997, the level of public expenditure in labour market programmes (in percentage of nominal GDP) in Belgium was lower than in the Netherlands but higher than in Germany, France and in the European Union as a whole.

In Belgium the proportion of active measures was lower than that of passive measures. This was also the case in all the other countries under review. Labour market policies are traditionally dominated by income maintenance measures. Only in France is the gap between the proportion of active and passive measures much smaller.

In their "Employment rates report 1998 (1999)", the European Commission has recommended a re-focusing of public expenditure to favour productive activities such as investment in infrastructure, in education and training and in other active labour market measures to help people into employment. Moreover there has been a growing recognition of the need to enhance the role of public expenditure in promoting growth and employment, especially through investment in education and training.

Definition

Active measures include:

1. Public employment services and administration;
2. Labour market training (training for unemployed adults and those at risk; training for employed adults);
3. Youth measures (measures for unemployed and disadvantaged youth; support of apprenticeship and related forms of general youth training);
4. Subsidised employment (subsidies to regular employment in the private sector; support of unemployed persons starting enterprises; direct job creation);
5. Measures for the disabled (vocational rehabilitation and work for the disabled).

Passive measures include:

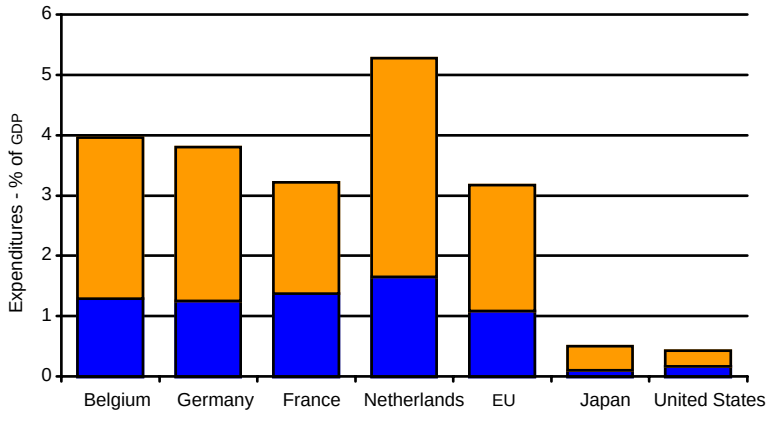
1. Unemployment compensation;
2. Early retirement for labour market reasons.

(see OECD (1998), Employment outlook.)

The figure for the EU is compiled as a weighted average of 12 EU member countries (there was no data for 1997 for Italy, Ireland and Portugal) where weighting rates are based on the share of each country's GDP in the total GDP of these countries.

97

	Active measures	Passive measures
Belgium	1.29	2.67
Germany	1.25	2.55
France	1.37	1.85
Netherlands	1.65	3.63
EU	1.09	2.09
Japan	0.10	0.40
United States	0.17	0.26



Source: OECD (1999), Employment outlook. EU: Own calculations.

f. Net replacement rate for income of an average production worker (1 month unemployed) - % 1997

Unemployment and related benefits help prevent those without work from falling into poverty but at the same time reduce the incentive to work. Indeed, unemployment benefits can be so high that the unemployed is discouraged from looking for work. We can analyse this by the net replacement rate, i.e. the ratio of after-tax income while unemployed to after-tax income while employed. This rate takes taxation, family benefits and housing benefits into account and differs according to individual circumstances and family structures. As we can see, net replacement rates tend to be on average higher for couples with children compared to couples without children. In their "Employment Rates Report 1998 (1999)" the European Commission thinks that there is no correlation between whether a country has high or low employment and whether net replacement rates increase or decrease over time. Indeed, it is not so much the level of benefits, which determines the disincentive effects on employment but rather their maximum duration and whether job search is combined with the strict application of the benefit rules.

During the first months of unemployment, the replacement rate in Belgium for the average worker is on average lower than in the neighbouring countries in 1997. However, the difference between net benefits and net income seems to become smaller after 5 years of unemployment (except for a single person without children). This is in contrast with the other countries under review where the replacement rate decreases after a couple of years in all family structures.

Definition

Net replacement rate is measured by the income of unemployment benefit divided by the income of an average worker. The result for the EU is the mean of the replacement rates of the 15 EU-member states in 1997.

97

	Single person	Married person	Lone parent with 2 children	Married with 2 children
Belgium	64.00	57.00	65.00	60.00
Germany	60.00	60.00	71.00	74.00
France	71.00	72.00	74.00	74.00
Netherlands	75.00	83.00	83.00	85.00
EU	61.60	64.80	71.67	71.67
Japan	59.00	57.00	63.00	56.00
United States	60.00	60.00	62.00	61.00

Source: OECD (1999), System and Work Incentives Publication.

g. Net replacement rate for income of an average production worker (5 years unemployed) - % 1997

97

	Single person	Married person	Lone parent with 2 children	Married with 2 children
Belgium	46.00	67.00	69.00	63.00
Germany	54.00	60.00	63.00	52.00
France	38.00	40.00	44.00	50.00
Netherlands	60.00	76.00	70.00	79.00
EU	42.87	54.87	57.20	65.80
Japan	32.00	45.00	59.00	65.00
United States	7.00	12.00	41.00	48.00

Source: OECD (1999), System and Work Incentives Publication.

D. Decomposition of the unemployment rate

The transformations linked to technological change and globalisation of the economies induced a wide variation of employment situations among advanced countries in relation to differences of institutional background. While Europe is marked by structurally rising unemployment, the United States demonstrate its ability to create jobs. In Japan, the unemployment rate increased in recent years.

1. Total unemployment rate - %

The evolution of total unemployment rate in Europe over the period 1993-98 has been a clear deterioration. It reached a much higher level (10.36%) than in the United States (4.65%) and in Japan (4.27%).

Cyclical differences between Europe and the United States have been one important factor behind the divergent evolution in labour market conditions. Unemployment has fallen in the United States as it was further advanced in the current cycle.

Structural factors and policies have also played a role. In Europe, growth may have been more capital-intensive, in response to labour market rigidity. Flexibility of labour market has allowed the American economy to create jobs, with high-skill jobs growing faster than low-skill jobs. But this result has been accompanied by an increasing income inequality (see Carnoy M. and Castells M., “Sustainable Flexibility: a Prospective Study on Work, Family and Society in the Information Age”, Stanford University, University of California at Berkeley, April 1995 and K.M Murphy and F. Welch (1999), “Recent trends in wage inequality”, AEA Annual meeting, New York, January 3-5 1999). In Japan, the official unemployment rate is low but there is also hidden unemployment because the government subsidies firms to keep redundant workers on their payrolls. The present crisis could make it increasingly difficult to maintain the Japanese model in the future.

In Europe, the analysis of change in overall labour market performance between 1993 and 1998 discloses a very mixed situation. Some Member States had a decline in performance while others had improvements. In Belgium the unemployment rate has increased from 7.43% in 1993 to 9.37% in 1998. However, in 1998 this rate was lower than in Germany (but this result for Germany includes the high unemployment rates of the new Länder), in France and in the European Union as a whole. Among the neighbouring countries compared, only the Netherlands had a lower unemployment rate.

We can take a more detailed look at the overall unemployment rate by decomposing it by gender, duration and age groups.

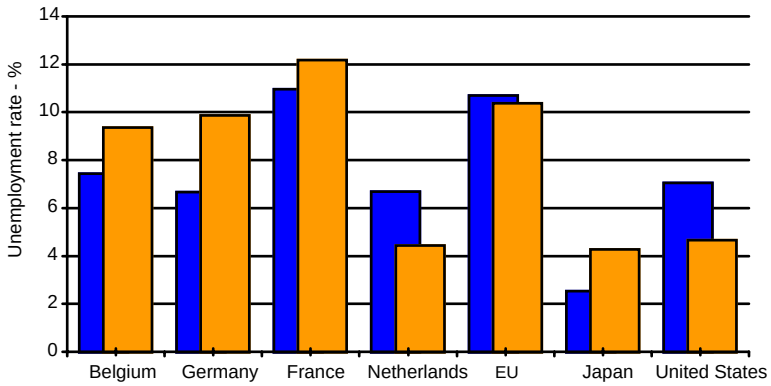
Definition

The unemployment rate for all age groups is defined as the unemployed labour force for ages 15-64 (16-64 for the United States) divided by the total labour force for ages 15-64 (16-64 for the United States).

Note

The unemployment rate for all age groups is defined as the unemployed labour force for ages 15-64 (16-64 for the United States) divided by the total labour force for ages 15-64 (16-64 for the United States). For reasons of data availability, only the results for Europe-12 are presented in this graph.

	93	98
Belgium	7.43	9.37
Germany	6.66	9.87
France	10.96	12.17
Netherlands	6.69	4.44
EU	10.71	10.36
Japan	2.52	4.27
United States	7.05	4.65



Source: European countries: Eurostat (1999), Labour force survey; Japan and US: OECD (1999), Employment outlook. Own calculations.

2. Unemployment rate for men and women - % for 1998

The incidence of unemployment among women in the labour force in the neighbouring countries is significantly higher than among men. In Belgium, the unemployment rate for women amounted to 11.72% in 1998 against 7.60% for men. Along with the Netherlands, the gender gap in Belgium (indicating a higher unemployment rate for women than for men) was the highest of the countries under review.

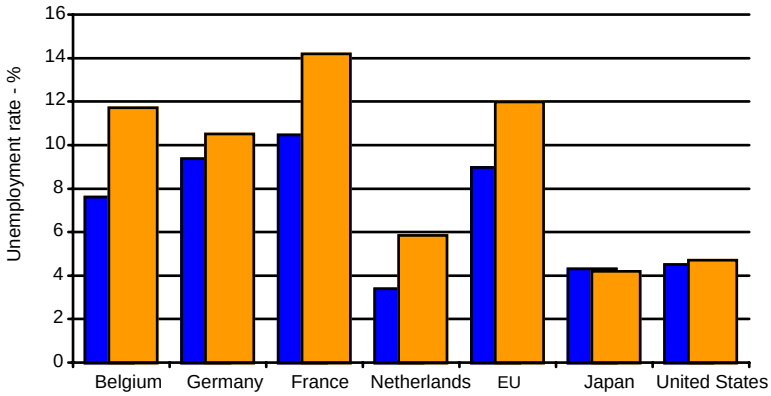
Definition

The unemployment rate for men (women) is defined as the number of unemployed male (female) for all age groups divided by the total male (female) labour force for all age groups. The gender gap is defined as the ratio of the female to the male unemployment rate.

Note

For the EU, the unemployment rate for men (women) is defined as the total number of unemployed male (female) of the 15 EU member countries divided by the total male (female) labour force of the EU for all age group.

	98		
	Men	Women	Gender gap
Belgium	7.60	11.72	1.54
Germany	9.38	10.51	1.12
France	10.47	14.20	1.36
Netherlands	3.39	5.85	1.73
EU	8.98	11.98	1.34
Japan	4.30	4.20	0.98
United States	4.50	4.70	1.04



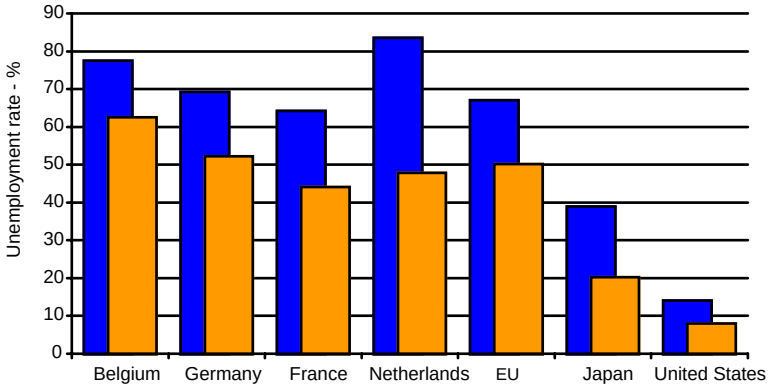
Source: EU countries: Eurostat (1999), Labour force survey: results for 1998. Japan and US: OECD (1999), Employment outlook. Own calculations.

3. Long-term unemployment - % of total unemployment for 1998

Long-term unemployment has become structural in the European Union. In 1998 almost half the unemployed had been in that situation for more than 12 months. Belgium belongs to the Member States with the highest levels of long-term unemployment: 77.50% of the unemployed had been unemployed for more than 6 months and 62.60% for more than 12 months.

Whereas long-term unemployment is a particular problem for young people in Southern Europe (50% of the long-term unemployed), in Northern Europe, for men in particular, it is often more concentrated among unskilled middle-aged workers, who have lost their jobs through firm closures. In these areas, youth unemployment accounts for only 15-25% of the total.

	98	
	6 months and more	12 months and more
Belgium	77.50	62.60
Germany	69.20	52.20
France	64.20	44.10
Netherlands	83.60	47.90
EU	67.10	50.10
Japan	39.00	20.30
United States	14.10	8.00



Source: EU countries: Eurostat (1999), Labour force survey: results for 1998. Japan and US: OECD (1999), Employment outlook. Own calculations.

4. Unemployment rate by age group - % for 1998

In Europe, unemployment is still largely concentrated among youth. The unemployment rate of young people (aged between 15 and 24) is very high in Belgium (20.49% in 1998) even though it has slightly decreased since 1995. Among the countries under review only France had a higher unemployment rate of young people (26.23% in 1998). This may be related to the access to unemployment allocations for people without professional experience. Youth unemployment was less than 10% in the Netherlands. In Germany where the apprenticeship program provides a training transition between school and full integration in the labour market, the youth unemployment rate was around 10%.

The unemployment rate of people aged between 55 and 64 was very low in Belgium (5.26% in 1998) and in the Netherlands (2.38%) in comparison with France, Germany and the European Union as a whole. However these results should not underestimate the importance of involuntary non-employment in that age group. An extensive recourse to early retirement has been used in Belgium while the results in the Netherlands cannot be seen in isolation from higher rates of disability than in the rest of Europe.

Definition

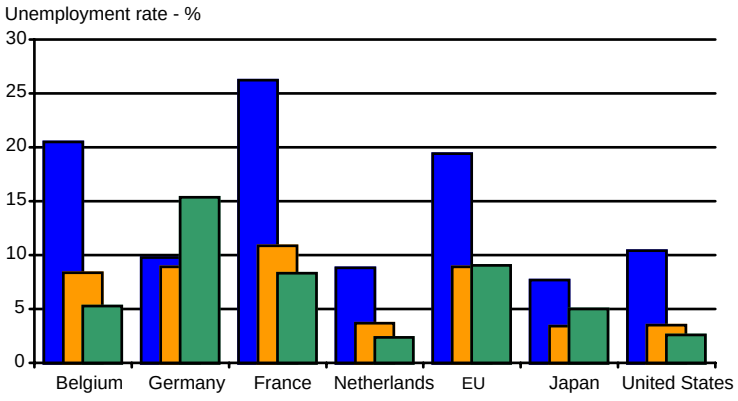
The employment rate for a given age group is defined as the ratio of the number of unemployed of the age group to the total labour force for the age group.

Note

For the EU, the unemployment rate of a given age group is defined as the total number of unemployed of the 15 EU member countries for the age group divided by the total labour force for the age group of these countries. For the United States, the first category of age refers to 16-24 years (instead of 15-24 years as it is for the other countries compared).

98

	15-24 years	25-54 years	55-64 years
Belgium	20.49	8.38	5.26
Germany	9.78	8.93	15.38
France	26.23	10.84	8.31
Netherlands	8.82	3.69	2.38
EU	19.41	8.90	9.05
Japan	7.70	3.40	5.00
United States	10.40	3.50	2.60



Source: EU countries: Eurostat (1999), Labour force survey: results for 1998; Japan and US: OECD (1999), Employment outlook. Own calculations.

5. Gender gap in unemployment rate by age group for 1998

In Belgium, the gender gap (indicating a higher unemployment rate for women than for men) is the most important for the age group 25-54 and is the lowest for people aged between 55 and 64 years. The gender gap for young people (15-24 years) in Belgium is the highest of the countries under review.

Definition

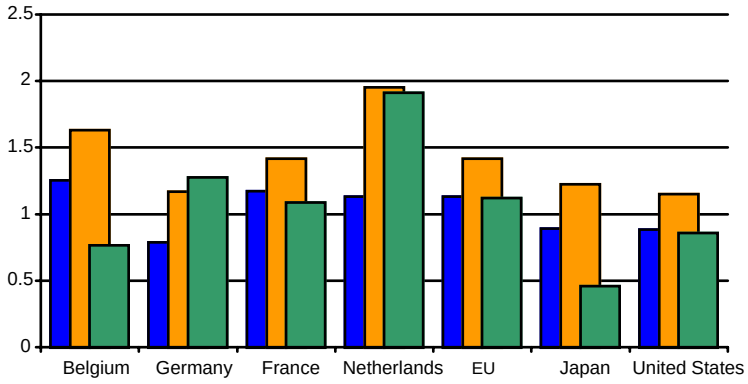
The gender gap for a given age group is defined as the ratio of the female to the male unemployment rate of the age group. The unemployment rate for a given age group for men (women) is defined as the ratio of the number of unemployed males (female) of the age group to the total male (female) labour force for the age group.

Note

For the EU, the unemployment rate of a given age group for men (women) is defined as the total number of unemployed males (females) of the 15 EU member countries of the age group divided by the total male (female) labour force for the age group of these countries. For the United States, the first category of age refers to 16-24 years (instead of 15- 24 years as it is for the other countries compared).

98

	15-24 years	25-54 years	55-64 years
Belgium	1.25	1.63	0.76
Germany	0.79	1.17	1.27
France	1.17	1.41	1.09
Netherlands	1.13	1.95	1.91
EU	1.13	1.42	1.12
Japan	0.89	1.23	0.46
United States	0.88	1.15	0.86



Source: EU countries: Eurostat (1999), Labour force survey: results for 1998; Japan and US: OECD (1999), Employment outlook. Own calculations.

V Education

A. Belgium's position

- % of people with at least a higher secondary education level
- % of people with a tertiary education degree
- Mathematics achievement scores
- Public expenditure on education - as % of GDP
- Science achievement scores
- % of students in schools using computers with access to e-mail/Internet - for upper secondary education
- Total (private + public) expenditure on education - as % of GDP
- Number of participating hours in job-related continuing education and training per employee (for ages 25-44 years)
- % of students in schools using computers with access to e-mail/Internet - for lower secondary education

Education and training are now recognised as a driving force of productivity and economic growth and a way for tackling the employment problem. The output of education in terms of the number of qualified people is very good in Belgium. The percentage of people with a higher secondary education level and those with a tertiary education degree are both relatively high in comparison with the other European member countries. Moreover, the quality of education in science and mathematics seems also to be good since the Belgian 13-year old pupils have relative good scores on the science and especially on the mathematics performance tests.

The fast technological development and the globalisation of the economies have huge implications for employment and education. The diffusion of information technology requires greater flexibility in production and implies a transformation of work organisation. The need for workers to acquire a range of skills and to continuously adapt these skills underlies the "lifelong learning economy". The globalisation of the economies is characterised by the new dynamics of trade and investment led by multinational firms. This puts greater competitive pressure on firms in the OECD area and creates global labour interdependence. As a result unskilled workers suffer mostly from the competition from developing countries.

It is now well accepted that investment in knowledge and skills should be increased to allow workers to adapt to this structural change. A special emphasis on lifelong learning is also needed as an adequate method to create these skills. Moreover, improving education and training systems should involve a very broad partnership between school, family, enterprises and local authorities. The use of the new information and communication technologies in education and training is necessary in order to move to a knowledge-based society. In the French community of Belgium (no data available for the Flemish community), on average 23 pupils share one computer in lower secondary education. The European Commission proposes in its eLearning initiative a ratio of 5-15 users per multimedia computer by 2004. In Belgium (French community) just a minority of schools (10th percentile) has a ratio of one computer for 10 students in 1998. Also in its eLearning initiative the European Commission suggests that all schools should be provided with an Internet connection by the end of 2001 and that by the end of 2002 all pupils should have fast connection and multimedia resources in the classroom.

Because of the existence of important externalities linked to the investment in education there is a place for an intervention of the State. Public spending on education is an investment that contributes to economic growth and has a positive impact on productivity. Governments place a high priority on maintaining the quality of the education system within the limits of budgetary constraints. For most countries, the indicators show a renewed increase in spending on education as a proportion of national income in the 1990's. This rise follows a period of relatively stable spending since the mid-1970s, during which rising rates of participation in education by young people were offset by shrinking youth population. Today, as education systems continue to expand, while youth population has stopped falling in most countries, governments have to meet mounting bills for a greater number of students. The spending increase reflects rising educational aspirations. There has been a rapid growth in "school expectancy" - the average number of years spent at school during childhood and youth. From 1990 to 1998, it rose from 15 to 16 1/2 years in OECD countries. At the same time, this trend puts serious pressure on tight public budgets, in countries that pay for education overwhelmingly from the public purse. The existence of a clear private economic gain from participation at higher levels of education creates pressure to shift some of the cost to individuals. Although education remains mainly publicly funded, private spending is becoming increasingly important.

As a consequence of the transfer of education to the communities in Belgium, data for Belgium as a whole is not always available. Sometimes data is given for the Flemish and/or French community in stead of Belgium.

B. Population of education age

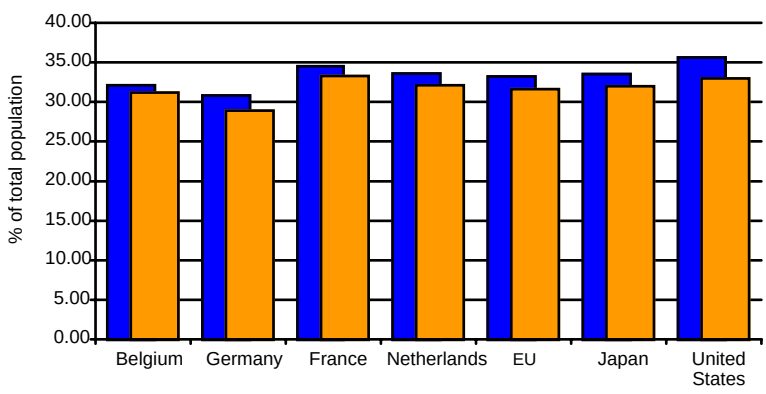
The indicators used to measure education investment cannot be interpreted without taking into account the number of students, which can internationally be compared by the percentage of the population of education age. The size of the youth population determines the potential demand for initial education and training. If the school age population is relatively large in a country, this country will spend a higher percentage of its GDP on education, ceteris paribus.

1. Population aged 5-29 - % of total population

During the 1970s and 80s there has been a sharp decline in youth population. Although this decline levelled off during the 90s, the proportion of 5-29 year-olds in the total population still went down. In Belgium the percentage of the population aged between 5 and 29 was relatively low (31.2%) in 1999 in comparison to the other countries. Only Germany had a lower percentage (28.9%). This is a result of the demographic evolution. Since 1950, the average number of children per woman was higher in France and in the Netherlands than in Belgium. In 1999, it reached 1.77 in France and 1.64 in the Netherlands against 1.54 in Belgium. Germany had a very low average number of children per woman for a long time. In 1995 for instance the fertility rate reached only 1.25 but it has gone up during the last years till 1.37 in 1999 which is still lower than the other countries under review. This can explain why the proportion of people between 5 and 29 year is also lower in Germany. Even though the slow-down in the European fertility rate should come to a halt, the number of women born after 1965 is lower because the number of births has decreased from then on in all the European countries.

Note the figures for the US and Japan are for the years 1995 and 1998.

	95	99
Belgium	32.09	31.20
Germany	30.84	28.90
France	34.52	33.30
Netherlands	33.59	32.10
EU	33.23	31.60
Japan	33.50	32.00
United States	35.60	33.00



Source: European countries: Eurostat (2000), New Cronos database; US and Japan: OECD (2000), Education at a glance.

C. Resources devoted to education

Expenditure on education is an important investment for a country. Besides the encouragement of economic growth, investment in education can also have a positive effect on productivity and can contribute to personal and social development. The following indicators have been selected to measure education investment:

- The proportion of national sources devoted to educational institutions;
- The educational spending per student;
- The expenditure on teachers' salaries;
- The student / teaching staff ratio;

Note that the expenditure on education is influenced by many factors. Things like the number of students enrolled, the efficiency in delivering education, limited access to higher education, the duration of studies,... will all influence the investment in education (Source: OECD (2000), Education at a glance).

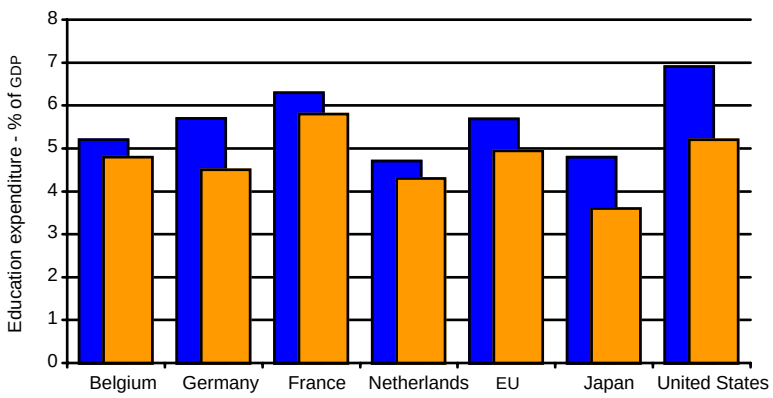
1. Total and public expenditure on education - as % of GDP in 1997

The total expenditures on education include the expenditures from private as well as public sources. Among the countries under review, the proportion of GDP invested in education varied from 4.7% in the Netherlands to 6.9% in the United States in 1997. In Belgium, 5.7% of GDP was spent on education in 1997. The relative high figure of total expenditure for Germany (in relation with its rather low share of population of education age), for the United States and for Japan, can be mainly explained by a relative high share of private spending. In Germany the private spending is mainly provided by the business sector for the work-based component in the dual system of apprenticeship in the upper secondary level. In the United States, household expenditure on tuition and other fees in tertiary institutions determine for a large part the private sector expenditure. The private spending in Japan is mainly explained by the expenditures in tertiary education where more than 50% originate from private sources (OECD (2000), Education at a glance). In Belgium, France and the Netherlands, spending on education is almost completely a public affair.

Note

The figure for the EU for total expenditures gives the ratio of the total expenditure on education of 13 EU member countries (data for Luxembourg and United Kingdom are not available) to the total GDP of these countries. The EU figure for public expenditures is calculated in the same way for the 15 EU member countries.

	Total	Public
Belgium	5.20	4.80
Germany	5.70	4.50
France	6.30	5.80
Netherlands	4.70	4.30
EU	5.68	4.94
Japan	4.80	3.60
United States	6.90	5.20



Source: OECD (2000), Education at a glance.

2. Annual expenditure per student - in 1.000 dollars based on PPP for 1997

Annual educational expenditure per student varied according to the different levels of education. Among the countries under review, the United States had the highest expenditure per student for all levels of education: 5718$ for primary education, 7230$ for secondary education and 17466$ for tertiary education. Belgium had a low level of expenditure in primary education (3813$) but it was slightly higher than the neighbouring countries and the European Union as a whole (3777$). The expenditure in the secondary education in Belgium (6938$) was also higher than the countries under review except the United States. With regard to the tertiary education the expenditure per student was higher in Belgium (6390$) than in France but lower than in the Netherlands and in Germany.

Note

For Belgium data cover expenditures on public institutions and government-dependent private institutions. For the other countries under review the figures give the public and private institutions spending. The figure for the EU is a weighted average of expenditures per student of 14 member countries (data for Luxembourg is not available). Weightings are based on the share of each country population for ages 5-29 in the total population for ages 5-29 of these countries.

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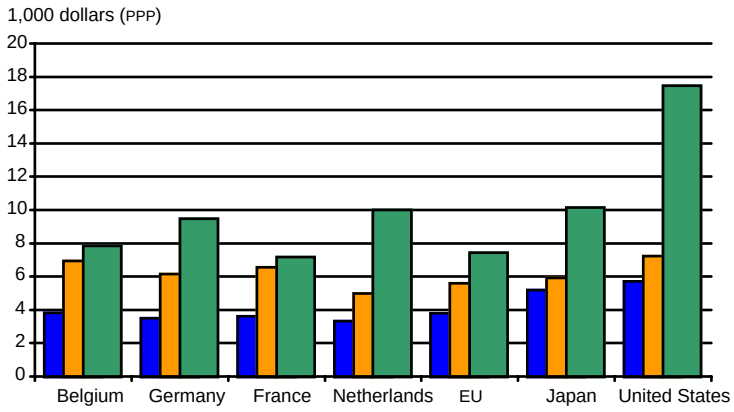
	Primary	Secondary	All tertiary
Belgium	3.81	6.94	7.83
Germany	3.49	6.15	9.47
France	3.62	6.56	7.18
Netherlands	3.33	4.99	9.99
EU	3.78	5.59	7.43
Japan	5.20	5.92	10.16
United States	5.72	7.23	17.47



Source: OECD (2000), Education at a glance.

3. Statutory salary and instructional characteristics for lower secondary education - for 1998

The attractiveness of the teaching profession is, among other things, affected by the level of a teacher's salary. In 1998, the statutory salary per teached hour for a teacher with 15 years of experience in the lower secondary education level is higher in the French and Flemish community than in the Netherlands but lower than in France, Germany and the European Union. The lowest level is reached in the United States due to the high number of hours supplied per year. The working time of the teachers is clearly of major importance for the financing of education and it determines also the attractiveness of the profession. The teachers' workload is another important element to take into account when comparing the teachers' salaries. This can be measured by the ratio of students to teaching staff. In 1995, a relatively large amount of teaching hours is supplied in small classes in the lower secondary level in Belgium. In France, teachers supply fewer hours per year but have almost twice as many pupils in classes than in Belgium in 1995. Overall, the students to teachers ratio decreases as the level of education rises. In 1998, this ratio was 14 pupils in primary education and 10.5 students in the tertiary education level in Belgium (no data for Belgium for the secondary education level in 1998). As in 1995, these are the lowest rates among the countries under review (exclusive France, which has no data for these indicators in 1998).

	Salary (with 15 years experience) - USD/teached hour	Number of teaching hours	Ratio student/teaching staff
Belgium (Fl)	40.42	691.00	7.00
Belgium (Fr)	41.60	733.00	7.00
Germany	52.79	732.00	16.00
France	47.08	629.00	13.00
Netherlands	34.48	910.00	17.00
EU	45.05	668.46	12.58
United States	33.93	964.00	18.00

Source: OECD (2000), Education at a glance.

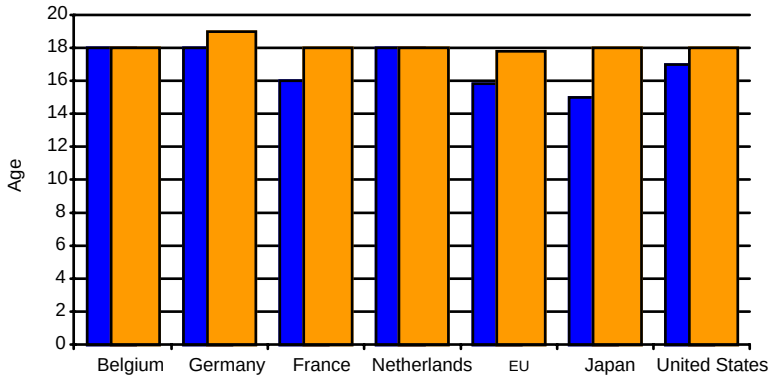
D. Participation in education

For the economic, intellectual and social development of a country, it is of major importance to have a well-educated population. One of the necessary conditions to reach a well-educated population is an overall participation and access to the education system.

1. Age of compulsory education and graduation - in 1998

In Belgium, education is compulsory up to the age of 18. This is rather high in comparison with the average of the European Union member countries (15-16 years). The ending age of compulsory education is almost the same as the average graduation age at the upper secondary level of education (18-19 years) in Belgium.

	Ending age of compulsory education	Graduation age upper secondary education
Belgium	18.00	18.00
Germany	18.00	19.00
France	16.00	18.00
Netherlands	18.00	18.00
EU	15.83	17.80
Japan	15.00	18.00
United States	17.00	18.00



Source: OECD (2000), Education at a glance.

2. Enrolment rate by age category - as % of the respective age category in 1998

The enrolment rates at different age categories can give an indication on the different structures of education systems among different countries. Moreover, it can provide a picture of access to education in the different systems. In the Flemish community of Belgium, more than 82% of the 3 to 4 year-olds are already enrolled in pre-primary or primary programmes. This is the highest enrolment rate among the OECD countries followed by France where almost 79% of the children aged 3 or 4 participate in education. In most other (OECD) countries, overall enrolment starts between the age of 5 and 6 years. Between the age of 5 to 19, there is almost overall enrolment in the countries under review. Around one out of five people between 20 and 29 years is still enrolled in the Flemish community of Belgium, which is about the same as in the other countries under review. A comparison between enrolment rates and the end of compulsory education reveals that many young people stay enrolled even beyond the age of compulsory education. So, there seems to be no close relation between reaching the age of compulsory education and the decline in enrolment rates. In most OECD countries, the sharpest decline in participation occurs at the end of the upper secondary level of education. In Belgium, Germany and the Netherlands this effect is less clear because of the relatively long compulsory education (18 year).

Note

The average of the EU is a weighted average of the enrolment rates in 14 EU member countries (no data for Luxembourg). Weightings are based on the share of each country's population in the total population of these countries. Data for Belgium is for the Flemish community.

	4 year and under	5-14 years	15-19 years	20-29 years	30-39 years	40 and over
Belgium	82.40	96.20	86.10	19.50	4.30	1.70
Germany	49.20	97.50	88.30	21.70	3.00	0.20
France	78.90	99.90	87.90	19.10	1.90	-.-
Netherlands	32.80	99.30	86.00	22.00	3.50	1.40
EU	55.76	99.19	79.72	20.25	3.83	0.82
Japan	49.70	101.00	-.-	-.-	-.-	-.-
United States	31.80	99.80	74.20	21.40	5.60	1.60

Source: OECD (2000), Education at a glance.

3. Net entry rates in tertiary education (type A&B) - for 1998

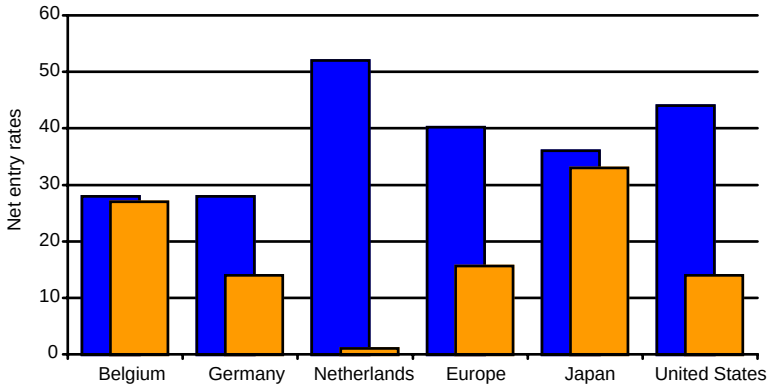
Entry rates in tertiary education can be an indication for the degree to which the population of a country acquires high-level skills and knowledge. In the European Union around 40% of young people are likely to attend tertiary type A education (bachelor's degree or higher, mostly offered at universities). On average more women than men will participate in this education form. In the Flemish community of Belgium no difference is observed between entry rates for men and women (28%) but the rates are lower than those of the Netherlands and the average of the European Union member countries. However, the proportion of people who enter tertiary type B education (programmes designed for direct entry into the labour market) is higher in Belgium (27%) than for the average of the European Union, Germany and the Netherlands. In the Netherlands only a very small part of tertiary education consist of type B.

Note

The figure for the EU is an unweighted average of the net entry rates in 10 EU countries (no data for France, Greece, Luxembourg, Portugal and Sweden). The figure for Belgium is for the Flemish community.

	Type A-men	Type A-women	Type A-total	Type B-men	Type B-women	Type B-total
Belgium	28.00	28.00	28.00	22.00	33.00	27.00
Germany	28.00	28.00	28.00	10.00	17.00	14.00
Netherlands	50.00	54.00	52.00	1.00	1.00	1.00
EU	36.73	43.91	40.18	13.00	18.30	15.60
Japan	45.00	27.00	36.00	22.00	45.00	33.00
United States	40.00	48.00	44.00	13.00	15.00	14.00

Source: OECD (2000), Education at a glance.



4. Net entry rates in tertiary education (type A) by age distribution - for 1998

The age of entrants to tertiary type A education may be a partial indication for the flexibility and suitability of the programmes for non-traditional students. In the Flemish community of Belgium 80% of all first-time entrants are younger than 20 years. So almost all entrants just finished upper secondary education when they enter tertiary education. In comparison with the other countries under review this is rather young. In Germany, the Netherlands and the average of the EU the age of entry was higher. More than half of the students enter tertiary education for the first time after the age of 20 and 80% of the students are older than 23 years when they enter tertiary education.

Note

The figure for the EU is an unweighted average of the age of entrants in tertiary type A education for 11 EU member countries (no data for France, Greece, Luxembourg and Portugal). Data for Belgium is for the Flemish community.

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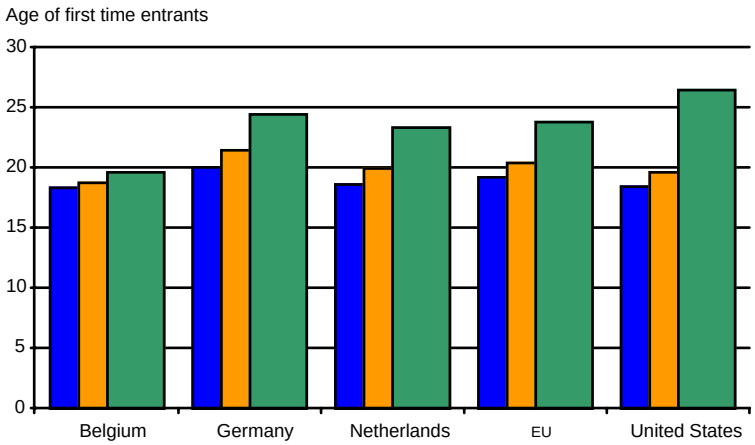
	Age at 20th percentile	Age at 50th percentile	Age at 80th percentile
Belgium	18.30	18.70	19.60
Germany	20.00	21.40	24.40
Netherlands	18.60	19.90	23.30
EU	19.19	20.35	23.78
United States	18.40	19.60	26.40



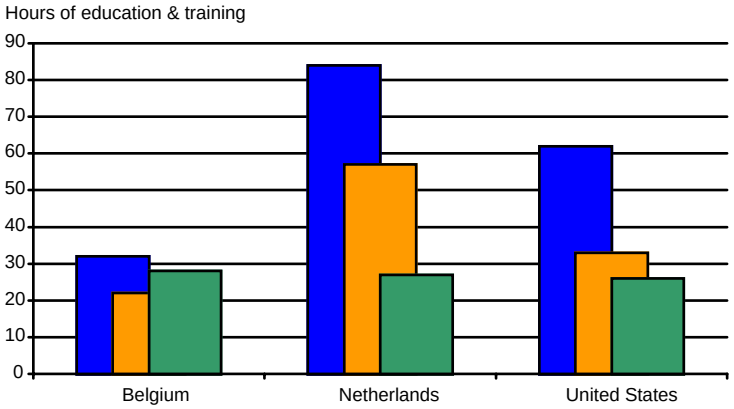
Source: OECD (2000), Education at a glance.

5. Number of participating hours in job-related continuing education & training per employee - for 1995

In 1995 on average 22% of the Flemish full-time workers participated in job-related continuing education and training. In the Netherlands this was 35% and in the United States the participation rate was 47%. But when comparing the participation in job-related education and training, the number of received training hours has to be taken into account. Whereas the mean number of hours per trainee was 80 in the United States, this was 161 hours in the Netherlands and 123 in Flanders. So, the mean number of hours per employee is higher in the Netherlands (57) than in the United States (38) or Flanders (27). In most countries, the youngest employees (25-34 year old) participated for a longer time in training than older employees did. In Flanders this variability by age is not very clear in comparison with the US and the Netherlands. Moreover, the employees in the age category of 45-64 year spend about the same hours on education and training than the Dutch and American employees of the same age. For the other age categories, the Flemish employees participate remarkably less hours in job related training. When comparing the participation rate with educational attainment, it seems that the participation rate increases with educational attainment.

Note The figure for Belgium is for the Flemish community.

	95		
	Between 25-34 year	Between 35-44 year	Between 45-64 year
Belgium	32.00	22.00	28.00
Netherlands	84.00	57.00	27.00
United States	62.00	33.00	26.00



Source: OECD (2000), Education at a glance.

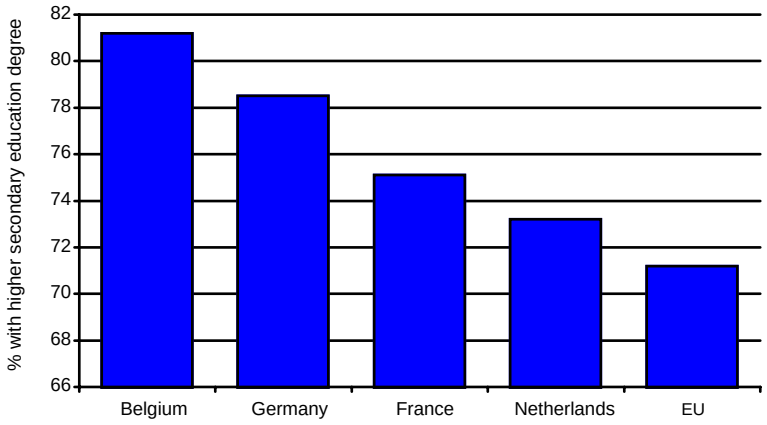
E. Educational attainment

The high level of educational spending makes it important that education systems provide good results. The quality of education and the educational attainment have a clear impact in terms of economic and social outcomes. Moreover, educational attainment is often seen as a level of skill. So for the employers, it can be an indication of the knowledge and capacities of potential employees.

1. % of 22 year old people with at least a higher secondary education degree - % for 1997

In the European Union, on average 71% of the people of the age of 22, have at least finished higher secondary education with success. In Belgium this rate is remarkably higher (81%) and it is even the highest among the countries under review (no comparable data for the United States and Japan).

	97
Belgium	81.20
Germany	78.50
France	75.10
Netherlands	73.20
EU	71.20



Source: European Commission (2000), Les chiffres clés de l'éducation en Europe.

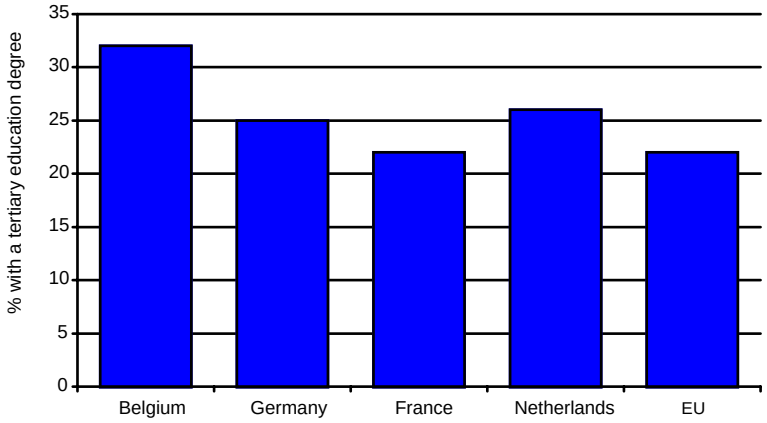
2. % of people between 30-34 with a tertiary education degree - % for 1997

On average 22% of the European people between 30 and 34 years have a degree of tertiary education. This rate hides large differences among the European member countries. In Belgium 32% of the people in that age category has a tertiary education degree. This is the highest rate among the member countries of the European Union. Also for the other age categories, Belgium has a high proportion of people with a tertiary education degree.

Definition

The percentage of people in the age category 30-34 with a tertiary education degree is measured as the number of people between the age of 30 and 34 who have a degree in tertiary education to the total population of that age category.

	97
Belgium	32.00
Germany	25.00
France	22.00
Netherlands	26.00
EU	22.00



Source: European Commission (2000), Les chiffres clés de l'éducation en Europe.

3. Mathematics and science performance scores for school year 1998-1999*

The figures present the results of the international survey about pupils mathematics and science skills (TIMSS). The survey compares the skills of 13-year old pupils. For the mathematics test, the Flemish students of Belgium get better results than the Dutch and American pupils. The Belgian students (Flemish community) perform less well on the science test than the Dutch or Japanese students. Japan gets the highest scores among the countries under review for both tests.

Note

This indicator reports scores on tests administrated in the Third International Mathematics and Science Study (IEA / TIMSS) undertaken by the International Association for the Evaluation of Educational Achievement (IEA) during the school year 1998 / 1999. Results reported are for the 8th grade (14 years) students.

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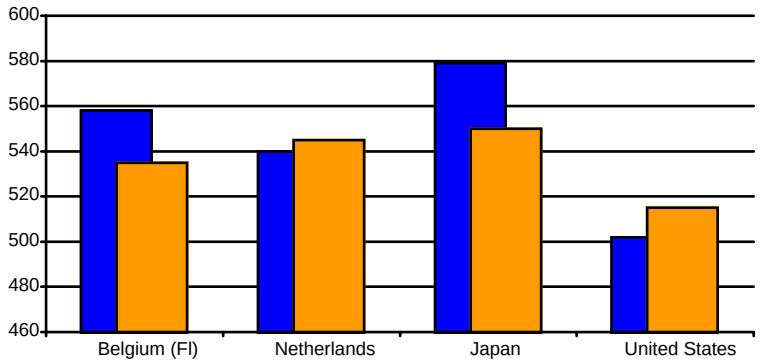
	Mathematics	Science
Belgium (Fl)	558.00	535.00
Netherlands	540.00	545.00
Japan	579.00	550.00
United States	502.00	515.00



* The international averages amount to 487 and 488 for mathematics and science, respectively.

Source: for mathematics scores: IEA (2000), TIMMS 1999, International Mathematics Report; for science scores: IEA (2000), TIMMS 1999, International Science Report.

4. Population aged 25-64 by the highest completed level of education - in % for 1998

The percentage of people having completed university tertiary education is rather low in France (10.5%) and in Belgium (11.8%) in 1998. However, the proportion of people with a degree from non-university tertiary education is higher in Belgium than in the other countries. Altogether the proportion of people having a degree from tertiary education (25.3%) is higher in Belgium than in the other European countries. But this indicator should be interpreted with caution since in many countries people start at a later age with tertiary education and have not yet completed their study at the age of 24. Looking at the share of the population having a level of education below upper secondary, the position of Belgium is less favourable. About 43.3% of the population belong to this category in Belgium. In Germany this share was only 16% in 1998.

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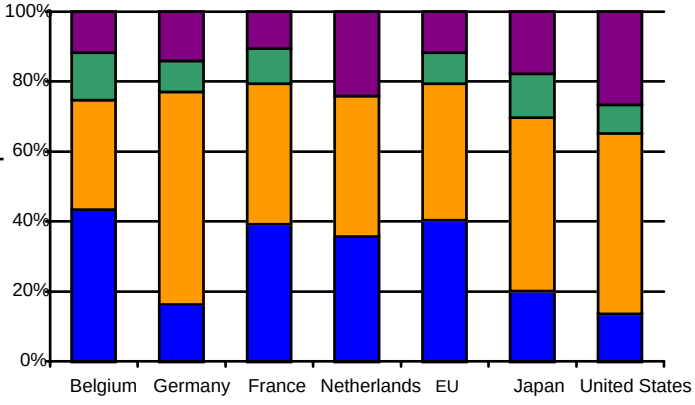
	Below upper secondary education	Upper secondary education	Non-university tertiary education	University tertiary education
Belgium	43.30	31.40	13.50	11.80
Germany	16.20	60.70	9.00	14.00
France	39.30	40.20	10.10	10.50
Netherlands	35.70	40.10	-.-	24.20
EU	40.26	39.10	8.83	11.71
Japan	20.10	49.50	12.70	17.70
United States	13.60	51.60	8.30	26.60



Source: OECD (2000), Education at a glance.

F. Education and the labour market

As already indicated, the quality of education and the educational attainment have a clear impact on economic and social indicators. Among others, education increases the chance to be employed.

1. Unemployment rates for men aged 25-64 by level of education attainment - for 1998

In comparison with the other European countries under review, Belgium has the highest ratio between the unemployment rate of the low qualified (less than lower secondary education) and the unemployment rate of the graduated from university. This high Belgian ratio accounts for men as well as for women. The ratio is the lowest for France and for the Netherlands. So, in Belgium it applies more than in the other countries that a higher degree increases the employability. The unemployment rate for men with a lower attainment than upper secondary education is lower in Belgium than for men in Germany and France with the same education. For Belgian women however, this unemployment rate is the highest among the countries under review.

Note

The figure for the EU is a weighted average of unemployment rates in 14 EU member countries (no data for Luxembourg). Weightings are based on the share of each country's working age population (15-64 year) in the total EU population (Luxembourg excluded) of this age group. For the Netherlands, the category "non university tertiary education" does not apply. Data for Italy concerning "non university tertiary education" is included in another category.

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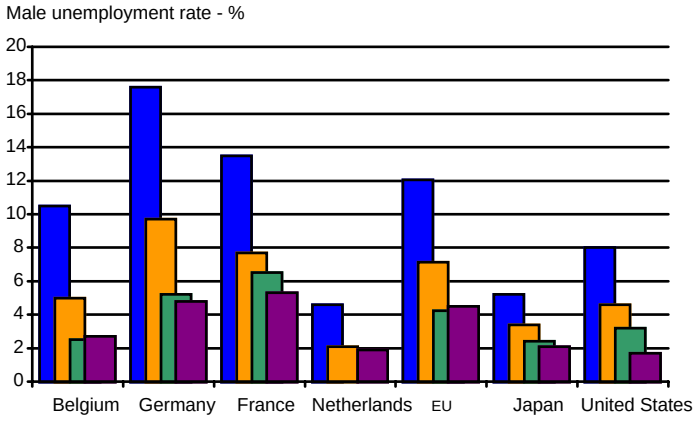
	Below upper secondary education	Upper secondary education	Non university tertiary education	University tertiary education
Belgium	10.50	5.00	2.50	2.70
Germany	17.60	9.70	5.20	4.80
France	13.50	7.70	6.50	5.30
Netherlands	4.60	2.10	-.-	1.90
EU	12.06	7.14	4.24	4.48
Japan	5.20	3.40	2.40	2.10
United States	8.00	4.60	3.20	1.70



2. Unemployment rates for women aged 25-64 by level of education attainment - for 1998

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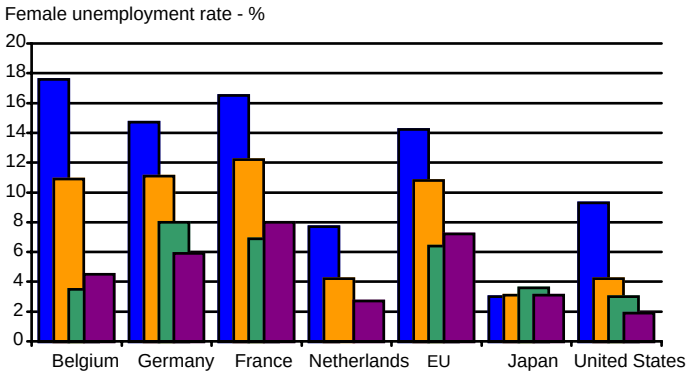
	Below upper secondary education	Upper secondary education	Non university tertiary education	University tertiary education
Belgium	17.60	10.90	3.50	4.50
Germany	14.70	11.10	8.00	5.90
France	16.50	12.20	6.90	8.00
Netherlands	7.70	4.20	-.-	2.70
EU	14.22	10.80	6.38	7.23
Japan	3.00	3.10	3.60	3.10
United States	9.30	4.20	3.00	1.90



Source: OECD (2000), Education at a glance and Eurostat (1999), Labour force survey.

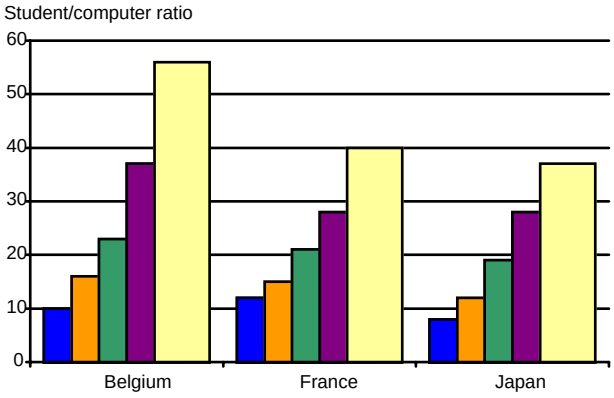
G. Education and ICT

At the Lisbon European Council (23-24/03/2000), the eEurope action plan was established in order to exploit the opportunities of the new knowledge driven economy and in particular of the Internet. In this eEurope action plan special attention is given to education and lifelong training. The eLearning initiative brings together the different education components of the eEurope action plan and of other Community actions. A major topic in eLearning is the effective integration of ICT (Information and Communication Technology) in education and training (Source: European Commission (2000), eLearning - Designing tomorrow's education).

1. Ratio of students to computer in lower secondary education - in percentiles in 1998

A typical lower secondary school in the French community in Belgium has on average one computer for 23 students. A minority of the schools (10th percentile) has a ratio of one computer for 10 students. But in one out of ten lower secondary schools the ratio is one computer for more than 56 students. So, a great variation exists in Belgium schools (French community) in terms of number of students per computer. The lack of computers in schools is an important problem because it is for the Belgian teacher the major obstacle in realising the school's ICT related objectives (OECD (2000), Education at a glance).

	10th percentile	25th percentile	Median	75th percentile	90th percentile
Belgium	10.00	16.00	23.00	37.00	56.00
France	12.00	15.00	21.00	28.00	40.00
Japan	8.00	12.00	19.00	28.00	37.00

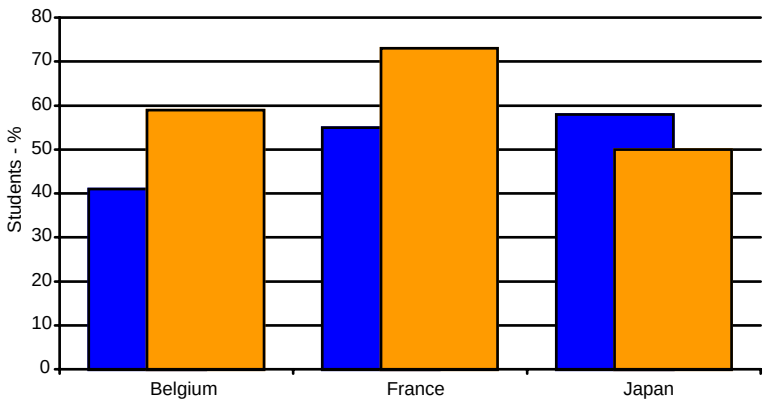


Source: OECD (2000), Education at a glance.

2. % of students in schools using computers with access to e-mail/Internet - in 1998

In the French community of Belgium, only 40% of the children in lower secondary education is enrolled in a school with access to Internet or e-mail for instructional purposes in the school year 1998-1999. Almost 60% of the students in upper secondary education attend a school that has access to Internet. In its "eEurope, an information society for all" one of the European Commission's objectives is that all schools must have access to Internet before the end of 2001. Before the end of 2002, all students must have access to Internet in the classroom.

	Lower secondary education	Upper secondary education
Belgium	41.00	59.00
France	55.00	73.00
Japan	58.00	50.00



Source: OECD (2000), Education at a glance.

VI Transport

A. Belgium's position

- Density of the total road and railroad network (km per square km)
- Use of seaport and airport for freight transport
- Congestion on roads
- Freight transport by train
- Persons killed in road traffic accidents

An efficient transportation system contributes to economic growth by minimising time and cost to exchange goods and services. It contributes also to the quality of life by promoting interaction between people. A good transportation system ensures that people can go where they want when they want which is encouraging also work mobility. Belgium has a very dense road as well as railroad network. This is also important for trade in Belgium since there is a lot of transport between (small) enterprises over short distances. Even though road traffic is the most widely used transport way in Belgium for freight as well as for passengers, the congestion on roads (measured as number of vehicles-km per km of road) is limited in comparison with the benchmarked countries. Unfortunately, the number of persons killed in road traffic accidents is relatively high in Belgium, but it is declining. The energy consumption that is necessary for transport has negative effects on the environment. Especially road traffic causes damages on the environment in Belgium, in contrast with transport by train, which is not such a burden on the environment. But this latter mode of transport is much less used. The dense road network causes also a burden on the environment in Belgium. The seaport of Antwerp is very important for the Belgian competitiveness. It is the second largest seaport of Europe and one of the fifth biggest in the world. The Antwerp seaport has very good hinterland connections by water and maybe in the future also by rail (the Iron Rhine railway line). This accessibility to and from Belgium is a significant factor in a company's decision process for its location.

B. Road and rail infrastructure

1. Density of the total road network in 1997

Indicators about the overall length of the road and railroad network may provide information on the accessibility of different places in a country. Belgian territory is criss-crossed of very dense road and railroad networks. In 1997, the density of the total road network (motorways and other roads), measured by the number of road kilometres per square kilometre, was much higher than that of the other countries considered. In Belgium, on average 4.7 kilometres of road were built-up on 1 square kilometre of territory. This is important for a country like Belgium where transport over short distances between small enterprises is frequent and it gives an advantage in terms of efficiency to freight transport by lorries over other modes. In the United States, where huge areas of territory are unpopulated, the length of road per square kilometre is much lower than in Europe or in Japan. Once we relate the length of the road network to the number of inhabitants, this pattern changes considerably. The United States appear to have a very dense road network. Because Belgium is very densely populated, its road infrastructure per inhabitant appears to be less impressive. However it remains very high and is only exceeded by France and by the United States.

Definition

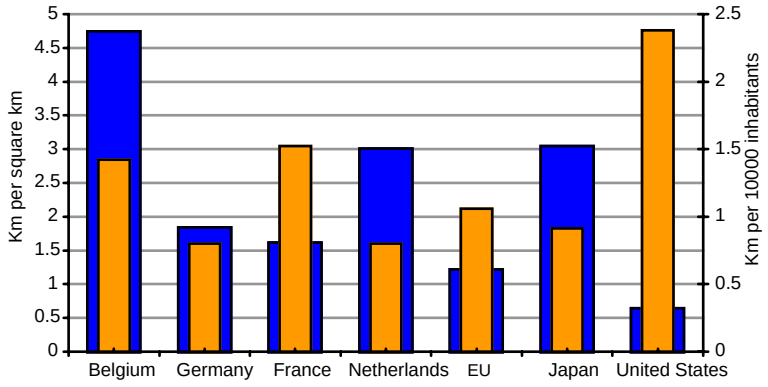
Kilometres per square kilometre is the ratio of the total length of the road network (all road types taken into account) to the country area. Kilometres per inhabitant are calculated as the ratio of the total length of the road network (all road types taken into account) to the country population.

Note

The figure for the EU gives the ratio of the total road length of the 15 EU member countries to the total area of these countries (the data on road length for Portugal, Greece and Italy are for 1996 (1997 is not available)).

97

	Km per square km	Km per 10.000 inhabitants
Belgium	4.75	1.42
Germany	1.84	0.80
France	1.62	1.52
Netherlands	3.01	0.80
EU	1.22	1.06
Japan	3.05	0.91
United States	0.65	2.38



Source: Kilometres of road: International Road Federation (IRF)(2000), World Road Statistics 1994-1998; Country areas: United Nations (1998), Annual Bulletin of transport statistics for Europe and North America; Total population: European Commission (2000), Ameco database; EU: own calculations.

2. Density of the operated railroad network in 1997

The density of the operated railroad is also very high in Belgium. This contributes to a good accessibility by train to different places on its territory. In 1997, on average 112 metres of rail were built-up on 1 square kilometre of Belgian territory. Although the railroad infrastructure per inhabitant in Belgium is less impressive than per square kilometre, it is still high for a densely populated country like Belgium.

Definition

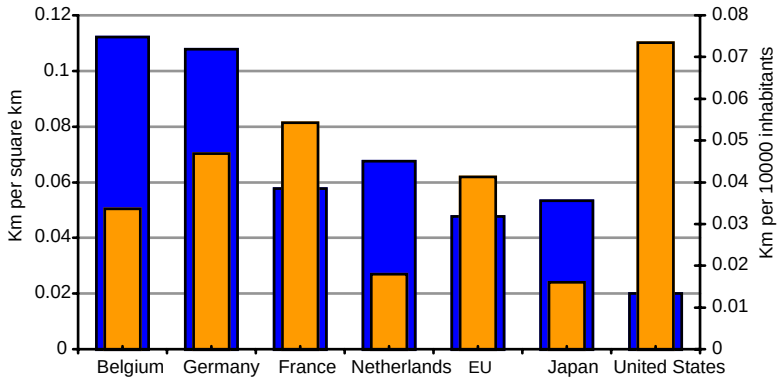
Kilometres per square kilometre is the ratio of the total length of operated railroad lines to the country area. Kilometres per inhabitant are the ratio of the total length of operated lines to the country population.

Note

The figure for the EU gives the ratio of the total railroad length of the 15 EU member countries to the total area of the EU territory.

97

	Km per square km	Km per 10.000 inhabitants
Belgium	0.11	0.03
Germany	0.11	0.05
France	0.06	0.05
Netherlands	0.07	0.02
EU	0.05	0.04
Japan	0.05	0.02
United States	0.02	0.07



Source: Kilometres of operated lines: International Union of Railways (IUR) (1997), International Railway Statistics for 1997; Country areas: United Nations (1998), Annual bulletin of transport statistics for Europe and North America; Total population: European Commission (2000), Ameco database; EU: own calculations.

C. Structure of transport flows

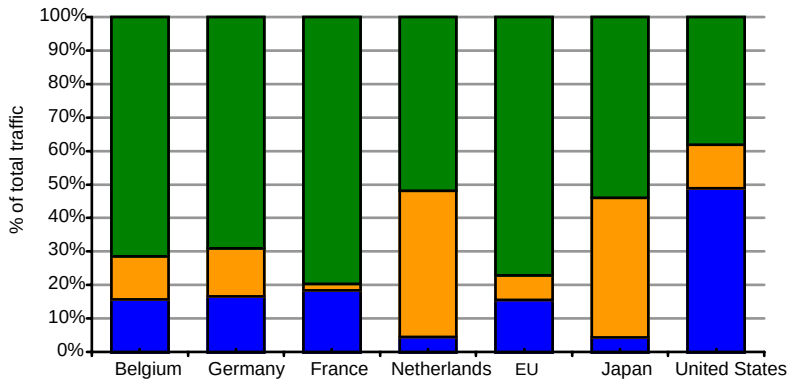
1. Structure of the freight transport traffic - % of total traffic in tonnes-km for 1997

Transport activity is traditionally measured by the amount of tonnes-kilometres (for freight transport) and by the amount of passenger-kilometres (for passenger transport). These measures take not only the quantities transported (number of tonnes or number of passengers transported) into account but also the crossed distances (average number of kilometres crossed by a tonne or by a passenger). For freight transport, statistics cover not only domestic transport (transport flows starting and ending in the same country) but also international transport (origin and destination of transport flows are in different countries) on the territory. In Belgium, more than 50% of the tonne-kilometres of freight transport by road is international. In 1997, road freights transport accounted for about 71% of the total freight transport demand. 16% of the tonnes-kilometres were transported by rail and the remaining 13% were transported by waterways. France, Germany and the United States rely more heavily on rail to transport their freight than

Belgium. In the United States, almost 50% of the total freight is transported by rail which is a more appropriate mode to transport large volumes over long distances. The very extended navigation canals network allows the Netherlands to rely heavily on this mode for its freight transport.

Note The figure for the EU gives the structure of the total freight traffic flow of the 15 EU member countries.

	97		
	Rail	Waterways	Road
Belgium	15.66	12.83	71.50
Germany	16.65	14.23	69.12
France	18.40	2.00	79.60
Netherlands	4.52	43.92	52.13
EU	15.51	7.41	77.08
Japan	4.33	41.74	53.93
United States	48.94	12.92	38.13



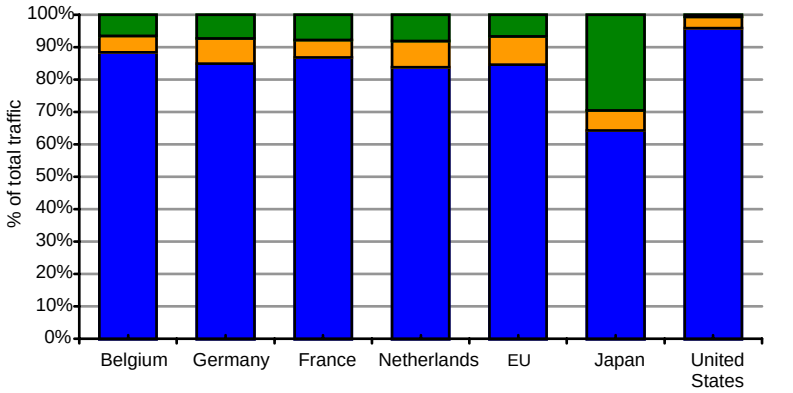
Source: European countries: ECMT (2000), Trends in the Transport Sector, 1970-1998 and European Commission (2000), European transport in figures; United States and Japan: IRF (2000), World Road Statistics 1994-1998.

2. Structure of the passenger transport traffic - % of total traffic in passengers-km for 1997

In all the countries considered, passenger transport demand is dominated by the private mode (transport by car). In Belgium, transport by car accounted for 88% of the total passenger traffic flow in 1997. In the United States, public transport was quasi non-existent and transport by car accounted for almost 96% of passenger transport.

Note The figure for the European Union gives the structure of the total passenger traffic flow of the 15 EU member countries.

	97		
	Car	Bus	Train
Belgium	88.39	5.05	6.56
Germany	84.87	7.79	7.34
France	86.83	5.32	7.84
Netherlands	83.79	8.11	8.10
EU	84.62	8.76	6.62
Japan	64.26	6.26	29.47
United States	95.89	3.52	0.58



Source: European Countries: ECMT (2000), Trends in the Transport Sector, 1970-1998 and European Commission (2000), EU transport in figures; United States and Japan: IRF (2000), World Road Statistics 1994-1998.

3. Number of tons loaded and unloaded in the 15 Europe's largest airports - 1.000 tons

In 1998, Brussels National airport was Europe's fifth biggest cargo airport. Between 1992 and 1998, freight transport volumes loaded and unloaded in Brussels National airport have grown by about 90%. Between 1997 and 1998, the Brussels National airport has grown by more than 15%, achieving a volume of almost 600.000 tonnes transported. Note that in 1998, the airport of Liege appears also in the top fifteen of Europe's largest airports. Between 1997 and 1998, the volume of goods transported in this airport increased by almost 369% which means a volume of 164.000 tons loaded and unloaded.

Airport (country)	1992	1998	% change 98/92
1. Frankfurt Rhein/Main (Germany)	1054	1465	39
2. London Heathrow (United Kingdom)	755	1301	72
3. Amsterdam Schiphol (Netherlands)	695	1219	75
4. Paris Charles de Gaulle (France)	612	1067	74
5. Bruxelles National (Belgium)	314	597	90
6. Luxembourg (Luxembourg)	151	383	154
7. Köln/ Bonn (Germany)	181	375	107
8. Copenhagen (Denmark)	n.a.	374	n.a.
9. London Gatwick (United Kingdom)	190	294	55
10. Madrid Barajas (Spain)	188	287	53
11. Roma Fiumicino (Italy)	237	262	11
12. Paris Orly (France)	275	217	21
13. London Stansted (United Kingdom)	53	192	262
14. Milano Malpensa (Italy)	89	170	91
15. Liège (Belgium)	n.a.	164	n.a.

Source: European Commission (2000), EU Transport in figures 2000. EU: own calculations.

4. Number of passengers embarked and disembarked in the 15 Europe's largest airports - million passengers

Between 1992 and 1998, the number of embarked and disembarked passengers in Brussels National Airport has grown by more than 100%. Over this period, it was the strongest growth rate among the 15 Europe's largest airports. In 1998, the number of passenger transported in Brussels has grown by 16%. Due to this growth the airport moves forward from position 13 in 1997 to 10 in 1998 in the ranking of Europe's largest airports. The growth of Brussels airport has been strong since the beginning of the nineties. Whereas in 1990 7,1 million passengers embarked and disembarked, this number went up to 18,7 million passengers in 1998.

Airport (country)	1992	1998	% change 98/92
1. London Heathrow (United Kingdom)	45	60.7	35
2. Frankfurt Rhein/Main (Germany)	30.1	42.7	42
3. Paris Charles de Gaulle (France)	24.8	38.6	56
4. Amsterdam Schiphol (Netherlands)	18.7	34.4	84
5. London Gatwick (United Kingdom)	19.8	29.2	47
6. Madrid Barajas (Spain)	18.1	25.5	41
7. Roma Fiumicino (Italy)	18.7	25.3	35
8. Paris Orly (France)	25	25	0
9. München (Germany)	11.8	19.3	64
10. Bruxelles Zaventem (Belgium)	9.2	18.5	101
11. Palma de Mallorca (Spain)	11.9	17.7	49
12. Manchester (United Kingdom)	11.7	17.6	50
13. Copenhagen Kastrup (Denmark)	12.1	16.7	38
14. Stockolm Arlanda (Sweden)	12.9	16.4	27
15. Barcelona (Spain)		16.2	

Source: European Commission (2000), EU Transport in figures 2000. EU: Own calculations.

5. Number of tons loaded and unloaded in the 15 Europe's largest seaports - million tons

The port of Antwerp is in the top five of the world's biggest seaports and the second largest in Europe. In 1998 the port of Antwerp had the best results ever. The maritime cargo turnover reached almost 120 million tonnes. But also 1999 was a top year with a total maritime traffic of 115 million tonnes (second best result ever) (Source: http://www.portofantwerp.be). The port of Antwerp has multiple advantages. First of all its location is most central in Europe. Moreover, besides the shipping of goods, they can also be stored, repacked and distributed in Antwerp. A new tidal container dock is under construction and there are plans for another new terminal. Concerning the hinterland connection, the port of Antwerp is connected by about 1500 kilometres of navigation canals and has very good river connections to the major industrialised regions in France and Germany. The OECD estimates that the "future expected growth in activity of the Antwerp harbour, in part due to the deepening of the Schelde, will be 43 per cent over 13 years" (see OECD (1998), Environmental Performance Review of Belgium, Paris June 1998). However, this growth is constrained by congestion problems. Considerable investments to improve the accessibility of the harbour by road, rail and canals are already planned. The main priority for this year is the continued deepening of the Schelde. A direct connection to the motorway and the provision of a railway tunnel under the Schelde and the reopening of the Iron Rhine route are also major topics on the transport agenda.

Port (country)	1990	1997	% change 97/90
1. Rotterdam (Netherlands)	288	303	5
2. Antwerpen (Belgium)	102	112	10
3. Marseille (France)	90	94	4
4. Hamburg (Germany)	61	77	26
5. Le Havre (France)	54	60	11
6. Amsterdam (Netherlands)	47	57	21
7. London (United Kingdom)	58	56	-3
8. Tees and Hartlep (United Kingdom)	40	51	28
9. Trieste (Italy)	34	46	35
10. Genoa (Italy)	44	46	5
11. Forth ports (United Kingdom)	25	43	72
12. Algeciras (Spain)	25	37	48
13. Dunkerque (France)	37	37	0
14. Wilhelmshaven (Germany)	16	36	125
15. Milford Haven (United Kingdom)	32	35	9

Source: European Commission (2000), EU transport in figures 2000. EU: Own calculations.

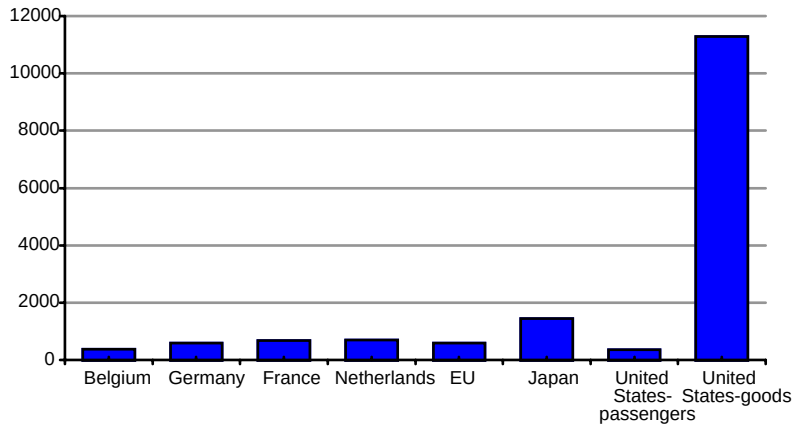
6. Productivity of railroad companies - for 1998

The productivity of the Belgian railroad companies is the lowest among the countries under review. The United States have a very high productivity for the railroad company that supplies freight traffic. This can be partly explained by the relative high number of tonne-km for freight transport. In contrast, the productivity for the passenger traffic company is the lowest among the countries under review. A possible explanation for this is the very low use of this transport mode by passengers.

Definition

the productivity of a railroad company is measured as the sum of the freight transport in tonne-kilometres and the passenger transport in passenger-kilometres divided by the average number of its staff. For the United States two figures are given since freight and passenger transport are supplied by different companies. The figure for the EU is the ratio of the total sum of freight transport and passenger transport for 13 EU member countries (data not available for Denmark and the United Kingdom) to the total number of staff in these EU member countries.

	98
Belgium	367.40
Germany	587.10
France	675.20
Netherlands	696.90
EU	579.60
Japan	1444.00
United States-passengers	349.80
United States-goods	11279.60



Source: Own calculations based on UIC (2000), http://www.uic.asso.fr.

D. Mobility and congestion

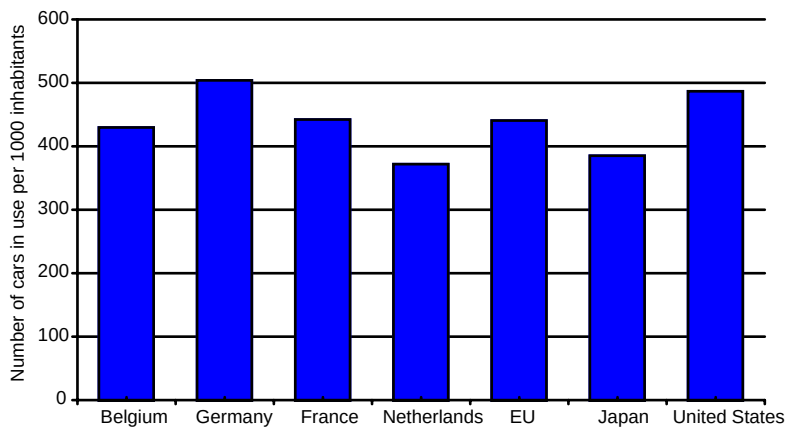
1. Number of cars in use - per 1000 inhabitants for 1997

In 1998, almost 430 vehicles were used in Belgium for every 1.000 inhabitants. Citizens in Japan and the Netherlands had fewer cars in use than those in Belgium (estimations of 385 and 372 cars in use for every 1000 inhabitants, respectively). The German citizens had the highest access to cars among the benchmarked countries (504 vehicles in use for every 1000 inhabitants).

Definition The total number of vehicles includes the passenger cars, buses and coaches, lorries and vans. Road tractors, two-wheelers motorcycles and mopeds are excluded.

Note The total for the EU is defined as the ratio of the total number of cars in use in 14 EU member countries (no data for Ireland) to the total population of these 14 EU member countries.

	97
Belgium	429.58
Germany	504.22
France	441.90
Netherlands	372.17
EU	440.54
Japan	385.30
United States	486.33



Source: IRF (2000), World road statistics 1994-1998. EU: Own calculations.

2. Capacity utilisation of the road network - number of vehicles-km per km of road for 1997

The number of vehicles-kilometres divided by the length of the road network can be used as a rough indicator of the risk of congestion at the national level. It gives an indication of the degree of capacity utilisation of the road network. However, this indicator is imperfect in many respects to measure congestion.

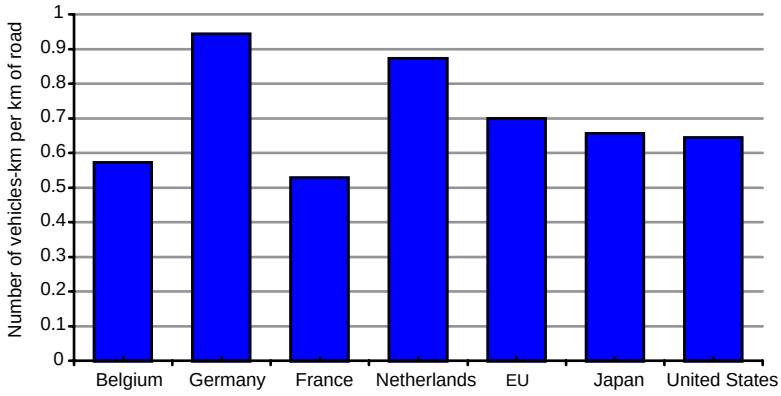
- First, it is aggregated at the country level and it does not take into account the distribution of the traffic at different time periods (congestion is a spacial and temporal phenomenon),
- Secondly, the assumption is made that cars, busses and trucks have the same impact on congestion,
- Thirdly, it does not make any difference between traffic on highways and on other roads,
- Finally, it does not take into account the quality of the infrastructure.

The degree of capacity utilisation of the road network is only lower in France than in Belgium. The relatively low degree of capacity utilisation estimated in Belgium is mainly due to the very high density of its road network providing a good substitutability between motorways and other roads. It is however negatively affected by the high density of the population and the relatively high access to private vehicles by the population. Results of the European centre for infrastructure studies (see European centre for infrastructure studies (1996), The state of European infrastructure, Rotterdam) confirm the relatively low level of congestion in Belgium compared to some other European countries. According to this study, the percentage of roads subject to serious congestion (congestion of at least one hour per day) amounted to 5.9% in 1996 while it was estimated at 7.9% and 14.8% in Germany and in the Netherlands, respectively.

Note

The French number of vehicles-km excludes the traffic by buses of the “Regie Autonome des Transports Parisiens” excluded. The figure for the Netherlands includes trams and subways and the Belgian figure includes motor vehicles with 2 or 3 wheels. In the United States, traffic by local and urban buses is excluded. The data for Japan excludes light vehicles. The figure for the EU is defined as the ratio of the total road traffic volumes of motor vehicles in 12 EU member countries (no data for Greece, Ireland and Portugal for 1996) to the total length of the road network of these 12 EU member countries.

	97
Belgium	0.57
Germany	0.94
France	0.53
Netherlands	0.87
EU	0.70
Japan	0.66
United States	0.64



Source: Number of vehicles-km: OECD (1999), Environmental data compendium; Kilometres of road network: IRF (2000), World Road Statistics 1994-1998. EU: Own calculations.

E. Energy consumption

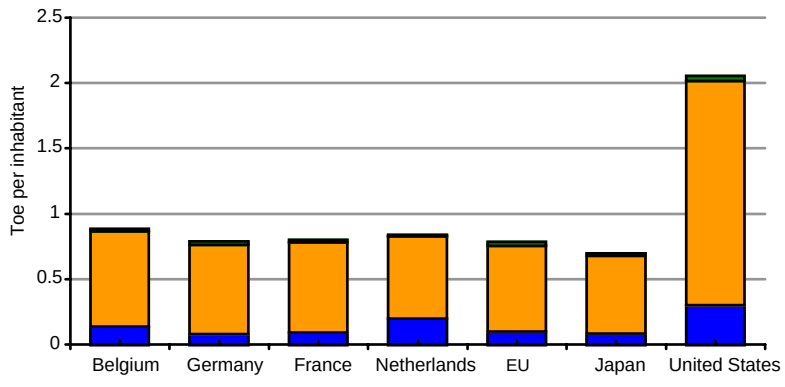
1. Final energy consumption by transport modes - toe per capita for 1997*

Energy consumption by transport has consequences for the environment. Transport is highly dependent on fuel consumption (diesel, gasoline) which is a major cause of air pollution. In 1997, the total energy consumption by transport (related to the population) in Belgium was only exceeded by the United States. A possible but partly explanation for this poor performance of Belgium could be found in the structure of its transport flow. This relies heavily on road transport and particularly road freight transport. In all the countries compared, rail is responsible for a very low share of energy consumption by transport. Because air traffic accounts for a large proportion of transport traffic in the United States, its energy consumption is substantially higher than in the other countries compared.

Note

The figure for the EU gives the ratio of the total energy consumption by the different transport modes of the 15 EU member countries to the total population of the EU.

	97		
	Air	Road	Rail
Belgium	0.14	0.73	0.02
Germany	0.08	0.68	0.03
France	0.09	0.69	0.02
Netherlands	0.20	0.63	0.01
EU	0.10	0.65	0.02
Japan	0.08	0.60	0.02
United States	0.30	1.71	0.04



*toe = tonnes of oil equivalent.

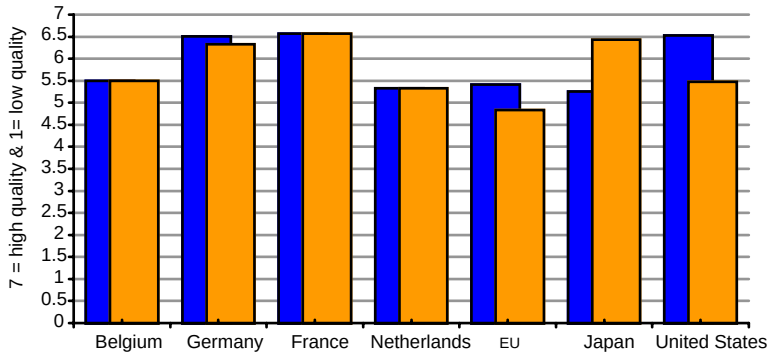
Source: OECD (1999), Environmental Data Compendium. EU: Own calculations.

F. Quality of infrastructure

1. Perception of quality of infrastructure in 1999 - scale from 1 (low) to 7 (high)

Besides the supply of infrastructure, it is also important to evaluate the quality perception of the infrastructure. The World Economic Forum (WEF) gives an indicator of quality perception based on a survey. To investigate the perception of the road quality, they asked leading business executives whether in their country "the road infrastructure is extensive and efficient for moving goods and services". The quality perception of railroad is examined with the sentence "Railroads are highly developed". On both questions the business executives had to give a score from 1 (= strongly disagree) to 7 (= strongly agree). From the results we see that the perception of the Belgian road infrastructure quality is around the average of the EU. The French and German executives perceive a better quality of road infrastructure. The relative low quality perception of the railroad network for the average of the EU is mainly due to a relative low quality perception of railroads in the Southern-European countries.

	Road	Railroad
Belgium	5.50	5.50
Germany	6.51	6.33
France	6.57	6.57
Netherlands	5.33	5.33
EU	5.42	4.83
Japan	5.26	6.43
United States	6.53	5.48



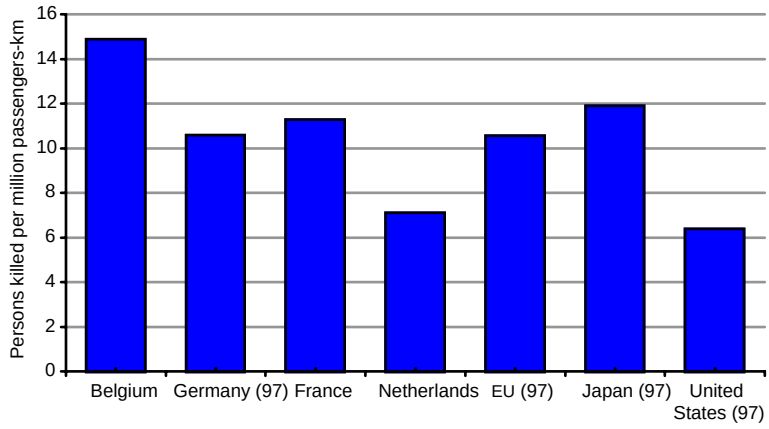
Source: World Economic Forum (WEF), The global competitiveness report 1999.

2. Persons killed in road traffic accidents - per billion passengers-km in 1998*

While the number of deaths due to road traffic accidents is affected by a complex variety of influences (including drinking, attitude towards safety, quality of the cars etc.) it is a good indicator to apprehend the quality of the road infrastructure. In 1998, the number of persons killed related to the volume of traffic (the number of passenger-kilometres) in Belgium was the highest among the compared countries. Among the benchmarked European countries, the number of people killed on the roads declined in Belgium (with 6.9%), France (with 4.8%) and Germany (0.6%) in 1999 (source: ECMT (2000): http://www.oecd.org/cem/).

Note The figure for the EU gives the ratio of the total number of persons killed in road traffic accidents of the 15 EU member countries to the total road traffic volume (public and private road transport) of these countries.

	98
Belgium	14.89
Germany (97)	10.57
France	11.27
Netherlands	7.11
EU (97)	10.57
Japan (97)	11.91
United States (97)	6.38



* or latest year available, i.e., 1997 for Germany, Japan, the United States and the average of the European Union.

Source: Persons killed: United Nations (1999), Road traffic accidents statistics; Passengers-km: ECMT (2000), Trends in the Transport Sector, 1970-1998.

VII Energy

A. Belgium's position

Price level for electricity and for gas - for industry

Price level for gas - for households

Efficiency in electricity generation

Price level for electricity - for households

Taxes on electricity and on natural gas - for households

The energy sector constitutes a key factor of competitiveness. The price of energy, the taxes, as well as the conditions and the security of supply, are important elements behind the decisions on the location of private investments. Priorities for a national energy policy are the following:

1. maintain the prices of energy at a competitive level by promoting efficient energy production and consumption with the least negative effect on the environment;
2. let the whole population benefit from lower prices;
3. guarantee the security of supply.

The energy price for the industry sector is relatively low in Belgium and the Belgian companies do not have to pay taxes on gas nor on electricity. The households however pay a relative high consumption price for electricity and have to pay high taxes on electricity as well as gas consumption. But the consumption price for gas without taxes is rather low for Belgian households. In comparison with the neighbouring countries, Belgium has an average position regarding the efficiency of electricity generation. But recent modification and plans should improve the average thermal efficiency of Belgian electricity production during the next years.

This chapter presents a selection of indicators reflecting the energy profile in Belgium and in the other countries under review (whenever data is available).

B. Energy consumption and intensity

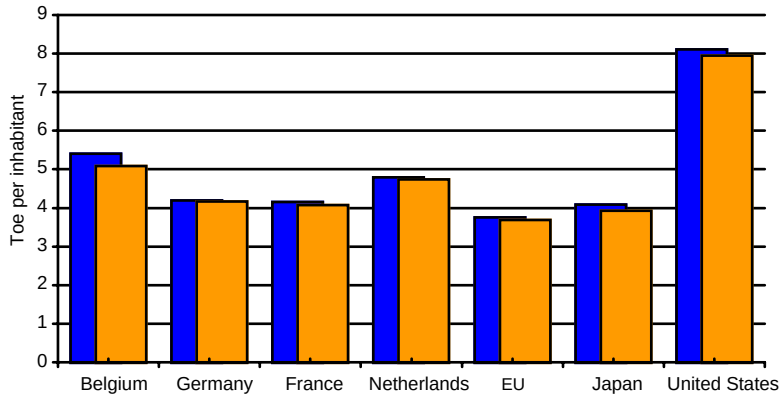
1. Gross inland consumption - toe per capita*

In 1997, the Belgian gross inland consumption amounted to 55 millions tonnes of oil equivalent (Mtoe), that is approximately 5.4 toe per inhabitant. This level was higher than the consumption per capita in the neighbouring countries and the EU average. Among the compared countries, the United States was the only country showing higher gross inland energy consumption per inhabitant.

Note

The data for the EU is the sum of the gross inland consumption of the 15 EU countries divided by the total population of the EU.

	97	93^97
Belgium	5.41	5.08
Germany	4.19	4.17
France	4.15	4.08
Netherlands	4.79	4.74
EU	3.76	3.69
Japan	4.08	3.93
United States	8.10	7.94



*toe = tonnes of oil equivalent.

Source: own calculations based on: Gross inland consumption: Eurostat (2000), Energy balance sheets, 1997-1998; For EU, Japan and United States: European Commission (2000), Annual Energy Review 1999. Population: European Commission (2000), AMECO database.

2. Energy intensity - toe per 1000 ECU GDP*

In 1997, only the United States exceeded the Belgian energy intensity. The Belgian GDP energy intensity had a strong negative growth between 1980 and 1990, as a result of important structural changes in the structure of industrial production and improvements in energy efficiency due to high energy prices. This tendency seems to be slightly inverted since the beginning of the 1990s. One has to bear in mind that several factors of different nature influence the evolution of the energy intensity. The importance of the energy intensive activities forming the GDP is an obvious determinant. Two other elements influence just as much this evolution: the growth of the transport demand and the average annual climate conditions, which has a direct impact on the heating consumption.

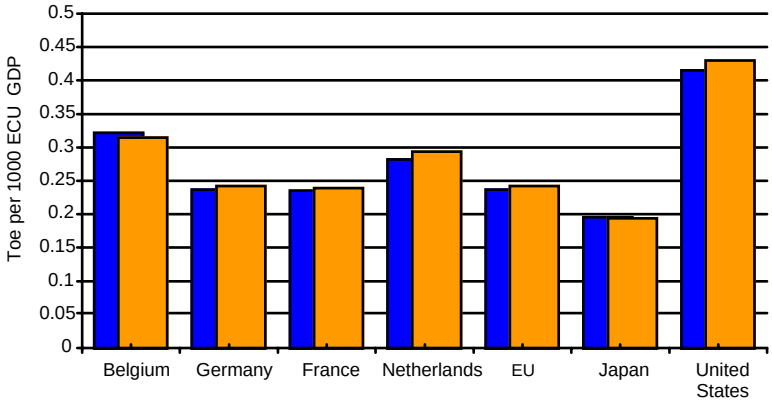
Definition

Ratio of the gross inland energy consumption to the GDP at 1990 market prices.

Note

The data for the EU is the ratio of the total gross inland energy consumption of the 15 EU member countries to the total GDP of these countries at 1990 market prices.

	97	93^97
Belgium	0.32	0.31
Germany	0.24	0.24
France	0.24	0.24
Netherlands	0.28	0.29
EU	0.24	0.24
Japan	0.20	0.19
United States	0.42	0.43



*toe = tonnes of oil equivalent.

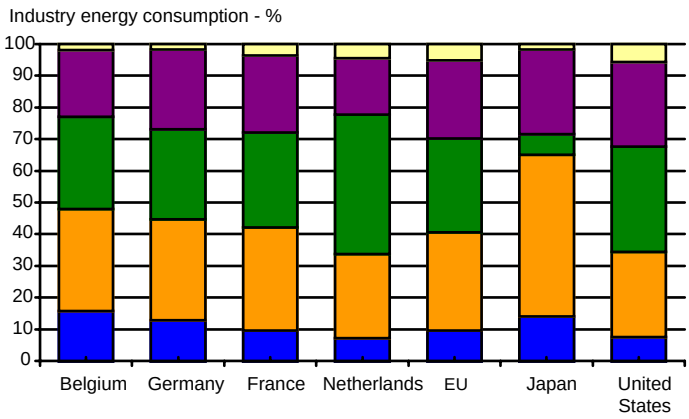
Source: Own calculations based on: Gross inland consumption: Eurostat (2000), Energy balance sheets, 1997-1998; For EU, Japan and United States: European Commission (2000), Annual Energy Review 1999. GDP: European Commission (December 1999), AMECO database.

3. Structure of industry energy consumption - % for 1998

The energy consumption of Belgian industries is relatively diversified. It is made up by petroleum products (32%), natural gas (29%), electricity (21%) and by 15.8% of coke and coal. The rest is derived gas, derived heating and renewable energy.

Note Data for energy consumption by industry include feedstock. The figure for the EU gives the structure of energy consumption by industry for the 15 EU member countries.

	98				
	Coal	Oil	Gas	Electricity	Other
Belgium	15.77	32.13	29.12	21.07	1.90
Germany	12.90	31.82	28.37	25.18	1.73
France	9.52	32.59	30.04	24.24	3.61
Netherlands	7.27	26.45	43.94	17.86	4.48
EU	9.53	31.00	29.72	24.55	5.20
Japan	14.10	51.00	6.41	26.83	1.66
United States	7.45	26.89	33.32	26.63	5.71



Source: OECD - IEA (2000), Energy balances of OECD countries, 1997-1998.

C. National production and dependency

1. Self-sufficiency in energy consumption - %

The share of the gross inland energy consumption that is satisfied by national production is low in Belgium. This shows a strong energy dependency for primary energy imports. Only Japan presents a higher dependency than Belgium. In order to minimise the risks related to a high degree of dependency, Belgium has strongly diversified its contracts of fuel supply.

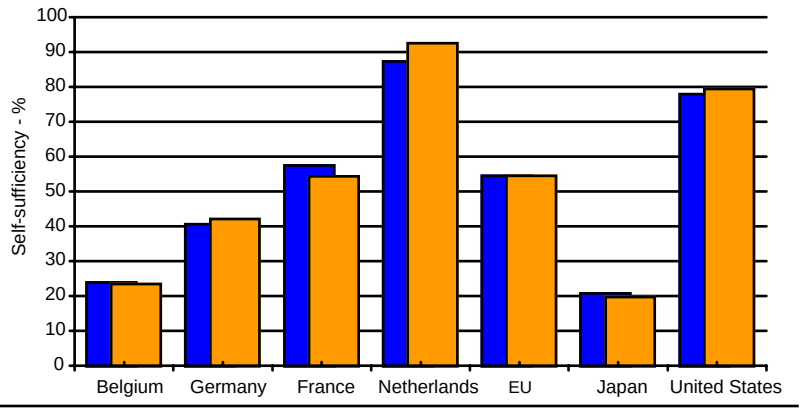
Definition

Ratio of total primary energy production and recovered products to gross inland energy consumption.

Note

This ratio gives an indication for the energy import dependency of a country: a low ratio indicates a high reliance on imports since inland consumption is poorly satisfied by domestic production. The data for EU is the ratio of the total primary energy production and recovered products of the 15 EU member countries to the total gross inland consumption of these countries.

	97	93^97
Belgium	23.84	23.44
Germany	40.60	42.09
France	57.47	54.40
Netherlands	87.33	92.47
EU	54.53	54.45
Japan	20.78	19.75
United States	77.98	79.43



Source: Own calculation based on: Gross inland consumption: Eurostat (2000), Energy balance sheets, 199-1998; For EU, Japan and United States: European Commission (2000), Annual Energy Review 1999. Primary production: OECD - IEA (2000), Energy balances of OECD countries, 1997-1998.

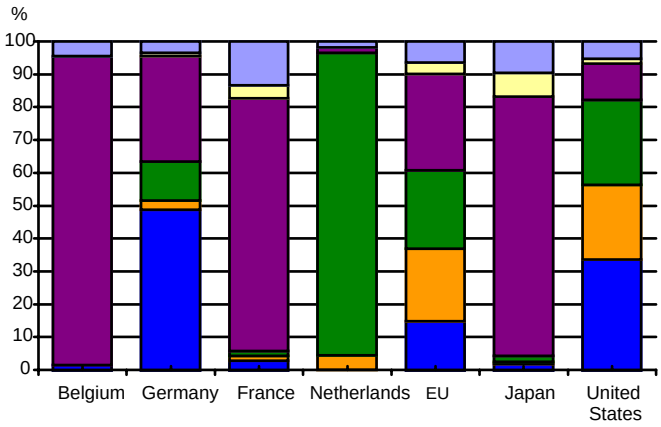
2. Structure of primary energy production and recovered products - % for 1998

The structure of primary energy production depends on the natural resources available in a country. While Germany and France have got coal-mines left to explore, Belgium recovers a marginal quantity of coal. The proportion of nuclear energy is dominating in Belgium, with almost 94% of the primary energy production. In France and in Germany, nuclear energy represents respectively 76.9% and 32% of the primary energy production. In the Netherlands, where the production of natural gas is very important, the nuclear energy does not represent more than 1.58%. The proportion of hydro energy is rather low in the countries under review. Although the hydropower energy potential is highly exploited in Belgium, it remains negligible due to the topography. The production of energy from wind is also very limited. The small size of the coastal area and the lack of open land exposed to wind restrain the potential of development of wind energy in Belgium. In Belgium, the use of biomass to produce energy is less developed than in Europe but it should benefit from the development of waste sorting programmes.

Note Other productions include the production of renewable energies (the production of energy from solar, geothermal tide, wind, etc.) and the production of waste. The hydro energy does not include electricity output from pumped storage plants. The data for EU gives the composition of primary energy production and recovered products of the 15 EU member countries.

98

	Coal	Crude oil and NGL	Natural Gas	Nuclear heat	Hydro energy	Other
Belgium	1.48	0.00	0.00	93.91	0.23	4.37
Germany	48.80	2.72	11.92	32.06	1.13	3.38
France	2.84	1.52	1.40	76.91	4.06	13.27
Netherlands	0.00	4.43	92.16	1.58	0.02	1.81
EU	14.88	21.96	23.90	29.32	3.45	6.49
Japan	1.84	0.68	1.85	78.77	7.24	9.63
United States	33.63	22.70	25.94	10.98	1.49	5.27



Source: OECD - IEA (2000), Energy balances of OECD countries, 1997-1998.

D. Efficiency in electricity generation

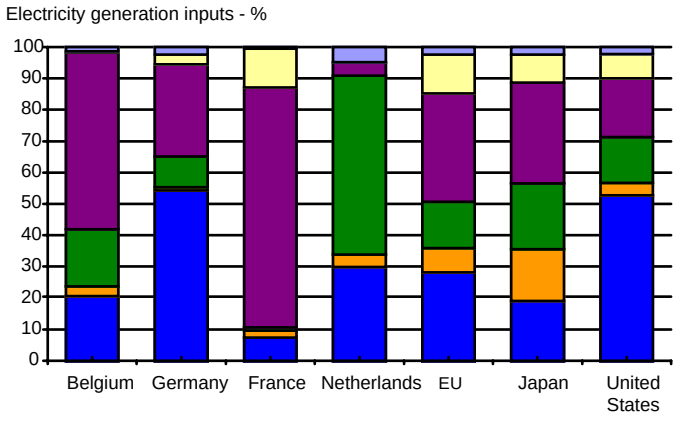
1. Inputs for electricity generation - % for 1998

In Belgium, nuclear energy stands for almost 60% of the inputs for electricity production. Only in France, the nuclear inputs are more important. In the Netherlands and Germany, natural gas and coal are respectively the dominating inputs.

Note This graphic gives the share of the different fuels used for the generation of electricity. The data for EU gives the share of the different fuels used for the total electricity generation of the 15 EU member countries.

98

	Coal	Oil	Gas	Nuclear energy	Hydro energy	Other
Belgium	20.56	3.14	18.31	56.21	0.47	1.31
Germany	54.22	1.15	9.83	29.26	3.12	2.42
France	7.36	2.30	0.98	76.54	12.24	0.58
Netherlands	29.92	3.87	57.02	4.18	0.12	4.89
EU	28.10	7.73	14.83	34.61	12.34	2.39
Japan	19.11	16.40	21.07	32.07	8.93	2.42
United States	52.75	3.87	14.66	18.77	7.71	2.24



Source: OECD - IEA (2000), Energy balances of OECD countries, 1997-1998.

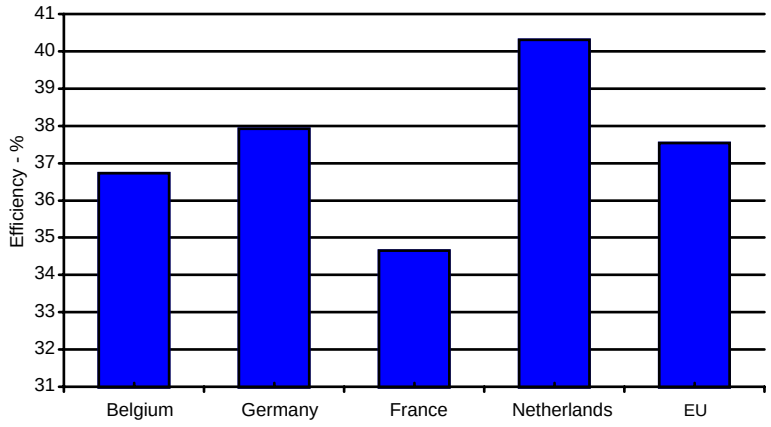
2. Efficiency of electricity generation - % for 1998

The efficiency of electricity production is directly linked to the structure of production. The electricity production in the Netherlands presents the highest efficiency degree (40.3%), followed by Germany, Belgium and France. Recent changes in the structure of electricity production should improve the Belgian average efficiency during the next years.

Definition Ratio of transformation outputs (i.e. electricity production) to transformation inputs used for electricity generation.

Note Public thermal power stations, auto-producers thermal power stations and nuclear power stations are taken into account. The data for EU gives the total transformation outputs of the 15 EU member countries divided by their total transformation inputs.

	98
Belgium	36.74
Germany	37.92
France	34.65
Netherlands	40.30
EU	37.54



Source: Own calculations based on Eurostat (2000), Energy balance sheets, 1997-1998.

E. Prices and taxation of energy

The energy prices are a function of several factors. Market competition is one of these elements. Concerning the determination of the electricity price, the structure of the input transformation as well as the efficiency of production are important. Furthermore, the taxation policy can encourage or not the consumption.

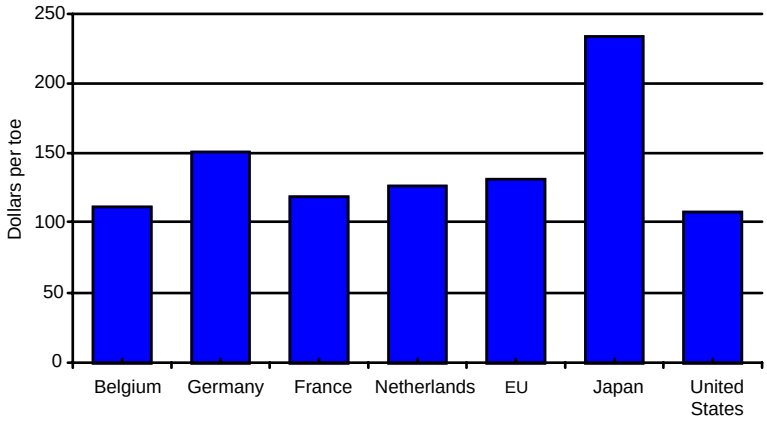
1. Index of energy prices for industry - dollars per toe for 1997*

The graph presents a weighted average of electricity and natural gas prices for energy consumption by industries. It clearly shows that Belgium offers a consumption price for enterprises that is inferior to the ones observed in Germany, the Netherlands and in France. This is partly due to the fact that in Belgium, industrial consumption of gas and electricity is not liable to taxation. Furthermore, electricity and in a larger extent natural gas prices (excluding taxes) were lower than the EU average.

Definition

The index of energy prices is compiled as a weighted average of electricity and natural gas consumption prices for industry. Taxes are included if they cannot be refunded. The prices are converted in tonnes of oil equivalent using the following coefficients for electricity and gas, respectively: 1kWh = 0.00086 toe and 1*10E7 kcal = 0.9 toe. Weightings are derived from the share of electricity and natural gas consumption by industry.

	97
Belgium	111.45
Germany	150.96
France	119.07
Netherlands	126.80
EU	131.29
Japan	233.89
United States	107.99



*toe = tonnes of oil equivalent.
Source: OECD - IEA (1999), Energy Prices and Taxes. Own calculations.

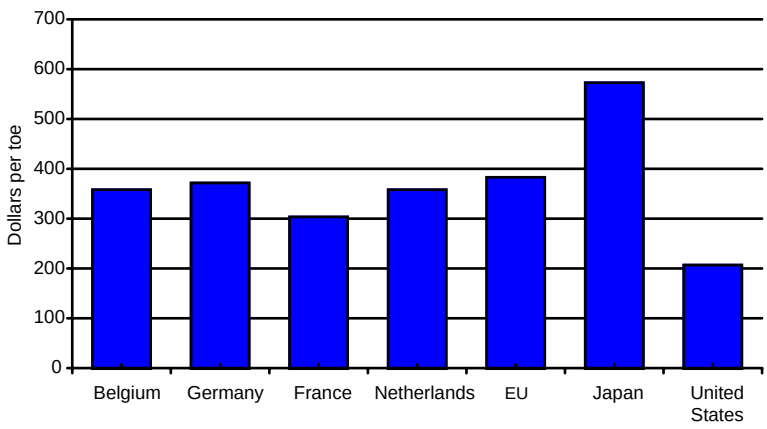
2. Index of energy prices for households - dollars per toe for 1997*

The graph presents a weighted average of electricity and natural gas prices for energy consumption by households. As compared to the neighbouring countries, Belgian households appear to pay nearly the same energy prices as the Dutch households. Belgian prices were exceeded by the average prices paid in Europe and in Germany and in a larger extent by those paid in Japan.

Definition

The index of energy prices is compiled as a weighted average of electricity and natural gas consumption prices for households (taxes included). The prices are converted in tonnes of oil equivalent using the following coefficients for electricity and gas: 1kWh = 0.00086 toe and 1*10E7 kcal = 0.9 toe, respectively. Weightings are derived from the share of electricity and natural gas consumption by households.

	97
Belgium	358.37
Germany	372.07
France	303.42
Netherlands	357.52
EU	383.50
Japan	573.17
United States	207.27



*toe = tonnes of oil equivalent.
Source: OECD - IEA (1999), Energy Prices and Taxes. Own calculations.

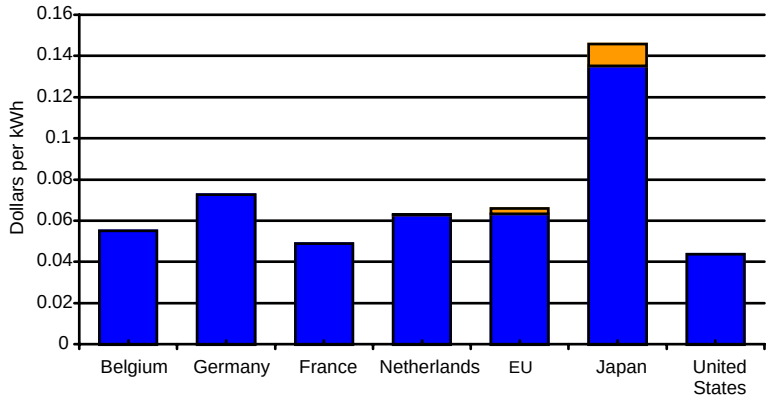
3. Average consumption price and taxes of electricity for industry - dollars per kWh for 1997*

The prices for industrial electricity consumption in Belgium were slightly lower than the European average. Among the countries under review, the electricity price is only lower in France and in the United States. In general, the prices are declining and until the liberalisation of the market, they were, in Belgium imposed by negotiations within the "Comité de contrôle du Gaz et d'électricité / Controlecomité van gas en elektriciteit". They were strongly related to the structure of production and the price of the input transformation. There are no taxes on the industrial consumption of electricity.

Note

The taxes illustrated in this graph are those to be paid by the industry as part of the transaction and which are not refundable. For the European countries, they exclude value added taxes paid by industry because they can be refunded (see OECD - IEA (1997), Energy Prices and Taxes). For European countries, the taxes include only excises (which are zero for the four European countries presented in the graph). For the United States, the data included in the graph gives the total price including taxes but the amount of taxes is not available. Electricity prices and taxes for the EU are a weighted average of electricity prices and taxes of 14 EU member countries (data for Luxembourg are not available for 1997). Weightings of prices and taxes are based on the share of each country's industrial electricity consumption in the total industrial electricity consumption of the 14 countries for which data are available.

	Price (taxes excl.)	Taxes
Belgium	0.06	0.00
Germany	0.07	0.00
France	0.05	0.00
Netherlands	0.06	0.00
EU	0.06	0.00
Japan	0.14	0.01
United States	0.04	-.-



*kWh = kilowatt per hour.

Source: Prices and taxes: OECD - IEA (1999), Energy Prices and Taxes.

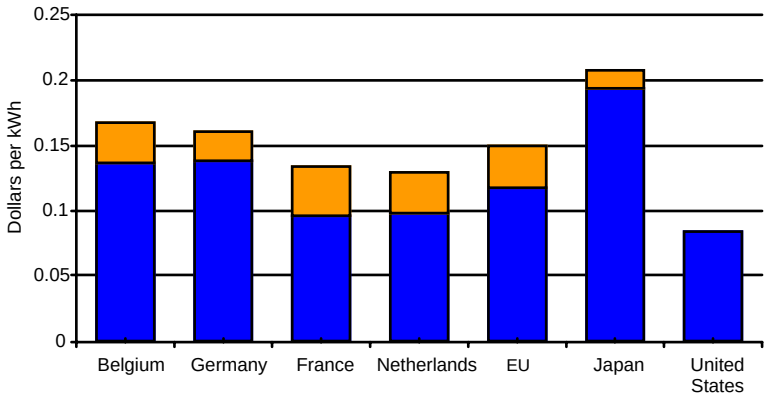
4. Average consumption price and taxes of electricity for households - dollars per kWh for 1997*

In 1997, the price differences between countries for electricity consumption by households were substantial. Including taxes, Dutch households paid some 23% less for electricity than Belgian households. In 1997, electricity consumption by households was the most expensive in Japan.

Note

Taxes are excises and VAT taxes. For the United States, the data included in the graph gives the total price including taxes but the amount of taxes is not available. Electricity prices and taxes for the EU are a weighted average of electricity prices and taxes of 15 EU member countries. Weightings of prices and taxes are based on the share of each country's residential electricity consumption in the total consumption of the EU.

	Price (taxes excl.)	Taxes
Belgium	0.14	0.03
Germany	0.14	0.02
France	0.10	0.04
Netherlands	0.10	0.03
EU	0.12	0.03
Japan	0.19	0.01
United States	0.08	



*kWh = kilowatt per hour.
Source: Prices and taxes: OECD - IEA (1999), Energy Prices and Taxes.

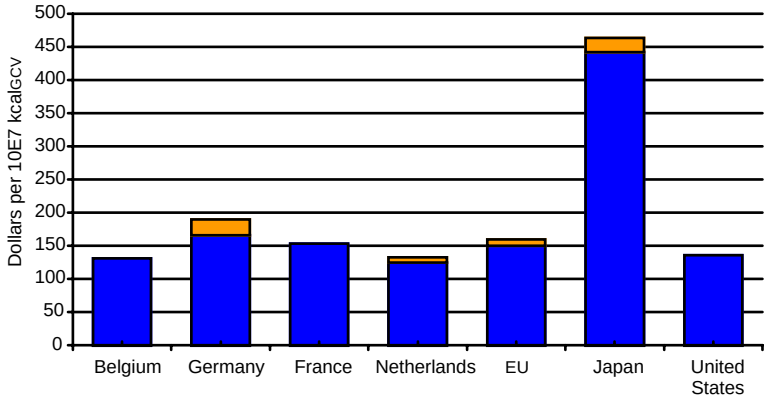
5. Average consumption price and taxes of natural gas for industry - dollars/ 10E7KcalGCV for 1997*

In 1997, the Belgian price including tax of natural gas for consumption by industry was the lowest of the compared countries. The prices excluding taxes are lower in the Netherlands, but this country taxes consumption. Natural gas prices are directly influenced by the international oil prices. Belgium benefits from the strategic location in the middle of a natural gas transport network.

Note

The taxes illustrated in this graph are those to be paid by the industry as part of the transaction and which are not refundable. For the European countries, they exclude value added taxes paid by industry because they can be refunded (see OECD - IEA (1997), Energy Prices and Taxes). So, for the European countries, the taxes include only excises. For the United States, the data included in the graph gives the total price including taxes but the amount of taxes is not available. Natural gas prices and taxes for the EU are a weighted average of natural gas prices and taxes of 10 European countries (data about Denmark, Luxembourg, Greece, Portugal and Sweden are not available for 1997). Weightings of prices and taxes are based on the share of each country's industrial natural gas consumption in the total electricity consumption of the 10 countries for which data are available.

	Price (taxes excl.)	Taxes
Belgium	131.32	0.00
Germany	165.81	24.18
France	152.88	0.00
Netherlands	124.26	8.62
EU	149.60	9.60
Japan	441.77	22.09
United States	135.66	-.-



*kcalGCV = kilocalorie of gross calorific value.
Source: OECD - IEA (1999), Energy Prices and Taxes.

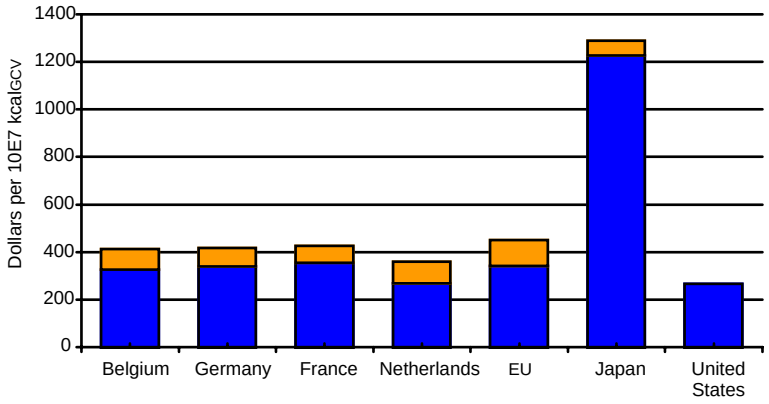
6. Average consumption price and taxes of natural gas for households - dollars/ 10E7KcalGCV for 1997*

Prices (including taxes) for natural gas consumption by households are substantially higher in France, Belgium and Germany than in the Netherlands. However, among these countries, the share of taxes (excise and VAT) in the consumption price is the highest in the Netherlands. Actually, consumption price differences are mainly due to differences in prices excluding taxes. For example, the price paid for natural gas (excluding taxes) by French households was around 24% higher than the price paid by Dutch households.

Note

Taxes are excises and VAT taxes. For the United States, the data included in the graph gives the total price including taxes (the amount of taxes is not available). Natural gas prices and taxes for the EU are a weighted average of gas prices and taxes of 12 EU member countries (data for Greece, Portugal and Sweden are not available). Weightings of prices and taxes are based on the share of each country's residential gas consumption in the total consumption of the countries for which data are available.

	Price (taxes excl.)	Taxes
Belgium	325.63	87.74
Germany	338.38	78.55
France	353.95	72.92
Netherlands	269.03	91.18
EU	341.14	110.18
Japan	1227.92	61.40
United States	267.29	-.-



*kcalGCV = kilocalorie of gross calorific value.
Source: Prices and taxes: OECD - IEA (1999), Energy Prices and Taxes.

F. Liberalisation of the electricity market

1. Implementation of the European electricity directive for key markets

The liberalisation of the electricity and gas market within the EU should deeply modify the energy sector. The European Union electricity directive has the objective of establishing common rules for the generation, transmission and distribution of electricity.

The federal law on the organisation of the electricity market was adopted on 29 April 1999 in Belgium (European directive 96/92/EC). Given the Belgian institutional structure, each region will also have to introduce those changes, which relate to their own competencies.

Member states of the EU had until 19 February 1999 to bring into force the European directive. As a consequence of its institutional structure, Belgium was allowed to transpose the implementation until February 2000 but at 29 April 1999 it implemented the new law concerning the electricity market. The boxed text compares the principal characteristics for four countries at 19 February 1999 and gives the indicators over the qualification conditions and the degree of liberalisation within the different markets.

Concerning electricity generation, all the countries compared, choose for the authorisation procedure. This means that an open and impartial procedure decides whether a company who wants to build new power plants can do this. In France, this system in combined with tendering. With this procedure, a designated authority decides what new capacity is required and it solicits tenders (CEPR & SNS (1999), A European market for electricity?).

For transmission and distribution, apart from Germany, which choose for a negotiated third party access, Belgium, France and the Netherlands adopted the regulated third party access. In case of negotiated third party access, producers and consumers of electricity will contract supplies directly with each other, but they will have to negotiate access to the network, tariffs and other conditions with its operator. In case of regulated third party access, prices for the use of the transmission and distribution systems can not be negotiated. For the international transport of electricity, Belgium adopted a negotiated third party access.

Since the implementation of the new Law, all consumers of more than 100 gWh are eligible to participate in the market opening in Belgium. This eligibility treshold is higher than in France consumers of more than 16 gWh can already choose their producers. In the Netherlands, consumers of at least two megawatts are eligible while in Germany eligibility applies to all consumers and distributors. It should be noted that this data concerns the situation at 19/02/1999. In the mean time the electricity market is already more open in these countries. Also in Belgium the Government has decided to speed up the liberalisation process. On May 5 (2000), the Inter-ministerial Conference on Energy decided that final clients with electricity consumption of 20 gWh or more will become eligible as of 01/07/2000 and on 31/12/2000 at the latest. At the latest on 31/12/2002, final clients with electricity consumption of 10 gWh or more will become eligible. The regions are also involved in the energy markets in Belgium and mainly in the areas of the distribution grid and the promotion of sustainable energy. On July 5 (2000), the Flemish Parliament approved the decree regarding the liberalisation of the electricity

market in Flanders. In Wallonia this should be approved by the Parliament before the end of the year 2000. The Brussels Region will also reform electricity distribution. A project is currently under consideration (Source: Economic reform of the products, services and capital markets: Belgian report for the European Union, November 2000).

Following the European directive, the market opening occurs in gradual stages: first step on 19 February 1999, second step on 19 February 2000 and third step on 19 February 2003. For the first step, about 25% should be opened for market competition. The second step will enlarge the degree of market opening to about 28%. In the third step, 33% of the market should be opened. In Germany, 100% of the market is already opened to competition. Belgium respects already the minimum threshold foreseen for 2003.

	Belgium	Germany	France	Netherlands
Production:	Authorisation	Authorisation	Authorisation with complementary tendering	Authorisation
Transmission:	Regulated TPA* for inland Negotiated TPA for international	Negotiated TPA	Regulated TPA	Regulated TPA
Eligible clients at 19/02/1999:	Consumers of more than 100 gWh**	All consumers and distributors	Consumers of more than 40 gWh	Consumers of at least two megawatts
% market opening at 19/02/1999:	33	100	25	32

*TPA: Third party access; gWh = Gigawatt.
Source: SNS & CEPR (1999), A European market for electricity?

VIII Environment

A. Belgium's position

- Generation of municipal waste
- Glass recycling rates
- Total annual emission of NH_3, VOC (relates to GDP)
- Total annual emission of CO_2 (related to GPD)
- Total annual emission of Nox, Sox, CO (related to GDP)
- Apparent consumption of commercial fertilisers (NPK) (per km^2)
- Public R&D expenditures for environment protection
- Intensity of fresh water abstraction
- Paper and cardboard recycling rates
- Pollution abatement and control expenditure of public sector

The final goal of environmental policies is to reach a high level of environmental performance and to reduce the costs of environmental degradations resulting from a large number of economic and social activities. These policies influence the competitiveness of industrial activities in many respects. On the one hand, by imposing regulations, standards and taxes, governments affect negatively the competitiveness of industries. In the short run, firms' profitability can be affected negatively by the expenditures. On the other hand, environmental policies can be good for competitiveness of industries. Environmental legislation stimulates investment in cleaner and more efficient technologies that can lead in the longer term to efficiency and competitive advantages. Simultaneously, the production of clean products and the adoption of a green image (for example, by adopting more conscious and pro-active behaviour towards environment) can lead the enterprise to create environmental related marketing advantages. Moreover, governments and buyers are not the only driving force to the good environmental performance of enterprises, financial stakeholders are another. They believe more and more that firms that do not comply with the environmental standards may get a poorer financial position in the future. In the case of air management, Belgium has a history of high emissions of CO_2, the most important cause of greenhouse gas, relative to its GDP. In 1998, Belgium ameliorates his relative position, but the emissions of CO_2 to its GDP are still higher than that of the neighbouring countries. Belgium has to be careful with his water management since its intensity of fresh water abstraction related to the available resources is one of the highest among the compared countries. This can be partly explained by the high population density and by this the very low renewable fresh water resources per capita. The generation of municipal and household waste is relatively low in Belgium and the recycling rate of glass is good in Belgium, contrary to these for paper and cardboard,

which is lagging far behind the other countries. But Belgium should achieve better rates in the future for paper and cardboard recycling as a result of the extension of the participating population to the sorting programmes. A partly explanation for the relative low expenditure for pollution abatement and control by the public sector can be found in the fact that the data refers only to regional administrations. Local authorities have also a significant proportion in the public environment expenditures and although the federal expenditure on environment seems to be low, there are important transfers from the federal government to regional and local authorities. The total public pollution abatement and control expenditure is around 0.71% of GDP in 1996. This is still lower than our neighbouring countries (Source: OECD (1998), Environmental Performance Review of Belgium). The Belgian government has a better score in terms of the percentage of total R&D expenditures that is spend on environmental protection. This chapter is based on the biannual OECD Environmental Data Compendium (1999) that tries to offer objective, reliable and comparable environmental statistics and information at international level. More indicators about the environmental performance of Belgium can be found in the report of the OECD reviewing the environmental performance of Belgium (OECD (1998), Environmental Performance Review of Belgium).

B. Emissions of pollutants

The indicators presented in this section concern the performance of countries on a few traditional air pollutants. The ratios of quantities of emissions to GDP provide useful indicators to compare the pressure on the environment imposed by human activities in different countries. However comparisons between countries must be interpreted carefully. First, definitions and methods to measure quantities of emissions may differ from country to country. Second, differences among countries do not only depend on the environmental performance only but they also depend on production structures.

CO_2 is the greenhouse gas that contributes for the largest proportion to the global warming potential. The nitrogen oxides (NO_x) emissions contribute, together with the sulphur oxides (SO_x) and emissions of ammonia (NH_3), to acid precipitation and soil acidification. Emissions of volatile organic compounds (VOC_s) along with NO_x are the main precursors of photochemical air pollution. Results for CO emissions are presented because they can cause direct adverse health effects by interfering with the absorption of oxygen by red blood cells (OECD (1998), Environmental Performance Review of Belgium, Paris, June 1998).

CO_2 emissions are mainly produced by transport activities, power stations and industrial processes. Transport, power stations, district heating and industrial combustion plants mainly produce SO_x and NO_x. Agricultural activities and particularly over-utilisation of fertilisers are the major sources of NH_3 emissions. VOC emissions are mainly the result of non-combustion processes, the use of solvents and road traffic. Road traffic and combustion plants of residential, commercial and industrial activities are the main causes of CO emissions.

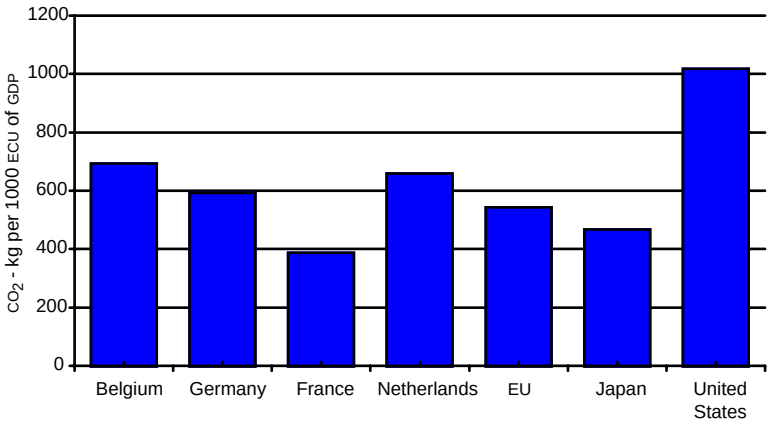
It should be noticed that, if emission indicators are good indicators of the environmental pressure, they are poor indicators of the damage incurred by the country itself. Indeed, because of transboundary emissions, the deposition of pollutants in a country depends not only of indigenous deposition (country by itself) but also to a large extent of the emissions by the neighbouring countries. This is particularly true for a small country like Belgium, centrally located between bigger countries. Moreover the effects and chemical interactions of the different emissions are not always clear.

1. Total annual emissions of CO_2 - kg CO_2 per 1.000 ECU of real GDP (1990 prices) for 1998

Results show that the ratio of CO_2 emissions to GDP in Belgium was only exceeded by the United States. In Belgium, about 693 kg of CO_2 was emitted in 1998 for every 1000 ECU of GDP. This was almost twice the emissions in France (amounting to 387 kg for 1000 ECU GDP in 1998).

Note The figure for Japan is for 1997. The figure for the EU gives the ratio of the total annual CO_2 emissions of 14 EU member countries (no data for Luxembourg) to their total GDP at 1990 prices.

	98
Belgium	693.04
Germany	592.76
France	387.48
Netherlands	659.29
EU	543.54
Japan	466.63
United States	1018.43



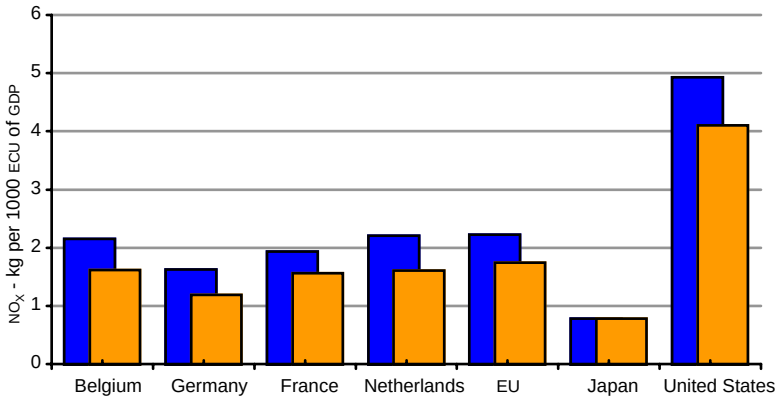
Source: http://www.UNFCCC.int and GDP: European Commission (Dec. 1999), AMECO database.

2. Total annual emissions of NO_X - kg NO_X per 1.000 ECU of real GDP (1990 prices) for 1998

In Belgium, the ratio of NO_X emissions to GDP decreased between 1993 and 1998. The NO_X emissions per 1000 ECU of GDP in Belgium were approximately at the same level as in the Netherlands but above the emissions of NO_X in France and in Germany. In 1998, the ratio of NO_X emissions to GDP decreased to 1.61 kg. in Belgium. But, this is still slightly higher than our neighbouring countries.

Note The figure for Japan is for 1997. The figure for the EU gives the ratio of the total annual emissions of NO_X of 14 EU member countries (no data available for Luxembourg) to their total GDP at 1990 prices.

	93	98
Belgium	2.16	1.61
Germany	1.63	1.19
France	1.93	1.56
Netherlands	2.21	1.60
EU	2.22	1.74
Japan	0.75	0.78
United States	4.93	4.10



Source: http://www.UNFCCC.int and GDP: European Commission (Dec. 1999), AMECO database.

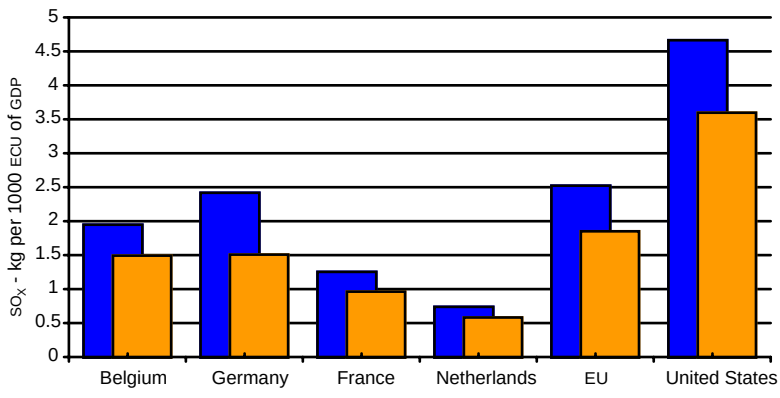
3. Total annual emissions of SO_X - kg SO_X per 1.000 ECU of real GDP (1990 prices) for 1998

The ratio of SO_X emissions to GDP differs rather widely among the countries compared. In 1995, the Netherlands emitted 0.58 kg of SO_X per 1000 ECU GDP. This ratio was much below the EU average which amounted to 1.85 kg per 1000 ECU GDP for the same year. Belgium's position is somewhat intermediate with SO_X emissions estimated at 1.5 kg per 1000 ECU GDP. Between 1992 and 1996, Germany has reduced remarkably its emissions of SO_X (up from 3307 kilotons in 1992 to 1543 kilotons in 1996). In the United States and in Germany, 63% of the emissions were due to electricity generation in 1995. This percentage amounted to 37% in France, 31% in Belgium and 12% in the Netherlands. In 1996, Belgium had 1.44 kg of SO_X emissions per 1000 ECU GDP. This ratio was the highest among its neighbouring countries, even higher than Germany that had 1.08 kg of emissions relative to GDP in 1996.

Note

The figure for the EU gives the ratio of the total annual SO_X emissions of the 15 EU member countries to their total GDP at 1990 prices.

	92	95
Belgium	1.95	1.49
Germany	2.42	1.51
France	1.25	0.96
Netherlands	0.74	0.58
EU	2.52	1.85
Japan	0.37	-.-
United States	4.66	3.60



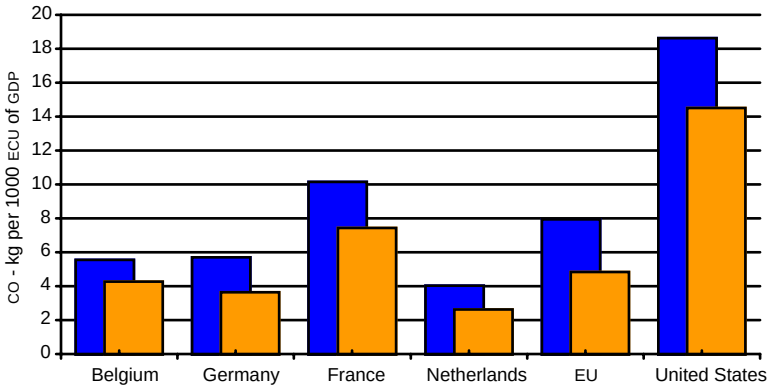
Source: Emissions: OECD (1999), Environmental Data Compendium. GDP: European Commission (Dec. 1999), AMECO database.

4. Total annual emissions of CO - kg CO per 1.000 ECU of real GDP (1990 prices) for 1998

In Belgium, the ratio of CO emissions to GDP decreased between 1993 and 1998. This is especially due to a reduction in the CO emissions since 1996. From 1990 till 1996 the emissions of CO still increased. Over the same period, also the neighbouring countries have reduced considerably their CO emissions.

Note The figure for Japan is for 1997. The figure for the EU gives the ratio of the total annual CO emissions of 14 EU member countries (no data for Luxembourg) to their total GDP at 1990 prices.

	93	98
Belgium	5.56	4.28
Germany	5.70	3.63
France	10.15	7.44
Netherlands	4.04	2.63
EU	7.93	4.84
Japan	1.55	1.42
United States	18.63	14.52



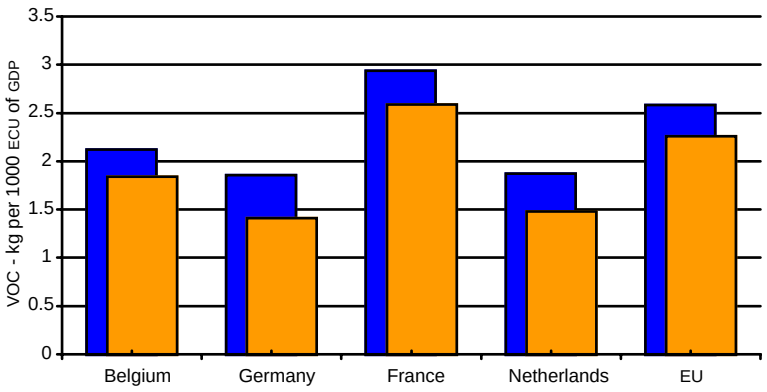
Source: http://www.UNFCCC.int and GDP: European Commission (Dec. 1999), AMECO database.

5. Total annual emissions of VOC - kg VOC per 1.000 ECU of real GDP (1990 prices) for 1998

The ratio of VOC emissions to GDP decreased slightly during the period 1992-1995. This ratio is more favourable in Belgium than in France and in the EU but less favourable than in Germany and in the Netherlands.

Note The figure for the EU gives the ratio of the total annual VOC emissions of 15 EU member countries to the total GDP at 1990 prices.

	92	95
Belgium	2.12	1.84
Germany	1.86	1.41
France	2.94	2.59
Netherlands	1.87	1.48
EU	2.58	2.26
United States	4.10	3.74



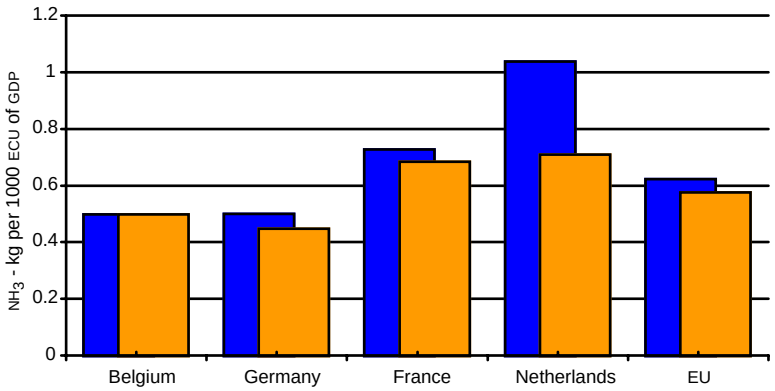
Source: Emissions: OECD (1999), Environmental Data Compendium; GDP: European Commission (Dec. 1999), AMECO database.

6. Total annual emissions of NH_3 - kg NH_3 per 1.000 ECU of real GDP (1990 prices) for 1998

Compared to its neighbouring countries, Belgium is responsible for low ammonia emissions: a quantity of 0.5 kg emitted per 1000 ECU GDP was estimated for 1994. Concerning NH_3, the less polluting country was Germany with a ratio of 0.45 kg of NH_3 per 1000 ECU GDP. In 1994, emissions of France and the Netherlands were above the EU average. In Belgium, agriculture is responsible for these emissions for more than 90%. It has to be noticed that these results have to be interpreted with caution. Indeed, the NH_3 emissions are strongly related with the importance of the agricultural sector in a country.

Note The figure for the EU gives the ratio of the total annual NH_3 emissions of 15 member countries to their total GDP at 1990 prices.

	91	94
Belgium	0.50	0.50
Germany	0.50	0.45
France	0.73	0.68
Netherlands	1.04	0.71
EU	0.62	0.58



Source: Emissions: EMEP MSC-W (1996), Transboundary air pollution in Europe; GDP: European Commission (Dec. 1999), AMECO database.

C. Fertilisers and pesticides use

Heavy use of fertilisers and pesticides by the agricultural sector can have important consequences for water and soil quality. They are to a large extent responsible for the qualitative degradation of the flora and fauna, with as consequences a loss of biodiversity, the accumulation of persistent organic chemicals in surface and ground waters, the affectation of the quality of surface water, etc.

Compared to the other countries under review, the agricultural sector in the BLEU (the Belgian Luxembourg Economic Union) makes intensive use of fertilisers and pesticides.

1. Apparent consumption of commercial fertilisers (NPK) - tonnes per square km

In 1997, for 1 square kilometre in the BLEU, 34.45 tonnes of commercial fertilisers were used. Two countries scored worse than Belgium for this indicator: the Netherlands and Japan (51 and 35 tonnes per square km of cropland, respectively). In the Netherlands, the very high fertilisation of croplands is partly responsible for the high NH_3 emissions.

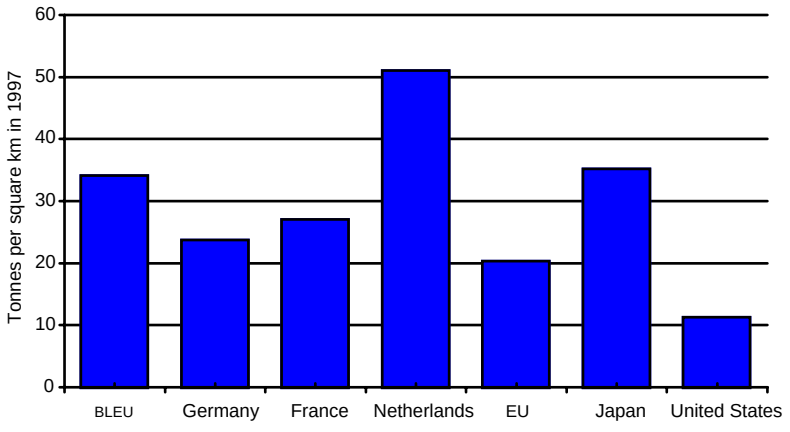
Definition

Ratio of the total apparent consumption of the commercial fertilisers to total area of arable and permanent cropland. "Arable refers to all land generally under rotation, whether for temporary crops (double cropped areas are counted only once) or meadows, or left fallow. Permanent crops are those that occupy land for a long period and do not have to be planted for several years after each harvest. The data concerning total agricultural consumption of commercial fertilisers refer to the nitrogen (N) and phosphoric acid (P205) contents of nitrogenous and phosphate fertilisers. Moreover it includes the K2O content of commercial potash, muriate, nitrate and sulphate of potash, manure salts, kainit and nitrate of soda potash" (see: OECD (1999), Environmental Data Compendium).

Note

The figure for the EU gives the ratio of the total annual consumption of the commercial fertilisers of the EU to the total area of arable and permanent crops.

	97	97//92
BLEU	34.15	-1.91
Germany	23.69	-0.49
France	27.05	2.36
Netherlands	51.02	-2.04
EU	20.30	1.40
Japan	35.16	-2.31
United States	11.29	2.05



(//) Average Growth Rates.

Source: Consumption of fertilisers and area of arable and permanent crops: OECD (1999), Environmental Data Compendium. Own calculations.

2. Consumption of pesticides - kg active ingredients per hectare for 1997*

The BLEU along with the Netherlands and Japan are the biggest consumers of pesticides among the countries under review. About 11 kg of pesticides per hectare of cropland was consumed in the BLEU in 1993. In the Netherlands this was 10.5 kg in 1997 (against 11.12 kg in 1995) and 14.45 kg per hectare in Japan (in 1993).

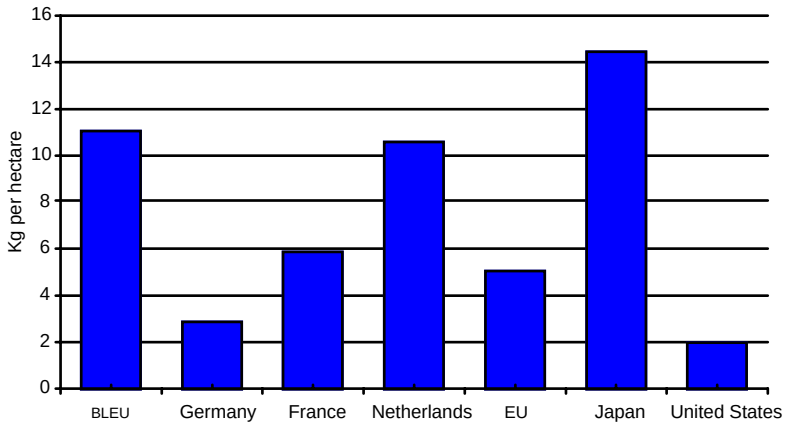
Definition

Ratio of the total consumption of pesticides to the total area of arable and permanent cropland. "Arable refers to all land generally under rotation, whether for temporary crops (double cropped areas are counted only once) or meadows, or left fallow. Permanent crops are those that occupy land for a long period and do not have to be planted for several years after each harvest. Active ingredients are the substances in a commercial pesticide that cause the desired effects on agriculturally harmful fungi, plants or animals" (see: OECD (1999), Environmental Data Compendium).

Note

The figure for the EU gives the ratio of the total annual consumption of pesticides of the EU to the total area of arable and permanent crops. Data for Belgium, Japan and the United States concern 1993.

	97
BLEU	11.04
Germany	2.87
France	5.86
Netherlands	10.59
EU	5.05
Japan	14.45
United States	1.96



* or latest year available, i.e., Belgium, Japan, US: 1993.

Source: Consumption of pesticides and area of arable and permanent crops: OECD (1999), Environmental Data Compendium. Own calculations.

D. Waste

1. Annual generation of municipal and household waste - kg per capita for 1997*

In 1996, municipal waste generation in Belgium reached 478kg per person in one year of which 357 kg was generated by households. The United States (713 kg per person per year) and the Netherlands (558 kg per person per year) were the two biggest producers of municipal wastes in 1997. In France, the production of waste by municipalities was estimated slightly above the level of Belgium (about 491 kg per person per year).

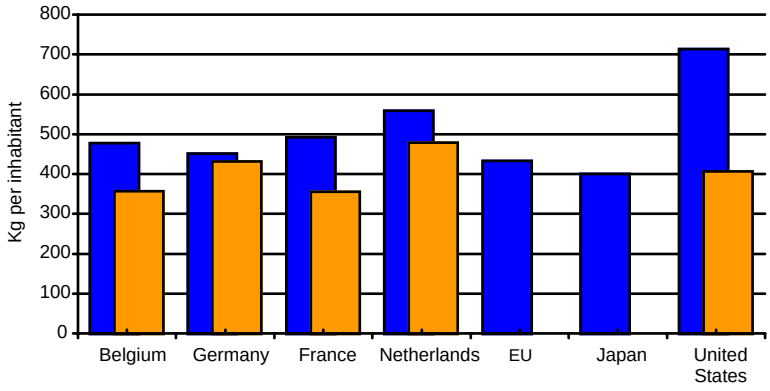
Definition

"In general, municipal waste is waste collected and treated by or for municipalities. It covers waste from households, including bulky waste, similar waste from commerce and trade, office buildings, institutions and small businesses, yard and garden waste, street sweepings, the content of litter containers, and market waste. The definition excludes waste from municipal sewage networks and treatment, as well as municipal construction and demolition waste." The household waste for the Netherlands includes waste paper collected by schools, churches and sportclubs (see OECD (1999), Environmental Data Compendium).

Note

The figure for the EU gives the ratio of the total annual waste generation of the 15 EU member countries to the total population of the EU.

	97	
	Municipal waste	Household waste
Belgium	477.56	356.79
Germany	450.64	431.46
France	491.38	354.89
Netherlands	558.32	478.57
EU	433.02	-.-
Japan	400.55	-.-
United States	712.94	406.37



* or latest year available, i.e., for generation of municipal waste in Belgium: 1996.

Source: Generation of municipal and household waste: OECD (1999), Environmental Data Compendium; Population: European Commission (Dec. 1999), AMECO database.

2. Waste recycling rates - % of apparent consumption for 1997*

The poor performance of the Netherlands in terms of generation of municipal wastes is outweighed by very high recycling rates for glass (82% of the apparent consumption) and paper and cardboard (62% of the apparent consumption). Concerning glass, Belgium has achieved a relatively good position with a recycling rate of 75%. However, for paper and cardboard, Belgium still lagged behind all other countries with a recycling rate of 16%. More recent data should show considerable improvements of the Belgian position regarding recycling rates since municipal waste collection and sorting programmes have been extended to a larger share of the population.

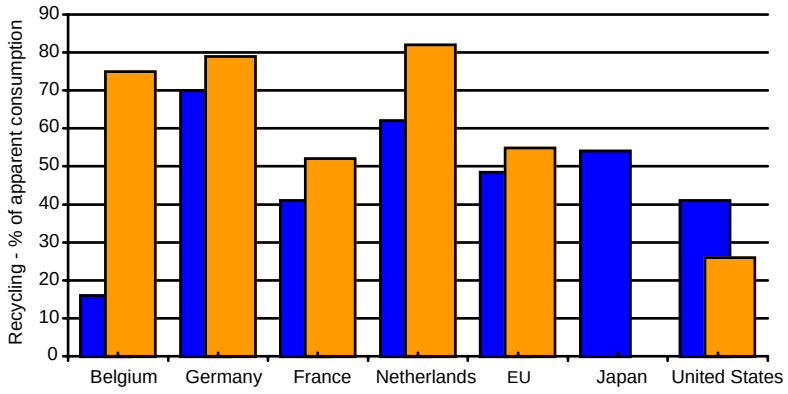
Definition

"Recycling is defined as any reuse of material in a production process that diverts it from the waste stream, except reuse of material as fuel. The recycling rate is the ratio of the quantity collected for recycling to the apparent consumption (domestic production + imports - exports) (see: OECD (1999), Environmental Data Compendium).

Note

For the United States, data refer to the material diverted from the municipal waste stream. Recycling rates are based on amounts of waste generated rather than on apparent consumption. For Belgium, paper and cardboard recycling data refer to waste recycled (incl. net imports for recycling) as % of apparent consumption. Data for the Netherlands concerning the glass-recycling rate refer to the glass collected in bottle banks as percentage of sale on domestic market. Returnable bottles are excluded from the Japanese glass-recycling rate; data refer to reuse of glass as culled compared to national production of glass bottles. The figure for the EU is compiled as a weighted average of 14 EU member countries recycling rates (the figure for Luxembourg is not available). Weightings of recycling rates are based on the share of each country's GDP in the total GDP of the 14 countries for which data are available.

	97	
	Paper and cardboard	Glass
Belgium	16.00	75.00
Germany	70.00	79.00
France	41.00	52.00
Netherlands	62.00	82.00
EU	48.46	54.85
Japan	54.00	-.-
United States	41.00	26.00



* or latest year available, i.e. 1994 for the US.

Source: OECD (1999), Environmental Data Compendium.

E. Water

1. Estimates of renewable fresh water resources (long term annual average) - 1000 m per capita

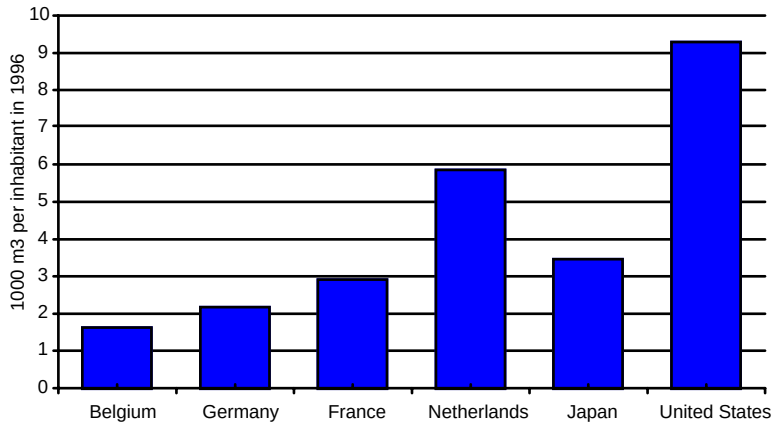
As a result of the high population density, per capita available freshwater resources in Belgium are the lowest of the countries under review. Freshwater precipitation is estimated to 27 billions of cubic meters of which 15 billions evaporated. 4 billions of cubic meters enters the country from neighbouring countries (mainly from France).

Definition

The data on the "renewable water resources is the net result of precipitation minus evapotranspiration (internal) plus inflow (total). This definition excludes any effect of (absence of) storage capacity and it represents, therefore, the maximum available quantity of fresh water over an average year. Inflow refers to water flows from neighbouring countries. Outflow represents water flows to other countries and to the sea. Inflow

as well as outflow include underground flows of surface waters, except France and the Netherlands" (see OECD (1999), Environmental Data Compendium).

	96
Belgium	1.62
Germany	2.17
France	2.91
Netherlands	5.86
EU	-.-
Japan	3.46
United States	9.30



Source: Freshwater resources: OECD (1999), Environmental Data Compendium. Population: European Commission (Dec. 1999), AMECO database.

2. Intensity of fresh water abstraction - % of available resources for 1995

The OECD estimates the share of total available resources fresh water abstracted in Belgium (42.5%) as the highest of the OECD countries. This is far above the neighbouring countries Germany (24.4%), France (23.9%) and the Netherlands (4.9%).

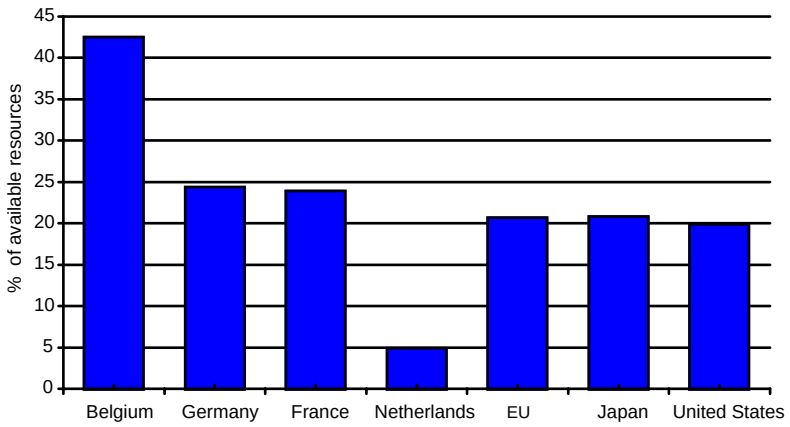
Definition

"Water abstractions refer to water taken from ground or surface water sources and conveyed to the place of use. If the water is returned to a surface water source, abstraction of the same water by the downstream user is counted again in compiling withdrawal" (see: OECD (1999), Environmental Data Compendium).

Note

The data for the intensity of fresh water abstraction is for 1995, except for the Netherlands (year = 1996).

	96
Belgium	42.50
Germany	24.40
France	23.90
Netherlands	4.90
EU	20.70
Japan	20.80
United States	19.90



Source: OECD (1999), Environmental Data Compendium.

3. Population connected to public sewerage - % of national population for 1996*

Simultaneously to the high intensity of fresh water abstraction, only 75.4% of the Belgian population were connected to waste water treatment plants in 1995. This percentage was below that of the other countries compared except in Japan. In that country, 50% of the population was connected to a public treatment facility in 1995 and 55% of the population in 1996. The Netherlands and Germany were the leaders in water treatment with 98% and 92% of the population connected to a sewerage treatment plant.

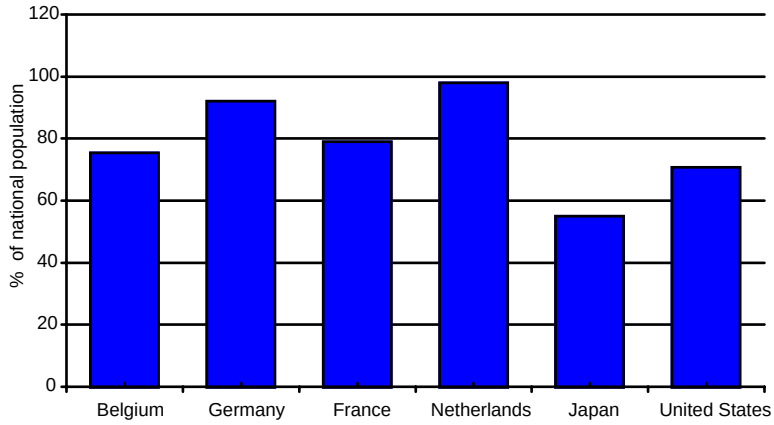
Definition

"The figure shows the percentage of national population connected to public sewerage networks and other treatment facilities (for example population connected to public sewerage and connected to waste water treatment in non-public treatment plants, e.g., industrial waste water plants). Population connected to public sewerage network but not served by any sewerage treatment is taken into account. Figures do not include individual private treatment facilities (e.g. septic tanks).

Note

"Data for France is expressed in percentage of dwellings which is considered as a good estimate of the population connected" (see OECD (1999), Environmental Data Compendium). Data for Japan and United States refer only to public treatment facilities.

	96
Belgium	75.40
Germany	92.10
France	79.00
Netherlands	98.00
EU	-.-
Japan	55.00
United States	70.80



* or latest year available, i.e. 1995 for Belgium, Germany, France and the United States.

Source: OECD (1999), Environmental Data Compendium.

F. Public expenditures for environment protection

Public sector expenditures for pollution abatement and public R&D expenditures for environment protection are two response indicators to environmental problems. They gauge the efforts taken by the public sector to improve the environment or mitigate its degradation.

1. Pollution abatement and control expenditure of public sector - % of nominal GDP for 1996*

In all the countries under review, public sector expenditures for pollution abatement and control represent a very small share of GDP. This share varies however widely among countries ranging from 0.50 in Belgium to 1.3 in the Netherlands.

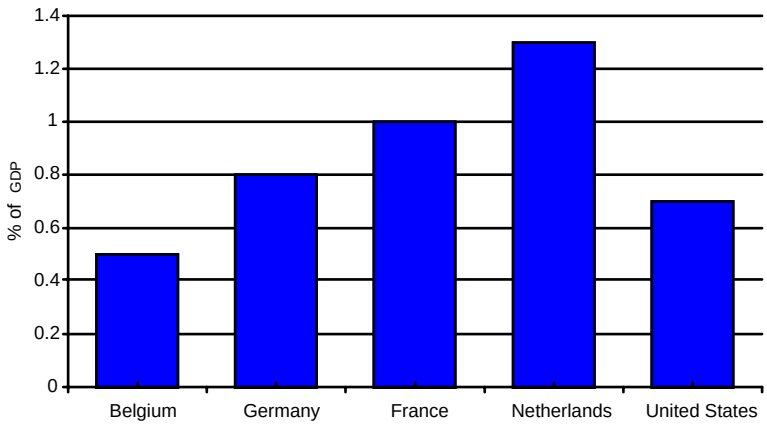
Definition

"Pollution abatement and control expenditure cover purposeful activities aimed at the prevention, reduction and elimination of pollution or nuisances that could have a harmful effect on the environment. This definition excludes activities such as the protection of endangered species, the establishment of natural parks and green belts, natural resource management and activities to exploit natural resources, such as the supply of drinking water. Also excluded is expenditure intended either for workplace protection or for the improvement of production processes for commercial and technical reasons" (see OECD (1999), Environmental Data Compendium).

Note

For Belgium, data refers to regional administrations only; federal and local (municipalities and provinces) administrative levels are excluded.

	96
Belgium	0.50
Germany	0.80
France	1.00
Netherlands	1.30
United States	0.70



* or latest year available, i.e. 1995 for the Netherlands and Germany and 1994 for the US.

Source: OECD (1999), Environmental data compendium.

2. Public R&D expenditures for environment protection - % of total R&D budget for 1997

In 1997, the share of R&D budget appropriated for environmental protection amounted to 2.2%. It was higher than in France (2%) but lower than that of the EU average and than that of the other neighbouring countries.

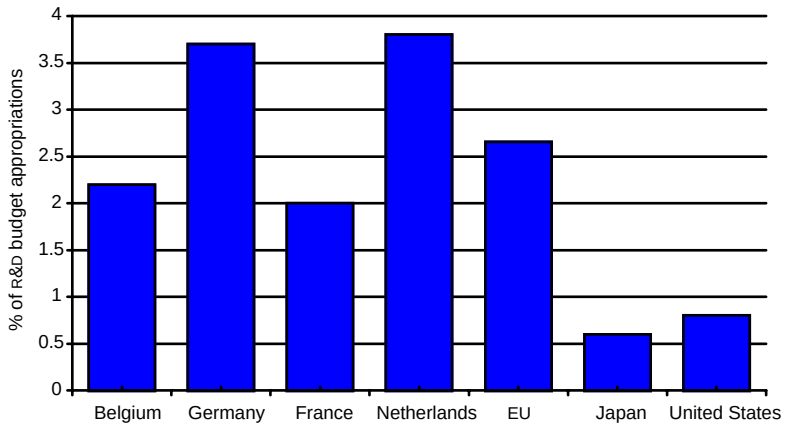
Definition

"Data refer to government budget appropriations or outlays for research and development (R&D) for the control and care of the environment, covering pollution related to air, water, soil and substrata, noise, solid waste and radiation. Data refer both to the prevention of pollution and to the identification and treatment of pollution" (see OECD (1999), Environmental Data Compendium).

Note

The figure for the EU is compiled as a weighted average of 12 EU member countries public R&D expenditures (the figure for Luxembourg, Greece and Sweden are not available). Weightings of recycling rates are based on the share of each country's R&D budget appropriations in the total R&D budget appropriations of the 12 countries for which data are available. Weightings are derived from OECD (1999), Main Science and Technology Indicators, N°2.

	97
Belgium	2.20
Germany	3.70
France	2.00
Netherlands	3.80
EU	2.65
Japan	0.60
United States	0.80



Source: OECD (1999), Environmental Data Compendium; for calculation of EU average: OECD (1999), Main science and technology indicators, Nr. 2).

IX Innovation and research and development (R&D)

A. Belgium's position

Share of gross domestic expenditure on R&D by manufacturing sector

Share of business in the funding of research by higher education institutions

Portfolio of venture capital

Gross domestic expenditure on R&D

Share of gross domestic expenditure on R&D by government

Business sector expenditure on R&D

Higher education expenditure on R&D

Share of business in the funding of research by government

Expenditure on innovation

Total researchers or university graduates

Total resident patent applications

Share of innovative firms

Innovation is important for economic growth and it determines the comparative advantages of a country on the international markets. Activities in research and development, innovation and technology may have an impact on trade performance as it increases the ability of a country to adapt trade patterns to structural changes. An increase in R&D investment should have a positive effect on competitiveness, as far as new products or processes emerge.

Measuring innovation is difficult as it can take many different forms including the introduction of new technological products and processes or the adaptations of the new products and improvements to processes. Analysis of technology performance and policies traditionally focuses on inputs (expenditure on R&D, number of research personnel, etc.) and outputs (patents and new products). On the input side, the Belgian domestic expenditure on R&D is low and it comes mostly from the industry sector and only about one fourth of it from the Government. In itself, the Belgian business sector expenditures on R&D are also low, except for the drug sector where they are rather high. Although the private sector funds a relative high share of research performed by higher education institutions, the expenditures on research and development in the higher education sector are rather low. Also in broader terms, like the expenditure on innovation or the human potential for technological innovation, Belgium experiences shortcomings. The output of the Belgium innovation process is low. On the one hand, the Belgian industry as a whole has a low number of patent applications and mainly for-

eign multinationals introduce patents in this country. On the other hand, the share of innovative firms as well as the innovative turnover is low in Belgium compared to its neighbouring countries. However, most of these indicators show some limitations to measure the general 'innovativeness' of an economy, its ability to produce new knowledge and technology. Moreover, they present a rather static picture of technology performance that neglects how the various individuals and institutions - firms, universities, public and private research institutes, government - interact in the generation of new products and processes. The importance of knowledge and technology diffusion requires better understanding of "national innovation systems". New information and communication technologies as well as improved regulation of intellectual property rights have improved international technology access and transfer.

New issues are also being raised regarding the role of governments in promoting innovation and technology. Most government intervention in the R&D area has been directed to correcting market failures. The existence of externalities of technology implies the tendency of the private sector to underinvest in technology development because of the inability of the firms to capture all the benefits from such investments. In order to maximise returns to the society, technology policies have focused on stimulating R&D spending in industries and universities, R&D tax credits and subsidies. In a broader approach focused on the innovation system, technology policies should emphasise the role of technological co-operation between firms and support the industry-university relation. Links between industry and university are becoming closer but still need to be imported in many European regions.

B. Inputs of innovation

1. R&D expenditures

a. Gross R&D expenditures

i. Gross domestic expenditure on R&D (GERD) - % of nominal GDP

Gross domestic expenditure on R&D (GERD) - carried out on national territory - expressed as a percentage of GDP is the usual R&D intensity measure. In 1995, Belgium (1.59%) had a lower result than the neighbouring countries (2.34% in France, 2.31% in Germany and 2.07% in the Netherlands). Among the countries under review, Japan and the United States had the highest R&D ratios (2.98% and 2.61% of GDP respectively), while the European Union lagged behind (1.97%).

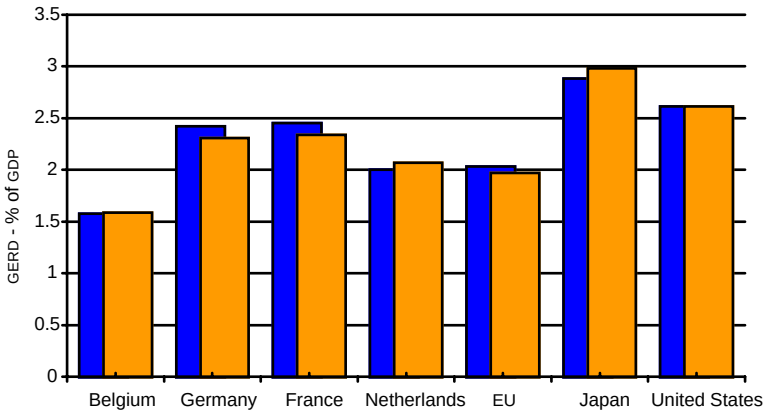
Definition

The gross domestic expenditures on research and experimental development (GERD) cover all R&D expenses carried out on national territory in the year concerned.

Note

The figure for the EU gives the ratio of total GERD made by 13 EU member countries (the data for Luxembourg and Portugal are not available) to the total GDP of these countries.

	93	95
Belgium	1.58	1.59
Germany	2.42	2.31
France	2.45	2.34
Netherlands	2.00	2.07
EU	2.03	1.97
Japan	2.88	2.98
United States	2.62	2.61



Source: GERD: OECD (1999), Main science and technology indicators - 1999 (2); GDP: European Commission: AMECO-database.

ii. Gross domestic expenditures on R&D (GERD) by source of funds - % of total GERD for 1995

R&D expenditure by the private sector is more important in the short run in the perspective of economic growth because it is more directly related to productivity growth of the sector. R&D funded by the Government has a longer run goal and is mainly directed towards the training of human capital, basic research and the promotion of investments with higher social benefit.

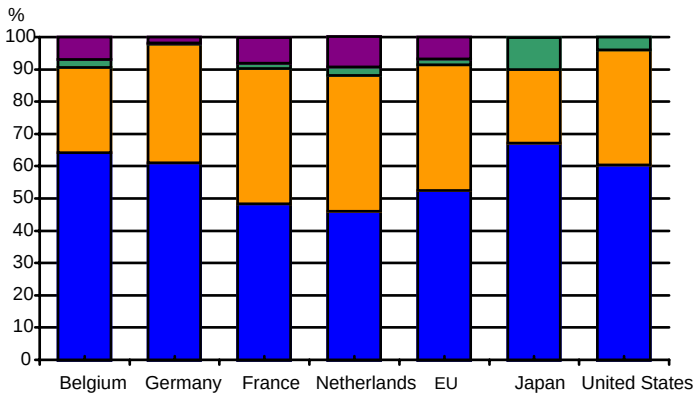
Gross domestic expenditure on R&D in Belgium in 1995 was mainly financed by industry (64.2%) whereas the intervention of the State (26.4%) was rather limited. The reason is to be found in the high government debt and the restrictive budgetary policy that followed. There was a very different situation in the Netherlands and in France where the Government financed 42% of the expenditure on R&D. Government intervention was also higher in Germany (36.80%). Among the countries under review, Japan had the lowest level of government intervention 22.8% against 35.6% in the United States and 39.1% in the European Union.

The share of foreign financing in Belgium in 1995 (6.9%) was similar to the European average (6.7%) but lower than in the Netherlands (9.3%) or in France (8.0%).

In Belgium, policies for R&D and innovation are largely region-based. Even if the Federal government spent public money on R&D, the Regions are in control of the directions taken by policy and the amount of budgetary credits they devote to R&D. In recent years, budgets spent on research have increased significantly in order to close the gap with the European average. The research credits for business purposes in the Walloon Region grew by more than 30% between 1997 and 1999, while in the Flemish Region credits for industrial research rose by 27% over the same period. The aims of this strengthening of resources are to consolidate the technological and scientific skills in Belgium and to raise gradually the technological standard of companies and SME in particular (Source: Economic reform of the products, services and capital markets: Belgian report for the European Union, December 1999).

Note The figure for the EU gives the division of the total GERD made by 12 member countries (data for Luxembourg, Greece and Portugal are not available) between the different sources of fund.

	95			
	Industry	Government	Other national sources	Abroad
Belgium	64.20	26.40	2.50	6.90
Germany	61.10	36.80	0.30	1.80
France	48.30	41.90	1.70	8.00
Netherlands	46.00	42.20	2.60	9.30
EU	52.50	39.00	1.80	6.70
Japan	67.10	22.80	9.90	0.10
United States	60.40	35.60	4.00	0.10



Source: OECD (1999), Main science and technology indicators - 1999(2).

b. By business sector

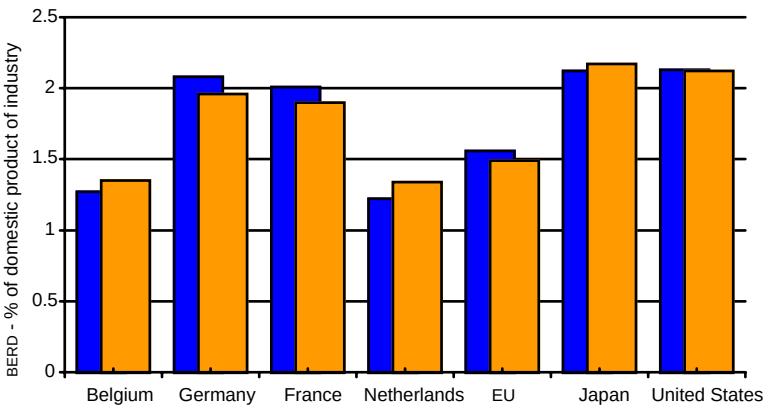
i. Business sector expenditure on R&D (BERD) - % of domestic product of industry

Business sector expenditure on R&D (BERD) in Belgium in 1995 amounted to 1.35% of the industry domestic product. The ratio of BERD to industry domestic product was nearly the same as in the Netherlands but lower than in Germany and in France. Among the countries under review, Japan had the highest ratio (2.17%).

Definition The business enterprise sector expenditures on research and experimental development (BERD) cover all R&D expenses carried out by industries on national territory in the year concerned.

Note The figure for the EU is an OECD secretariat estimate.

	93	95
Belgium	1.27	1.35
Germany	2.08	1.96
France	2.01	1.90
Netherlands	1.22	1.34
EU	1.56	1.49
Japan	2.12	2.17
United States	2.13	2.12



Source: OECD (1999), Main science and technology indicators - 1999(2).

ii. Business sector R&D (BERD) by sector of performance - % of total BERD for 1995

The breakdown of BERD among sectors is also correlated with Government financing. The intervention of the Government is expected to be higher in a certain number of sectors like aeronautics and defence.

In Belgium, expenditures on R&D are more important in the electrical / electronic sector (21.9%) and in the pharmaceutical sector (17%). Japan and the Netherlands have a higher share of R&D expenditures in the electrical / electronic sector. Among the countries under review, France and the United States spent most on R&D in the aerospace sector in 1995.

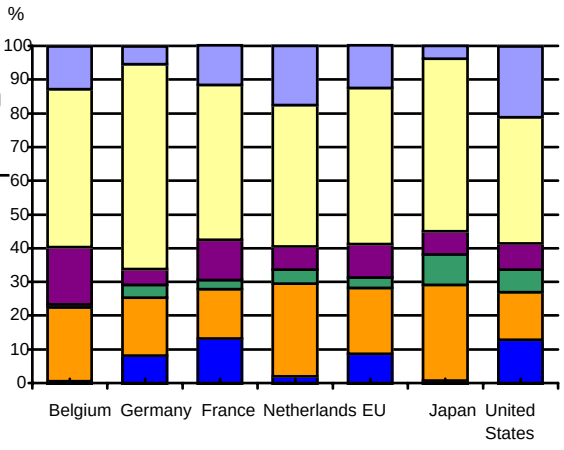
It should also be noticed that the relation between the amount of R&D spent and innovation is a complex one. In sectors such as aeronautics huge amounts of R&D are needed to get an output in terms of innovation. This may not be the case in other sectors.

Definition Division of the BERD by sector of performance.

Note The classification in sectors is according to the International Standard Industrial Classification (ISIC). The figure for the EU is an OECD estimate.

95

	Aero-space	Electrical/ electronic	Machinery and computer	Drug	Other manu-facturing industries	Non-manu-facturing industry
Belgium	0.50	21.90	1.00	17.00	46.70	12.80
Germany	8.10	17.20	3.90	4.60	60.70	5.40
France	13.20	14.60	2.70	12.00	45.90	11.70
Netherlands	1.90	27.50	4.30	6.80	42.00	17.50
EU	8.70	19.60	3.00	10.00	46.20	12.60
Japan	0.70	28.50	9.00	6.80	51.20	3.80
United States	12.80	14.20	6.70	7.70	37.40	21.10



Source: OECD (1999), Main science and technology indicators - 1999(2).

c. By higher educational institutions

i. Higher education expenditure on R&D (HERD) - % of nominal GDP

Expenditure on R&D in the higher education sector (covering all higher educational institutions) are important because of the role of knowledge for innovation. Japan (0.62%) and the Netherlands (0.6%) had the highest expenditure on R&D as % of GDP by higher education. The spending on R&D by the Belgian higher education sector is around the figure of the other countries under review but it decreased slightly between 1993 and 1995.

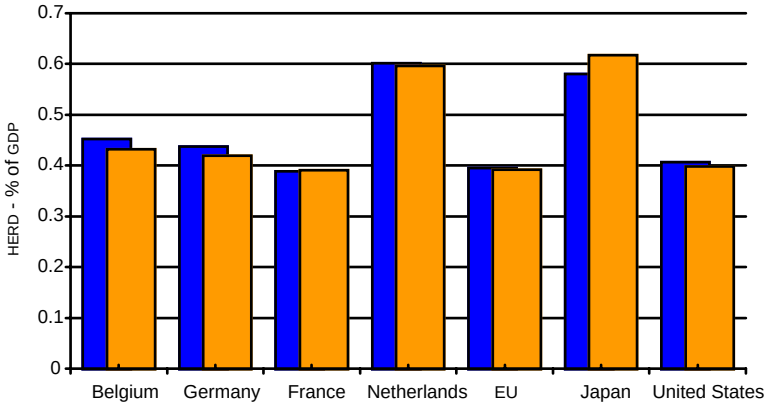
Definition

The expenditures on research and experimental development in higher education sector (HERD) cover all R&D expenses carried out on national territory in the year concerned by higher educational institutions.

Note

The figure for the EU gives the ratio of total HERD made by 13 member countries (data for Austria and Luxembourg are not available) to the total GDP of these countries.

	93	95
Belgium	0.45	0.43
Germany	0.44	0.42
France	0.39	0.39
Netherlands	0.60	0.60
EU	0.39	0.39
Japan	0.58	0.62
United States	0.41	0.40



Source: GERD: OECD (1999), Main science and technology indicators - 1999(2). GDP: European Commission: AMECO database.

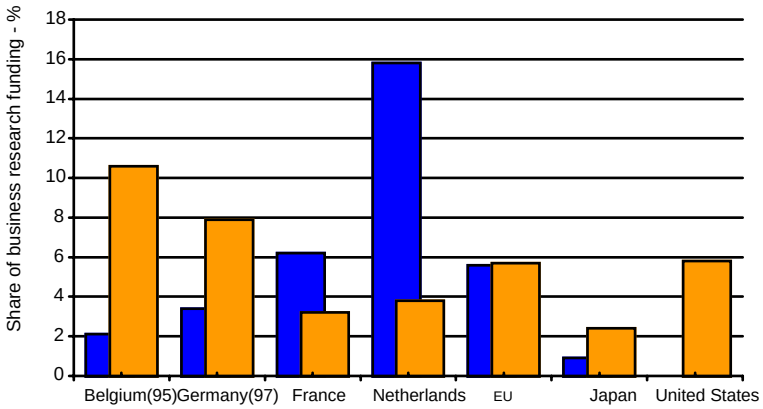
d. Co-operation business and public sector

i. Percentage share of business in the funding of research - 1996

Innovation no longer depends solely on how firms, universities and research institutes perform independently, but more and more on how they co-operate (OECD (1999), Science, technology and industry scoreboard). Firms need access to fundamental research and knowledge for their research, universities want to commercialise their research and obtain funding and governments look to alliances that ensure that public research is for the benefit of the economy. The share of business financing of R&D performed by higher education or government sectors indicates the private sector's use of the research capabilities of universities and public laboratories. The Belgian share of business in the funding of research performed by universities is the highest among the countries under review. In 1995, 10.6% of the research performed by higher education institutions is funded by the private sector in Belgium. This is much higher than the average of the European Union (5.7%), the United States (5.8%) and Japan (2.4%). However, it should be noted that it is no surprise that countries differ substantially because there are differences in the national innovation systems. Whereas Belgium has a high co-operation in terms of funding between business and university, the contrary is true for the funding of government research. Only 2.1% of the research performed by the government sector is funded by the business sector, which is the lowest among the European countries under review but higher than Japan and the United States. But this small percentage can be explained by the quite small amount of research performed by the Belgian government sector. When we take a look at the percentage share of firms who have co-operation arrangements of any type with universities or government research institutions, we see that in Belgium a relative high share (11.9%) of firms has agreements with universities or government.

Note For business' share in the funding of research performed by university or government, data is available for the year 1996 or latest year available i.e. 1995 for Belgium and 1997 for Germany.

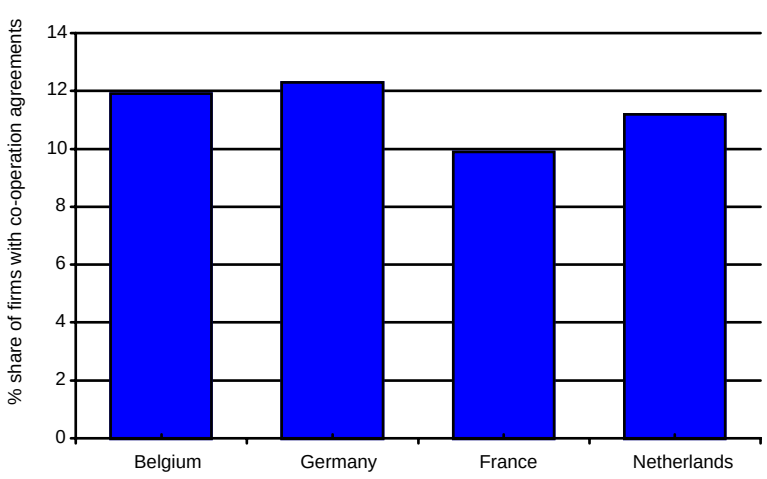
	Govern-ment	Higher education
Belgium (95)	2.10	10.60
Germany (97)	3.40	7.90
France	6.20	3.20
Netherlands	15.80	3.80
EU	5.60	5.70
Japan	0.90	2.40
United States	0.00	5.80



Source: OECD (1999), Science, technology and industry scoreboard: Benchmarking knowledge-based economies.

ii. Percentage share of firms with co-operation agreements, 1994-1996

	% co-operation agreements
Belgium	11.90
Germany	12.30
France	9.90
Netherlands	11.20



Source: OECD (1999), Science, technology and industry scoreboard: Benchmarking knowledge-based economies.

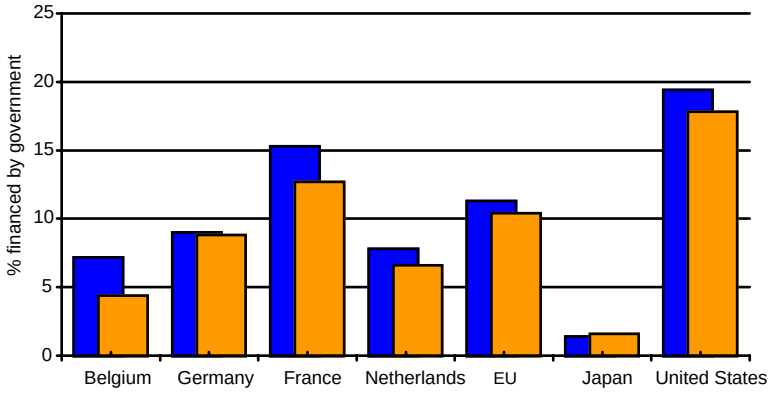
iii. Share of business sector expenditure on R&D (BERD) financed by government - %

The intervention of national authorities in the financing of BERD in 1995 was low in Belgium (around 4%). However, it should be kept in mind that the data related to BERD financed by the Government do not include fiscal deductions allowed for R&D investments or for the recruitment of researchers. The United States had the highest proportion of co-financing by the Government (18.4%). In the neighbouring countries and in the European Union as a whole Government intervention in the financing of BERD was higher than in Belgium. In Japan, on the contrary, only 1.6% of BERD was financed by the State but the level of business expenditure on R&D was none the less very high.

In comparison to the other countries under review, it appears that R&D in Belgium is a result of investment decisions by the industry with a rather low direct financial support from the Government.

Note The figure for the EU is an OECD secretariat estimate.

	93	95
Belgium	7.20	4.40
Germany	9.00	8.80
France	15.30	12.70
Netherlands	7.80	6.60
EU	11.30	10.40
Japan	1.40	1.60
United States	19.40	17.80



Source: OECD (1999), Main science and technology indicators - 1999(2).

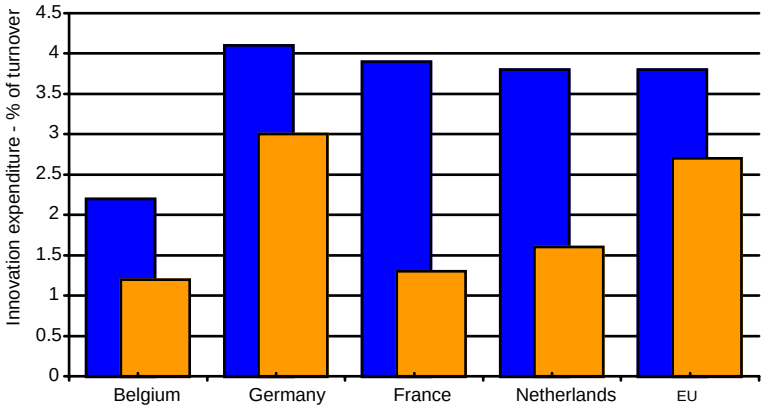
2. Innovation expenditure

a. Expenditure on innovation - % of tunrover (1996)

Expenditure on R&D as an input of innovation does not cover all the expenses made for innovation. The second Community Innovation Survey launched in 1997-1998, collects firm-level data on inputs and outputs of the innovation process across a large number of European countries. Their measurement of expenditure on innovation activity includes research and development, acquisition of machinery, equipment and other external technology, industrial design, training and marketing linked to technological innovations. A distinction is made between the service sector and the manufacturing sector. The service sector includes transport, telecommunications, computer and related activities and engineering services. No data was available for other service sectors. For the manufacturing sector as well as for the service sector, Belgium has the lowest innovation expenditures among the countries under review. In general, the innovation intensity in the manufacturing sector was highest among the large enterprises, but there was no significant difference between the medium sized and small enterprises. It should be noted however that differences between countries should be treated with caution and reflect partly differences in industrial structure across countries.

Note The average for Europe is a calculation of Eurostat.

	Manufacturing sector	Service sector
Belgium	2.20	1.20
Germany	4.10	3.00
France	3.90	1.30
Netherlands	3.80	1.60
EU	3.80	2.70



Source: Eurostat (1999/2), Community Innovation Survey 1997/1998, Statistics in Focus, Research and Development.

3. Human resources

a. Total researchers (or university graduates) - per 10.000 labour force for 1995*

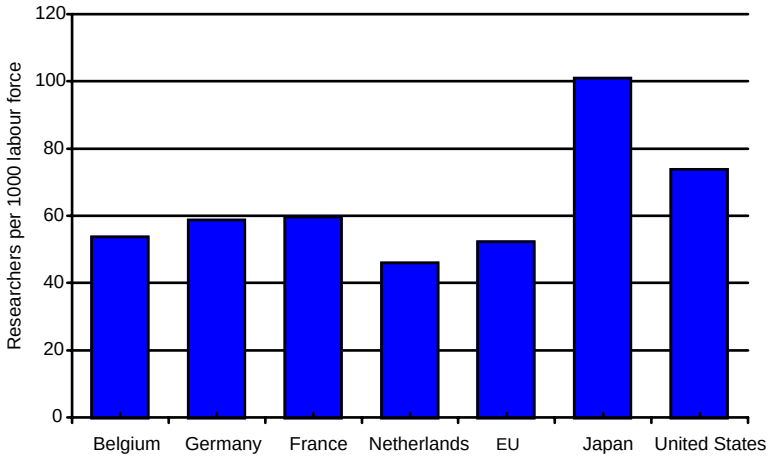
The total number of researchers can be an indicator for the human potential of technological innovation. It includes only the researchers but excludes the technicians and any other category of personal working in the field of R&D. Moreover it gives no indication about the conditions in which R&D has been realised and in particular about the equipment at the disposal of the researchers.

In Belgium there were 53 researchers per 10.000 labour force in 1995, against 46 in the Netherlands, 58 in Germany and 59 in France. In Japan about one person in 100 was a researcher in 1995.

Note

The figure for the EU gives the ratio of the total number of researchers (or university graduates) in 12 member countries (data for Austria, Luxembourg and Greece are not available) to the total labour force for all ages of these countries.

	95
Belgium	53.63
Germany	58.67
France	59.60
Netherlands	45.93
EU	52.20
Japan	101.02
United States	73.83



* or latest year available, i.e., 1993 for United States.

Source: Number of researchers: OECD (1999), Main science and technology indicators - 1999(2). Labour force: OECD (1997), Labour force statistics, 1976-1997.

C. Outputs of innovation

The number of patent applications gives a rough measure of output of innovation. On this basis, the OECD suggests a few indicators in the perspective of an international comparison. These indicators present both advantages and disadvantages. On the one hand, patent applications are systematically registered and their number can be compared on an international basis. On the other hand, the number of patent applications gives no information about the market value of the technology concerned. This is among other things influenced by the country regulation of intellectual property rights and by the specialisation of the country in specific sectors of R&D. Moreover, it does not cover innovation that does not benefit from intellectual property protection under patents (like for example organisational changes). Other indicators for the innovative output are the share of innovative firms and the share of innovative turnover in the total turnover. These variables are based on innovation surveys. But surveys are susceptible to problems like the composition of a representative sample and receiving a sufficient number of replies. Especially for surveys on innovation these problems seems to occur. Indeed, innovating firms seem to be much more inclined to supply answers than those that do not. This means that national surveys with a low response rate show a larger proportion of innovative firms. Moreover, small firms have more difficulty in responding to surveys, which can make their results less representative (OECD (1999), Science, technology and industry scoreboard).

1. Patent performance

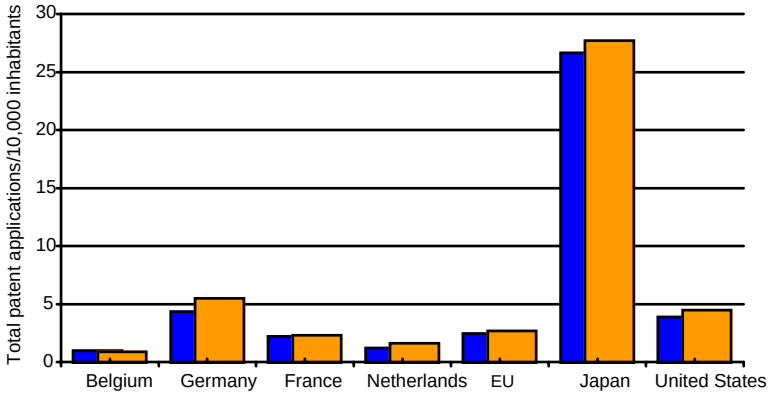
a. Total resident patent applications - per 10.000 inhabitants

The number of resident patent applications (applications presented in a country by residents of the concerned country) per 10,000 inhabitants is called the “coefficient of inventiveness” in the OECD report. It reflects the dynamism of a country in the field of innovation. In 1997, Belgium had the lowest score (0.89) among the countries under review. This has been the case since the beginning of the nineties. In the neighbouring countries, Germany (5.49) had a higher coefficient of inventiveness than France (2.31) and the Netherlands (1.61). Japan (27.7) has by far the highest score against the United States (4.45) and the European Union as a whole (2.70). Part of the explanation for the low number of patent applications in Belgium can certainly be found in the small number of multinational companies of Belgian origin. Moreover, much of the patent performance is related to the patent regulation and patent culture in a country.

Definition

Resident patent applications for a given country refer to applications in a country by residents of the country concerned.

	93	97
Belgium	0.96	0.89
Germany	4.35	5.50
France	2.22	2.30
Netherlands	1.20	1.61
EU	2.44	2.69
Japan	26.62	27.68
United States	3.88	4.48



Source: Patent applications: OECD (1999), Main science and technology indicators - 1999(2); Population: European Commission - AMECO database.

b. Ratio of resident to national patent applications

The ratio of resident patent applications to national patent applications (by residents and non-residents of the concerned country) is an indicator of technological independence of a country.

According to this indicator, Belgium (0.01) and the Netherlands (0.03) have a much lower ratio than Germany and France. Leading countries in technology as Japan (0.84) and the United States (0.52) have the highest scores.

However, this indicator should be interpreted with caution in the case of small countries characterised by a high degree of openness of their economies. The hypothesis can be made that small and medium sized firms do not introduce patent applications for the domestic market in Belgium and in the Netherlands, because of the small size of the country and the perspective of limited benefits in comparison to the costs of patent applications. Moreover, a large number of big firms in Belgium are affiliates of multinational groups that control the patent strategy.

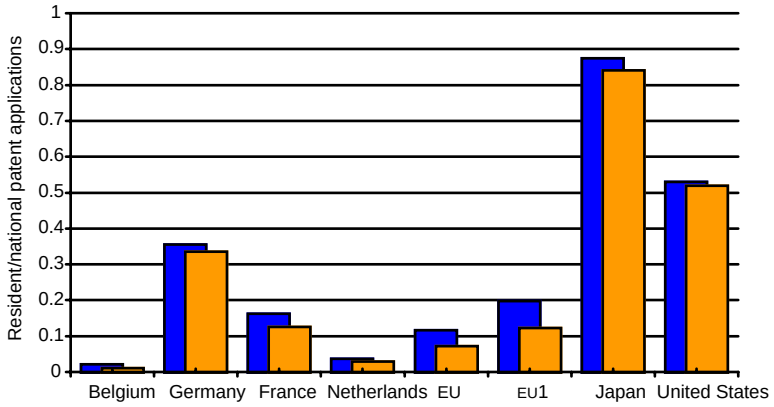
Definition

The number of national patent applications is the sum of resident and non-resident patent application over a given period. Resident patent applications for a given country refer to applications in a country by residents of the country concerned. Non-resident patent applications for a given country refer to applications in a country by non-residents of the country concerned. This ratio indicates the degree of technological autosufficiency of a country (see OECD (1999), Main science and technology indicators - 1999(2)).

Note

The two ratios provided for the EU differ with respect to the definition used for non-resident patent. The first one ("EU") defines the non-resident patent applications of the European Union as the sum of all non-resident patent applications by individual member countries. Data used for this first definition are based on own calculations. The second one ("EU1") defines the total non-resident patent applications of the EU as all patent applications on the European territory by non-residents of EU. Data used for the second definition are OECD secretariat estimates. Note that the first definition is more appropriate to compare individual member countries with an average for the EU while the second definition allows the comparison of the EU with the United States.

	93	97
Belgium	0.02	0.01
Germany	0.36	0.33
France	0.16	0.13
Netherlands	0.04	0.03
EU	0.12	0.07
EU1	0.20	0.12
Japan	0.87	0.84
United States	0.53	0.52



Source: OECD (1999), Main science and technology indicators - 1999(2), own calculations.

c. Ratio of non-resident to resident patent applications

The ratio of non-resident patent applications to resident patent applications is an indicator of the importance of the domestic market for the introduction of foreign patents.

This ratio was very high in Belgium (93.26) and high in the Netherlands (34.01). It was very low in Japan and in the United States (0.19 and 0.93, respectively).

This ratio must be interpreted along with the ratio of resident to national patent applications. It confirms the important role played by foreign multinationals in Belgium and the fact that Belgian companies introduce very few patents domestically.

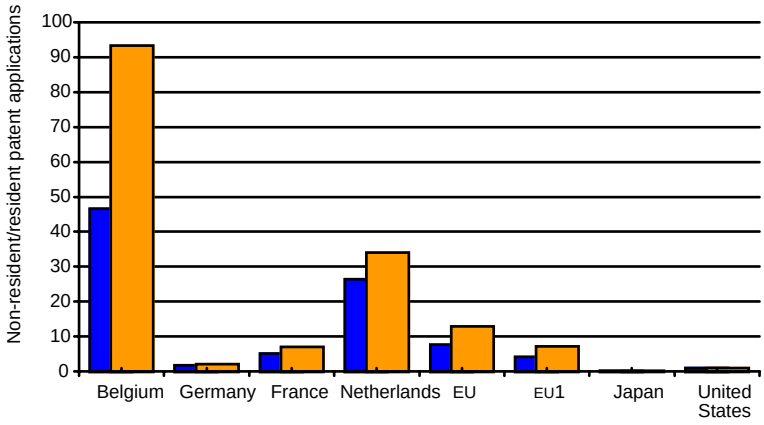
Definition

Resident patent applications for a given country refer to applications in a country by residents of the country concerned. Non-resident patent applications for a given country refer to applications in a country by non-residents of the country concerned. This ratio indicates the degree of technological dependency of a country (see OECD (1999), Main science and technology indicators - 1999(2)).

Note

The two ratios provided for the EU differ with respect to the definition used for non-resident patent applications. The first one ("EU") defines the non-resident patent applications of the EU as the sum of all non-resident patent applications by individual member countries. Data used for this first definition are based on own calculations. The second one ("EU1") defines the total non-resident patent applications of the EU as all patent applications on the European territory by non-residents of the EU. Data used for the second definition are OECD secretariat estimates. Note that the first definition is more appropriate to compare individual member countries with an average for the EU while the second definition allows the comparison of the EU with the United States.

	93	97
Belgium	46.52	93.26
Germany	1.81	1.99
France	5.16	6.95
Netherlands	26.46	34.01
EU	7.56	12.85
EU1	4.07	7.16
Japan	0.14	0.19
United States	0.89	0.93



Source: OECD (1999), Main science and technology indicators - 1999(2), own calculations.

d. Ratio of external to resident patent applications

The ratio of external patent applications (applications presented abroad by residents of the concerned country) to resident patent applications is an indicator of the rate of diffusion of innovation.

The ratio of external to resident patent applications is rather high in Belgium (34.6) and in the Netherlands (42.75). Again the hypothesis can be made that firms in small countries have a tendency to introduce more systematically an external patent application than in other countries.

The similarity of results about patent applications in Belgium and in the Netherlands can be interpreted as an indication of a particular country profile where innovation originates mainly from abroad and where patent applications are oriented towards foreign markets. These characteristics should be viewed in relation to the small size of both countries and the presence of foreign multinational firms on their market.

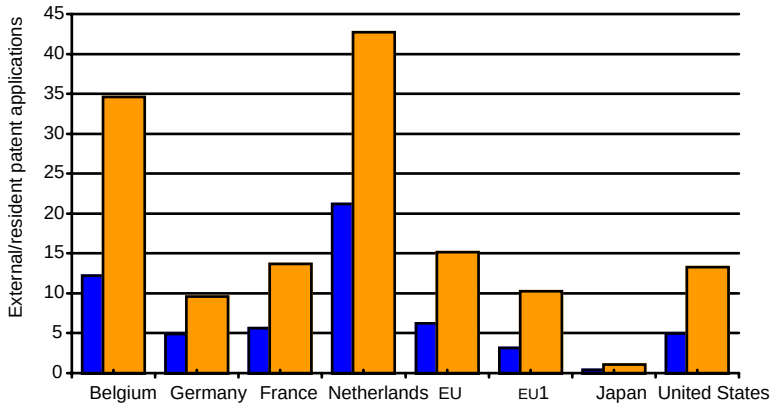
Definition

Resident patent applications for a given country refer to applications in a country by residents of the country concerned. External patent applications refer to applications by the country concerned for patents in other countries. External patent applications concern inventions already covered by resident applications. One resident patent application can give rise to several external patent applications. This ratio indicates the degree of technological diffusion of a country (see OECD (1999), Main science and technology indicators - 1999(2)).

Note

The two figures provided for the EU differ with respect to the definition used for external patent applications. The first one ("EU") defines the total external patent applications of the EU as the sum of all external patent applications by individual member countries. Data used for this first definition are based on own calculations. The second one ("EU1") defines the total external patent applications of the EU as all patent applications by residents of the EU which are external of the EU territory. Data used for the second definition are OECD secretariat estimates. Note that the first definition is more appropriate to compare individual member countries with an average for the EU while the second definition allows the comparison of the EU with the United States.

	93	97
Belgium	12.19	34.60
Germany	4.92	9.61
France	5.66	13.67
Netherlands	21.16	42.75
EU	6.25	15.18
EU1	3.16	10.28
Japan	0.39	1.09
United States	4.99	13.26



Source: OECD (1999), Main science and technology indicators - 1999(2), own calculations.

2. Innovative output

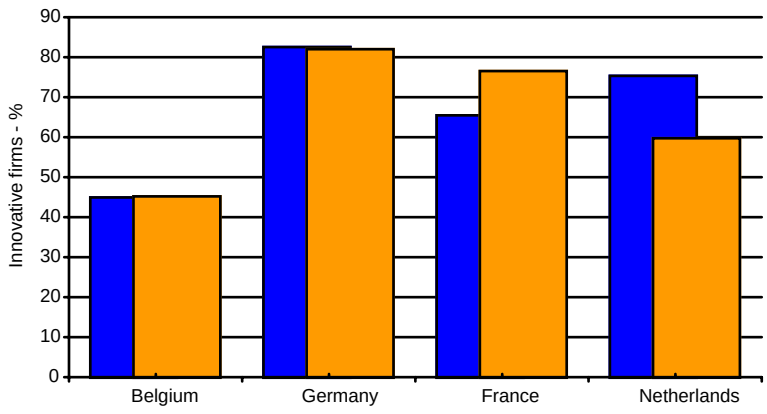
a. Share of innovative firms - 1996

The Community Innovation Survey has investigated innovate output by the share of firms that introduced at least one new or improved product or process technology on the market over a given period of time. In the OECD study "Science, technology and industry scoreboard 1999", this data was used and weighted by the number of employees, so as not to underestimate the weight of large firms. Data is available for the manufacturing and the service sector. In the manufacturing sector almost 45% of the Belgian firms (weighted by size) introduced new or technologically improved products or processes on the market. This is much lower than Germany (82.5%), the Netherlands (75.4%) and France (65.5%). This is comparable with the service sector where the share of innovative firms is also around 45% for Belgium. When the size-class of innovative firms is taken in consideration, one notice that in general the share of innovators is much higher among large firms than among small ones in the countries under review.

Definition

Innovative firms are firms that introduced new or technologically improved products or processes on the market.

	Manufacturing sector	Services sector
Belgium	44.90	45.20
Germany	82.50	82.00
France	65.50	76.50
Netherlands	75.40	59.80



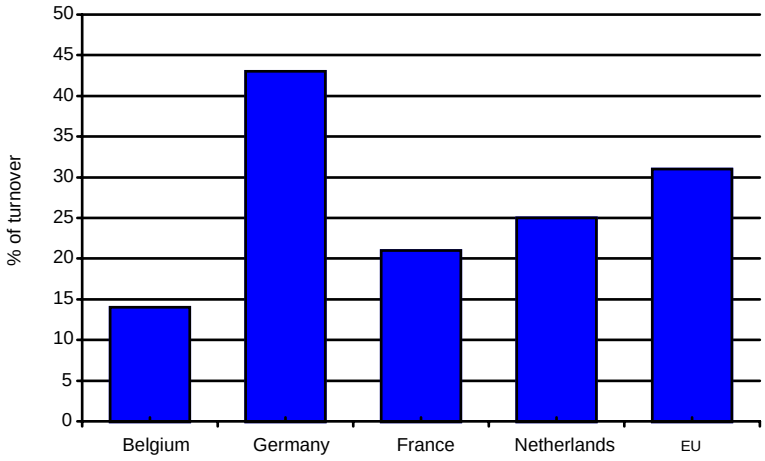
Source: OECD (1999), "Science, Technology and Industry scoreboard 1999: Benchmarking Knowledge Based Economies" (mainly based on data from Eurostat).

b. Turnover of new and improved products in manufacturing - % of total turnover

An indicator for the performance of innovation activity is the relative share of the turnover of new and improved products. This shows not only if the innovation is successful in leading to new processes or products, also it indicates whether new products stand the test of the market place. In the Community Innovation Survey 1997/1998 this is measured for the manufacturing sector. The share of turnover of new and improved products in the manufacturing sector is 14% for Belgium. This is much lower than our neighbouring countries and the average of the EU (31%). At the sector level there is no sector for which Belgium has a better performance than the average of the EU or the neighbouring countries. Especially the share of turnover of the sector of wood, publishing, pulp and paper and the transport equipment sector and manufacturing NEC sector are far behind the other countries.

Note Data for Europe is calculated by Eurostat.

	96
Belgium	14.00
Germany	43.00
France	21.00
Netherlands	25.00
EU	31.00



Source: Eurostat (1999/2), "Community Innovation Survey 1997/1998", Statistics in focus, Research and Development.

D. Financing of innovation

This section is based on the study "Benchmarking Pilot Project" on the financing of innovation initiated by the European Commission. Along with this study, the analysis of innovation financing (including formal and informal venture capital, corporate venturing, banks, institutional investors, public schemes and public/private partnerships) has been divided into three parts: the market conditions of innovation finance, the exit conditions for investors and the other framework conditions. The first group of indicators presents information on the financing of high-growth companies and business formation. The section on exit conditions deals with the possibility for the venture capitalist to take his return. The third group of indicators deals with institutional investors, which are an important source of venture capital funding.

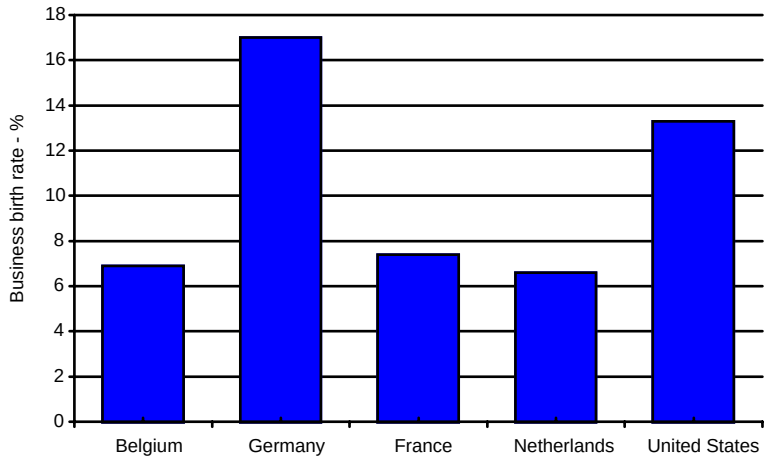
1. Market conditions

The setting up of SME (and particularly high growth technology based firms) is extremely important for job creation. Therefore, a country or region must try to create an environment that provides incentives for the creation of new companies. Among other things, the creation and growth of SME depend heavily on their access to financial markets, which is more restricted than for large enterprises. The access to risk capital is therefore particularly important for the start-up of innovative activities.

a. Business birth rate - % of total business population in 1996*

The number of new enterprise formations each year as a percentage of the total stock of existing businesses appeared to be similar in Belgium (6.9%) and in the Netherlands (6.6%) in 1996 but lower than in France (7.4%) and in Germany (17.0%). In comparison, the business birth rate was 13.3% in the United States in 1993. However these results must be examined very cautiously because differences of methodology between the countries under review are possible. Moreover, the indicator may fluctuate with the economic cycle, which affects the comparison (European Commission, Pilot project on the "Financing of Innovation").

	96
Belgium	6.90
Germany	17.00
France	7.40
Netherlands	6.60
United States	13.30



* or latest year available, i.e., 1993 for United States.

Source: 1998 EU-benchmarking project "Financing of innovation", appendix 2.

b. Portfolio of venture capital invested to 31 December 1999 - % of nominal GDP

Venture capital is risk capital for the start-up, development, expansion or restructuring of young rapidly growing, not quoted companies.

The portfolio of venture capital invested represents the cumulative volume of all net (investments minus divestments) venture capital invested domestically and abroad to a certain date.

The value of the venture capital invested to the end of 1999 amounted to 0.77% of GDP in Belgium. This was a significant increase compared with precedent years. At the end of 1996 for example, the portfolio amounted to 0.43% of GDP. Among the countries compared in this graphic, Belgium has an intermediate position between the Dutch portfolio (1.28% of GDP) and the French and German portfolio (around 0.39% of GDP) at the end of 1999.

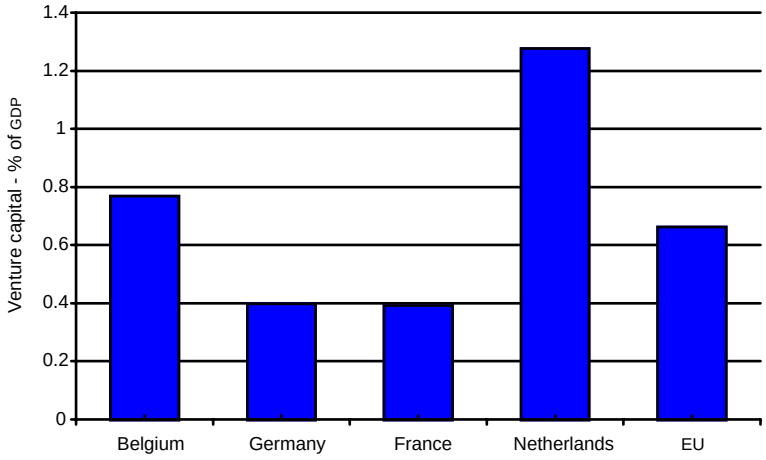
Definition

The portfolio of venture capital invested represents the cumulative volume of all net (investments minus divestments) venture capital invested domestically and abroad to a certain date.

Note

The figure for the EU gives the ratio of the total portfolio of venture capital invested to 31 December by 14 European member countries (the data for Luxembourg is not available) to the total GDP of these countries.

	99
Belgium	0.77
Germany	0.40
France	0.39
Netherlands	1.28
EU	0.66



Source: EVCA (2000), European Private Equity and Venture Capital Association, Yearbook 2000.

c. Total venture capital invested in 1997 by investment stage - % of nominal GDP

Data on the stage distribution of venture capital investment show that European venture capital tends to be more oriented towards later stages in businesses than in the United States. The main reasons for this difference are probably related to a difference in rates of return (lower for early-stage investment and lower in Europe than in the United States) and to a more risk-acceptance culture in the US. In Belgium, the volume of venture capital investment in 1997 was higher at the stage of expansion and replacement capital than at the seed and start-up stages. It was nil at the stage of buy-out.

Definition

Seed: Financing provided to research, assess and develop an initial concept before the business has reached the start-up phase.

Start-up: Financing provided to companies for product development and initial marketing. Companies may be in the process of being set up or may have been in business for a short time, but have not sold their product commercially.

Expansion: Financing provided for the growth and expansion of a company that is breaking even or trading profitably. Capital may be used to finance increased production capacity, market or product development and/or to provide additional working capital.

Replacement capital: Purchase of existing shares in a company from another venture capital investment organisation or from another shareholder or shareholders.

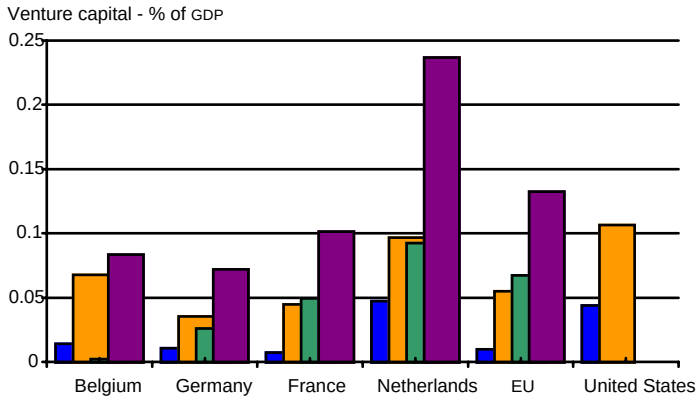
Buy-out: Financing provided to enable current operating management and investors to acquire an existing product line or business" (see EVCA (1998), 1998 Yearbook).

Note

United States: Data on buy-out and total investment are not available. The figure for the European Union gives ratio of the total venture capital investment of 14 member countries (the data for Luxembourg is not available) to the total nominal GDP of these countries.

97

	Seed and start-up	Expansion and replacement capital	Buy-out	Total
Belgium	0.01	0.07	0.00	0.08
Germany	0.01	0.04	0.03	0.07
France	0.01	0.04	0.05	0.10
Netherlands	0.05	0.10	0.09	0.24
EU	0.01	0.05	0.07	0.13
United States	0.04	0.11	-.-	-.-



Source: 1998 EU-benchmarking project "Financing of innovation"; appendix 2; based on: EVCA (1998), 1998 Yearbook.

2. Exit conditions

a. Second tier stock market capitalisation - % of nominal GDP for 1997

The second-tier stock market capitalisation is an indicator for the exit possibilities for the investors. This is an important requirement for the development of the venture capital market and other forms of early stage finance. After all, venture capitalists may want to dispose of their investment at a certain moment and this takes often place through an initial public offering (IPO). If there is no market on which to float their investments in companies, this will discourage venture capitalists and entrepreneurs. So, second tier markets are important instruments to improve the conditions for start-up companies.

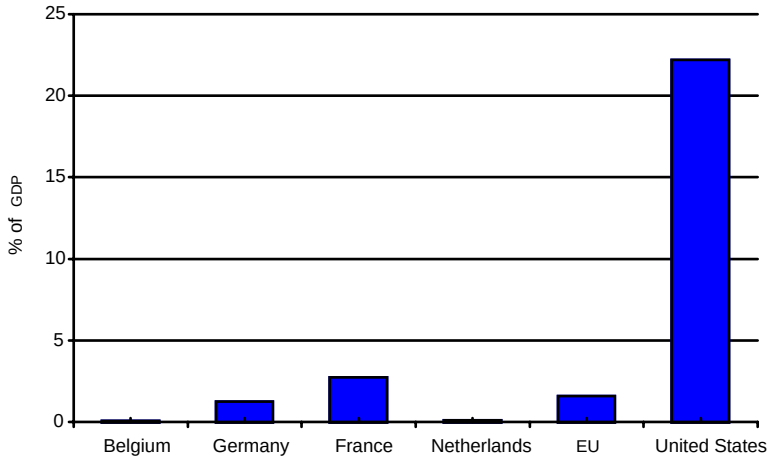
It is clear that the recent European second tier stock markets relative to GDP are small in comparison to the US NASDAQ (created in 1971). Some actions have been taken to achieve a higher level of activity in view of making Europe an attractive market for risk capital, such as the creation of a pan-European second-tier capital market (EASDAQ) and the in-

creasing co-operation between some existing national second tier stock markets (the Euro-NM).

Note

The United States figure is for NASDAQ capitalisation. The figure for the EU gives the ratio of the total parallel market capitalisation of 13 EU member countries (data for Denmark and Luxembourg are not available) to the total nominal GDP of these countries.

	97
Belgium	0.06
Germany	1.24
France	2.73
Netherlands	0.10
EU	1.57
United States	22.21



Source: Parallel market capitalisation: 1998 EU-benchmarking project "Financing of innovation"; appendix 2 based on International Federation of Stock Exchanges (1997), Annual report 1997. GDP: European Commission: AMECO database. Own calculations.

3. Other framework conditions

a. Total financial assets of institutional investors - % of nominal GDP

Even if this venture activity is only marginal for institutional investors, their role in the funding of venture capital is important. Banks and insurance companies still remain an important investor in venture capital but their investment horizon is shorter than it is for pension funds. The development of pension funds or other forms of collectors of long term saving will increase the disposability of capital for long term investment (OECD (1998), European venture capital markets: trends and prospects in venture capital and innovation (OECD / GD(96)168)).

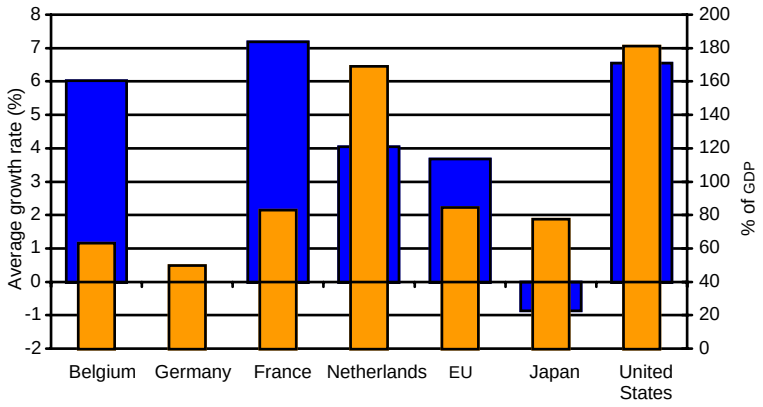
Total financial assets of institutional investors reached 63.04% of nominal GDP in Belgium in 1996. This is relatively low in comparison with the other countries under review. Only Germany had a lower result (49.86%). In Belgium, the gap is mainly due to the very low share of pension funds in the total due to the pay-as-you-go pension scheme. From 1990 till 1996, an increase in the financial assets from institutional investors of 6.03% is observed.

Definition

Institutional investors include insurance companies, investment companies, pension funds and other types of institutional wealth (e.g. endowment funds, foundations,...) collecting savings and supplying funds to the market.

Note The figure for the EU gives the ratio of the total financial assets of institutional investors of 14 member countries (the figure for Ireland is not available) to the total GDP of these countries.

	96	96//90
Belgium	63.04	6.03
Germany	49.86	-.-
France	83.06	7.18
Netherlands	169.01	4.04
EU	84.62	3.68
Japan	77.51	-0.84
United States	181.07	6.54



Source: Financial assets: OECD (1998), Institutional investors statistical yearbook; GDP: European Commission - AMECO database.

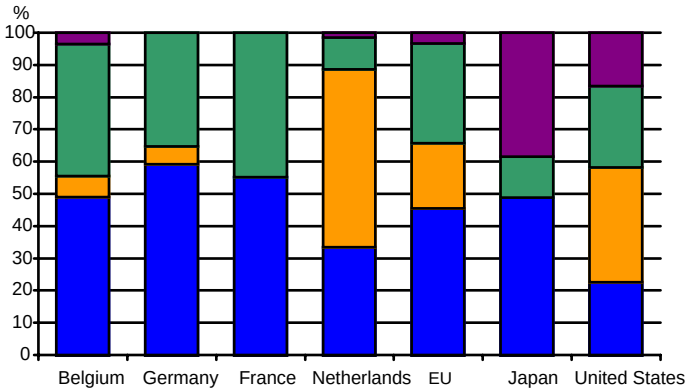
b. Total financial assets by type of institutional investor - % of total assets for 1996

The share of pension funds in total institutional investors was very small in Belgium in 1996 as well as in Germany and in France. In these countries where the "pay-as-you-go" pension system administered by the State is still dominant, the potential for further growth of pension-fund assets is relatively large.

The potential impact of regulations on pension fund investments is expected to have important consequences for investment in risk capital. In Belgium, since 1.1.1999, the investment rules of pension funds have been modified. Pension funds may invest up to 10% in unquoted shares and up to 5% in options and futures. This new regulation gives Belgium a modern framework for pension funds investments.

Note The figure for the EU gives the ratio of the total financial assets (by type of institutional investors) of institutional investors of 14 member countries (the figure for Ireland is not available) to the total GDP of these countries.

	96			
	Insurance companies	Pension funds	Investment companies	Other
Belgium	49.02	6.51	41.04	3.43
Germany	59.19	5.55	35.26	0.00
France	55.15	0.00	44.85	0.00
Netherlands	33.47	55.19	9.91	1.43
EU	45.51	20.20	31.01	3.29
Japan	48.91	0.00	12.60	38.49
United States	22.58	35.59	25.24	16.59



Source: OECD (1998), Institutional investors statistical yearbook.

c. Equities in the portfolio of institutional investors - % of total assets for 1996

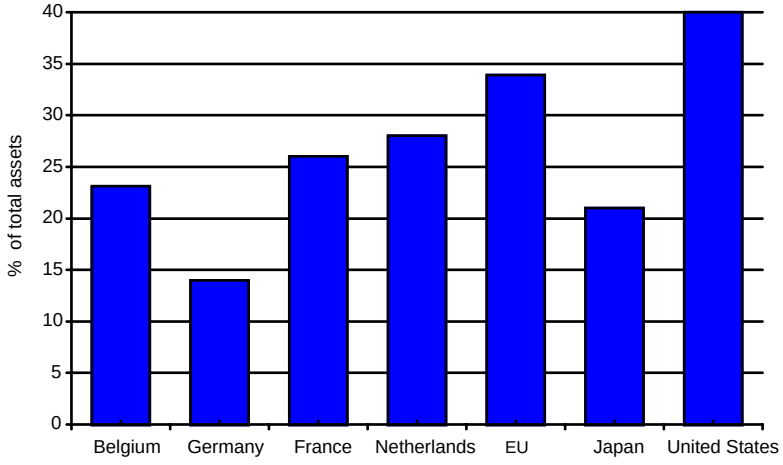
Increased investment in equities stimulates the development of stock market infrastructures and all the services of professional advisers, investment banks and information services that support them (European Pilot Project on the Financing of Innovation).

The composition of the assets of institutional investors varies considerably among countries. In Belgium, institutional investors hold more than 20% of their assets in equities, against a proportion of 14% in Germany.

Note

The figure for the EU is compiled as a weighted average of the equity shares in institutional investors portfolio of 13 EU member countries (no data for Ireland and Luxembourg). Weightings are based on the share of each country's financial assets in the total financial assets of those countries.

	96
Belgium	23.00
Germany	14.00
France	26.00
Netherlands	28.00
EU	33.91
Japan	21.00
United States	40.00



Source: OECD (1998), Institutional investors statistical yearbook.

X Information and communication technology

A. Belgium's position

Basket of business telephone charges

Main telephone lines

Mobile telephone subscribers

Number of computers in use

Numbers of Internet hosts

People using the Internet

Secure web servers

B2C e-commerce

Basket of residential telephone charges

Basket of personal and business digital mobile services

Basket of Internet access charges

The development of the information society or knowledge economy has been a priority for the European Union member countries during the last years. The information society can create jobs and new opportunities and can enhance the competitiveness and economic growth. If a country wants to take full advantage of this development it needs to be competitive in Information and Communication Technology (ICT) markets and industry. Indeed, ICT plays a fundamental role in the transformation of the economy and the society as a whole. The diffusion of Internet and new forms of e-commerce for instance are rapidly changing ways of doing business. ICT can lead not only to more efficient transactions but also to the development of new business and new markets. ICT can become more and more a catalyst for the growth and competitiveness of other economic sectors.

Although ICT takes a growing place in daily life, the diffusion of the new information and communication technologies is rather low in Belgium. The number of main telephone lines, mobile telephone subscribers, computers in use, internet hosts, people using the Internet,... is lower in Belgium than in most neighbouring countries and certainly than in the United States. B2C e-commerce is small in Belgium as well in terms of value of transactions as in terms of the number of buyers and the lack of secure web servers does not encourage the development of e-commerce. One of the main reasons for this poor performance of Belgium is the high access charge. For the period that we have data, Belgium has one of the highest charges for the use of residential telephone, digital mobile services and access to Internet. But the prices for those services have been reduced after the period for which we have data available.

B. ICT sector

Before analysing the Information and Communication Technology (ICT) sector, it is important to define it. Many national and international organisations tried to develop a definition for the ICT sector. In general, two points of view were developed to describe the ICT sector: through the production side and through the user side. The latter point of view includes the diffusion and utilisation of ICT goods and services in the economy (enterprises, households and government). Indicators like the number of mobile and fixed telephones, the use of Internet, the use of e-commerce,... measure this. They will be discussed in the following paragraphs. But before this we will take a look at the ICT sector through the production side definition. This definition takes into account the industries that deliver as well as distribute ICT goods and / or services in the economy. From the point of view of our study it is necessary to use a definition that enables us to make international comparisons. The ideal way to define the ICT sector is to determine the ICT products (goods and services). The main problem here is the fast evolution of these products. A second-best solution has been given by the OECD in 1998 and is based on the determination of manufacturing and services industries that can be viewed as ICT sectors. The ICT manufacturing sector consists of the ISIC codes 3000, 3130, 3210, 3220, 3230, 3312 and 3313. The sectors 5150 and 7123 form the goods related services and the intangible services includes sectors 6420 and 7200 (for more information see OECD (2000), Measuring the ICT sector).

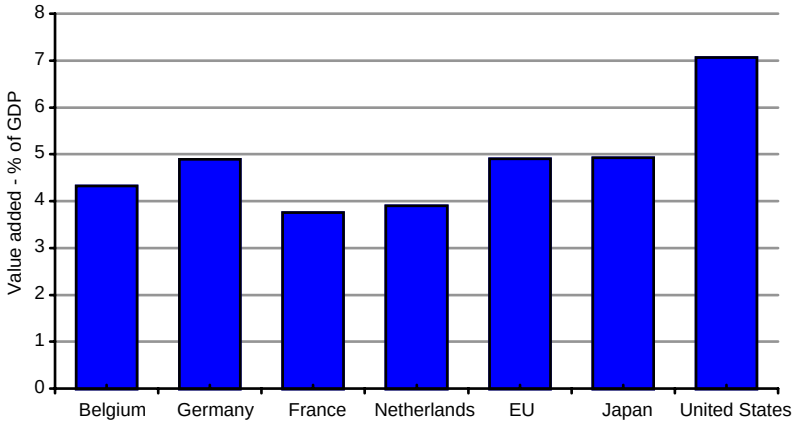
1. Value added in the ICT sector - as % of GDP in 1997

In 1997, the ICT sector created 7.06% of GDP in the United States. This is not only the highest figure among the countries under review but also among the OECD countries. On average, the value added in the European ICT sector amounts to 4.9% of GDP. In Belgium the value added is 4.32% of GDP which is less than in Germany (4.89%) but higher than in France (3.76%). It should be noted that the value added for the Netherlands is underestimated due to the exclusion of wholesale and renting. In Europe, the Nordic countries and the United Kingdom had the highest value added as % of GDP in the ICT sector (more than 6%) in 1997.

Note

the figure for the EU is a weighted average of the value added in the ICT sector in 10 EU member countries (data not available for Denmark, Spain, Greece, Ireland and Luxembourg). Weightings are based on each country's GDP to the total GDP of the available EU member countries.

	97
Belgium	4.32
Germany	4.89
France	3.76
Netherlands	3.90
EU	4.90
Japan	4.92
United States	7.06



Source: OECD (2000), Measuring the ICT sector.

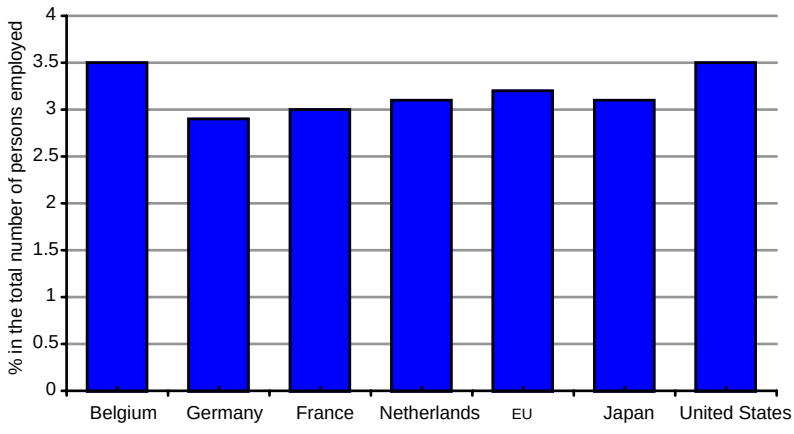
2. Employment in the ICT sector - in 1997

Among the countries under review, Belgium has a relative high share of persons employed in the ICT sector to the total number of employed persons. Among the EU member countries this share is higher in the Nordic countries, in Austria, in Ireland and in the United Kingdom.

Note

The share of ICT employment in the total number of employed persons for the EU is an average of the employment in ICT in 14 EU member countries (no data for Luxembourg) to the total number of employed persons in those 14 countries. Employment is measured in terms of the number of persons employed.

	Number of persons employed	Share in total number of employed persons
Belgium	130373.00	3.50
Germany	974000.00	2.90
France	681038.00	3.00
Netherlands	199000.00	3.10
EU	4758687.00	3.20
Japan	2059983.00	3.10
United States	4521080.00	3.50



Source: OECD (2000), Measuring the ICT sector.

C. ICT Infrastructure

1. Telecommunication

a. Main telephone lines - per 1000 inhabitants for 1998

Belgium lags behind the other benchmarked countries concerning the penetration rate of mainline telephone (including public telephones). In 1998, the number of main lines connected was estimated at 474 for 1000 inhabitants and all other countries compared exceeded this.

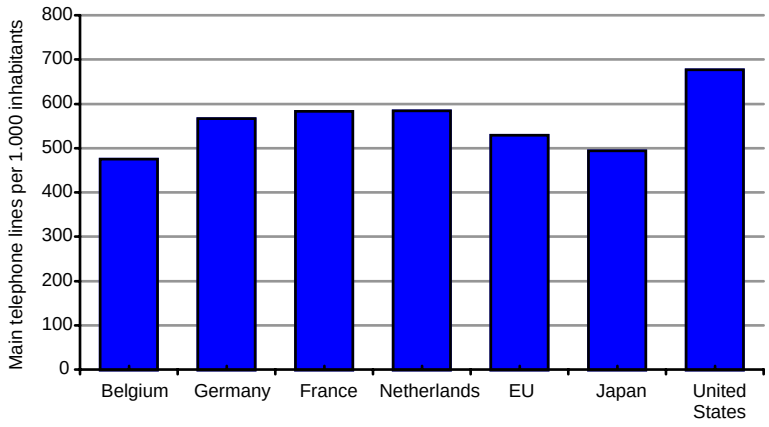
Definition

Main telephone lines are the telephone lines which connect the subscriber's terminal equipment to the public switched network and which have a dedicated port in the telephone exchange equipment. It may not be the same as an access line or a subscriber. Access lines refer to the total capacity (rather than lines in service) or to all network access points including mobile telephone subscribers. Telephone subscribers would not generally include public telephones, which are included in main lines.

Note

The figure for the EU gives the ratio of the total number of main telephone lines of the 15 EU member countries to the total population of the EU.

	98
Belgium	474.70
Germany	566.30
France	582.90
Netherlands	584.50
EU	528.61
Japan	493.90
United States	676.60



Source: IMD (1999), The World Competitiveness Yearbook. EU: Own calculations.

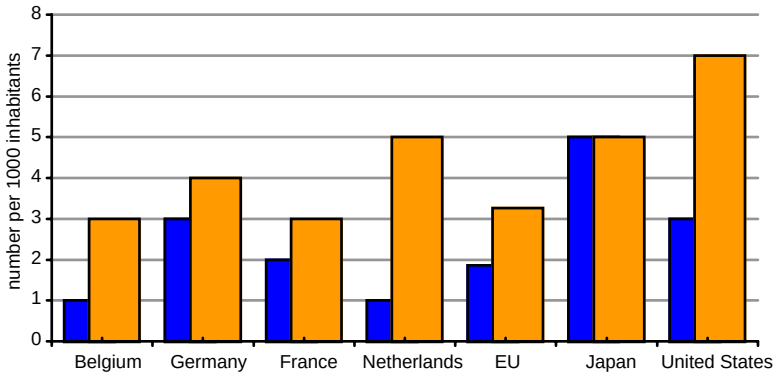
b. Number of mobile operator equivalents

The number of mobile operators has increased over the last couple of years for all countries under review. In 1995 the Belgian market structure in the mobile telephony was still a monopoly. Between 1996 and 1999 the Belgian market switched from a duopoly to a market with three operators. This seems to be an overall trend in the European Union.

Definition

Mobile operator equivalents are operators with networks that commenced or were expected to commence offering services.

	95	99
Belgium	1.00	3.00
Germany	3.00	4.00
France	2.00	3.00
Netherlands	1.00	5.00
EU	1.87	3.27
Japan	5.00	5.00
United States	3.00	7.00



Source: OECD (2000), Cellular mobile pricing structures and trends.

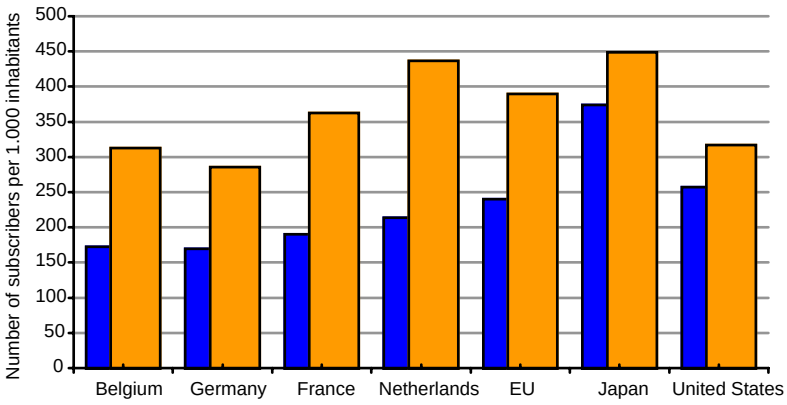
c. Cellular mobile telephone subscribers - number of subscribers per 1.000 inhabitants

Mobile communication is the main driver of growth in telecommunication services. Whereas in 1998 around 17% of the Belgian population subscribed to cellular mobile telephone, this rate boosted to more than 30% of the population in 1999. Among the compared countries, the largest markets for mobile telecommunication is Japan where almost 45% of the population subscribed to this technology. The Scandinavian countries are the leading European countries in terms of cellular mobile subscription.

Definition

Cellular mobile subscribers refer to users of portable telephones subscribing to an automatic public mobile telephone service which provides access to the Public Telephone Network (PSTN) using cellular technology. The figure for the EU gives the ratio of the total number of cellular mobile telephone subscribers of the 15 EU member countries to the total population of the EU.

	98	99
Belgium	172.14	312.62
Germany	169.62	285.85
France	190.49	362.69
Netherlands	213.34	436.41
EU	239.69	389.34
Japan	374.01	448.59
United States	257.20	317.06



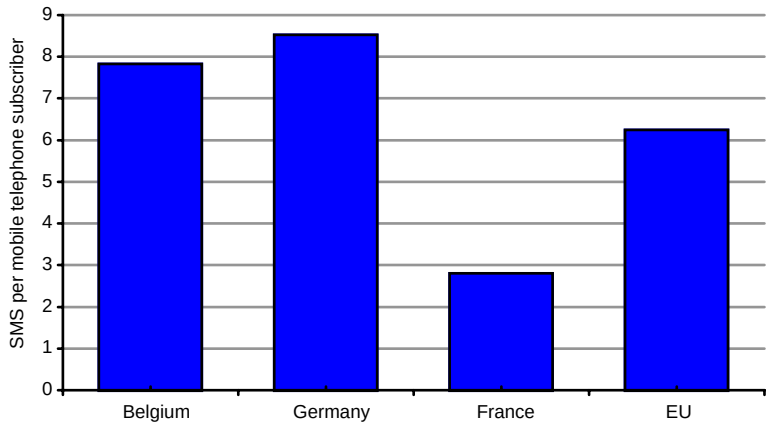
Source: ITU (2000), Telecommunication industry at a glance (http://www.itu.int/ti).

d. Number of SMS in April 1999 per mobile telephone subscriber

The Short Message Service (SMS) is the ability to send and receive text message to and from mobile telephones. Even though this service exists since 1992 it became popular only recently. In April 1999, users in Europe sent more than one billion SMS messages and some operators were reporting 800% increases in the number of messages over the previous year (OECD (2000), Cellular mobile pricing structures and trends). Among other factors, this strong growth has been made possible by technological developments but also by the expansion of the Internet. Indeed, there is the capability to link the Internet to SMS so that a lot of operators place SMS on their website. Therefore, the number of potential users of SMS is not only increasing with the number of mobile telephone subscribers but also with every PC connected to the Internet. In April 1999, the Belgian mobile telephone subscriber sent on average 7 SMS, which was more than the number of SMS sent in that month by the EU member countries (5.7) and France (2.8), but less than Germany (8.5).

Note The figure for the EU gives the ratio of the total number of SMS in 11 European member countries to the total number of mobile telephone subscribers in those 11 countries. No data was available for the Netherlands, Austria, Ireland and Luxembourg.

	99
Belgium	7.83
Germany	8.52
France	2.80
EU	6.24



Source: OECD (2000), Cellular mobile pricing structures and trends.

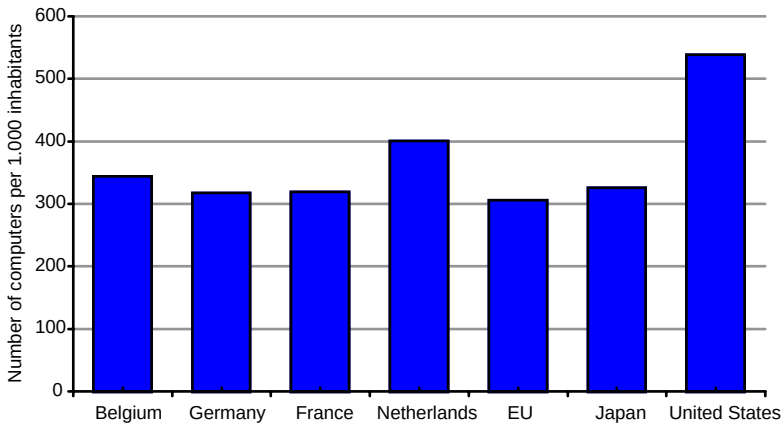
2. Information Technology (IT)

a. Number of computers in use - per 1000 inhabitants for 1999

Computers are important because they are the cornerstones of information technology. On average, almost 30% of the Belgian population owned a computer in 1999. Among the countries under review, this amount was only exceeded by the Netherlands and by the United States. In Europe, the Nordic countries are clearly on top concerning the number of computers in use. In 1999, the number of computers in Finland, in Sweden as well as in Norway amounted to more than 500 per 1000 inhabitants.

Note The figure for the EU gives the ratio of the total number of computers in use in the 15 EU member countries to the total population of the EU.

	99
Belgium	343.80
Germany	317.40
France	318.90
Netherlands	400.60
EU	306.18
Japan	325.50
United States	538.90



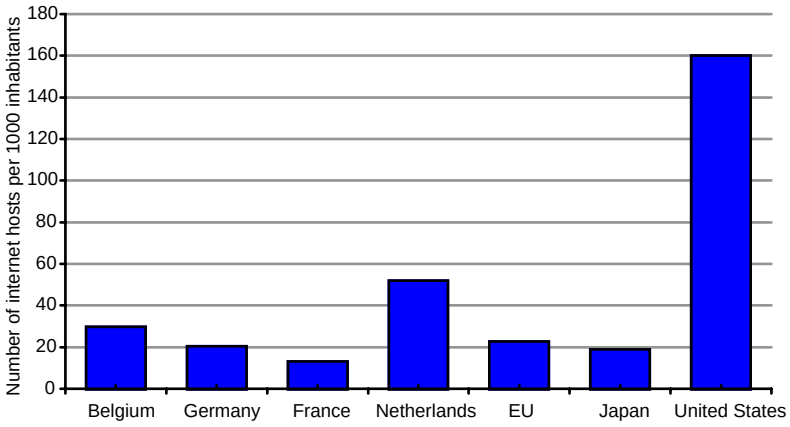
Source: IMD (2000), The World Competitiveness Yearbook. EU: Own calculations.

b. Number of internet hosts in September 1999 - per 1000 inhabitants

A conventional indicator to measure the development of Internet infrastructure is the number of Internet hosts. An Internet host is a domain name that has an associated IP address record. The main obstacle of the interpretation of host data is the determination of the geographical location of a particular domain. As some top-level domain names are generic (gTLDs, such as .com, .net or .org), the hosts under these domains need to be allocated to the different countries. Without going further in detail, we take here the methodology of Telecordia, an organisation which provides Internet hosts data based on daily samples of IP addresses. In Belgium, the number of Internet hosts amounted to 29.8 per 1000 inhabitants in September 1999 while this was only 8.6 in September 1997. This expansion appears also in the other countries under review and even in all other OECD countries, showing the very fast diffusion of this technology.

Note the figure for the EU is the ratio of the total number of Internet hosts in 14 EU member countries (no data for Luxembourg available) to the total population in the EU.

	99
Belgium	29.80
Germany	20.40
France	13.20
Netherlands	51.90
EU	22.81
Japan	18.80
United States	160.10



Source: OECD (2000), Local access pricing and e-commerce.

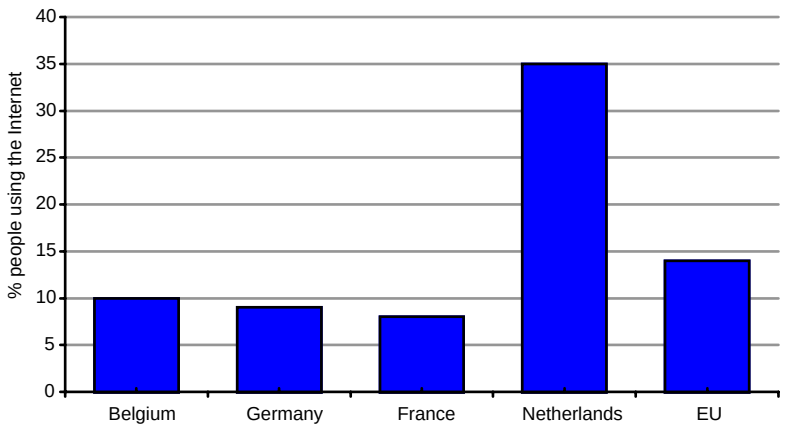
c. Proportion of people using the Internet in 1999 (%)

In 1999, 10% of the Belgian population older than 15 years seems to use or has access to the Internet. This is less than the average of the 15 European member countries. In Europe, the Scandinavian countries are again on top: in Sweden for instance more than 50% of the population aged 15 and over uses Internet. The relatively low figure for France should be interpreted with caution. In France 21% of the population over 15 years uses the Minitel. Minitel is only used in France and although it is technically quite different from Internet, it is similar in nature and function. If one would ad the figure for Minitel with the one for Internet, France would climb up in the list of countries with 29% of the population older than 15 using Internet or Minitel.

Note

The figures are based on Eurobarometer, which is an opinion poll programme of the European Commission. The survey methodology is face-to-face interviews with households and a sample size of 1.000 interviews per country (Germany 2.000 interviews). All samples are representative of the population aged 15 and over.

	99
Belgium	10.00
Germany	9.00
France	8.00
Netherlands	35.00
EU	14.00



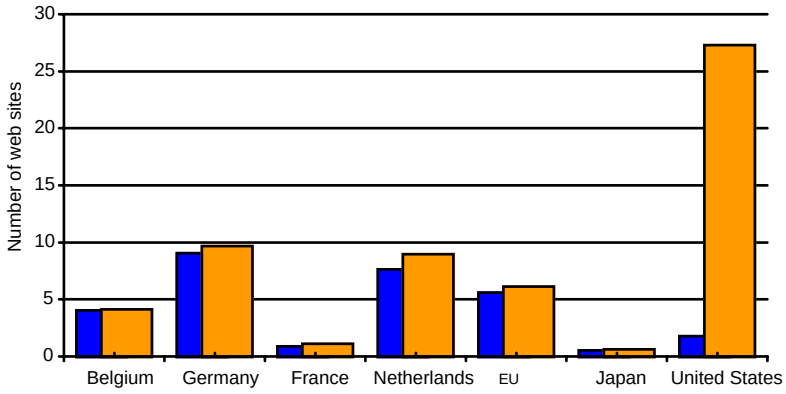
Source: EITO (2000), European Information Technology Observatory.

d. Number of web sites in February 2000 - per 1000 inhabitants

We can take a look at the number of web sites in each country by their sites under country code Top Level Domain (ccTLD, e.g. .be for Belgium, .fr for France, .nl for the Netherlands). In February 2000, Germany and the Netherlands have the largest number of web sites among the countries under review with respectively 9 and 7.6 sites per 1000 inhabitants. In the same period, Belgium has 41200 sites by ccTLD or 4.03 sites per 1000 inhabitants. However, to get a fuller understanding of the development of web sites, it is necessary to include sites under generic Top Level Domain (gTLD, e.g. .com, .org, .int,..). While the adjustment to gTLD for most OECD countries might be no more than 10% of their ccTLDs, this is certainly not the case for the United States since most American businesses preferred to use gTLDs. So, weightings for gTLDs do not seem to change the ranking among European countries, but the United States is now the leader with 7.46 million web sites or 27.28 sites per 1000 inhabitants in February 2000. Moreover, the gap between the United States and the other countries is extremely large. Per 1000 inhabitants, the United States has for instance more than 6 times more sites than Belgium. This gap can partly be explained by the access to internet, meaning that countries with more users on-line are more likely to stimulate the creation of domestic content and

services on-line. Another explanation is the easier access for small businesses in the United States to create and maintain sites on the World Wide Web.

	By ccTLD domain	Weighted by gTLD
Belgium	4.03	4.11
Germany	9.07	9.66
France	0.87	1.13
Netherlands	7.62	8.95
EU	5.61	6.14
Japan	0.52	0.60
United States	1.79	27.28



Source: OECD (2000), Local access pricing and e-commerce.

D. ICT pricing

The prices of ICT are very important for the development of the sector. Although the charges on fixed and mobile telephone communication decreased in Belgium over the last couple of years, they are still high compared to the other countries under review. The telephone charges have also an important influence on the use and diffusion of Internet and e-commerce.

1. Telecommunication

a. Basket of residential telephone charges - US dollars based on PPP for 08/1998

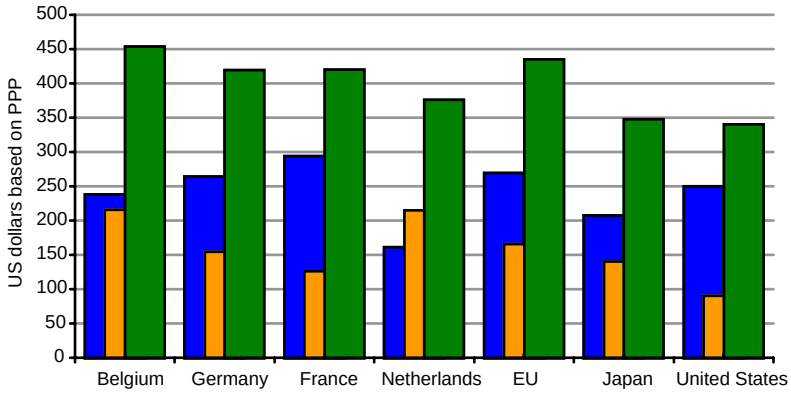
The price basket computed by the OECD shows that residential telephone services are quite expensive in Belgium. Moreover, the total average yearly spending on telecommunication charges in Belgium was the highest among the countries compared. To explain this we have to decompose the telephone charges in usage charges (price of calls spread over distance and time) and fixed charges (connection and line rental costs). The usage charges are not higher than in the other countries; only the Netherlands and Japan have lower charges. But, the Belgian fixed charges are the highest among the compared countries. So, the relatively high total average annual spending in Belgium can be explained by the very high fixed charges.

Note

Values express the average annual spending by a residential user, including taxes. The figure for the EU is compiled as a weighted average of the charges operated in the 15 EU member countries. Weightings of charges are based on the share of each country's access lines in the EU total.

98

	Usage charges	Fixed charges	Total
Belgium	238.02	215.54	453.56
Germany	264.48	154.62	419.10
France	294.20	125.76	419.96
Netherlands	161.39	214.99	376.38
EU	269.18	166.04	435.22
Japan	207.50	140.36	347.86
United States	250.27	90.20	340.47



Source: OECD (1999), Communication Outlook. EU: Own calculations.

b. Basket of business telephone charges - US dollars based on PPP for 08/1998

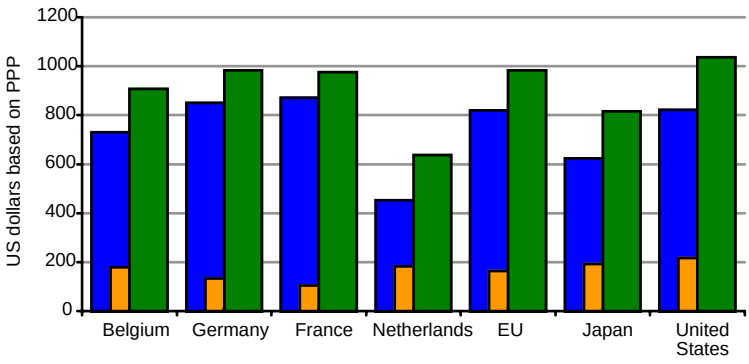
The business telephone charges basket shows the average annual spending (excluding taxes) by business users for the use of one line. This basket concerns mainly small enterprises since larger firms would rather use other services like leased lines. Among the countries compared, total charges are only lower in Japan and in the Netherlands than in Belgium. While fixed charges are slightly lower than in Japan and in the Netherlands, usage charges are substantially higher in Belgium.

Note

Values express the average annual spending by a business user, excluding taxes. The figure for the EU is compiled as a weighted average of the charges operated in the 15 EU member countries. Weightings of charges are based on the share of each country's access lines in the EU total.

98

	Usage charges	Fixed charges	Total
Belgium	729.51	178.13	907.64
Germany	850.65	133.29	983.94
France	871.31	104.28	975.59
Netherlands	453.40	182.97	636.37
EU	819.48	163.79	983.28
Japan	623.66	192.78	816.44
United States	820.66	215.97	1036.63



Source: OECD (1999), Communication Outlook.

c. Basket of national leased line charges - 1.000 US dollars based on PPP for 08/1998

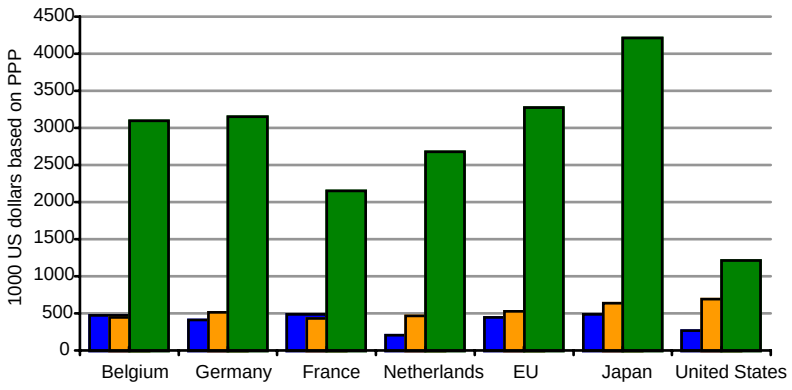
Because they use more than one telecommunication line, leased lines provide an important service for large businesses. Users who need to transport high volumes of traffic can profit from lower prices than prices offered by the public switched telecommunication network (PSTN). Moreover users can control their own telecommunication facilities and traffic. Evidence shows also that low local leased line prices contribute to the development of the Internet access.

Along with France, Belgium has the lowest prices for medium speed circuits (64 kbit/s). In these two countries, tariffs for low speed circuits (M. 1020) are higher than for medium speed circuits (64 kbit/s), encouraging customers to use the latter. The United States had the lowest tariffs for high speed leased line circuits.

Note

The values of the basket of national leased line charges express the price (excluding taxes) of the rental charges of 100 national circuits distributed over 5 distances from 2 to 200 km. The figure for the EU is compiled as a weighted average of the charges operated in the 15 EU member countries. Weightings of charges are based on the share of each country's access lines in the EU total.

	98		
	M. 1020	64 kbit/s	1.5/2.0 Mbit/s
Belgium	470.35	443.74	3092.49
Germany	407.54	516.93	3149.20
France	488.27	434.05	2151.87
Netherlands	204.16	462.50	2679.66
EU	448.54	529.20	3272.19
Japan	487.91	638.58	4211.04
United States	264.38	690.58	1211.60



Source: OECD (1999), Communication Outlook.

d. Interconnection rate for fixed call termination on fixed network - Eur/100 per minute for 09/1999

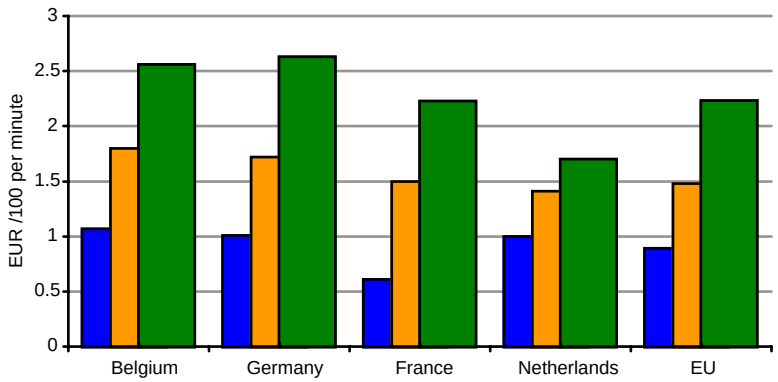
Interconnection charges are those to be paid by new operators for using the incumbent's network for the delivery of services, to transit calls and to allow the incumbent access to its own customers. High interconnection charges can discourage new operators to use the incumbent's network and so to enter the market. The graph shows interconnection rates for fixed call termination on fixed network. For most of the European countries, they are similar to interconnection rate for mobile call termination on fixed network. The Belgian interconnection rates are among the highest of the compared countries. On the first of September 1999, the three interconnection rates from Belgium were above the upper limit of the Commissions "1999 best practice recommendation on interconnection charges". For the local interconnection rate this best practice was 1 EUR/cents per minute and this was among the countries under review exceeded by Belgium and Germany. These two countries exceeded also the best practice recommendation for single transit (1.6 EUR/cents per minute) and for double transit (2.3 EUR/cents per minute).

Definition Local level refers to local exchanges, single transit refers to metropolitan level and double transit refers to national level (more than 200 km).

Note The figure for the EU is compiled as a weighted average of the interconnection rates operated in 14 EU member countries (data for Greece are not available). Weightings of charges are based on the share of each country's access lines in the total of the 14 countries taken into account.

99

	Local	Single transit	Double transit
Belgium	1.07	1.80	2.56
Germany	1.01	1.72	2.63
France	0.61	1.50	2.23
Netherlands	1.00	1.41	1.70
EU	0.89	1.48	2.23



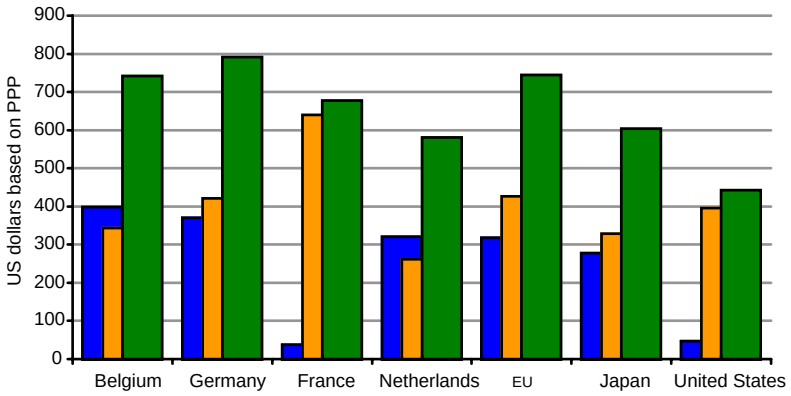
Source: European Commission (2000), Annexe 1 of the "Fifth Report on the Implementation of the Telecommunication Regulatory Package". EU: Own calculations.

e. Basket of personal digital mobile service charges - in USD PPP for 1999

In Belgium, the average annual digital price for a personal basket (based on 568 calls) of mobile service was 742 USD in 1999. This was only exceeded by Germany (791 USD) among the countries under review. Especially the usage charges are higher in Belgium in comparison with the other countries. Mobile communication pricing is characterised by flexible tariff packages. The same usage pattern with a different tariff packages can therefore give major differences in prices.

Note The personal basket is based on 568 calls per annum and includes VAT. For countries like France and the United States data was available for more than one tariff option. Here the cheapest tariff package is given. The figure for the European Union is an unweighted average of the mobile communication charges from the EU member countries.

	99		
	Usage charges	Fixed charges	Total
Belgium	398.00	344.00	742.00
Germany	370.00	421.00	791.00
France	37.00	640.00	677.00
Netherlands	320.00	261.00	581.00
EU	317.67	426.80	744.47
Japan	277.00	328.00	604.00
United States	47.00	396.00	443.00



Source: OECD, WP TISP (1999), Cellular mobile pricing structures and trends.

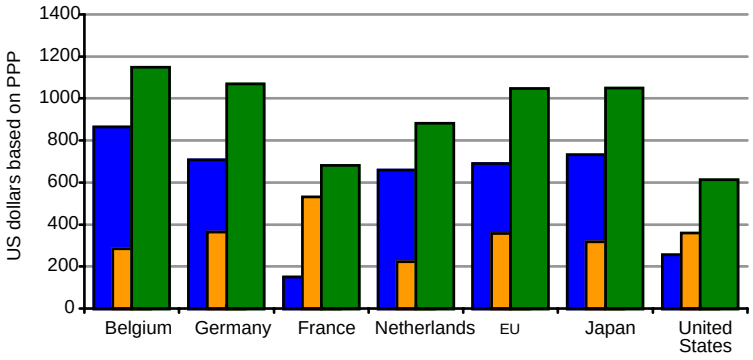
f. Basket of business digital mobile service charges - in USD PPP for 1999

The price basket for business mobile services computed by the OECD shows that in Belgium business charges for mobile communication are quite high. Again, the usage charges are the highest in Belgium but the fixed charges are one of the lowest among the countries under review.

Note

The business basket is based on 1169 calls per annum and excludes VAT. For countries like France and the United States data was available for more than one tariff option. Here the cheapest tariff package is given. The figure for the European Union is an unweighted average of the mobile communication charges from the EU member countries.

	99		
	Usage charges	Fixed charges	Total
Belgium	864.00	285.00	1148.00
Germany	707.00	363.00	1070.00
France	150.00	531.00	681.00
Netherlands	660.00	222.00	882.00
EU	689.33	357.33	1047.47
Japan	731.00	318.00	1049.00
United States	255.00	360.00	614.00

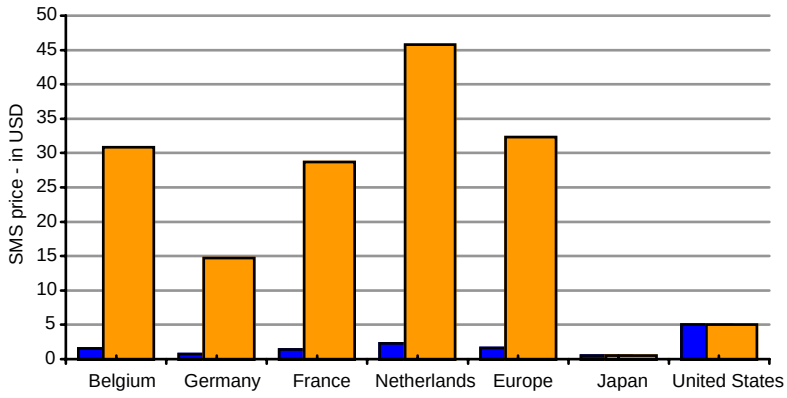


Source: OECD, WP TISP (1999), Cellular mobile pricing structures and trends.

g. Short Message Service (SMS) pricing - in US dollars in 1999

Before we compare the SMS prices between the operators of the countries under review, we have to take a look at the price system. Indeed, the European countries have a different SMS charging system than the United States and Japan. In Europe, SMS users pay an individual price per message sent. This in contrast with the United States and Japan where users pay an additional fixed monthly charge for the right to send a limited or unlimited number of messages. So, with the latter system, the more messages the customer sends, the cheaper it gets per message. The Belgian prices for 10 messages per month (1.54 US$) as well as for 200 messages per month (30.86 US$) are just below the average of the European Union (1.62 US$ and 32.34 US$ respectively). Among the European countries under review, Germany has the lowest SMS prices and the Netherlands have the highest. With a fixed rate of 5 US$ per month, the United States has a very high charge for 10 messages in one month, but for 200 messages this is one of the cheapest systems. It is also more likely that a user who takes the SMS services will use it as much as possible.

	Per 10 messages	Per 200 messages
Belgium	1.54	30.86
Germany	0.73	14.69
France	1.44	28.71
Netherlands	2.29	45.80
EU	1.62	32.34
Japan	0.55	0.55
United States	5.00	5.00



Source: OECD (2000), Cellular mobile pricing structures and trends.

2. Information Technology (IT)

i. Basket of internet access charges - US dollars based on PPP for 03/2000

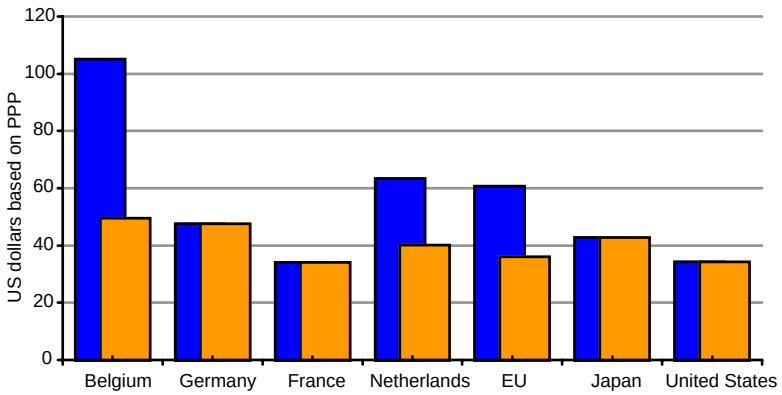
Internet access prices include public switched communication network (PSTN) charges (the fixed monthly line rental and the local call charge) and the charge of an Internet Service Provider (ISP). The ISP charge is the best available rate, from the largest telecommunication operator, for 30 hours of service. In March 2000, there are no ISP charges in Belgium. Despite this free service, Belgium has, among the countries under review, the highest access rate for 30 hours on Internet at peak moments as well as at off-peak moments. Since there are no ISP charges in Belgium, this high rate is totally due to high PSTN charges. The fixed charge (line rental) as well as the usage charges (telephone call charges) are the highest in comparison with the other countries. Especially the usage charges are much higher and represent 84.61% of total charges at peak moments and 67.38% at off-peak moments. So, PSTN charges are highly differentiated according to the peak and off-peak period. In the other countries (beside the Netherlands) no difference is made between peak and off-peak charges. Another important element in the development of Internet is the price of the connection “always on”. This means that the public telecommunication operator (PTO) offers the possibility of an unlimited Internet access for a

fixed price. In comparison with the other countries under review, the price for an always on connection is high in Belgium. In Europe, especially the Nordic countries have a low always on price (Source: OECD (1999), Communications outlook).

Note

The figure for the EU is compiled as a weighted average of the charges operated in the 15 EU member countries. Weightings of charges are based on the share of each country's number of web sites in the EU total.

	Peak	Off-peak
Belgium	105.15	49.60
Germany	47.50	47.50
France	34.00	34.00
Netherlands	63.37	40.11
EU	60.77	35.95
Japan	42.70	42.70
United States	34.23	34.23



Source: OECD (2000), Local access pricing and e-commerce (annex).

E. Quality of telecommunications

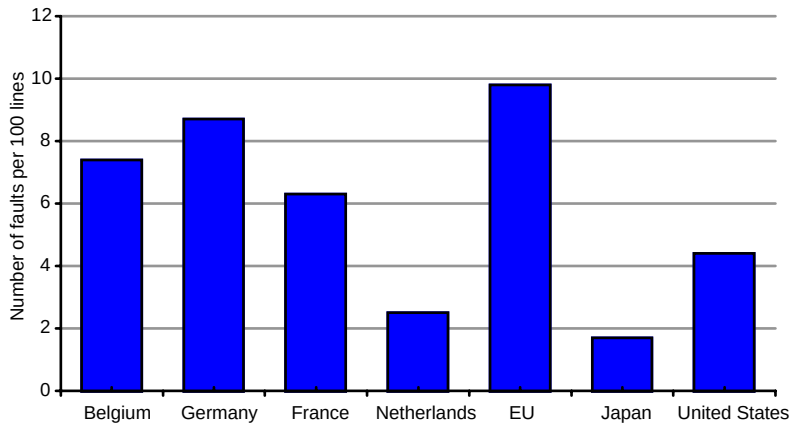
1. Faults on main lines - number of faults per 100 lines for 1995

In 1995, the quality of the telecommunication lines was relatively low in Belgium. The number of faults per 100 connected lines was only exceeded by Germany and by the EU average. The relative high figure for the EU average was partly due to countries like Portugal and Greece where the number of faults per 100 lines amounted to 38 and 43, respectively.

Note

The definition of a fault can vary. For instance, some countries report only faults detected by their own network system. Others include reports of faults by the customers. The figure for the EU is compiled as a weighted average of the number of faults in 12 EU member countries (figures for Denmark, United Kingdom and Ireland are not available). Weightings of faults are based on the share of each country's main lines in the total number of main lines connected of the 12 available EU member countries.

	95
Belgium	7.40
Germany	8.70
France	6.30
Netherlands	2.50
EU	9.80
Japan	1.70
United States	4.40



Source: OECD (1999), Communications outlook.

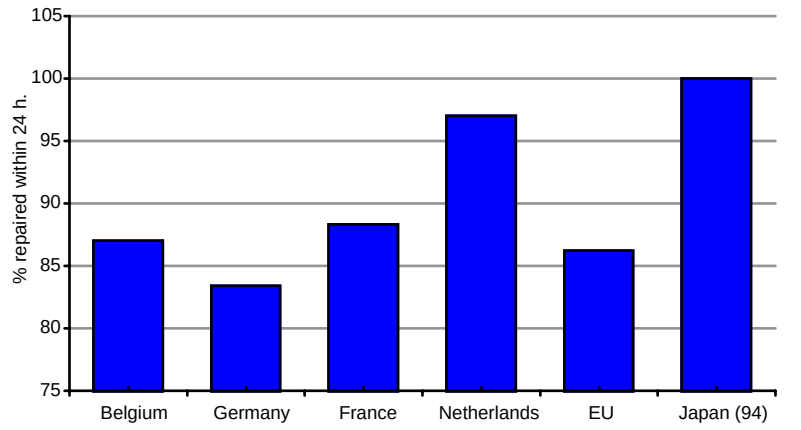
2. % of network faults repaired within 24 hours in 1995

Fast repair of network faults is also an indicator for the quality of a network service. In 1995, 87% of network faults were repaired within 24 hours in Belgium. This is around the average of the European Union. The Netherlands did remarkably better in that year (97%) but this figure represents fault reparations within 48 hours (in stead of 24 hours). Because of possible differences in the interpretation of repaired faults within 24 hours, it is also important to look at the performance of a country over time. In 1997, the % of faults repaired within 24 hours was 90% for Belgium, 87.3% for France, 83.2% for Germany (faults repaired within 3 working days) and 99% for the Netherlands (within 48 hours, in 1996). So, we see that Belgium made faster progress in repairing faults over the period 1995-1997 than its neighbouring countries.

Note

The figure for the EU in 1995 is a weighted average of the faults in 14 EU member countries (no data for Spain in 1995). Weightings are based on the share of each country's main lines in the total number of main lines of the EU member countries (exclusive Spain).

	95
Belgium	87.00
Germany	83.40
France	88.30
Netherlands	97.00
EU	86.21
Japan (94)	100.00



Source: OECD (1999), Communications outlook.

F. E-commerce

E-commerce can be described as doing business over the Internet, selling goods and services which are delivered off-line as well as products which can be "digitised" and delivered on-line, such as computer software (source: OECD (2000), E-commerce: impacts and policy changes). Till now e-commerce is most developed between businesses (B2B) and between businesses and consumers (B2C). But, also consumers can trade goods and services through sites with each other (C2C) or with business (C2B). Also governments use this new technology for the transmission and receipt of information (G2B, G2C, B2G and C2G). Although the impact of e-commerce is rather uncertain, it could enhance welfare for example by saving time or giving access to goods and services more finely tuned to individual needs. Another main advantage is the increase in the available information and this at a low cost. In most European countries, e-commerce is still in its infancy but it is developing fast. In order to the further exploitation of the opportunities of this new technology, special attention has to be given at certain topics. An improvement in the accessibility to the Internet infrastructure and services and the creation of a stable regulatory environment are for instance major points for encouraging the development of e-commerce.

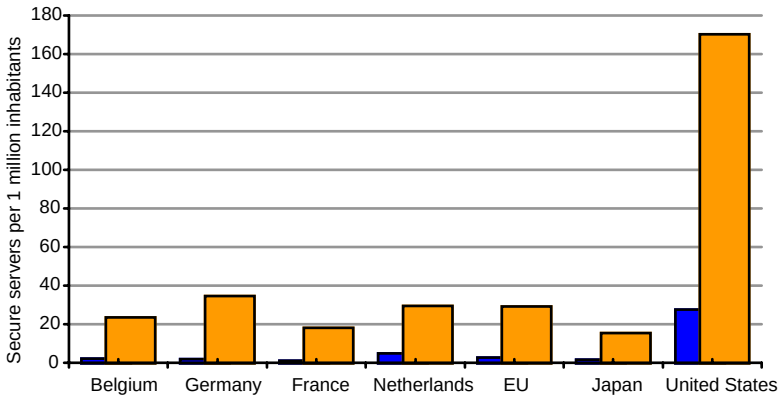
1. Secure web servers - per million inhabitants

The number of secure web servers is a key indicator of the necessary infrastructure for the development of e-commerce. Since 1997, the number of secure servers raised in all OECD countries. In Belgium, the number of secure servers per 1 million inhabitants raised from 2.1 in September 1997 to 23.6 in March 2000. But this was still lower than the number in Germany (34.5), the Netherlands (29.4), the average of the European Union (29.16) and the United States (170.4). The Nordic countries are the leaders in the number of secure web sites in Europe. However, they are also far behind the United States.

Note

The figure for the EU is the weighted average of the number of secure servers in the 15 EU member countries. Weightings of servers are based on the share of each country's total population to the total population of these EU countries.

	97	00
Belgium	2.10	23.60
Germany	1.80	34.50
France	1.10	18.00
Netherlands	4.80	29.40
EU	2.72	29.16
Japan	1.60	15.40
United States	27.60	170.40



Source: OECD (2000), Local access pricing and e-commerce.

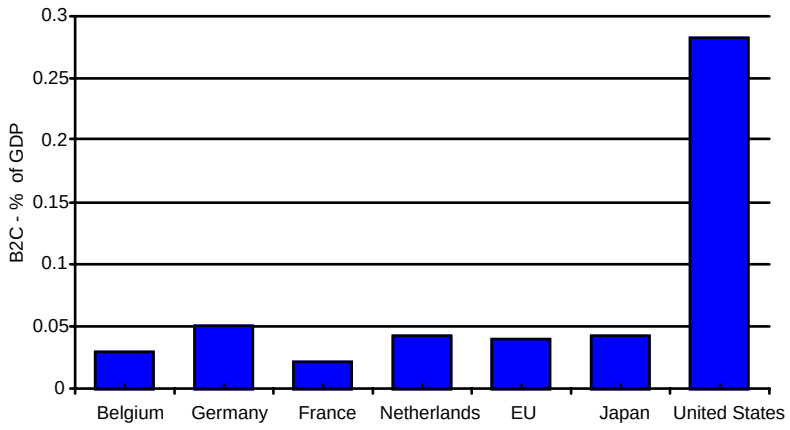
2. B2C e-commerce: value of transactions - as % of GDP for 1999

From 1998 to 1999, Business to Consumer (B2C) e-commerce sales experienced an extremely high growth rate in the EU member countries. Belgium reached for instance a growth rate of 420%. Despite these growth rates, the European e-commerce transactions lags well behind the United States. Whereas the value of transactions was 0.28% of GDP in the United States in 1999, this was around 0.04% of GDP for the average of the European Union and almost 0.03% of GDP for Belgium.

Note

The average of the European Union is the value of transactions of 12 European member countries (no data for Greece, Ireland and Luxembourg) to the total GDP of these countries.

	99
Belgium	0.03
Germany	0.05
France	0.02
Netherlands	0.04
EU	0.04
Japan	0.04
United States	0.28

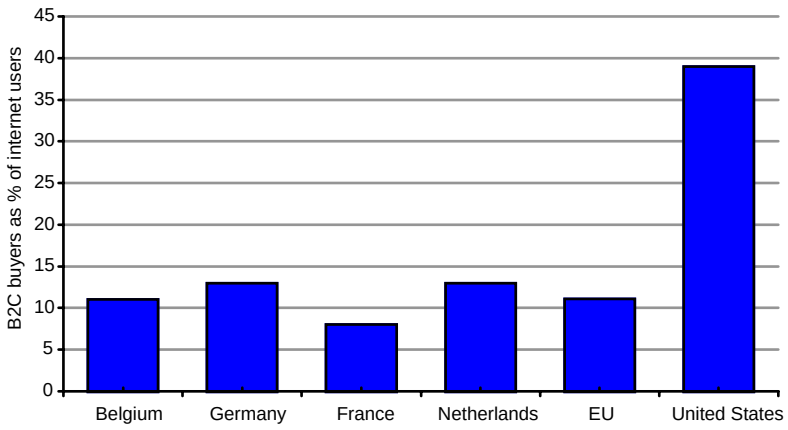


Source: OECD (2000), E-commerce: Impact and policy challenges.

3. B2C e-commerce: number of buyers - as % of internet users, end 1998

In Belgium, 11% of Internet users use their technology to do business (B2C). This is less than the Dutch and German (both 13%) Internet users. This indicator shows also the difference between the European and American attitude towards B2C e-commerce. Whereas in the United States almost 40% of the Internet users purchase over the Internet, this is about 11% in the EU area.

	99
Belgium	11.00
Germany	13.00
France	8.00
Netherlands	13.00
EU	11.07
United States	39.00

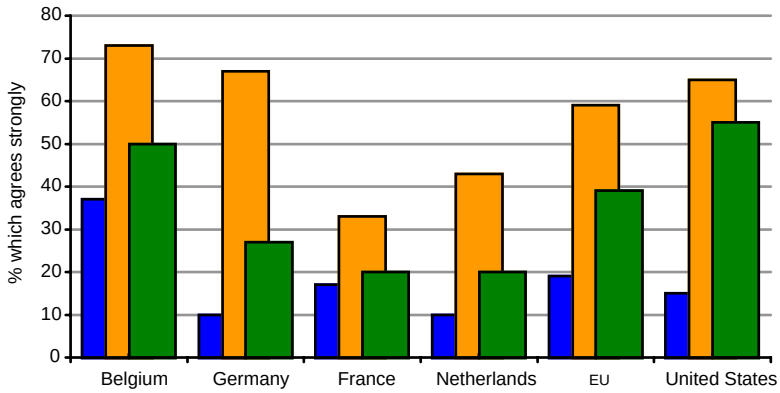


Source: OECD (2000), E-commerce: Impact and policy challenges.

4. The use of e-commerce in 1999 - % of interviewees who agrees strongly

In 1999, Andersen Consulting did an e-commerce survey for Europe with the objective of developing and understanding the current usage and perceptions of e-commerce across senior executives in Europe. It was based on a questionnaire in which the respondent gave the degree to which he agreed with the statement. 37% of the Belgian businesses agree strongly that e-commerce forms a significant part of the way they currently operate and even 73% of them strongly believe that in five years they will be much more reliant on e-commerce than now. Half of the companies strongly agree that e-commerce could have a transformational impact on their business.

	99		
	Current importance	Future plans	Transforming business
Belgium	37.00	73.00	50.00
Germany	10.00	67.00	27.00
France	17.00	33.00	20.00
Netherlands	10.00	43.00	20.00
EU	19.00	59.00	39.00
United States	15.00	65.00	55.00

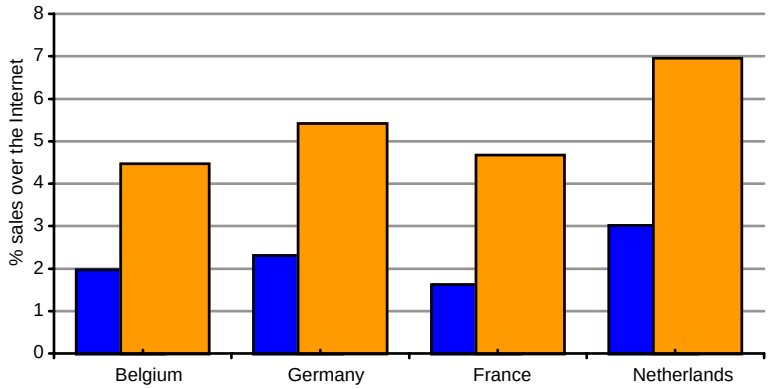


Source: Andersen Consulting (1999), eEurope takes off.

5. % of sales over the Internet - in 1999 and expected in 2001

The Internet sales volume of the Belgian business lags well behind its neighbouring countries. In 1999, less than 2% of business sales happened over the Internet in Belgium whereas this was 3% in the Netherlands and 2.31% in Germany. The Bathwick Group (1999) expects that the Belgian position will get even worse. In 2001, Belgian business will sell 4.47% over the Internet, which will be less than France (4.67), Germany (5.42) and the Netherlands (6.95).

	99	01
Belgium	1.97	4.47
Germany	2.31	5.42
France	1.62	4.67
Netherlands	3.01	6.95

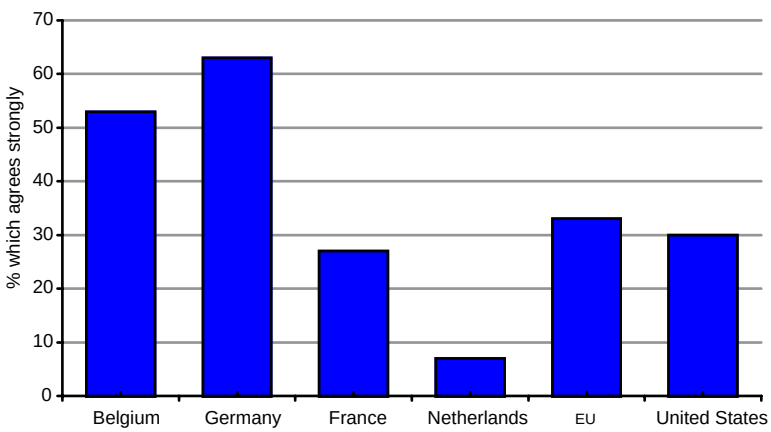


Source: The Bathwick Group (October 1999), E-business in a connected world, Study Report Belgium.

6. Price as barrier of e-commerce in 1999 - % of interviewees who agrees strongly

The development of e-commerce is accompanied with several barriers. Besides the same barriers as other countries experience like the security of financial, personal or corporate information and concerns over privacy, the Belgian companies have special concerns about telecommunications access charges. 53% of the companies strongly agree that the reduction of access and telecommunication costs is a key requirement for the further development of e-commerce.

	Access and telecom costs
Belgium	53.00
Germany	63.00
France	27.00
Netherlands	7.00
EU	33.00
United States	30.00



Source: Andersen Consulting (1999), eEurope takes off.

XI Foreign trade and direct investment

A. Belgium's position

Openness to foreign trade

Current account balance

Foreign direct investment

Growth export performance (1996-1999)

Foreign trade plays an ever-increasing role in the world economy. The openness of all major economies has risen over the last decade. In Belgium, the role of foreign trade has traditionally been very important. This is not only linked to the size of the economy but also to a spirit of openness to the world. The continuing globalisation of the economy in the coming years will make trade and foreign direct investment more and more important factors in explaining long-term economic growth. The emergence of the newly industrializing economies, the increasing role of multinational companies and the process of mergers and acquisitions underlines how important it is for Belgium to create the necessary framework conditions so that Belgian enterprises can compete efficiently on the world scene.

B. Foreign trade

Gains from trade come from different sources. Inter-industry trade is associated with a comparative advantage of nations related to factor endowments. Each country has a tendency to specialise in the goods that are produced at lower relative costs in terms of domestic resources. Intra-industry trade based on the similarity of nations is related to differentiation of the products and economies of scale. It may lead to increased efficiency and welfare gains if associated with variety.

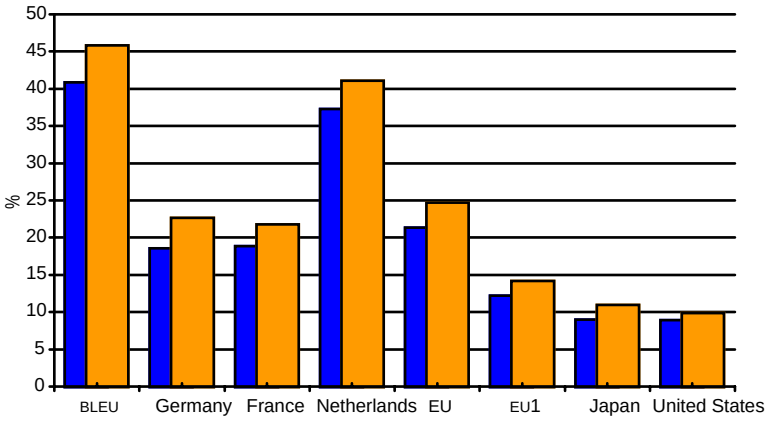
1. Degree of openness of the economy - %

In 1998, the degree of openness of the economy (defined as the share of exports in the final demand) reached 45.84% in the Belgian Luxembourg Economic Union (BLEU). It was much higher than in Germany (22.67%), France (21.75%) and in the European Union as a whole (24.74%). There are many reasons for that. In particular, the small size of the domestic market in Belgium implies a greater need to import goods and services from abroad and to promote exports. The degree of openness of the United States (9.9%) and Japan (10.93%) are similar to that of the European Union (14.16%) when only extra-EU trade is considered.

Definition Ratio of exports of goods and services to the total final demand of the economy.

Note For the EU, two figures are presented: "EU" and "EU1". The figure referred as "EU" takes into account all goods and services exported by EU member countries (including intra-EU exports) divided by the total GDP and imports (including intra-EU imports) of these countries. The figure referred as "EU1" takes only into account exports and imports of goods extra-EU and all exports and imports of services. The figure EU is more appropriate to compare individual member countries with an average for the EU while the second definition allows the comparison of the EU with the United States.

	93	98
BLEU	40.88	45.84
Germany	18.56	22.67
France	18.82	21.75
Netherlands	37.25	41.06
EU	21.33	24.74
EU1	12.23	14.16
Japan	8.96	10.93
United States	8.94	9.90



Source: for exports and imports: WTO (1999), International Trade Statistics, annual report; for GDP: European Commission (1999), AMECO database.

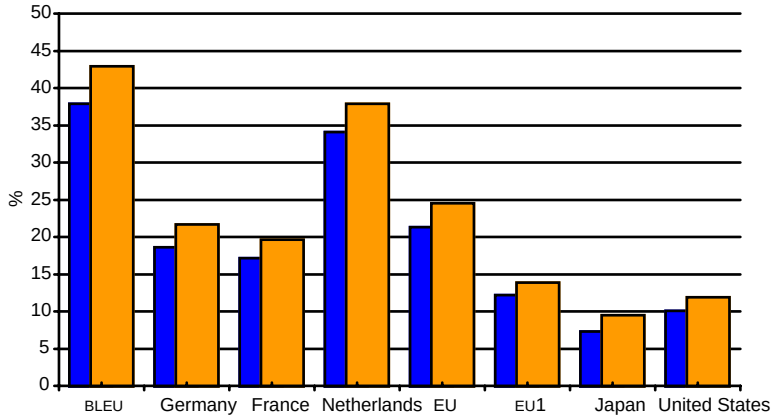
2. Degree of penetration of imports - %

In 1998, the degree of penetration of imports (defined as the share of imports in the final demand) reached 42.96% in the Belgian Luxembourg Economic Union (BLEU). It was much higher than in Germany (21.68%), France (19.64%) and in the European Union as a whole (24.51%). The degree of penetration of imports of the United States (11.91%) and Japan (9.51%) are similar to that of the European Union (13.86%) when only extra-EU trade is considered.

Definition Ratio of imports of goods and services to the total final demand of the economy.

Note For the EU, two figures are presented: "EU" and "EU1". The figure referred as "EU" takes into account all goods and services imported by EU member countries (including intra-EU imports) divided by the total GDP and imports (including intra-EU imports) of these countries. The figure referred as "EU1" takes only into account imports and exports of goods extra-EU and all exports and imports of services. The figure referred as EU is more appropriate to compare individual member countries with an average for the EU while the second definition allows the comparison of the EU with the United States.

	93	98
BLEU	37.85	42.96
Germany	18.63	21.68
France	17.16	19.64
Netherlands	34.10	37.86
EU	21.31	24.51
EU1	12.17	13.86
Japan	7.30	9.51
United States	10.10	11.91



Source: For exports and imports: WTO (1999), International Trade Statistics, annual report; for GDP: European Commission (1999), AMECO database.

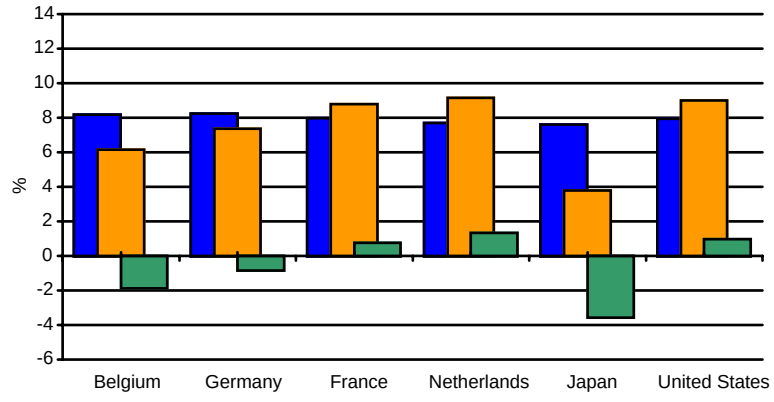
3. Export market growth and performance in manufactured goods - yearly average growth rate (96-99)

Export performance is calculated by comparing the growth of a country's export volumes with that of its export market. It measures the gap between potential exports and effective exports of a country. Over the period 1996-99, the performance of Belgium has deteriorated by on average 1.84% per year, against lesser deterioration by 0.8% in Germany. France and the Netherlands had on average a positive export performance over this period. Over the same period, the export performance strongly deteriorated in Japan (-3.55%) which can be partly explained by the Asian crisis in 1998.

Note

The indicators of export market growth represent the potential export growth for a country, assuming that its market shares remain unchanged. They are calculated as a weighted average of import volume growth in all its markets, with weights based on the share of its exports going to that market. Export performance is calculated as the percentage change in the ratio of export volumes to export markets. This indicator shows whether a country's exports grow faster or slower than its market (OECD 2000).

	99//96		
	Export market growth	Export volume	Export performance
Belgium	8.17	6.16	-1.84
Germany	8.25	7.38	-0.83
France	7.98	8.78	0.74
Netherlands	7.70	9.16	1.33
EU	-.-	-.-	-.-
Japan	7.62	3.79	-3.55
United States	7.95	8.99	0.96



Source: OECD (2000), Economic outlook Nr67.

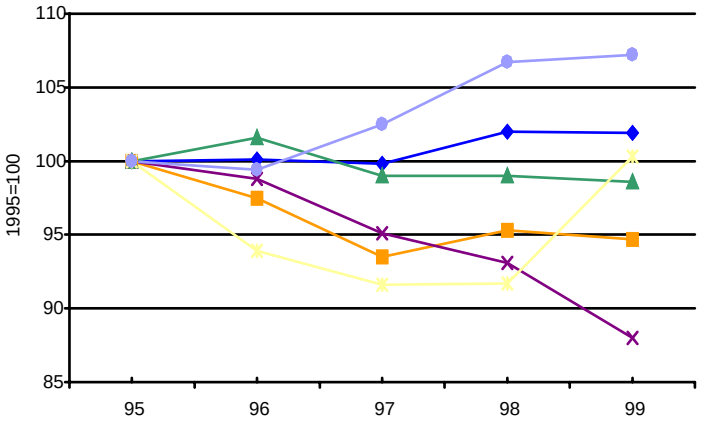
4. Competitive position: relative export prices - indices, 1998 = 100

Between late 1995 and mid-1997, the evolution of the relative export price indices in the EU (concerning manufactured goods) expressed in a common currency was mainly influenced by a depreciation of the European exchange rate mechanism (ERM) against the USD. The improvement in the EU competitiveness that came along with this was less important for Belgium because of its very high geographical concentration of trade on the neighbouring countries. In 1999 the improvements in the competitiveness among the European countries under review reflected the depreciation of the Euro against the American dollar. Again, this positive effect was less clear in Belgium.

Note

Indices are expressed in a common currency and concern manufactured goods. For more details, see Durand, M., C. Madaschi and F. Terribile (1998), "Trends in OECD countries' international competitiveness: the influence of emerging market economies", OECD Economics Department Working Papers, Nr.195.

	95	96	97	98	99
BLEU	100.00	100.10	99.80	102.00	101.90
Germany	100.00	97.50	93.50	95.30	94.70
France	100.00	101.60	99.00	99.00	98.60
Netherlands	100.00	98.80	95.10	93.10	88.00
Japan	100.00	93.90	91.60	91.70	100.30
United States	100.00	99.40	102.50	106.70	107.20

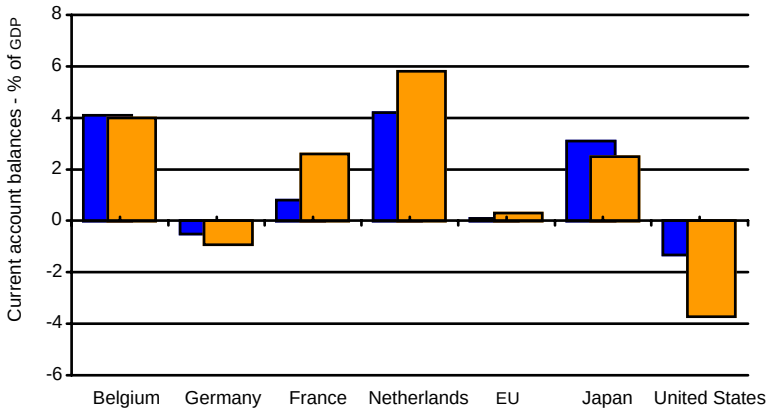


Source: OECD (2000), Economic Outlook Nr.67.

5. Current account balances - % of GDP

In 1999, Belgium had a high current account surplus. Among the neighbouring countries, the Netherlands and France had also a surplus while Germany had a slightly negative result. The positive current account in Europe and in Japan contrasted with the negative current account in the United States.

	93	99
Belgium	4.10	4.00
Germany	-0.50	-0.90
France	0.80	2.60
Netherlands	4.20	5.80
EU	0.10	0.30
Japan	3.10	2.50
United States	-1.30	-3.70



Source: OECD (2000), Economic outlook - Nr67.

6. Structure of exports and imports according to factor intensity - % of intra-EC exports and imports for 1999

The factor intensity of intra-EU trade in 1999 shows some characteristics of the Belgian trade. On the export side, the share of products that are intensive in high-skilled labour and capital-technology was lower than in Germany, in France and in the European Union as a whole. Only the Netherlands had a lower result. On the import side, the high share of products that are intensive in natural resources should be mentioned. This can be explained by the lack of natural resources in Belgium.

Note

Based on the OECD typology. Natural resource intensive: animal products; vegetal products, animal and vegetable fats, prepared foodstuffs, mineral products, hides and skins, wood pulp products, pearl, precious and semi-precious stones (metals), base metals and articles thereof. High skilled; capital, technology intensive: chemical products, plastics and rubbers, machinery and mechanical appliances, transportation equipment, instruments, measuring, musical, arms and ammunition. Low skilled intensive: Wood and wood products, textiles and textile articles, footwear, headgear, article of stone, plaster, cement, miscelanous, works of art.

	INTRA-EC imports			INTRA-EC exports		
	Natural resource intensive	High skilled labour capital and technology intensive	Low skilled intensive	Natural resource intensive	High skilled labour capital and technology intensive	Low skilled intensive
Belgium	33.62	57.16	9.21	30.85	56.24	12.91
Germany	24.72	50.49	24.79	18.21	66.7	15.09
France	25.87	62.82	11.31	26.68	64.69	8.64
Netherlands	30.59	57.84	11.57	37.92	54.33	7.74
EU	26.1	59.74	14.16	26.26	60.54	13.2

Source: EUROSTAT: COMEXT database.

7. Geographical distribution of trade - % of total exports and imports for 1999

The Belgian Luxembourg Economic Union (BLEU) trade with other European Union countries represented 76.44% of total exports and 71.45% of total imports in 1999. On the export side, the main trading partners of the BLEU were Germany (18.12%), France (17.73%), the Netherlands (12.20%) and the United Kingdom (10.08%). On the import side, the main trading partners of the BLEU were Germany (18.19%), the Netherlands (16.03%) and France (13.34%).

The importance of trade relations between Belgium and the other countries of the European Union demonstrates the high degree of integration of Belgium in Europe. The geographical concentration of trade can also be a source of vulnerability due to the sensitivity to cyclical fluctuations in the neighbouring countries.

EXPORTS (f.a.b)	BLEU	Germany	France	Netherlands	EU (1998)
OECD	86.73	84.49	82.78	89.87	83.66
EU	76.44	56.92	64.47	77.8	63.15
BLEU		5.59	7.71	12.27	5.48
Germany	18.12		15.84	25.79	13.23
France	17.73	11.49		10.75	9.84
Netherlands	12.2	6.56	4.71		5.63
United Kingdom	10.08	8.47	10.38	10.52	8.15
Italy	5.67	7.46	9.14	5.99	5.98
United States	5.26	10.23	7.72	4.3	8.15
Japan	1.17	2.08	1.53	1.07	1.61
Total	100	100	100	100	100

Source: OECD (2000), Monthly statistics of international trade.

IMPORTS (c.i.f)	BLEU	Germany	France	Netherlands	EU (1998)
OECD	86.28	81.96	82.58	79.83	82.99
EU	71.45	53.37	63.12	59.5	61.19
BLEU		5.25	7.3	10.3	5.39
Germany	18.19		17.17	19.7	13.83
France	13.34	10.53		6.57	9.18
Netherlands	16.03	8.08	5.11		6.71
United Kingdom	8.22	6.95	8.48	9.64	6.95
Italy	3.74	7.43	9.65	3.14	6.07
United States	7.58	8.35	8.73	9.33	8.41
Japan	2.7	4.92	3.56	4.22	3.83
Total	100	100	100	100	100

Source: OECD (2000), Monthly statistics of international trade.

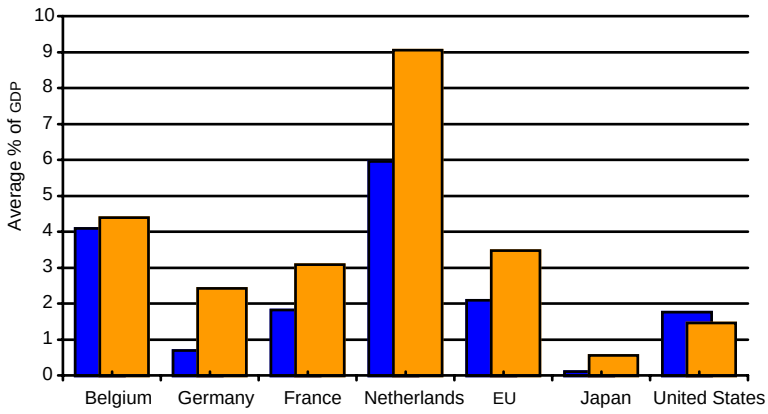
C. Foreign direct investment

1. Inward and outward foreign direct investment - % of nominal GDP (average 1995-1999)

Over the period 1995-1999, Belgium attracted a high volume of direct investments from abroad as a percentage of GDP (4.40%). Inward foreign direct investments can have a positive impact on the economy as additional source of know-how and technology. However, a large proportion of these foreign investments is related to the fiscal incentive benefiting to co-ordination centres whose financial operations are realised among affiliates of a same group. The data for Belgium concerning inward direct investment is then overestimated. Among the countries under review, only the Netherlands attracted a higher volume of direct investment from abroad as a percentage of GDP and it reached almost 6% over the period 1995-99.

Outward direct investment from Belgium reached 4.39% of GDP over the period 1995-99. In the Netherlands, outward direct investment reached the highest percentage (9.05%) over the same period. Internationally oriented firms in the Netherlands have a tradition of investment in the neighbouring countries in particular in Belgium and Germany.

	95^99 Inward investment	95^99 Outward investment
Belgium	4.09	4.39
Germany	0.69	2.43
France	1.82	3.09
Netherlands	5.95	9.05
EU	2.09	3.47
Japan	0.10	0.56
United States	1.76	1.45



Source: For FDI inflows and outflows: United Nations (2000), World Investment Report; for GDP: European Commission (1999), AMECO database (own calculations for Belgium based on these databases).