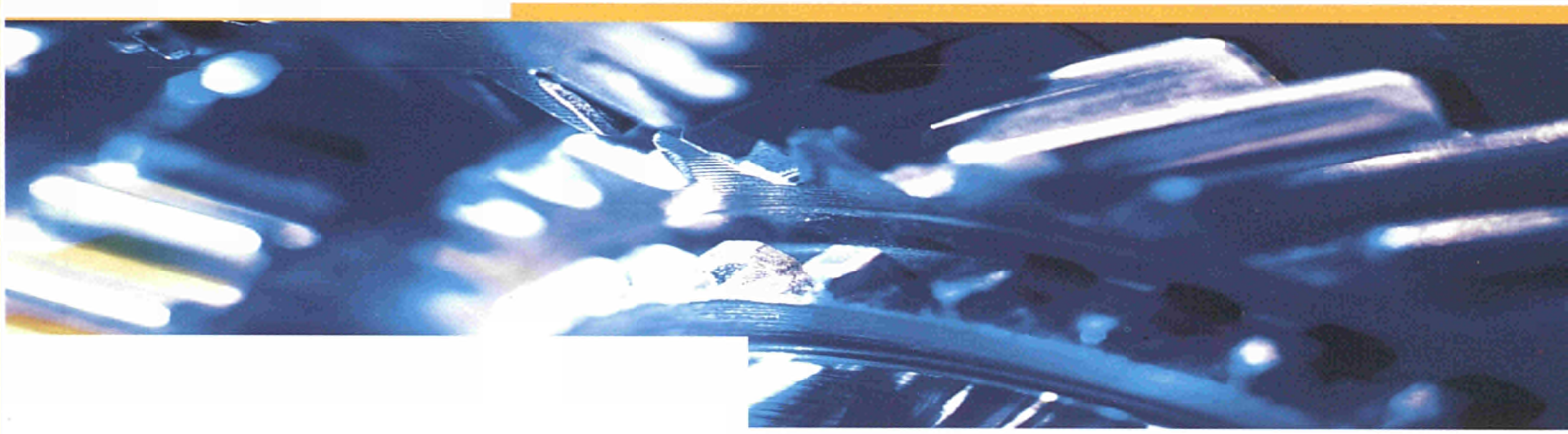
EUROPEAN COMMISSION

The competitiveness of European industry



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Based on the working document of Commission services

A great deal of additional information on the European Union is available on the Internet.
It can be accessed through the Europa server (http://europa.eu.int)

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COMPETITIVENESS REPORT

Preface by Stefano Micossi

Director-General for Industry of the European Commission

The recent upturn in economic activity should not divert attention from the fundamental questions that will determine Europe's long-run economic performance. Though the Union's economic base is strong, rigidities and distortions still remain that prevent Europe from fully exploiting its potential for growth and employment creation.

It is vital that European society be open to change and innovation. Policy-makers can assist by creating a favourable environment for innovation and growth, through market-based policies that encourage investment in human capital and knowledge, promote the exchange of information and remove obstacles to change.

The Commission has been diligent in responding to this challenge. Its strategy for industry is market-based and horizontal in approach, focusing on providing coordination and support while leaving to the private sector the responsibility for identifying technological and market trends.

This report on the competitiveness of European industry provides an up-to-date analytical foundation for the examination of key issues, based on existing research and on further analysis of key data. It has been produced at the request of the Council by its resolution of 21 November 1994 on strengthening the competitiveness of European industry.

The report seeks to establish the extent to which European industry has been successful in adapting to the requirements for change induced by greater competition at home and abroad. It also seeks to identify factors which hinder European industry from realizing its full potential for growth and employment in the light of the Commission's proposals for a confidence pact for employment. The Competitiveness Advisory Group on its part has also addressed these issues in its reports to the Commission and to the European Council.

The report is complemented by a Commission communication on the same subject which lays out the operational conclusions drawn by the Commission from the analytical report. The importance of benchmarking as a tool for improving the performance of enterprises, sectors and policies is stressed.

I hope that this publication will prove to be a vital tool for analysts and policy-makers, and indeed anyone who needs accurate, up-to-date and detailed information on the competitive performance of European industry.

S. Micossi

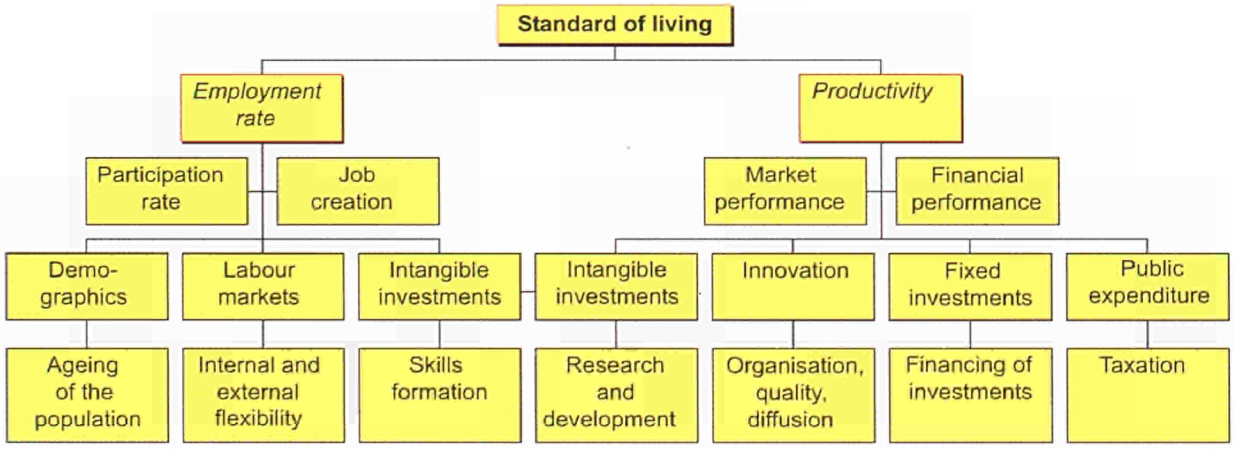
"Country abbreviation"

Country	*Abbreviation*
Belgium	B
Denmark	DK
Germany	D
Greece	EL
Spain	E
France	F
Ireland	IRL
Italy	I
Luxembourg	L
Netherlands	NL
Austria	A
Portugal	P
Finland	FIN
Sweden	S
United Kingdom	UK
EUR 15	EUR 15
United States of America	USA
Japan	JP
Norway	NO
Canada	CA
Switzerland	CH
Poland	PL

Introduction

Competitiveness does not concern industry alone. It touches every citizen in the European Union. A strong economy is an efficient economy that creates jobs and raises standards of living. Productivity, employment, and living standards are all linked together. High productivity provides the basis for raising living standards. However, increases in labour productivity should not be achieved at the expense of job creation. The ability to achieve high rates of employment also affects living standards directly by generating income from a larger proportion of the population. When both productivity and employment rise together, strong growth can ensue.

The competitiveness pyramid



Many interlinked factors affect the performance of the European economy. Some of these relationships are illustrated in the competitiveness pyramid.

Europe continues to lag 20% behind the United States in terms of both productivity levels and the employment rate (proportion of the working age population that is employed). It also lags behind the Japanese employment rate by a similar margin. The result is a level of GDP per capita nearly one third below that of the United States and one sixth below that of Japan. Such a result is by no means inevitable and should not be considered as acceptable. Europe's human resources, capital base, infrastructure, and the size and development of its home market provide the foundation for both high productivity and high employment rates.

Although the EU closed the major part of its productivity gap with the US between 1960 and 1990,

European labour productivity is currently stuck on a plateau. Moreover, the remarkable increase in productivity between those years was mainly achieved through the rapid increase in the capital stock and the significant substitution of labour by capital. Since 1960, the EU has managed to create 10 million new jobs — half those of Japan and less than a fifth of those in the US. A very high rate of job creation enabled the US to increase its employment rate significantly from 63% in 1960 to 72% in 1995, when it came close to the consistently high Japanese rate of 74%. In the EU, the employment rate declined from 67 to 60% over the same period. High labour costs, along with capital/labour substitution, is surely an important reason for the EU's poor employment record.

Growth and jobs are produced by enterprises operating on competitive markets. Therefore, if competitiveness is to be improved, the focus must be on how to improve the performance of enterprises. Though enterprises themselves are primarily responsible for ensuring their competitiveness, many factors influencing their performance are affected by framework conditions set by policy makers at national or European level.

The first three chapters of the report examine the competitive performance of the European economy in general, of European industry in particular and with regard to trade and foreign direct investment. They provide an overview of key elements that are required to make an assessment of competitiveness.

The next three chapters examine the extent to which European performance can be ascribed to the operation of markets. The chapter on labour markets and corporate finance addresses factors of production. The chapter on competition and operation of markets for services deals with the operation of certain product markets.

The final three chapters address issues related to non-price competition. They cover specific areas including the level of skills, research, innovation and protection of the environment.

Chapter 1
Competitive performance of the European economy

Competitive performance may be assessed at both the level of enterprises and the level of the economy as a whole. High levels and rapid growth of productivity, along with high levels of employment, drive competitive performance of an economy. This chapter examines the extent to which the European economy achieves high productivity and employment compared with other developed countries and with its potential. The link between investment and levels of public expenditure and economic performance is then investigated.

1. Performance of the European economy

In 1995 the 15-member European Union generated a GDP of almost ECU 6 500 billion, or in other words 20% more than that of the United States and 70% more than that of Japan. The four largest Member States generate almost three-quarters of Europe's GDP, almost 30% being accounted for by Germany.

Up to 1990 Europe's economy grew at the same rate as that of the United States, but considerably less than that of Japan. In the early 1990s Europe weathered a longer and deeper recession than the United States which is clearly leaving Europe behind, while Japan has not regained its earlier growth rates (Table 1.1.).

Table 1.1. Economic growth
Annual average — GDP growth in %

	EUR 15	USA	Japan
1960-73	4.7	3.9	9.6
1973-79	2.5	2.5	3.6
1979-90	2.3	2.4	4.1
1991	1.5	-0.5	4.5
1992	1.0	2.5	1.1
1993	-0.6	3.4	-0.2
1994	2.8	4.1	0.5
1995	2.7	3.2	0.4

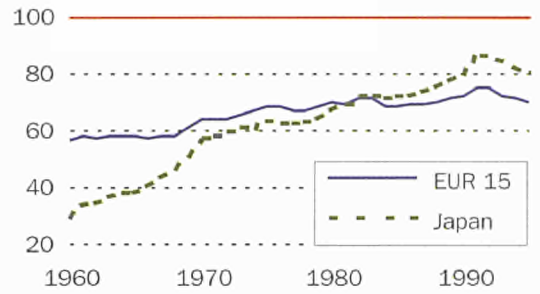
Source: European Commission.

2. Living standards in the European Union

Living standards are the ultimate yardstick of competitiveness in that they reflect the economy's ability to generate, for the factors of production (and the rest of the population), a relatively high income on a long-term basis. The standard of living is evaluated by the per capita gross domestic product (GDP) – measured in purchasing power parities (PPP).

Despite significant progress since 1960, the standard of living in the European Union in 1995 was lower than that in the United States by more than a quarter and that of Japan by almost one sixth .

Fig. 1.1. Living standards
GDP per capita — USA=100



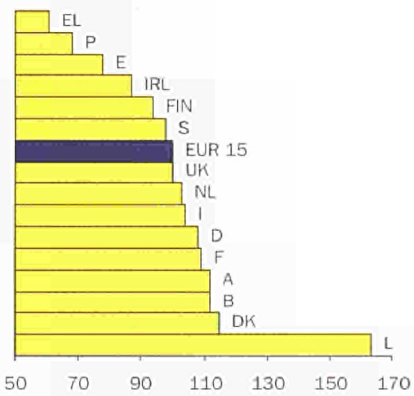
Source: European Commission.

Growth in European standards of living initially enabled it to converge on those of the United States in relative terms, before peaking in the early 1980s and even falling back since the early 1990s (Fig. 1.1.).

The shift in Japan was similar but decidedly more rapid. Starting from a level half of that in Europe, the standard of living grew very quickly and overtook its European counterpart at the end of the 1970s and only peaked in the early 1990s.

Although convergence within the European Union has enabled the disparities in living standards between the Member States to be reduced, the spread between the Member States is still between 1 and almost 3 in 1995 (Fig. 1.2). That spread was between 1 and more than 4 in 1960.

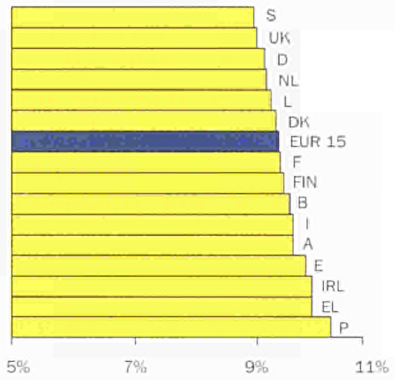
Fig. 1.2. Living standards
GDP per capita — EUR 15=100



Source: European Commission.

This convergence is due to a sharper rise in living standards than the Community average in those Member States whose living standard was the lowest and also in France, combined with a slower rate of growth in living standards in those Member States which were advanced in 1960. Thus Sweden and the United Kingdom, whose living standard counted among the highest in 1960, had a lower standard of living than the Community average by 1995 (Fig. 1.3.).

Fig. 1.3. Living standards
GDP PPP/ per capita nominal growth 1960-1995



Source: European Commission.

Changes in living standards result from a combination of growth in productivity and job creation.

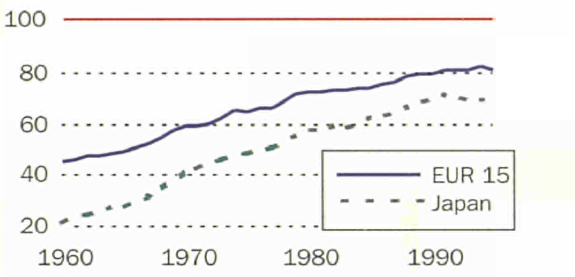
Productivity expresses the efficiency with which goods and services are supplied. A rise in the proportion of the total population which is employed represents enhanced productive use of human resources.

Thus in 1995 the European Union's standard of living was 30% lower than that in the United States. This can be attributed to a combination of lower employment and productivity rates. Concerning Japan, the standard of living is lower than that in the United States because of relatively low productivity.

3. Productivity

While all forms of productivity are important, labour productivity has a direct impact on living standards (Fig. 1.4).

Fig. 1.4. Labour productivity
GDP/employee — USA=100

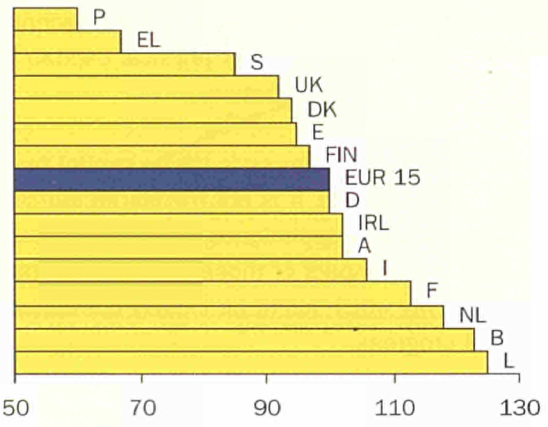


Source: European Commission.

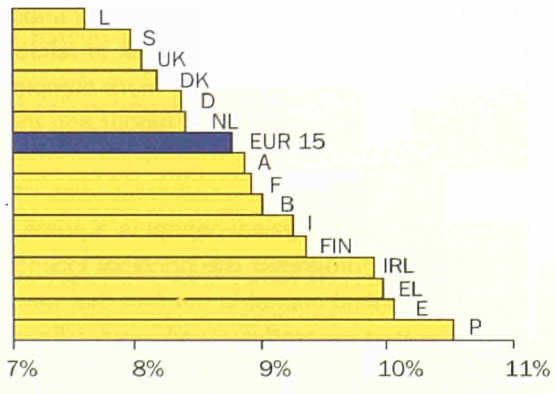
Between 1960 and 1990, the European Union and Japan largely made up their productivity gap with the United States. Nevertheless, that period of convergence seems to have come to an end in both cases. A European GDP per person employed – i.e. labour productivity – which peaks at four fifths of that in the United States points to an unexploited margin of efficiency in the European economy. Contrary to conventional wisdom, Japan is still producing behind the European Union and United States in terms of productivity, particularly as a result of the very low level of labour productivity in agriculture and services.

There are considerable differences within the European Union (Fig. 1.5). However, the maximum ratio between the Member States of 1 to 5 in 1960 became 1 to 2 in 1995 owing to the very sharp rise in productivity in Greece, Spain, Portugal and Ireland.

Fig. 1.5. Labour productivity
GDP/employee — EUR 15=100



GDP/employee annual nominal growth 1960-95



Source: European Commission.

Box 1.1. Measuring productivity

The traditional way of analysing productivity is based on the accumulation of physical capital, but this process, which is subject to diminishing returns, is unable to explain a sustained improvement to labour productivity. Indeed the accumulation of physical capital only explains part of the growth in productivity.

In order to explain the growth in productivity, economic theory now invokes four major factors: technical progress, the accumulation of physical capital, higher skills and economic integration.

Although technical progress is the essential factor in improving productivity, it is not measured directly. However, statistical techniques have been developed to estimate the impact of those other causal factors on productivity which might be closely correlated with technical progress.

Labour productivity — GDP/per person employed — is still an effective means of measuring performance. Measuring the quantity of labour used remains, however, subject to a wide margin of error, even in the advanced economies, and is inevitably imprecise in the rest of the world owing to a lack of reliable statistics. Use must also be made of more complex concepts which take account of both labour and the contribution of capital.

The accumulation of physical capital is a prime yardstick of technical progress. The principal incentive to accumulate physical capital is the fact that new techniques generate new products and more efficient production methods. Measuring and analysing this is however a problem since the national estimates of capital stock are conceptually close but difficult to compare owing to widely differing calculation hypotheses.

By measuring labour and physical capital, it is also possible to measure total factor productivity i.e. the ratio of production to the utilization of the factors of labour and capital. This formula explains the basics of productivity growth, with technical progress as a residual factor (Table 1.2.).

Table 1.2. Annual productivity growth

1973-92	Labour product.	Capital product.	Factors of product.
France	2.73	-1.96	0.73
Germany	2.69	-1.04	1.54
UK	2.18	-1.67	0.69
USA	1.11	-0.72	0.18
Japan	3.13	-2.85	1.04

Source: OECD - Maddison.

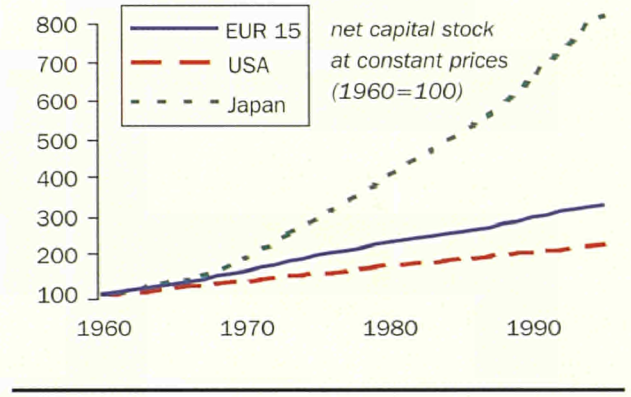
A third factor helping to turn technical progress to practical account – the accumulation of human capital by raising the level of education – has been incorporated into an 'augmented' version of the formula for the total productivity of the factors, which has given rise to far fewer statistical measurements in practice.

Other aspects such as the ever greater openness of economies, economies of scale, structural change and access to natural resources help to improve productivity, but it is difficult to measure the impact of these.

In attempting to close the productivity gap, the contribution of capital has been more important in the European Union and Japan than in the United States.

Between 1960 and 1995, the European Union more than tripled its capital stock and Japan multiplied its own eight times, whereas investment in the United States barely doubled (Fig. 1.6.).

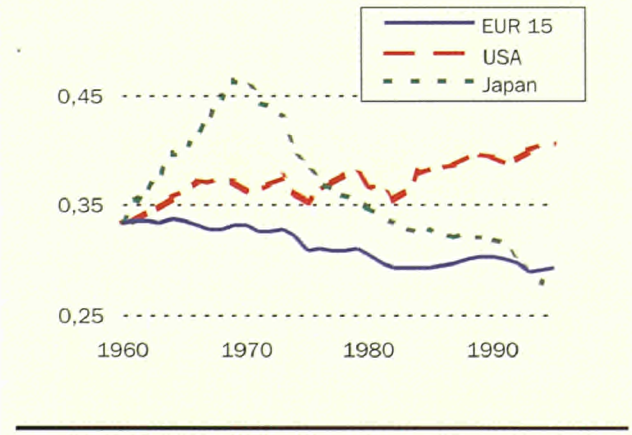
Fig. 1.6. Net capital stock



Source: European Commission.

The rapid increase in capital stock in the European Union and in Japan led to a relative fall in capital productivity – measured in terms of GDP per unit of capital stock – between 1960 and 1995. At the same time capital productivity rose in the United States (Fig. 1.6.).

Fig. 1.7. Capital productivity
GDP/capital stock

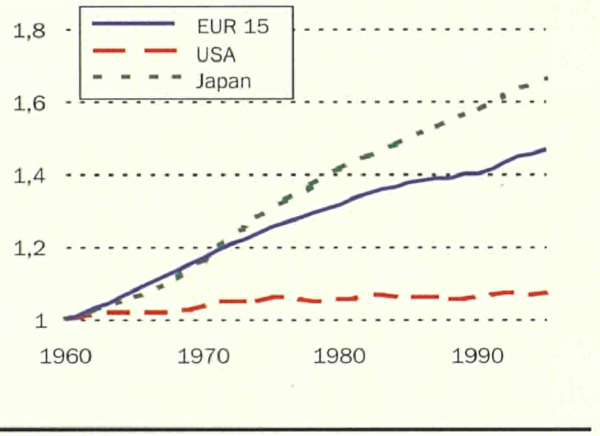


Source: European Commission.

When account is taken of growth in employment, capital intensity – the amount of capital per person employed – better reflects the boost given by technical progress to productivity.

In contrast to the United States where, between 1960 and 1995, capital intensity only rose slightly and the phenomenon of substitution of labour by capital was not significant, the changes within the European Union and even more strikingly in Japan were marked by a sharp rise in capital intensity as a result of a more rapid increase in capital stock and of a replacement of labour by capital (Fig. 1.8.).

Fig. 1.8. Capital/Labour substitution

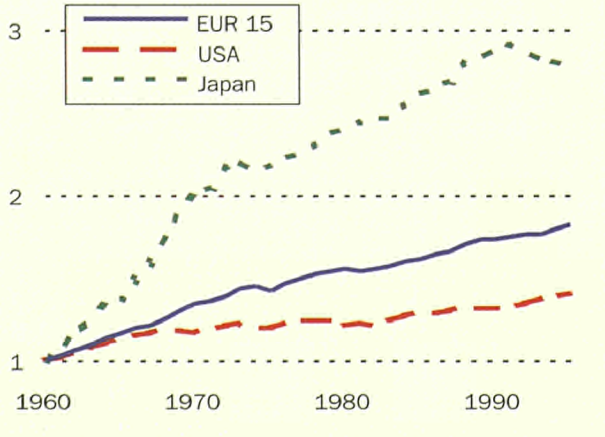


Source: European Commission.

Despite a relative drop in the productivity of capital, total factor productivity almost doubled in the European Union, and almost trebled in Japan, between 1960 and 1995, whereas it increased by less than a half in the United States.

However, productivity growth in the European Union and Japan has begun to peak (Fig. 1.9.).

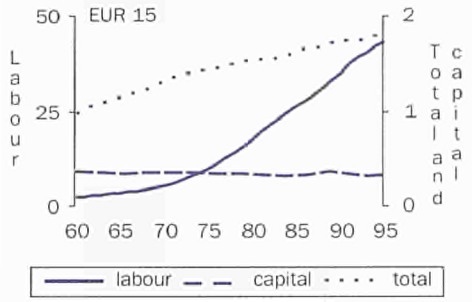
Fig. 1.9. Total factor productivity



Source: European Commission.

In the long term, the boost to total factor productivity is due to that of the rapid rise in labour productivity and to the relative stagnation in capital productivity (Fig. 1.10.).

Fig. 1.10. Labour and capital productivity



Source: European Commission.

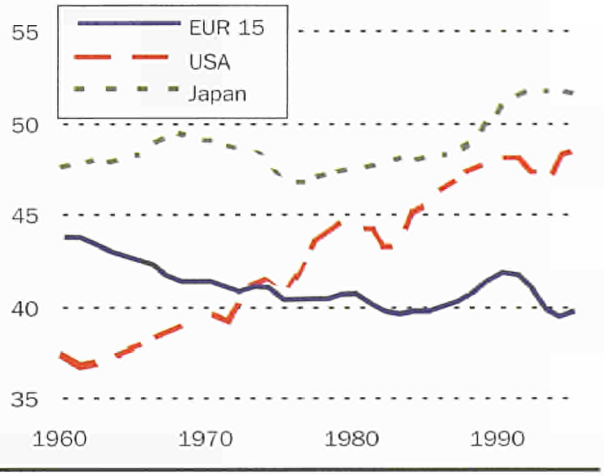
4. Employment rate

The employment/population ratio is an essential determinant of living standards: any increase has a positive effect on living standards.

In 1995 this ratio was clearly lower in the European Union (40%) than in the United States (48%) and in Japan (52%). Although the rate increased in the United States after 1960 (+11 points) and in Japan (+4 points), it decreased by 4 points in the European Union.

Between 1990 and 1995 the employment/population ratio fell by 2% in the European Union whereas it rose by 0.3% in the United States and 0.9% in Japan (Fig. 1.11.).

Fig. 1.11. Employment as % of population



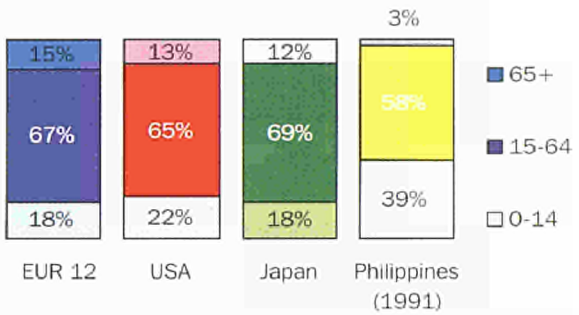
Source: European Commission.

The employment/population ratio is itself determined by demographic structure and the employment situation.

The population of working age is customarily defined as the population between 15 and 64 years of age.

In 1995, the working-age population represented two-thirds of the total population of the European Union, or in other words a proportion comparable to that of the United States and Japan. The difference in the employment/population ratio can thus not be attributed to demographic structure (Fig. 1.12.).

Fig. 1.12. Demographic structure (1992)



Source: Eurostat, Basic statistics.

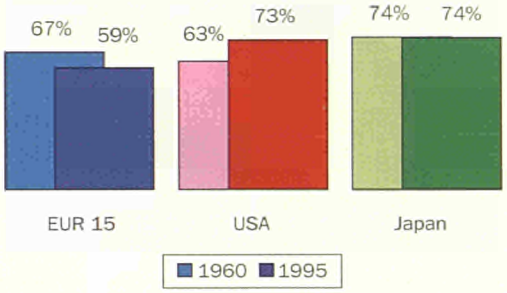
The demographic structure of the European Union, and in particular the increasing population of over 64-year olds in the total population, nevertheless points to future problems, faced by all of the developed countries.

This situation contrasts with that of developing countries, for example the Philippines, where the relative proportion of under 15-year olds in the population is twice as high as in the European Union and there is virtually no-one over the age of 64.

The employment rate, which reflects the proportion of the working-age population that is utilized, is clearly lower in the European Union (59% in 1995) than in the United States and Japan (73% and 74% respectively) (Fig. 1.13.). This difference of almost 15% in the employment rate is equivalent to 37 mil-

lion jobs in the European Union, more than double the current number of unemployed in Europe.

Fig. 1.13. Employment rate
employment as % of working age population

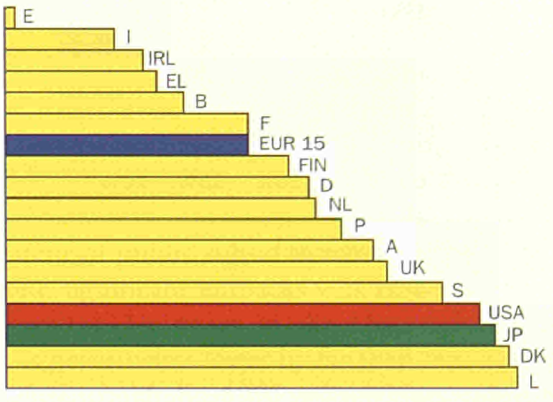


Source: European Commission.

The employment rate, which has declined by 8% since 1960 in the European Union, is one of the most significant signs of the lack of efficiency of the European economy. In the European economic system this decline illustrates the fact that the number of jobs in the European Union has grown less quickly than the population of working age.

The employment rate varies widely between the Member States: from 46% in Spain to 75% in Luxembourg. However, two Member States, Denmark and Luxembourg, have higher employment rates than the United States and Japan (Fig. 1.14.).

Fig. 1.14. Employment rate (1995)

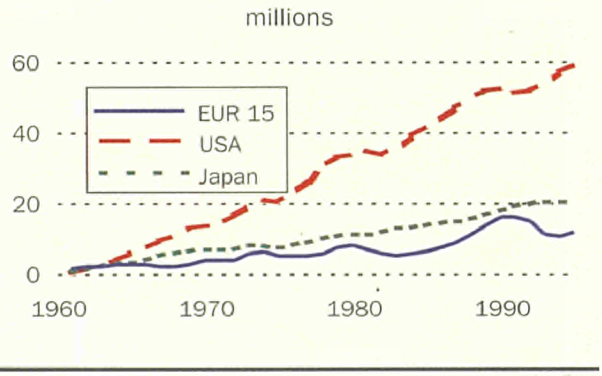


Source: European Commission.

Behind this poor performance lies the fact that with only 10 million new jobs, the European Union has created only half as many jobs as Japan and five and a half times less than the United States (Fig. 1.15.).

In relative terms, the difference is still more significant: between 1960 and 1995 the number of jobs increased by barely 8% in the European Union as opposed to 84% in the United States and 44% in Japan.

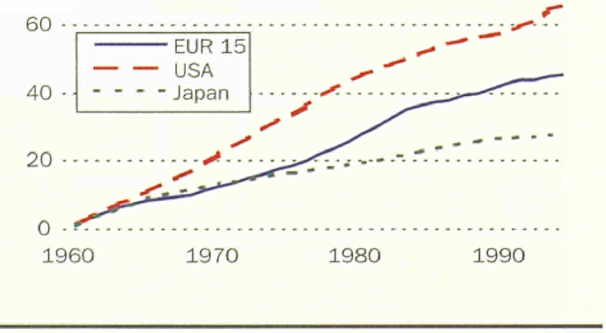
Fig. 1.15. Employment creation



Source: European Commission.

There have been 50% more new entrants on the job market in the United States than in Europe (Fig. 1.16.).

Fig. 1.16. New entrants on the job market
increase in population in working age (millions)



Source: European Commission.

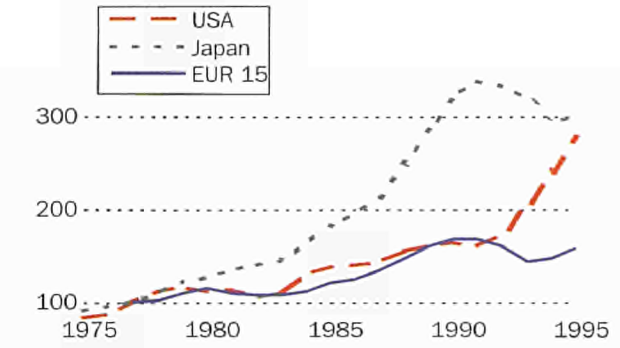
It thus emerges that, in contrast with the United States where job creation has kept pace with the increased supply of labour, the European Union is facing relative employment stagnation despite less demographic pressure.

5. Investment

Improvements to productivity largely depend upon investment, and more particularly investment in plant and equipment which rapidly incorporates technical progress.

For the past 20 years the European Union has clearly invested less than Japan and even the United States, where investment has risen very fast since 1990 (Fig. 1.17.).

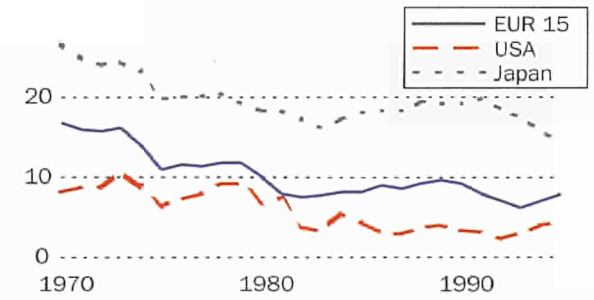
Fig. 1.17. Investment in plant and equipment at constant prices (1977=100)



Source: European Commission.

The savings rate is also much lower in the European Union than in Japan, which devotes twice as large a part of GDP to savings and this difference is relatively stable over time (Fig. 1.20.).

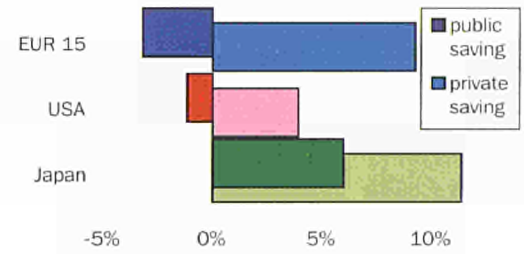
Fig. 1.18. Savings rate
net saving as % of GDP



Source: European Commission.

This difference can be explained by the public savings rate, which is positive in Japan in contrast to the chronic public deficits in the European Union and the United States, which divert a significant proportion of savings away from investment (Fig. 1.19.).

Fig. 1.19. Savings rate (1993)
as % of GDP



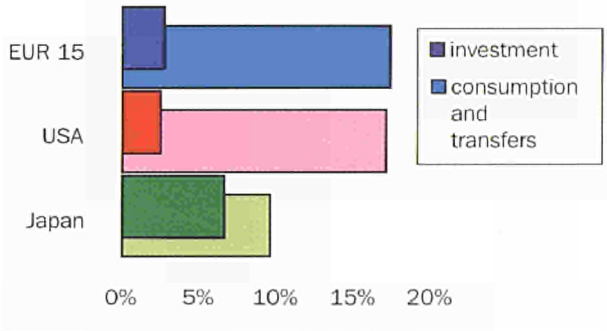
Source: European Commission.

6. Public expenditure

The structure of public spending in the European Union is characterized by the predominance of spending on consumption and transfers instead of investment (Fig. 1.20.).

In addition to the handicap arising from the chronic public deficits in the European Union, the relatively low level of public investment in the European Union serves to widen the gap.

Fig. 1.20. Public spending (1993)

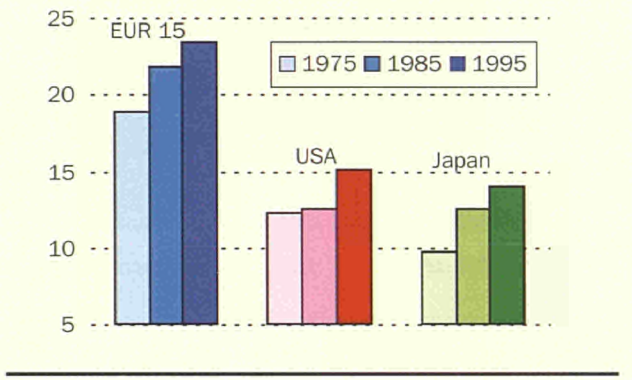


Source: European Commission.

Increasing public expenditure derives mainly from the massive increase in public transfers which, within the European economy, increased from 15 to 23%

of GDP between 1970 and 1995. At the same time public transfers increased from 9 to 15% of GDP in the United States and 6 to 14% in Japan (Fig. 1.21.).

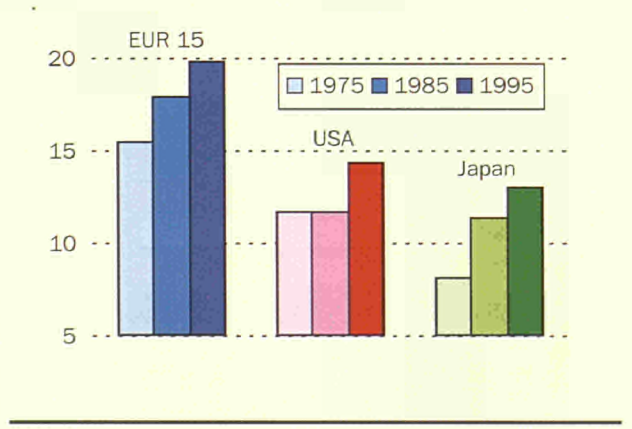
Fig. 1.21. Public transfers
as % of GDP



Source: European Commission.

The rise in public transfers basically corresponds to that of public transfers to households, where the increase has been from 12 to 20% of European GDP, 8 to 14% of US GDP and 5 to 13% of Japanese GDP. (Fig. 1.22.)

Fig. 1.22. Public transfers to households
as % of GDP

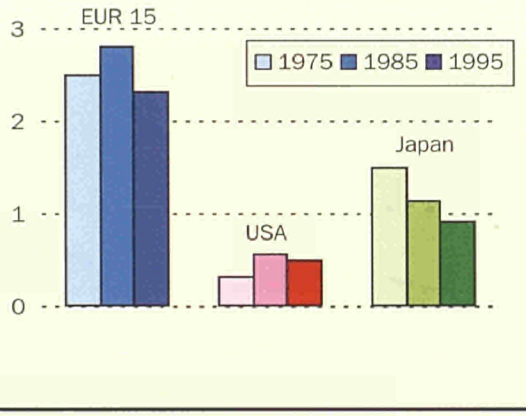


Source: European Commission.

The extent of public subsidies to enterprises, which – despite significant cutbacks – is twice as great in the European Union as in the United States and Japan, is nevertheless lower by far than that of transfers to households: in 1995 subsidies to enterprises represented no more than one tenth of transfers to households.

Support for enterprises has remained relatively stable not only in Europe, but also in the United States and Japan (Fig. 1.23.).

Fig. 1.23. Public subsidies to enterprises
as % of GDP



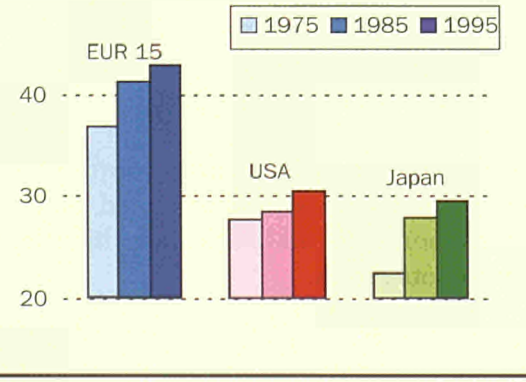
Source: European Commission.

7. Taxation

In 1995, after several decades of constantly heavier tax burdens, the share of the European economy taken by the State is 50% higher than in the United States and Japan.

Between 1970 and 1995, fiscal pressure increased by some 10% in the 15-nation EU and in Japan. This increased from 34 to 43% of GDP in EU-15 and from 20 to 30% in Japan, while it barely increased at all in the United States by a mere 2%, from 28 to 30% (Fig. 1.24).

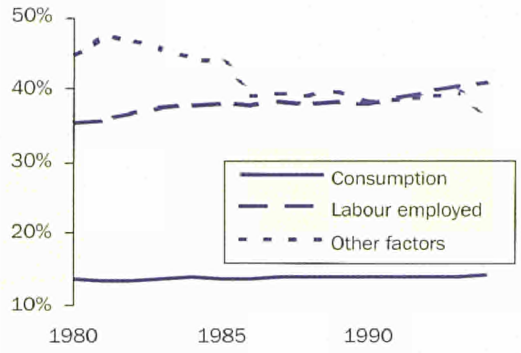
Fig. 1.24. Fiscal pressure
tax burden (as % of GDP)



Source: European Commission.

Trends in the structure of taxation according to economic function show that, over the period 1980-94, the effective tax rate on labour employed increased steadily on average from 34 to 40% in Europe, whereas the effective tax rate on other factors of production decreased from 44 to 35%. Taxation of consumption has remained broadly stable at around 13% (Fig. 1.25.).

Fig. 1.25. Structure of taxation
EU 1980-94



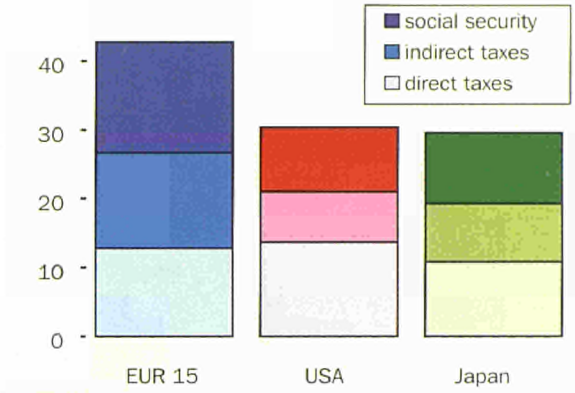
Source: European Commission.

Direct-tax rates (i.e. income taxes) in Europe have converged towards those in the United States but levels of indirect taxation and social security contributions are significantly higher in Europe than in the United States and Japan. After moving closer to the American level, the relative weight of direct taxation in Japan has fallen drastically since 1992.

Direct taxation is the principal form of taxation in the United States and Japan, followed by indirect taxation and, finally, social security contributions. In Europe, however, direct and indirect taxation and social security contributions are equally important. Because indirect taxes and social security contributions are regressive, they weigh more heavily on the cost of unskilled labour (Fig. 1.26.).

The higher level of social security contributions in Europe as compared with the United States and Japan corresponds to the particularly high level of transfers to households.

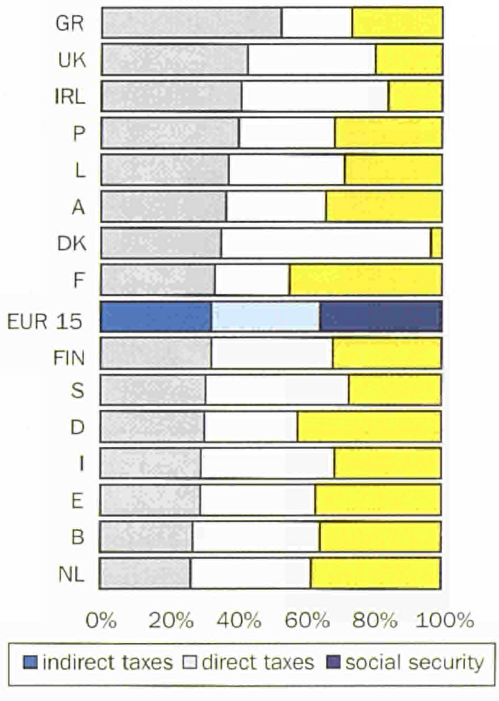
Fig. 1.26. Taxation
as % of GDP



Source: European Commission.

There are considerable differences in the relative importance of direct and indirect taxes and social security contributions between Member States: indirect taxes represent between one-quarter and half of taxation depending on the Member State (Fig. 1.27.).

Fig. 1.27. Structure of taxation
1993: as % of GDP



Source: European Commission.

In Europe, the substantial increase in public spending over the last two decades has led to a combination of high taxation and high deficits. These have led to higher costs for enterprises and lower investment through the siphoning off of available savings.

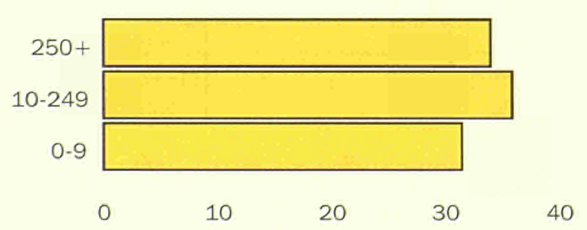
Chapter 2
Competitive performance of European industry

Even though the debate on competitiveness is often conducted in terms of the competitiveness of industries and of national economies, competitiveness is a concept that applies primarily to enterprises. Competitive enterprises develop and achieve high profitability in the market as a result of the greater efficiency of their production chain and their capacity for innovation. Identifying the mechanisms by which enterprise performance is converted into high growth, improved productivity and job creation is essential in establishing the link between business competitiveness and economic performance.

1. European enterprises

There are some 16 million enterprises in Europe, employing more than 100 million people. Employment is equally divided between micro-enterprises, small and medium-sized enterprises, and large businesses (Fig. 2.1.).

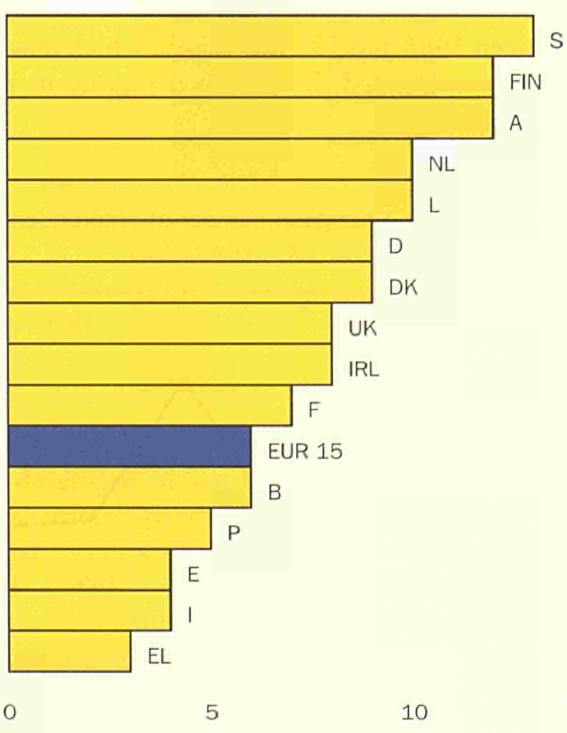
Fig. 2.1. Employment in relation to enterprise size in Europe
number of employees (millions) by size group



Source: EIM Small Business Research and Consultancy.

The average size of an enterprise varies widely from one Member State to another: from an average payroll of three in Greece to 13 in Sweden (Fig. 2.2.). As a general rule enterprise size increases the further north you go in Europe. In fact there is a correlation between living standards and enterprise size. This can, on the one hand, be explained by the predominance of the retail sector in southern Europe and, on the other hand, the presence of capital intensive industries in the north.

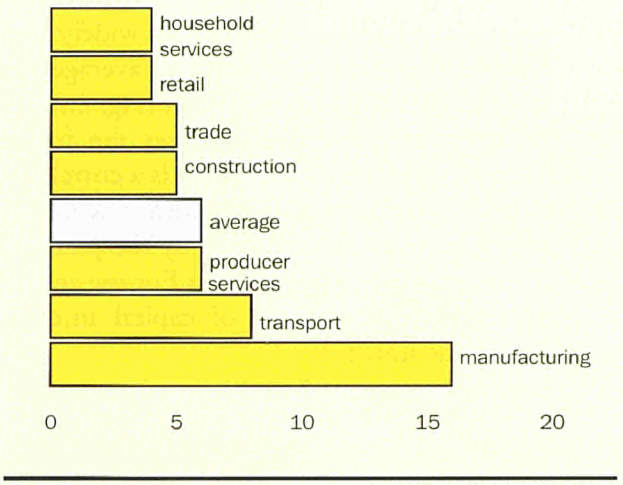
Fig. 2.2. Average enterprise size
average employment per enterprise in 1990



Source: EIM Small Business Research and Consultancy.

Average enterprise size also varies widely according to economic sector (Fig. 2.3.). Manufacturing enterprises are on average distinctly larger than the rest of the economy. There is a correlation between the capital intensity of economic activity and average enterprise size.

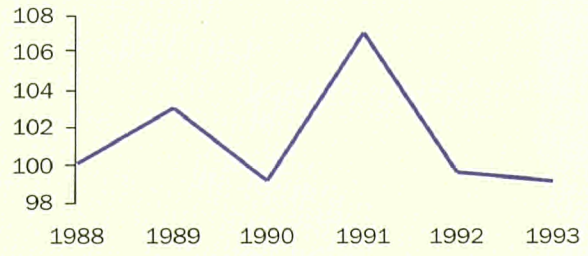
Fig. 2.3. Average enterprise size
average employment per enterprise in 1990



Source: EIM Small Business Research and Consultancy.

Between 1988 and 1993 the rate at which new enterprises were created slowed down slightly in Europe (Fig. 2.4.).

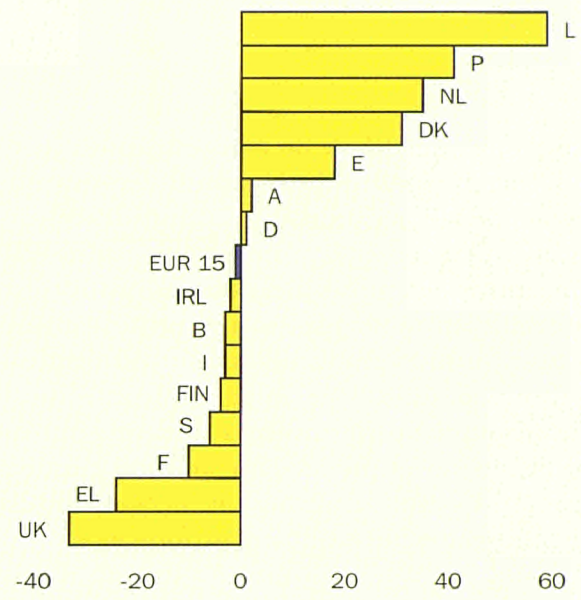
Fig. 2.4. Change in number of enterprises
EUR 15 – 1988=100



Source: EIM Small Business Research and Consultancy.

In certain Member States the creation of new enterprises is not sufficient to compensate for the disappearance of existing enterprises (Fig. 2.5.).

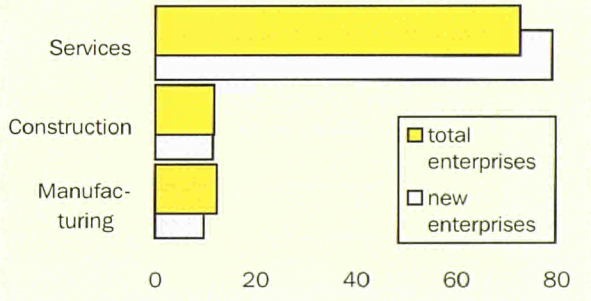
Fig. 2.5. Creation of enterprises
% change from 1988 to 1993



Source: EIM Small Business Research and Consultancy.

Relatively more new enterprises are created in the service sector than in manufacturing and construction (Fig. 2.6.).

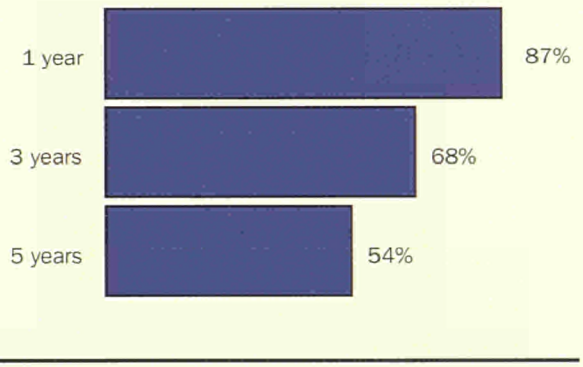
Fig. 2.6. Creation of enterprises in the EU
(1993 as % of total)



Source: EIM Small Business Research and Consultancy.

More than half of the new enterprises created in Europe survive more than five years (Fig. 2.7.).

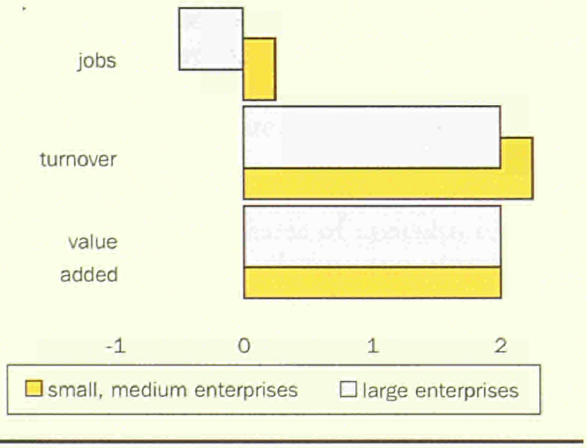
Fig. 2.7. Creation of enterprises in the EU
survival rate of enterprises



Source: EIM Small Business Research and Consultancy.

Between 1988 and 1995 small and medium-sized enterprises performed better than larger enterprises in terms of both job creation and growth in turnover (Fig. 2.8.).

Fig. 2.8. Enterprise size and performance
% annual growth between 1988 and 1995



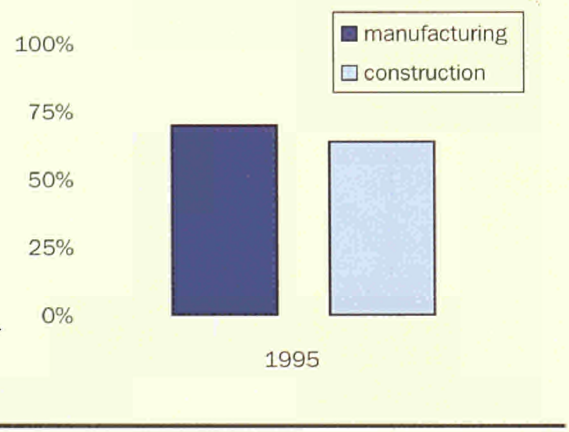
Source: EIM Small Business Research and Consultancy.

Large and small firms are complementary. Current forms of industrial organization are leading to an increased recourse to outsourcing and much greater integration between firms at different stages of the production chain. The more links between enterprises are well developed and equitable, the more the economy benefits from a high level of integration. Weakness in one of the links in the production and marketing chain may constitute a significant handicap for the entire sector. In this connection, supplier and subcontractor quality is a decisive factor for manufacturing industry.

It is difficult to estimate the precise extent of subcontracting in the European economy. The purchase of goods and services is an imperfect yardstick since it also includes purchases of raw materials and energy.

However, that measure shows that subcontracting is widespread in manufacturing and construction. The purchase of goods and services is equivalent to more than two thirds of turnover in manufacturing industry and some three fifths of that of the construction industry (Fig. 2.9).

Fig. 2.9. Subcontracting in the EU
purchase of goods and services as % of turnover



Source: Eurostat.

In manufacturing industry, subcontracting is particularly developed in aerospace, motor vehicles, electronics, metal products, textiles, clothing and footwear.

In response to stiffer competition and shorter product lives, the major motor vehicle, aircraft and electronics manufacturers are tending to refocus their activities, reduce the number of their subcontractors. They subcontract an increasing proportion of the actual design of their products.

This process leads to the development of partnerships between customers and subcontractors. These partnerships are most advanced in the high technology sectors and in the most industrialized countries. They involve first-level subcontractors i.e. rarely SMEs. However, not all subcontracting operations are partnerships: in many cases the customers induce subcontractors to take responsibility for certain activities (development, certification).

Increased subcontracting of design activities and the shrinking number of subcontractors make their principal customers more dependent. Subcontractors for their part must constantly develop new skills.

In order to produce 'just-in-time', guarantee product quality and meet increasingly stringent environmental standards, subcontractors must bear an increasing proportion of the costs and risks which in turn affects their profitability.

2. Sectoral aspects

Industry (manufacturing industry, construction and energy) accounts for nearly one third of the value added and jobs within the European economy, while services account for most of the remaining two thirds. Contrary to popular belief there is no dichotomy between industry and services in the European economy: their levels of competitiveness depend closely on one another.

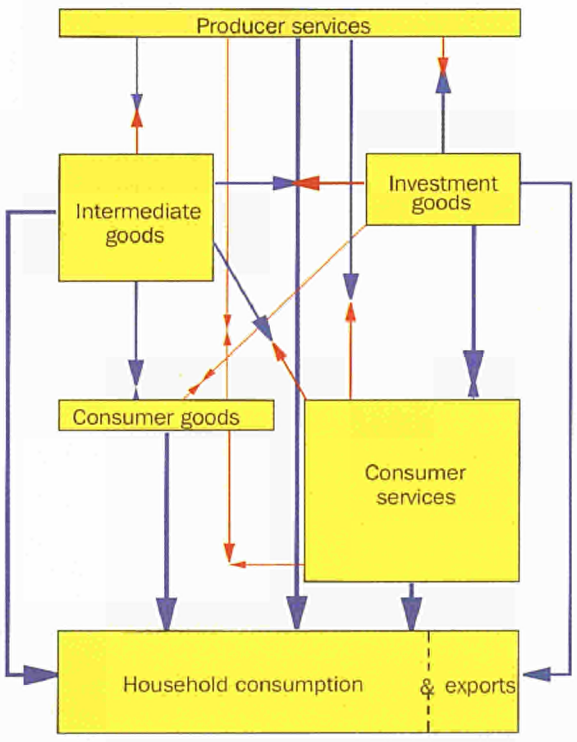
Box 2.1.

The role of industry in the economy appears more clearly if the various sectors of the economy are grouped together according to their place within the production process (Fig. 2.10.):

- depending on whether they produce more from their own resources (capital and labour) or from resources supplied by other sectors (intermediate consumption and investment goods);
- depending upon whether they essentially sell to other enterprises or for final consumption (households plus exports);

Exchange of products between these major economic sectors is clearly greater than consumption and exports, and their competitiveness depends largely upon inputs from the other major economic sectors.

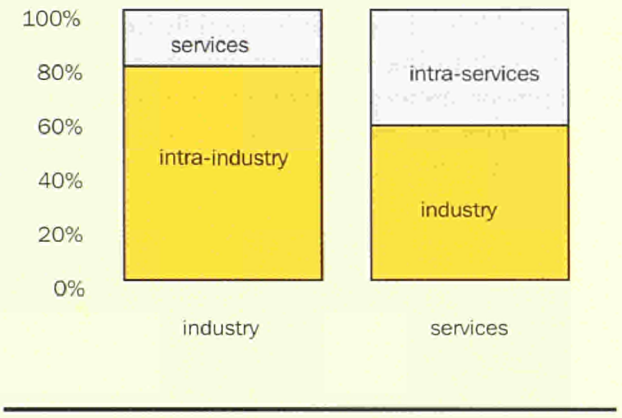
Fig. 2.10. Sectors of economy



Source: Eurostat 1985, Input-output tables.

One fifth of industry's inputs come from services and, conversely, three fifths of the inputs of services are supplied by industry, the balance corresponding to trade between industrial sectors and between service sectors (Fig. 2.11.).

Fig. 2.11. Origin of inputs



Source: Eurostat 1985, Input-output tables.

3. Performance by sector

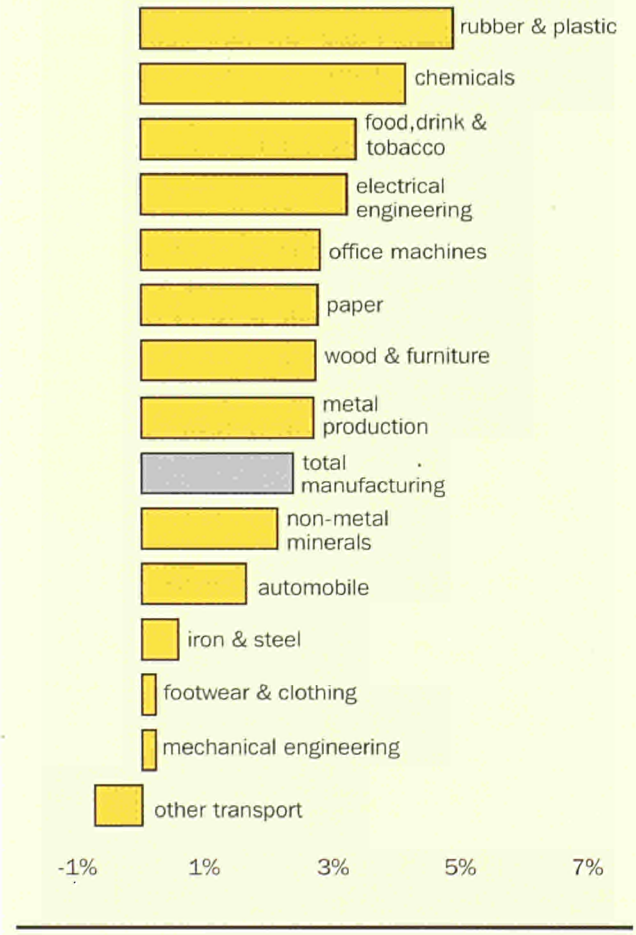
During the 1980s the significance of services within the European economy increased significantly, from 58% to 64% of value added. This increase is essentially due to the growth in market services, whose share increased from 43% to 49% between 1980 and 1991, whereas the share of non-market services remained stable.

At the same time the shares of agriculture, energy, construction and above all manufacturing industry diminished. The share of manufacturing industry fell from 26% to 23% between 1980 and 1991.

Between 1984 and 1994 European manufacturing industry, with a real annual growth in value added of 2.2%, has not been performing as well as its Japanese (4.1%) and American (3.0%) competitors.

The main European manufacturing sectors achieved rather unequal levels of performance between 1985 and 1995. The sectors that have most quickly – measured in terms of changes in value added – are those of rubber and plastics, chemicals, food processing, electrical engineering and office machinery. Conversely the transport equipment sector, other than motor vehicles, is diminishing (Fig. 2.12.).

Fig. 2.12. Manufacturing sectors
real growth between 1985 and 1995



Source: Eurostat.

In relative terms, as compared with their American and Japanese competitors, most European industrial sectors have performed less well. All of the low-growth sectors, namely transport equipment, mechanical engineering, footwear and clothing, and steel are developing less quickly in Europe than in America or Japan. The majority of the medium or fast-growth sectors, including paper, office machinery, electrical engineering and chemicals are also expanding less quickly in Europe than in America or Japan. Only the wood, furniture and food processing industries are expanding more quickly in Europe.

The European sectors recording the best relative performance in terms of growth are also those whose production performance is equivalent to or better than that of their competitors. The sectors where relative growth is equivalent to or higher than that of its competitors – food processing, wood and furniture, non-metallic minerals, metal products, plastics and rubber – have seen their relative productivity improve. Conversely, the European sectors growing more slowly than those of their competitors – mechanical and electrical engineering, office machinery and other means of transport – have seen their relative productivity deteriorate.

All of the medium or fast growth sectors in Europe are characterized by a higher level of investment – measured in relation to value added – than that of their competitors. Conversely most of the European sectors where relative growth is lower than that of their American and Japanese competitors – footwear and clothing, other means of transport, mechanical and electrical engineering and office machinery – have lower relative rates of investment.

4. Technological performance

Economic growth cannot be solely attributed to input growth, but also depends on other factors. Technical progress is one of the main sources of long-term productivity growth. In turn, it is closely determined by the level of intangible investment.

Certain industrial sectors diffuse technological innovation while others use it. The more a sector diffuses innovation through the economy, the more it contributes to growth. The high-technology sector is characterized by a high level of innovation diffusion, or in other words by high R&D efficiency, rather than by a high level of spending on R&D (Table 2.1.).

Table 2.1. R&D diffusing and using sectors

Diffusing sectors	Using sectors
computers	aeronautics
machinery	automobile
instruments	iron & steel
electronics	food & drink
chemicals	textile
components	
telecom equipment	

Source: Soete, 1987.

Between 1984 and 1993, the European Union lost patent share in all sectors apart from aerospace and transport equipment. These two R&D-using sectors are, however, relatively minor as regards the number of patents granted or lodged. The losses are limited in the following R&D diffusing sectors: chemical and pharmaceutical products and engineering (Table 2.2.).

The decline in the already weak position of the European Union is continuing rapidly in electronics, an R&D diffusing sector, in which research and development are more important at world level, and which exerts a strong influence on innovation throughout industry.

Table 2.2. EU share of total patents by sector

	1993	% change 1984-93
Share of patents granted in the US		
Aerospace	29.2	0.5
Chemicals	21.1	-1.4
Pharmaceuticals	22.9	-3.1
Engineering	19	-3.9
Electronics	10.9	-6.8
Transport equipment	24.6	-3.9
Other	17.8	-4.5
Total	16.7	-4.9
Share of patent applications in Europe		
Aerospace	60.8	8.3
Chemicals	41.4	-0.7
Pharmaceuticals	38.8	-3.2
Engineering	50.3	-0.6
Electronics	30.8	-8.3
Transport equipment	59.7	5.4
Other	50.9	-1.8
Total	42.6	-3.9

Source: European Commission.

5. Enterprise profitability

Together with growth, profit is one of the yardsticks of the competitiveness of an enterprise. It illustrates an enterprise's ability to combine efficiently the factors of production.

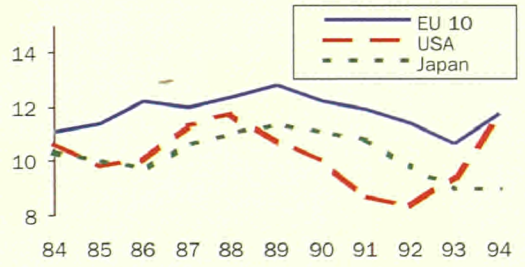
Following a period of decline between 1989 and 1993 and during an upswing of economic activity, industrial enterprises in Europe clearly improved their financial performance in 1994 with rises of respectively 1.2 and 1.8 points in their gross and net

margins – i.e. annual rises that were greater than throughout the period 1984-94 (+0.8 and 1.3 points respectively).

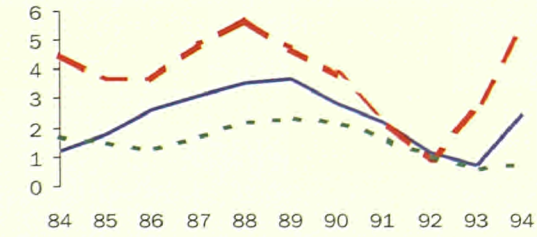
Although the gross margin of European enterprises has generally been higher than that of American and Japanese enterprises, the recent improvement in financial performance of American enterprises enabled these to catch up in 1994. Conversely the net margin lead held by American enterprises increased in 1994.

The financial performance of Japanese enterprises lags behind that of their European and American competitors (Fig. 2.13.).

Fig. 2.13. Financial performance
(gross profit / turnover %)



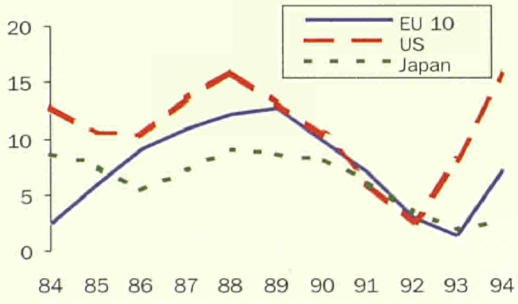
(net profit / turnover %)



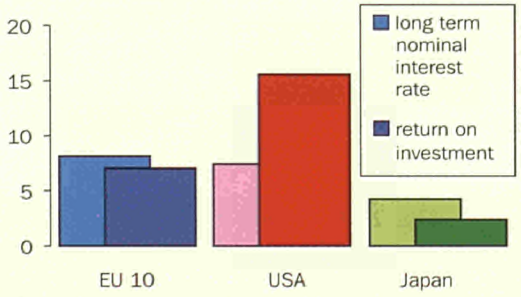
Source: European Commission.

The return on investment of European enterprises – i.e. the ratio of the net result to the enterprise's own equity – improved in 1994, but more slowly than in the United States. In addition it is lower than the nominal interest rates on the long-term public sector debt. Rates of return in Japan are to a certain extent depressed by the very large depreciation charges represented by high rates of Japanese investment, and by the relative lag of Japan compared to the United States and Europe in coming out of recession during the current business cycle (Fig. 2.14.).

Fig. 2.14. Return on investment
(net result / company equity)



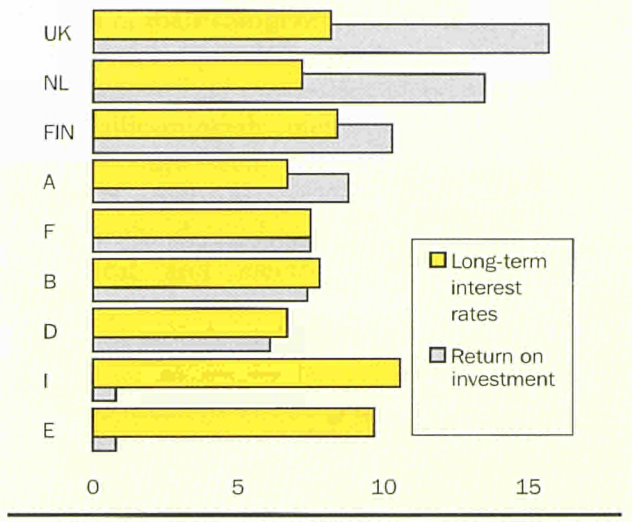
(profitability vs long term interest rate %)



Source: European Commission.

While long-term interest rates are on average 1% higher than returns on investment in the EU, significant differences arise between Member States. The Netherlands and the United Kingdom generated returns on investment substantially in excess of long-term interest rates in 1994, while Spain and Italy generated returns which, compared with interest rates, can be described as particularly inadequate (Fig. 2.15.).

Fig. 2.15. Return on investment in the EU
(profitability vs long term interest rate % - 1994)

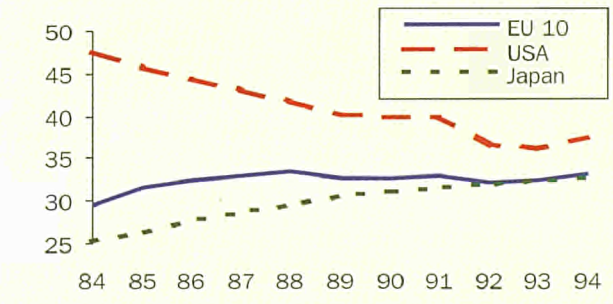


Source: European Commission

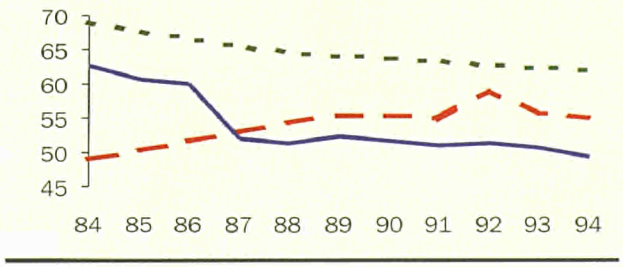
Improvements in the financial performance of European enterprises enabled these to improve their financial structure between 1984 and 1994: the share of equity in the balance sheet rose by 3.8 points, whereas that of debt fell by 13.2 points.

The share of equity in industrial-enterprise balance sheets is similar in Europe, the United States and Japan. The rate of indebtedness of European countries is now lower than that of American and Japanese enterprises (Fig. 2.16.).

Fig. 2.16. Financial structure
(share of equity)



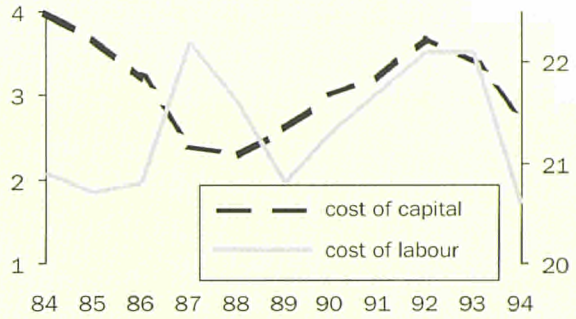
(share of debt)



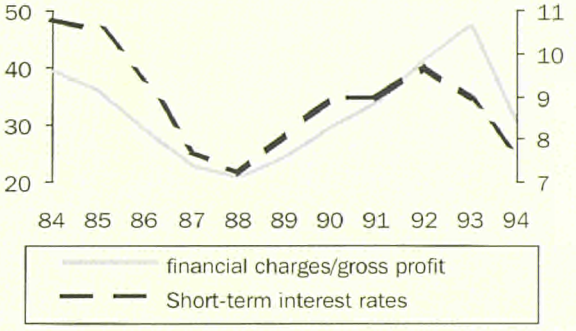
Source: European Commission.

Against a competitive background where enterprises' sales prices rose only slightly, the improvement in financial performance by European enterprises in 1994 can mainly be explained by the relative fall in labour costs (-1.5 points) and the significant lightening of financial burdens (-0.7 points). Financial charges represent no more than 30% of gross profits for enterprises in 1994, mainly owing to a fall in short-term interest rates (Fig. 2.17.).

Fig. 2.17. Labour and capital costs
(labour and capital cost / turnover)



(cost of capital and rate of interest)



Source: European Commission.

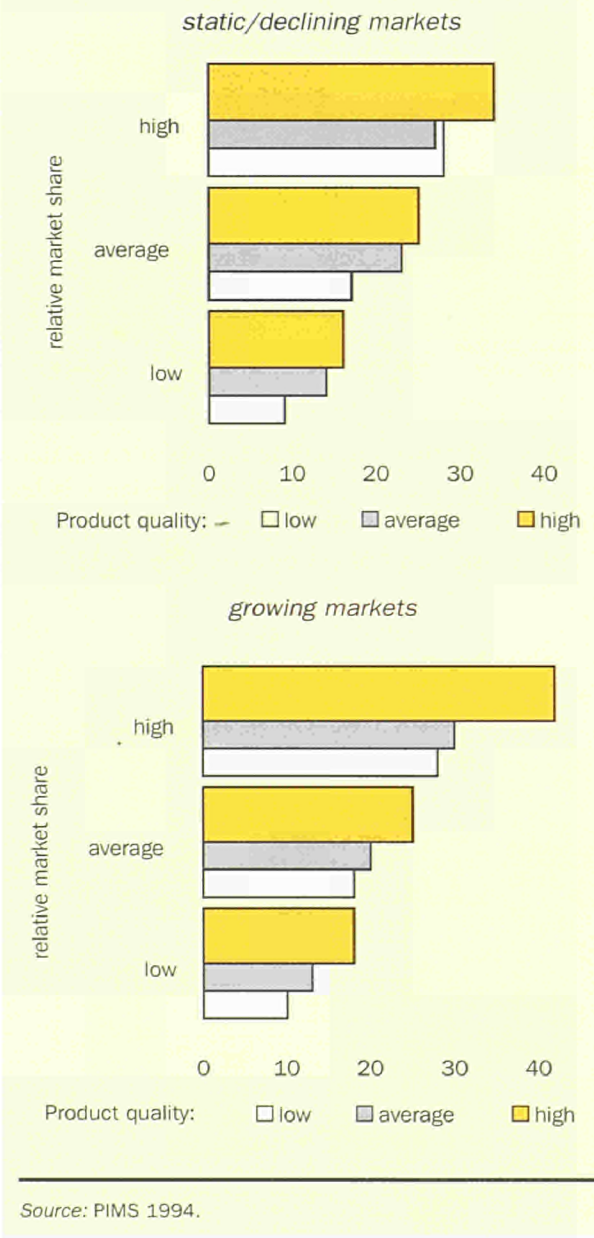
6. Enterprise competitiveness

A competitive enterprise may be defined as an enterprise which succeeds in maintaining or increasing its market share, while remaining profitable. Such an enterprise is capable of financing its growth and improving its position for the goods and services that it sells.

Enterprise profitability is closely correlated with market share: a high market share yields high profitability whatever the type of market in which an

enterprise operates. However, maximum profitability is associated with a large share of expanding markets. On average, product quality significantly influences the profitability of enterprises having an equal market share (Fig. 2.18.).

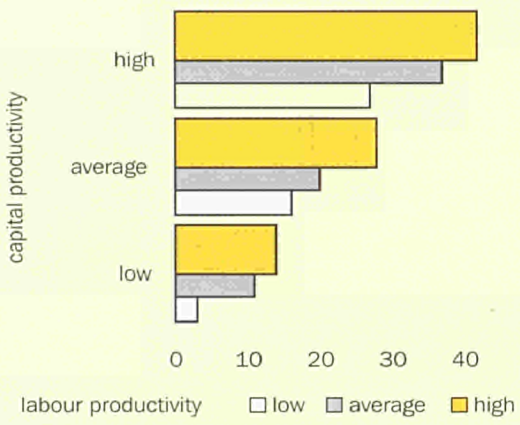
Fig. 2.18. Profitability, quality and market share
(return on capital % 1990-94)



Source: PIMS 1994.

The most productive enterprises are also those that are the most profitable. This link shows itself to be as important for the productivity of capital as it is for the productivity of labour. The substitution of capital for labour without growth of the enterprise has a negative effect on its profitability (Fig. 2.19.).

Fig. 2.19. Profitability and productivity
(return on capital % 1990-94)

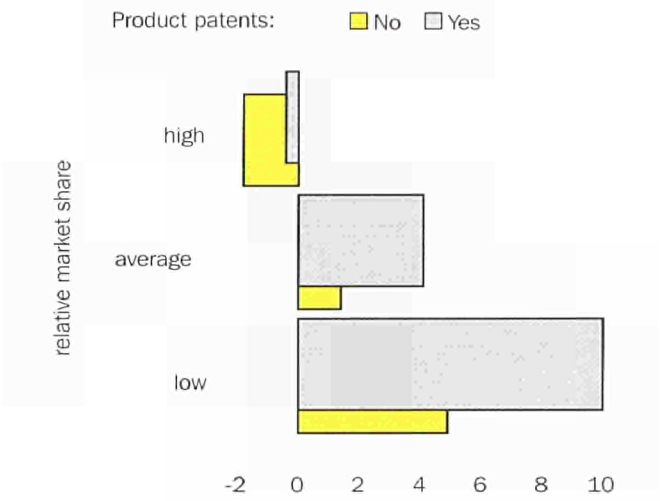


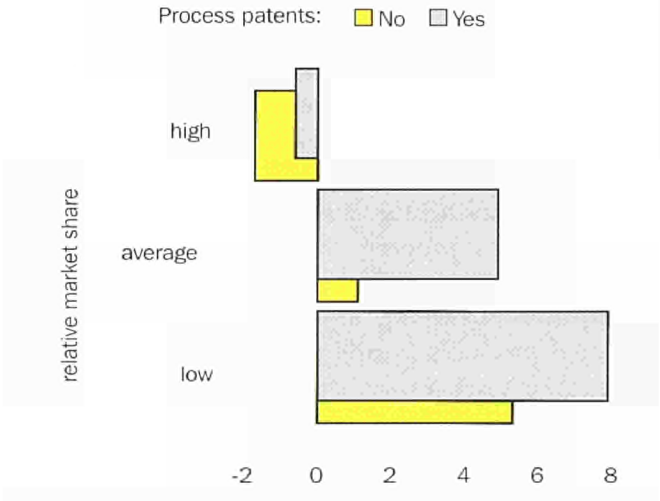
Source: PIMS 1994

The competitiveness of an enterprise depends simultaneously on its economic environment (allocation of factors and their relative cost) and on intangible factors such as the quality of goods and services, innovation, marketing activity, investment in R&D and intellectual property.

Enterprises possessing know-how, i.e. branded or patented products, clearly manage better to gain or retain their market share than others. The impact on market share of process patents is comparable to that of product patents (Fig. 2.20.). (It must also be taken into account here that defending a strong market position is more difficult than growth from a weaker position).

Fig. 2.20. Intellectual property and competitiveness
annual growth in market share, 1990-94

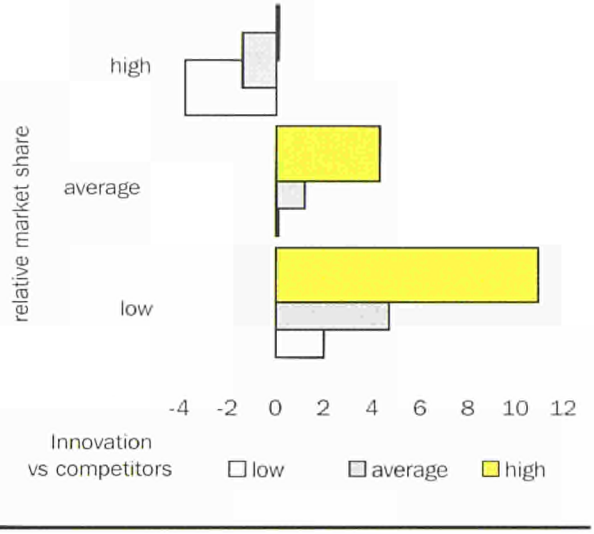




Source: PIMS 1994.

Innovation, measured via the share of turnover generated by new products, also leads to a perceptible increase in market share (Fig. 2.21.).

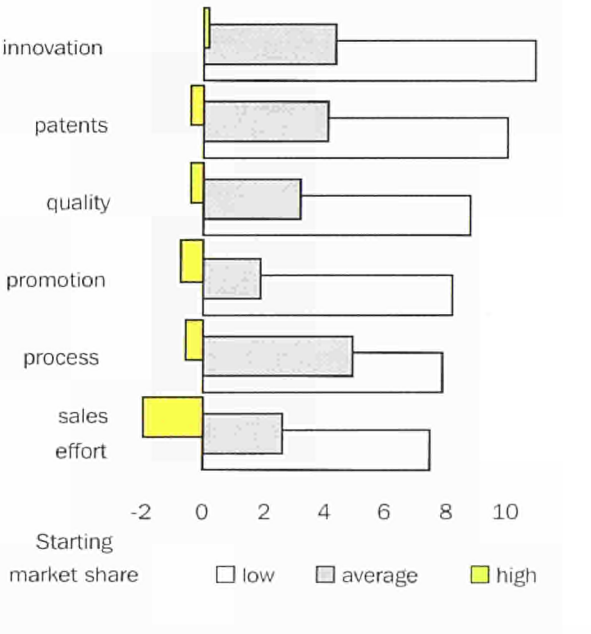
Fig. 2.21. Innovation and competitiveness
annual growth in market share, 1990-94



Source: PIMS 1994.

The impact of other intangible factors such as marketing and the quality of goods and services is less significant than that of intellectual property (patents and trade marks) and of innovation (Fig. 2.22.).

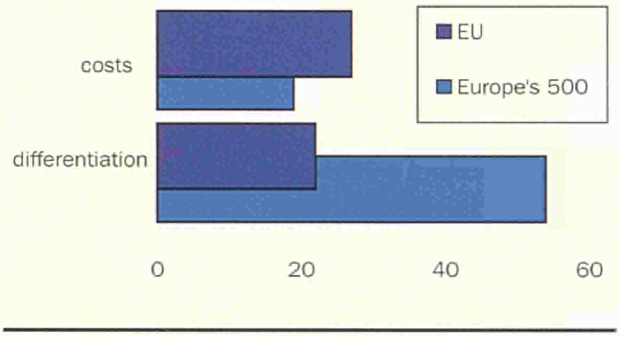
Fig. 2.22. Intangible factors and competitiveness
annual growth in market share, 1990-94



Source: PIMS 1994.

A selection of 500 of Europe's most dynamic enterprises shows that the majority of dynamic enterprises base their growth strategy on product differentiation rather than on cost (Fig. 2.23.).

Fig. 2.23. Strategies of dynamic enterprises



Source: EIM Small Business Research and Consultancy.

Acquiring a bigger market share reflects the competitiveness of enterprises but, in order to measure the contribution made by a enterprise to overall economic growth, its added value must be examined.

The growth in added value is, in general, determined by the same factors as for market share. Thus intellectual property is closely linked with growth.

These same growth factors also play a decisive part in job creation. However, in comparison with the United States, European growth clearly creates far fewer jobs. This phenomenon can be explained by the means used by enterprises in order to boost their productivity. Jobs are directly affected in traditional sectors when enterprises replace labour by capital in order to improve their productivity. Only rapidly-growing enterprises manage to create jobs while at the same time increasing their capital/labour ratio.

Chapter 3
Internationalization

The openness of the European economy means that performance in international markets constitutes an important element in industrial performance. This chapter examines the way in which trade and foreign direct investment have developed over the preceding decade with a view to identifying strengths and weaknesses in the performance of European industry. The extent to which foreign direct investment has led to a loss of jobs and output in Europe is also examined.

1. Internationalization: the stakes

Open markets drive productivity gains through the response of enterprises to increased competition. They make cost-effective and innovative components and other inputs available and enable the exploitation of economies of scale. Performance on international markets also serves as an indicator of competitiveness to the extent that the ability to maintain and expand international market share reveals an ability by enterprises to meet competition on open markets.

A major development over the last two decades has been the continuous trend towards the opening of markets. Progress in this area can be attributed to several factors. The successful outcome of the Uruguay Round has led to the setting-up of the World Trade Organization and to the opening-up of new areas, including services, agriculture and intellectual property rights. Economic integration at the regional level (European Union, NAFTA, ASEAN, Mercosur, APEC, etc.) has also led to improved market access. Finally, recent developments towards market-oriented reforms in Central and Eastern Europe, Latin America and East Asia have led to the entry of these economies into world trade and investment.

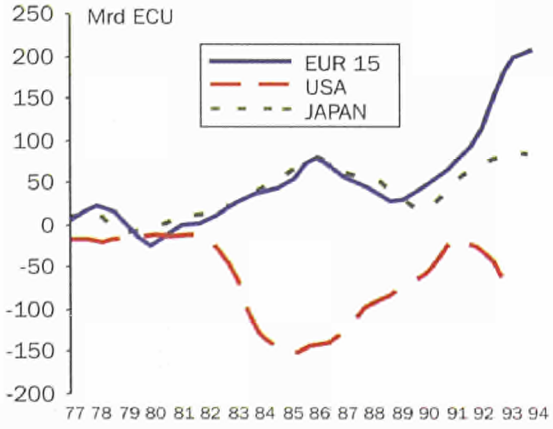
Internationalization derives from market stimuli and results in improvements of allocative efficiency. The degree of internationalization of European enterprises can be considered as an indicator of their competitiveness. Trade and investment by European companies in third country markets reflects the capacity of European firms to penetrate foreign markets.

One of the major determinants of Europe's ability to sustain its competitiveness is linked to the presence of its enterprises on fast growing markets.

2. Trade performance

Over the period 1982-94 the European Union sustained a continuous surplus in both goods and services (Fig. 3.1.). This surplus decreased between 1986 and 1989 and then grew quickly to reach 3.4% of GDP in 1994. Despite the reunification of Germany, the European Union's balance has improved to a significantly degree since the beginning of the 1990s.

Fig. 3.1. Balance in goods and services



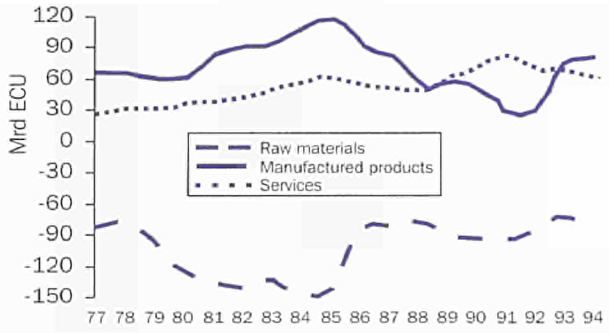
Source: European Commission.

Up until 1991, the overall balance of goods and services for the European Union and Japan was of the same order and followed a parallel development. Since then the European Union's balance has improved substantially while that of Japan has remained stable. The United States was in deficit throughout the 1980s and the size of the deficit generally mirrors the surplus of the European Union and Japan.

The European Union has traditionally had a trade surplus in services (Fig. 3.2.). This surplus has represented a relatively stable share of GDP, although it decreased in the beginning of the 1990s to reach 1.1% in 1994.

The trade balance in raw materials (energy, agricultural products and other raw materials) has constantly been in deficit. The deficit declined substantially in 1986 following the collapse of the price of oil and has remained relatively stable since then at around 1.4% of GDP.

Fig. 3.2. Balance of raw materials, manufactured products and services
(EUR 12)

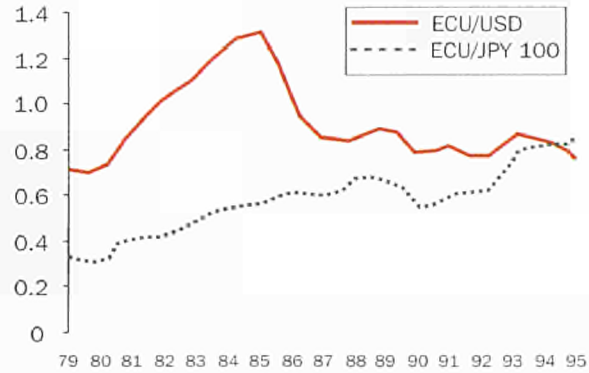


Source: European Commission.

The trade surplus in manufactured goods has constantly decreased since the mid 1980s although it recovered partly between 1992 and 1994. The positive performance in the latter period could, to a certain extent, be related to lags in the business cycle. The observed deterioration of the manufacturing trade balance can be analysed in the light of other macroeconomic factors such as the exchange rate.

Exchange rate movements observed over the period are, however, difficult to relate to manufacturing trade performance. The dollar has continued to depreciate against the ecu since the Plaza agreements of 1985, although by 1995 the dollar had not yet fallen to its level of 1980 prior to the big appreciation of the early 1980s. Since 1987, the yen has appreciated against the ecu at three times the rate of the dollar's depreciation (Fig. 3.3.).

Fig. 3.3. Exchange rates



Source: European Commission.

In the short term, exchange rate volatility can influence developments for sectors which compete primarily on price. For these sectors, increases in unit labour cost relative to other industrialized regions have a significant effect on their competitiveness. Non-wage cost (i.e. material input cost, cost of capital) are, of course, also relevant factors. However, even if over the short term, depreciation of a currency provides a boost to price competitiveness, experience shows that this advantage can quickly be eroded by higher costs of imported raw materials and components and by an increase in inflationary pressures. Over the medium term, exchange rate appreciation can be taken as an indicator of competitiveness, providing that it is not the product of systematically higher interest rates.

However, currency misalignments (i.e. prolonged divergences between the real exchange rate and the longer term equilibrium value) do have an impact on the volume and composition of trade. The observed appreciation of the ecu against the dollar over the period does not seem to respond to a persistent

currency misalignment. Therefore, even if the appreciation could have had an effect on the European Union's trade flows over the short term, exchange rate movements do not explain the evolution of the manufacturing trade balance. Furthermore, as manufactured goods increasingly interact with services, the trade balance of manufactured goods gives only a partial picture of competitiveness in manufacturing.

A more detailed picture of the trade competitiveness of European Union manufacturing is given by the analysis of the export structure of the European Union in terms of sectoral and geographical specialization. The relevant factors determining EU trade competitiveness are twofold:

- firstly, whether Europe enjoys and is capable of increasing its comparative advantage in high value added sectors;
- secondly, whether Europe is present in the fastest growing sectoral and geographical markets and is capable of adapting its manufacturing structure to changes in world trade and to the pace of global integration.

In order to evaluate these factors, European Union competitiveness can be examined in the light of its trade specialization relative to other OECD countries and the impact that this specialization has on its share of OECD exports.

Constant share analysis, in order to show the initial export structure of the European Union and its pattern of adaptation, decomposes changes in exports over several years according to products and destinations. Three separate effects (Table 3.1.) can be identified as contributing to the changes in share:

- the effect of the initial specialization;
- the effect of changes in the sectoral and geographical composition of exports;
- the 'elementary competitiveness' effect, which measures the European Union's intrinsic competitiveness relative to the rest of the OECD, and which is heavily influenced by developments in costs and exchange rates.

In overall terms, the European Union's manufacturing trade competitiveness has deteriorated in relation to other industrialized countries. The share of the EU 12 (excluding intra-EU trade) in OECD exports has decreased by 2.5% between 1987 and 1993 (from 41.3% to 38.8%). At the same time, the share of North America increased by 3.7% and that of Japan decreased by 1%.

Table 3.1. Analysis of changes in shares in OECD exports (1987-93)

Effects	EUR 12	North America	Japan
Initial specialization of exports	-2.4	1.9	1.6
Adaptation of export specialization	-0.8	0.6	0.4
Elementary competitiveness residual	0.7	1.2	-3.0
Total	-2.5	3.7	-1.0

Source: DRI.

A decomposition of the total changes in shares in OECD exports into the three different factors gives a more detailed picture of the decline in EU export share. The initial specialization effect (-2.4%) and the subsequent poor adaptation (-0.8%) between 1987 and 1993 would have accounted for a 3.2 % loss in market share. This potential loss was compensated in part through the elementary competiveness effect (+0.7%), which resulted in a total loss of 2.5%. It is worth noting that the European Union improved its intrinsic competitiveness despite the appreciation of the ecu against the dollar over the period.

The decline in export share relative to other OECD countries is thus not due to a lack of performance of manufacturing industry itself, but to poor initial specialization and adaptation of EU exports to changes in world trade. A further decomposition of these two effects into sectors and destinations can help to identify the main factors behind the decline in export share (Table 3.2.).

The initial geographical specialization of exports on parts of the world of low growth potential in relation to other OECD countries is the main factor behind the initial unfavourable position (-3.0). In terms of sectors, the initial specialization of the European Union was better than the OECD average (0.8).

Problems in terms of the European Union's capacity to adapt to changes in world trade, can be attributed to a lack of dynamism in changing patterns of both geographical (-0.6) and sectoral (-0.2) specialization.

Table 3.2. Analysis of change in EUR 12's share in OECD exports (1987-93)

Effects	Initial specialization	Adaptation
Sectoral	0.8	-0.2
Geographical	-3.0	-0.6
Total	-2.4	-0.8

Source: DRI.

The decline in the European Union's export performance is thus mainly due to poor geographical specialization. The destination of the European Union's exports has been oriented to regions with slow growing imports and has therefore not benefited as much as the other OECD countries from the overall growth in world trade.

However, since 1993 positive signs of a European Union recovery have emerged. A new wave of trade relationships with emerging economies is building a base for subsequent improvement.

A good sectoral performance measured at aggregate level can hide substantial differences between sectors. Similarly a poor geographical specialization in general does not reveal in which specific markets the European Union is performing less well. Individual sectors and markets can be related to EU average performance to establish areas of strength or weakness.

The major exporting sectors at EU level are mechanical engineering, which accounts for 16% of total EU manufacturing exports in 1994, motor vehicles (close to 9%), food, drink and tobacco (6.5%), basic chemicals (5.5%) and electrical equipment for industry (4.8%).

These rankings are, however, somewhat arbitrary as they depend largely on the type and level of aggregation of the sectoral classification adopted. As a result, the share of a given sector in total EU exports does not in itself say much about the relative specialization of EU trade. Furthermore, specialization in itself does not imply a comparative advantage. On the contrary, it could happen that being specialized in labour or resource intensive sectors is a source of comparative disadvantage.

In order to establish the sectoral strengths and weaknesses of the European Union's exports, it is necessary to measure the comparative advantage of EU exports relative to other developed countries. For that purpose, EU exports and imports are analysed on the basis of two indicators. The first one is the export specialization indicator, which reveals whether a sector reports a share in its total exports greater (indicator exceeding 1) or lower (indicator below 1) than other OECD countries. The second indicator is the adjusted cover ratio indicator, which measures the sector's trade balance (surplus if indicator exceeds 1, deficit if it is below 1) adjusted for the overall manufacturing trade balance in order to eliminate the structural surplus or deficit in manufacturing as a whole.

Table 3.3 presents the breakdown of EU exports in 1994 according to whether both indicators exceed one, thus revealing a comparative advantage, or are below one, thus signalling a comparative disadvantage. The third category includes sectors for which the two indicators do not point in the same direction.

In overall terms, sectors which enjoy a comparative advantage represent 57% of total EU exports and 38% of total EU imports. Sectors with a comparative disadvantage account for 12% of exports, but 29% of imports. Export and import shares in an intermediate position are roughly balanced at 31% and 33% respectively.

Table 3.3. Sectoral breakdown of EU exports (1994)

	Share in total exports (%)	Share in total imports (%)	Export specialization (1)	Adjusted cover ratio (2)
Sectors with a comparative advantage	57.1	37.6	1.19	1.52
Sectors in an intermediate situation	30.7	33.3	0.98	0.92
Sectors with a comparative disadvantage	12.2	29.1	0.59	0.42

(1) Share of sector in total EU manufacturing exports divided by the same share calculated for the OECD.
(2) Sectoral cover ratio (exports divided by imports) adjusted for the overall cover ratio of manufacturing industry.
Source: DRI.

The European Union's strong export sectors cover three broad clusters: engineering and metal sectors, chemical and pharmaceutical sectors and other unrelated sectors (Table 3.4.). The last five sectors of the group demonstrate a comparative advantage which is somewhat weaker (these include food, drink and tobacco, basic chemicals, aerospace equipment as well as rubber and plastics).

Table 3.4. Sectoral breakdown of EU exports, (1994)

Sectors with comparative advantage

	Share in total exports (%)	Share in total imports (%)	Export specialization	Adjusted cover ratio
Mechanical engineering	16.0	7.5	1.14	2.13
Ferrous metals	3.1	1.5	1.12	2.06
Metal articles	3.3	2.5	1.36	1.34
Pharmaceutical	2.8	1.6	1.70	1.73
Speciality chemicals	4.7	2.8	1.22	1.69
Non-metalic mineral products	2.0	1.1	1.46	1.83
Household appliances	0.9	0.7	1.51	1.25
Other manufactures	4.4	2.8	1.26	1.59
Printing and publishing	0.9	0.5	1.42	1.97
Food, drink, tobacco	6.5	5.3	1.13	1.22
Aerospace equipment	4.3	4.1	1.19	1.07
Rubber and plastics	2.7	2.3	1.11	1.15
Basic chemicals	5.5	4.9	1.03	1.13

Source: DRI.

The comparative disadvantage category is concentrated in some electronics related sectors and a number of resource based sectors (Table 3.5.)

Table 3.5. Sectors with a comparative disadvantage

	Share in total exports (%)	Share in total imports (%)	Export specialization	Adjusted cover ratio
Office and eqp-machinery	2.8	6.7	0.60	0.42
Consumer electronics	2.6	6.1	0.52	0.42
Instrument engineering	2.3	3.2	0.73	0.73
Timber and wooden furniture	1.4	3.7	0.73	0.38
Non-ferrous metals	1.6	5.3	0.57	0.30
Pulp, paper & paperboard	1.5	4.1	0.47	0.36

Source: DRI.

The third category groups all those sectors where the indicators point in different directions. It contains two different cases (Table 3.6.). The first case concerns the sectors which have a trade deficit although they perform better than the OECD average. This is mainly due to the fact that the OECD as a whole reports a trade deficit in that sector, in part because the industrialized countries have transferred the intermediary activities into low wage countries. This is, for example, the case of the textile cluster where the European Union has specialized in the valued added part of the textile and clothing sector which gives a comparative advantage and reports a good trade performance compared with the OECD, but suffers from increasing competitive pressure from non-OECD countries for lower value added products.

The second case concerns those sectors which report a trade surplus although they perform worse than the OECD average. The situation in these sectors is due to an inability to capture a part of the overall trade surplus of the OECD as a whole. Telecommunications and electrical equipment are examples of such sectors.

Table 3.6. Sectors in intermediate situation

	Share in total exports (%)	Share in total imports (%)	Export specialization	Adjusted cover ratio
Textile	3.9	5.4	1.46	0.72
Leather/ leather goods	0.9	1.0	1.97	0.81
Footwear/ clothing	2.7	6.0	1.89	0.44
Manufacture of jewellery	3.2	4.2	1.58	0.77
Mineral oil refining	1.9	2.2	1.40	0.87
Motor vehicles and parts	8.7	6.0	0.70	1.46
Telecom equip. & other prof. electro.	3.2	3.0	0.85	1.07
Electrical equip. for industry	4.8	4.4	0.89	1.08
Other means of transport	1.4	1.1	0.76	1.30

Source: DRI.

Although no categoric conclusions can be drawn from the above analysis, the European Union seems to enjoy more sectors with trade related comparative advantages than disadvantages, including several of high growth potential. The level of aggregation of the analysis can distort the conclusions reached, because a country can be ranked highly because it is specialized in a fast growing sector even though it may be strongly specialized in the slow part of that fast growing sector, and vice versa. Conclusions about trade specialization at a high level of aggregation can also give an erroneous picture, particularly in the case of the European Union which is more specialized within sectors than between sectors.

Some elements can nevertheless be highlighted, such as the EU's particularly poor trade performance in certain fast growing sectors such as office and electronic data processing, consumer electronics and instrument engineering. Similarly, some of the European Union's strong sectors are facing competitive pressures from the non-OECD countries. The capacity of industry in the European Union to adapt its means of production to growth sectors in order to match the changing patterns of demand is a crucial element in achieving success in export growth and thereby for its sustained competitiveness.

Despite recent positive developments, the geographical structure of European exports in 1993 showed that nearly all markets, with the exception of Central and Eastern Europe, in which the European Union posted a relative geographical specialization, had been characterized by slower than average trade growth at the OECD level between 1987-93 (Table 3.7.).

Table 3.7. Geographical composition of EU manufacturing exports, 1993

	OECD Exports % Growth 1987-93	Relative EU specialization
EFTA	24.3	2.1
Central Eastern Europe	123.0	2.0
Former Soviet Union	42.5	1.7
Mediterranean Basin	36.7	1.7
Rest of the world	22.1	1.7
Other Asia	27.1	1.3
Japan	78.2	0.8
China	124.3	0.8
Australia and New Zealand	38.3	0.7
North America	42.0	0.6
Latin America	112.4	0.6
NICs Asia	162.8	0.5

Source: DRI.

The European Union's manufacturing trade performance has suffered from limited presence in the fastest growing markets. Clearly, the European Union is not taking full advantage of the most dynamic international markets. However, recent trade with emerging economies shows an improvement in the European Union's trade patterns.

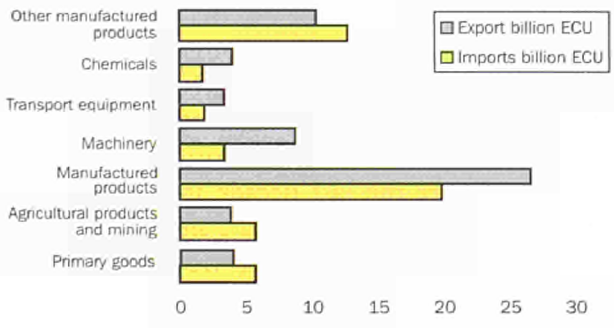
Over the last decade, the relative standing of emerging Asia in the world economy has improved significantly. The share of Asian world exports increased from 16% to 26% between 1980 and 1993. In the same period, the share of Asian intra-regional trade increased from 39% to 47%. In 1993, 83% of OECD imports from non-OECD Asia were manufactured goods, against 51% in 1980. Prospects for further growth are even more encouraging, as in the next decade 400 million Asians are expected to possess a purchasing power equivalent to that of Europeans today.

As a result, the European Union's presence in the growing markets of Asia is of paramount importance. Europe's share of Asian imports accounted for only 15% in 1992, while it represented 25% in 1970. However, since 1992 Europe's presence in Asia has been strengthened and the total EU two-way trade with emerging Asia more than doubled in 1994.

The European Union accounts for approximately 20% of Latin America's imports and exports. In contrast, Latin America represents only 5% of total European Union exports. Since Latin America embraced market liberalization and economic reforms, EU exports to Latin America have increased significantly, with a growth rate of 41% from 1990. This makes the region the world's fastest growing continental market for the European Union.

The European Union has now consolidated its position as the most important trade partner for most of Central and Eastern Europe. Overall, in 1994, trade with these countries accounted for 6% of total extra-EU exports, increasing by 56% over 1993. EU imports accounted for 5% of total imports, with a growth rate of 71% from the previous year. Inter-industry trade is mainly concentrated in resource- and labour-intensive product from Central Europe in exchange for investment and high value added goods from the Union. However, intra-industry has been expanding faster, demonstrating a higher degree of integration with the EU economy, mainly through the supply of components (Fig. 3.4.).

Fig. 3.4. EU trade with Central Europe by sector, 1994



Source: Eurostat.

A common denominator for the majority of countries in the Mediterranean Basin is their dependence on the European Union for exports. In 1994, the region absorbed 10% of EU exports (increase of 4% from 1993) and accounted for 8% of EU imports (a growth of 11%). In the past, cultural differences, political and economic instability and competition with products from the southern members of the European Union, in textile, food and low-technology products, have prevented the development of trade-flows and industrial cooperation. The region has, however, the potential to become an important trade and industrial partner for the European Union.

3. Foreign direct investment

The capacity to attract inward foreign direct investment enables Europe to benefit from the transfer of knowledge and technology, in addition to that of capital and the jobs which are created as a result of the investment. Experience with American investment in Europe in the 1950s and 1960s and with Japanese investment, particularly in the United States and the United Kingdom since the 1980s, has shown that for organizational innovation, in which it is difficult to disentangle country-specific and firm specific elements, the demonstration effect of having functioning examples of best practice in the local economy can lead to significant improvements in the performance of domestic firms. The impact on quality of component suppliers has been particularly important leading to substantial gains in competitiveness for the overall economy.

Foreign direct investment also acts as an indicator of Europe's attractiveness as a place in which to do business. Europe's large and sophisticated home market, infrastructure endowment and high level of human resources and technology all represent powerful sources of competitive advantage that attract investment. However, high costs and insufficient dynamism of the local economy can reduce Europe's attractiveness and lead investors to prefer to supply that market from other more favourable locations. Recent developments as well as the level of absolute investment therefore need to be monitored closely.

Over the past decade, investment flows into Europe have been heavily influenced by the internal market programme. Member States redirected their outflows

towards other members in anticipation of completion of the internal market, so that over the period 1988-92 intra-EU flows amounted to 31 billion per year compared with ECU 25 billion of extra-EU investments. Third countries also stepped up their investments in order to take advantage of market integration and to ensure a more active local presence. At its peak in 1989-91, the European Union succeeded in attracting 47% of world foreign direct investment, and still accounts for one third of all such investment (Table 3.8.).

Table 3.8. Share of world FDI inflows[1]

%	1983-88	1989-91	1992-93	1994
Developed countries	78.4	81.2	63.4	59.8
Developing countries[2]	21.6	18.8	36.6	40.2
EUR 15	30.0	47.0	40.1	31.5
Rest of W. Europe	1.6	2.4	1.2	1.1
United States	37.6	24.1	15.5	21.9
Japan	0.4	0.7	0.7	0.4
EU as % of developed countries	38.2	57.8	63.2	52.7

[1] Including intra-region flows.
[2] Including the transition economies of Central and Eastern Europe.
Source: UNCATD 1995 data.

Growth in foreign direct investment over recent years has paralleled that of trade in the sense that developing countries, overwhelmingly the newly industrialized ones, have dramatically increased their share of the total from 19% in 1989-91 to 40% in 1994. As with trade, this development can be considered as positive since foreign direct investment encourages the world development process and enables access to these markets for developed countries' goods and services. The ability of the European Union to attract investment should be measured against that of other developed countries rather than as a share of the world total. At 53%, the European Union share of developed countries' inward investment remains well above the 38% achieved in 1983-88 before the surge of internal market related investment, but has nevertheless declined from the peak of 63% achieved as recently as 1992-93. It still exceeds the United States share of these investments by 16%. The low level of inward investment to Japan can be considered as a product of both restrictive policy in the past and substantial domestic barriers.

Developed countries have seen a significant shift in their inward investment towards service sectors directly related to industry, with two-thirds of this concentrated in finance and trade related services. For the European Union, the service sector accounted for less than a quarter of total inward investment in 1970, while today this has risen to around 70% (Table 3.9.). Over the last decade, financial services with 30% and trade/tourism with 10% have been among the major recipients of inward investment. This contrasts with manufacturing, where only food-related activities show any marked specialization (8%).

Table 3.9. EU's sectoral shares of inward FDI

% of intra EU 12 flows to	1984-86	1987-89	1990-92
Industry (excluding energy)	22.9	32.0	28.9
Building & construction	2.5	2.5	0.6
Services	74.6	65.5	70.5

Source: UNCATD 1995 data.

Market access to third countries increasingly requires sustained direct investment. Such investment in both manufacturing and services related to industry constitutes a necessary complement to direct trade. Many services, which are growing more rapidly than industry, also require a local presence. In this case, direct investment is required to exploit new growth possibilities. Achieving a high level of investment, particularly in fast growing economies, should constitute an important objective for European enterprises, and an indicator of external competitiveness of European industry.

The European Union has consistently been a leading investor worldwide. This performance has been maintained over the last decade in contrast to the United States, which recovered a significant place as a foreign investor in the 1990s, and Japan, for which outward investment has recently halved after the very rapid build up in the 1980s. As a result, outward stocks of foreign investment by the European Union exceed those of the United States and are more than double those of Japan (Table 3.10.).

Table 3.10. Distribution of global outward stock of FDI

%	1980	1990	1994
EU 15 estimate (excl. intra-EU)	37.6	37.7	33.1
USA	45.6	30.4	31.3
Japan	4.1	14.0	14.2
Other developed countries	11.4	13.9	13.8
Other Asia	0.4	2.7	6.0
Rest of world	0.8	1.4	1.6
TOTAL WORLD (USD billion)	482	1 433	1 948

Source: Based on UNCTAD 95 data.

Since the beginning of the 1990s, a number of countries in Asia (particularly Hong Kong, Taiwan, South Korea and Malaysia) have become sizeable outward investors, predominantly in other countries in the region. Total outflows reached USD 30 billion in 1994.

Most European foreign investment is directed towards developed countries just as most inflows come from that source. The United States and EFTA countries have accounted for 60% or more of total investments over the past decade. As a result US/EU bilateral stocks of investment are quite balanced. The very low levels of EU investment in Japan can be seen in large part as a product of the barriers mentioned above. It can hinder effective access to the Japanese market (Table 3.11.).

Table 3.11. Extra-EUR 12 FDI outflows *(million ECU)*

average/year	1984-88	1989-91	1992-93
USA	17 075	13 480	8 345
Japan	138	644	800
EFTA	1 243	2 563	3 378
OPEC	244	1.125	802
Ex-Comecon	20	553	:
Latin America	:	:	843
Asean	:	:	855
Australia	:	:	528
Other	4 638	13 153	4 258
Total	23 358	26 880	19 809

Source: Eurostat.

Since newly industrializing countries are accounting for a much greater share of world trade and investment, it is important to analyse in more detail European investments in these growth markets. Asia represents the most important region amongst the developing countries with some USD 59 billion in inflows in 1994 compared with USD 32 billion in 1992. The region now accounts for more than 70% of the total of developing countries inward stock of foreign direct investment. China alone accounted for USD 34 billion or 40% of all flows into developing countries in 1994. Asian countries experienced a near doubling of total world inflows in 1993/94 compared with the previous year, from 16% to 25% (Table 3.12.).

Table 3.12. FDI inflows to developing and transition economies *(USD billion)*

average/year	1983-88	1989-91	1992-94
East, Sth & Sth East Asia*	6.1	15.0	22.2
China	1.8	3.7	24.2
Latin America	7.4	10.6	19.3
Central & Eastern Europe	-	1.0	5.5
Africa	2.1	3.3	3.1

* Excluding China.
Source: UNCTAD 95 including intra-region inflows.

Compared with the United States and Japan, Europe is not investing enough in strongly growing economies. For instance, in 1992/93 the ASEAN countries and Latin America each took only 4% of European outward investment. Only in Central Europe has the European Union maintained consistent flows into developing economies. Association Agreements between the European Union and these countries have assisted in putting in place a favourable environment for investors in Central Europe. Remaining impediments to investment concern inadequate progress towards structural reforms, and in particular slow privatization, as well as the yet unstable macro-economic environment in some of these countries.

While in the second half of the 1980s and early 1990s the European Union was mainly investing its foreign direct investment internally and to the United States, as well as increasingly focusing its efforts on Central and Eastern Europe, the United States was sharply increasing its foreign direct investment in Latin America, as was Japan in Asia.

As a result, the European Union has clearly lost ground as compared with its main competitors in the fastest growing markets, in particular in East Asia.

With an annual growth rate of about 8% as a whole, and an estimated demand of ECU 1 500 billion for infrastructures in the next 10 years, emerging Asian economies are the fastest growing economies in the world. Yet over the period 1986-92 only 10% of foreign direct investment in Asia originated from the European Union. As a comparison, Japan has on average invested four times more and the United States two to three times more in these countries, according to Unctad estimates. Although, on aggregate, the volume of European Union FDI in developing Asia lags behind its main competitors, there are large variations between individual recipient countries. Furthermore, since 1992, an overall increase of European investment has been noted in this region. In 1993/94 European investment in Indonesia, Malaysia, Philippines and Thailand (combined) increased by 87%, against an increase of 12% from Japan, according to a study from the World Bank. This shows that European Union corporate strategies have begun to demonstrate stronger commitment to East Asia.

However, there are clear signs that European Union investment in Asia is less integrated in the local and regional fabric. Investments are heavily concentrated in the chemical sector (one half of the stock) and appear to be mainly of an import-substitution and 'stand alone' nature. The European Union's competitors (United States, Japan and increasingly intra-Asian foreign direct investment) concentrate more on network-type industries, related to a growing supplier chain of affiliated or local companies which they help upgrade.

Sustained growth rates in recent years have shown Latin America's potential for expansion, in particular for the biggest countries. The region is thus becoming a strategic area for investment and trade. For example, in 1992, 35% of USD 10 billion invested in privatization in Argentina was from Spanish and French companies. In Mexico, German companies have invested heavily in the petrochemicals, automobile and tourism industries. Also, European firms have played an important role in some key industrial sectors in large, fast growing markets such as Brazil (in automobiles, pharmaceuticals, chemicals, mechanical engineering).

A region of particular importance is the southern Mediterranean, where FDI is crucial to help modernize the countries' economies, and thus to improve regional prosperity and socio-economic stability. The European Union is already the region's principal economic partner, and in November 1995 the Barcelona Conference launched a plurilateral Euro-Mediterranean partnership, which should lead to much better long-term investor confidence in the region. Some countries — such as Morocco, Tunisia and Israel — have already experienced a virtuous circle of greater stability, foreign investment and high rates of economic growth.

Central and East European countries have a good potential to attract FDI. Many countries are middle-income economies with sizeable domestic markets and pent-up consumer demand and a large industrial base; others are rich in natural resources and have considerable human resource endowments and relatively low labour costs. Although the relative importance of foreign direct investment to these regions has been modest, its growth since 1989 is remarkable. In addition, the transfer of modern technology and management practices to foreign affiliates and supplier firms and the provision of previously unavailable services assist in speeding the transition to a market economy and fostering economic development. Foreign direct investment helps the transition process by exerting pressure for institution building, restructuring and privatization as well as competition.

Box 3.1 illustrates a case of a successful, low investment strategy developed in this region.

Box 3.1. Example of Asea Brown Boveri's expansion into the former communist bloc

Over the last five years, the Swiss-Swedish engineering conglomerate ABB, has built a network of 60 companies in the former communist bloc, establishing one of the largest manufacturing presences there of any Western group. Covering 13 countries and employing about 30 000 people, ABB has seen its orders in the region leap from USD 225 million in 1990 to USD 1.7 billion in 1994, with expectations of reaching between USD 3 and 4 billion by the year 2000. Exports from the region have also grown (from USD 25 million in 1990 to USD 220 million in 1994), which clearly indicates the local market potential. Expansion has been made primarily through acquisitions, rarely in excess of USD 20 million each, totalling about USD 300 billion. Financial risks were therefore limited. The main objectives pursued by ABB were to anticipate the growing needs of these regions for modern energy equipment, and secure favourable cost sources for components (such as turbines and switchgears which are claimed to be up to 40% cheaper than from Western suppliers). The strategy developed has been accompanied by ambitious programmes meant to enhance the internal potential of the local units. Following sizeable cuts in local staff, huge training programmes were put in place for managers and technicians together with transfers of technology and sophisticated production equipment. This strategy is claimed to have allowed transformation of many near-bankrupt State-owned companies into profitable units.

The emerging global picture indicates that outside Europe, EU investors seem to prefer lower equity, less risky and conservative forms of transnational involvement. European Union investment abroad is also still somewhat conservative in form and appears to concentrate on mature sectors and in countries with which the European Union Member States have historic ties.

Although evidence on the relationship between foreign direct investment and employment is limited, what is available does not reveal a negative impact on employment (Box 3.2.). The widespread view that foreign direct investment is essentially motivated by the search for lower labour costs is not substantiated, given that in most sectors low-skilled labour costs now account for only 5% to 10% of total production costs, as against 25% in the 1970s.

Decisions to invest abroad are in fact influenced by a wide range of factors such as closeness to markets, security of supply, diversification of risk and the spreading of investment costs. Moreover, most foreign direct investment occurs in sectors with relatively low labour content and, within the European Union, countries such as Germany, the Benelux and France (known for their high labour costs) continue to be amongst the major recipients of FDI. In any case, when considering the labour component, investors do not react to nominal wages but to unit labour costs (i.e. wages adjusted for productivity levels).

Box 3.2. Delocalization - Example of the Belgian diamond industry

The Belgian diamond industry constitutes an interesting example of the overall employment effects of delocalization. Known as one of the world's major trade centres for jewellery diamonds, the Antwerp area employed about 12 000 people in this sector at the beginning of the 1980s: 8 000 in cutting and setting operations and the remaining 4 000 in service and trade activities. In spite of a major relocation during the 1980s of the cutting and setting operations to India and Thailand, it is estimated that there are still about 15 000 people employed in Antwerp. Delocalization resulted in a reduction of about 4 000 manufacturing jobs in Europe, but Antwerp has, in the meantime, substantially invested in the development of trade logistics, marketing, financing, certification and R&D in cutting and setting machinery, which, together, have more than offset the negative impact on the jobs transferred abroad.

Source: Bureau du Plan - Brussels 1994.

Research in various Member States indicates that, whenever hard delocalizations to non-EU countries have occurred, the immediate losses of low-skilled jobs to the developing countries have broadly been offset by increases in higher-skilled jobs in supporting activities in the country of origin. This general conclusion is also supported by OECD research that has found that the net effect of FDI on employment in the host and home economies is neutral (i.e. FDI destroys, but also creates employment in both countries).

Behind the relatively unsatisfactory trade performance of European industry lies a geographical specialization on mature or slow growing markets. Only recently has European industry begun to take a more active interest in strongly growing parts of the world such as East Asia. A similar absence of specialization on growth markets compared to the United States and Japan can also be observed in European foreign direct investment.

After examining the main characteristics of Europe's competitive performance, the report now tuns to certain underlying factors that might help to explain the trends identified.

Chapter 4
Labour market

European labour markets persistently suffer from low rates of net job creation and low rates of employment. This chapter examines to what extent the functioning of the labour market itself can be considered a major contributor to the outcome. It also examines to what extent regulation affects the cost and flexibility with which industry uses labour. An improved functioning of the European labour market is vital for competitiveness, just as competitiveness is a determining factor for the level of employment.

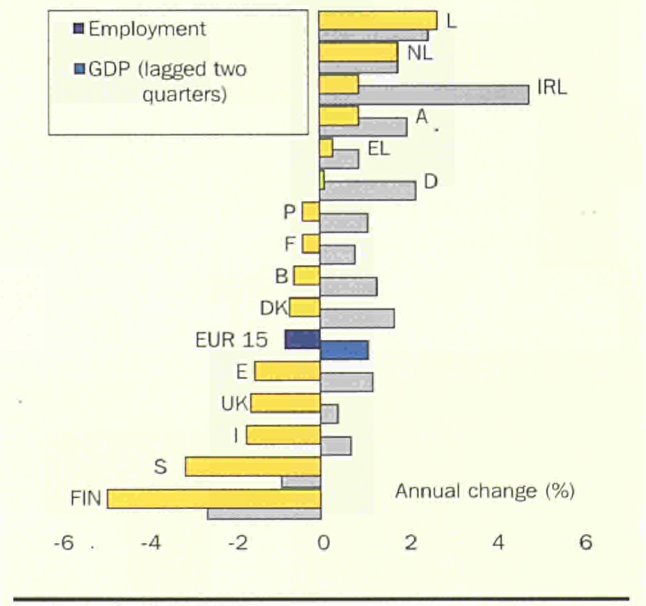
Europe has a specific social model characterized by solidarity, public responsibility for social protection, fundamental social rights and the role of social partners. High productivity levels are required to sustain the costs incurred in maintaining this system, but the system itself provides incentives for high levels of skill formation (the issue on human resources and skills is dealt with in the chapter on intangible investments). Systems which put excessive emphasis on income maintenance will necessarily have a worse performance, in terms of the employment rate, than systems geared to promoting the adaptability of workers to the labour market.

1. Employment composition and development

Over time, the rate of net job creation in the European Union has closely mirrored the rate of change in GDP. An increase in growth of GDP has tended to be followed after a period of time by a rise in the rate of growth of employment.

There are considerable differences among EU countries in terms of the degree to which output growth is translated into jobs, which implies that the functioning of labour markets also affects employment creation (Fig. 4.1).

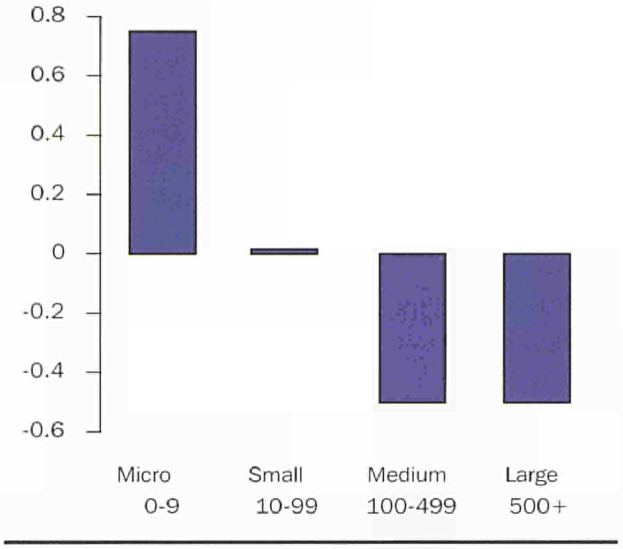
Fig. 4.1. Growth of GDP and employment in Member States 1990-94



Source: European Commission.

Despite recent methodological criticism of studies alleging a dominant role for SMEs in the job-generating process, prevailing evidence shows that SMEs still outperform large firms with regard to job creation. It appears that micro firms (1 to 9 employees) make an overwhelming contribution to total net job growth. Between 1988 and 1995 employment in micro-size firms increased at an annual average rate of 0.75% compared with no increase in small firms and a decrease of 0.5% in both medium and large firms (Fig. 4.2.). Micro firms operate primarily within local markets. Medium and large firms are more likely to be exposed to international competition.

Fig. 4.2. EEA employment performance
annual (%) change from 1988 to 1995



Source: The European Observatory for SMEs, 1995.

Industry accounts for one third of employment in Europe and Japan compared with one quarter in the USA. In all three cases, services constitute the main source of employment, but more so in the USA (Table 4.1.).

Table 4.1. Employment by sectors
(in % of total 1993)

	EUR 15	USA	Japan
Agriculture	5.1	2.6	8.0
Industry	29.6	22.2	33.4
Services	65.3	75.2	58.5

Source: Eurostat.

Employment growth in the European Union has consistently lagged behind that of the USA and Japan. US total annual job creation has been 0.8 % higher than that of the European Union.

Europe's weaker employment performance masks considerable sectoral differences in generating jobs. For instance, jobs in European industry have been lost at twice the US rate, while Japan has been one of the few OECD countries to register growth in industry employment over the 1980s. Similarly, in agriculture, EU job losses have been greater than in the USA and Japan (Table 4.2).

Table 4.2. Employment growth 1979-93
(Annual percentage change)

	EUR 15	US	Japan
Agriculture	- 3.6	- 0.4	- 2.6
Industry	- 1.4	- 0.7	0.9
Services	1.6	2.2	2.0
Total	0.3	1.4	1.1

Source: Eurostat, 1995.

In all three cases, services have shown considerable employment growth. Equally, more jobs have been created in market services than in non-market services. Moreover, the kinds of service activity in which the most jobs were created were also much the same. In all three economies, personal and communal service (like health care, social service and education as well as public administration) were the leading growth sectors (Table 4.3).

Table 4.3. Change in employment by ISIC sectors, 1980-93
(Average change as % of total employment in 1980)

	EUR	USA	Japan
Agriculture	- 0.29	- 0.02	- 0.27
Mining, energy	- 0.03	- 0.02	0.00
Manufacturing	- 0.35	- 0.18	0.23
Construction	- 0.08	0.08	0.13
Distribution, hotels	0.23	0.38	0.28
Transport	0.01	0.07	0.06
Banking, insurance	0.28	0.36	0.32
Other services	0.52	0.89	0.51

Source: OECD labour force statistics.

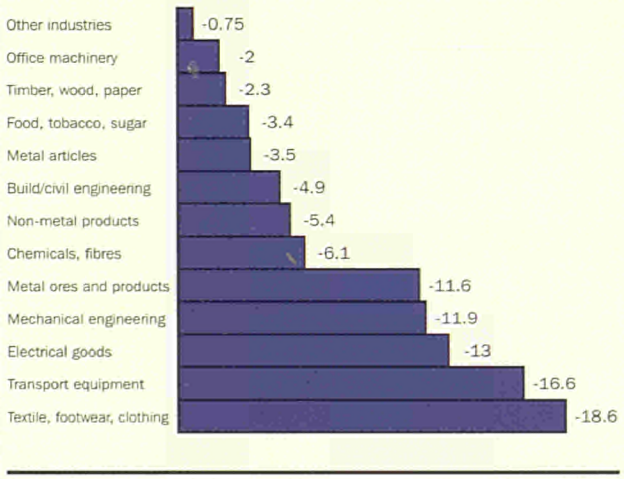
The reasons behind the better US and Japanese employment performance are different. Services account for two thirds of the difference in performance between the European Union and the USA, while more than four fifths of the difference between the European Union and Japan is accounted for by industry.

Industry in Europe is unlikely to be a significant source of new jobs except for SMEs. Nevertheless, a cut in job losses in industry can have a considerable impact on the overall employment situation.

The sectoral performance of European industry varies widely in terms of change in employment.

Over the period 1985-94, the heaviest job losses occurred in five industries: textiles, footwear and clothing; transport equipment; electrical goods; mechanical engineering; and metal ores (Fig. 4.3.). These industries account for 72% of total job losses within industry during the period. Only the rubber and plastics industry recorded modest growth.

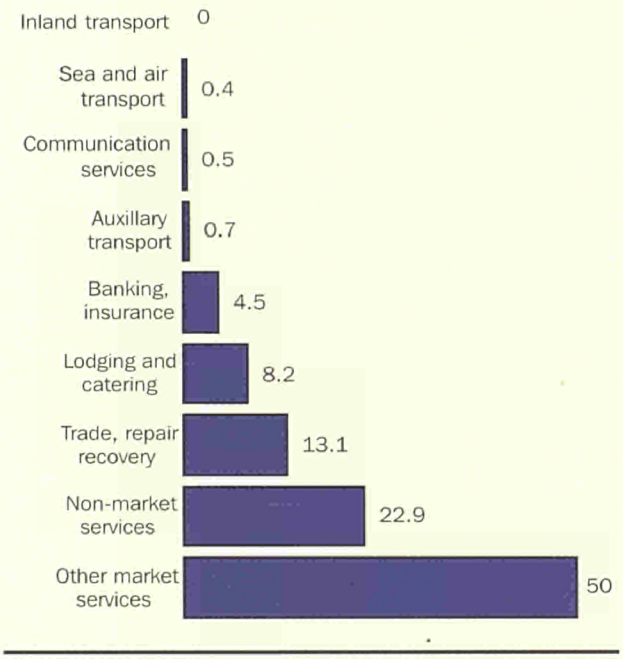
Fig. 4.3. EUR 12 employment performance
(% total loss in industry 1985-94)



Source: Eurostat.

In contrast to industry, service sectors have generally displayed strong growth (Fig. 4.4). Over the period 1982-94 by far the strongest growth in employment was enjoyed by other market services. This category regroups three rather different types of service: business services (including professional, technical and information services), household services (including audio-visual services as well as many proximity services) and market services of education and health. Available information points to strong growth in each of these categories. Non-market services also showed strong growth, particularly in the fields of education and health. Transport has contributed comparatively little to employment growth in services.

Fig. 4.4. EUR 12 employment performance
(% total gain in services 1985-94)



Source: ERECO employment network

While these relative changes meant that the sectoral division of employment in Europe became more similar to that in the United States over the period, significant differences, nevertheless remain. In particular, the share of employment in agriculture in Europe was still around twice that in the United States, despite the large scale falls which occurred in preceding years, while the share of manufacturing was almost 40% higher (but lower than that in Japan). This was mirrored in higher shares of employment in all service sectors in the United States than in Europe, apart from transport and communications.

Over the long term in the European Union there has been a gradual shift in the structure of occupations away from manual jobs, skilled as well as unskilled, towards non-manual jobs, especially those with a high skill content requiring extensive education and training.

High-skilled jobs are also more stable over the business cycle. For instance, in the two years 1992 to 1994, when the total numbers in work declined by 2% in the European Union as a whole, the number of managers, professionals and technicians in

employment expanded by 3.5%. At the same time, the numbers employed in low- skilled, manual jobs and as agricultural or fishery workers fell by 10%.

2. LABOUR COSTS

Labour costs influence competitiveness in two separate ways. The first, and most direct way, is through the effect on prices. As a cost of production, labour enters into the final production price. For manufacturing industry, labour costs represent approximately 30% of total costs (and 70% of value added) compared with 60% for purchases of goods and services and finance the remainder (see Chapter 2). The second way concerns the way labour costs affect job creation and therefore employment.

In order to measure the price of labour that is significant for competition on international markets, unit labour costs are the relevant indicator. They combine three elements: the total cost of labour to the employer, including social security and other non-wage costs, productivity and the current rate of exchange. When analysing levels and developments in unit labour costs it is important to clearly identify the role played by each of these elements.

Since unit labour costs are an element of price competitiveness on international markets, they affect directly the tradable part of the economy. Nearly all manufacturing industry can be considered as tradable. Construction has a very low degree of tradability, and only half of services can be considered as directly tradable in the same way as goods. Altogether, the tradable part now exceeds half of the economy. If the development of manufacturing unit labour costs is a major concern of industry, developments in the economy as a whole cannot be ignored. The importance of services both as a key input to industry and for the distribution of goods means that price developments in these sectors are also important for industry (see Chapter 6). Unit labour costs are not an appropriate measure for examining developments in the non-tradable parts of the economy such as proximity and welfare services.

Developments in labour costs

Developments in total labour costs since 1980 have followed a similar path in Europe as in the United States. A strong deceleration in the rate of growth of labour costs as measured by the compensation per employee is evident (Table 4.4.). The rate of growth in Europe remains higher than that in the United States although on present trends this difference is likely to disappear, as has already occurred in the lower inflation parts of Europe. The lowest growth of labour costs has been consistently recorded in Japan, where labour costs are now growing at only half the rate of those in the United States or Europe.

When turning to the causes of the higher rate of increase of labour costs in Europe, it is clear that an expansion in real wages is not the answer. After adjusting for inflation (Table 4.5.), European real labour costs are not rising faster than those in the United States. Japanese real labour costs rose strongly in the 1980s during the period of rapid growth, but have since slowed down substantially. In Europe, real labour costs rose more strongly in the latter part of the 1980s, while US real labour costs have been rising faster during the 1990s.

Table 4.4. Nominal compensation per employee
(annual average growth rate)

	1980-85	1985-90	1990-95	1980-95
EUR 15°	9.1	6.2	4.8	6.8
EUR 10*	7.7	5.1	3.5	5.4
USA	6.1	4.4	3.7	4.7
Japan	3.8	4.1	1.8	3.3

° 1990-94, 1980-1994.
* B, DK, WD, F, I, L, NL, UK, S, FIN.
Source: European Commission.

Table 4.5. Real compensation per employee
(annual average growth rate)

	1980-85	1985-90	1990-95	1980-95
EUR 15°	0.6	1.2	0.7	0.9
EUR 10*	0.9	1.4	1.1	1.1
USA	0.7	0.8	1.2	0.9
Japan	1.7	2.7	0.9	1.7

° 1990-94, 1980-94.
* B, DK, WD, F, I, L, NL, UK, S, FIN.
Source: European Commission.

Whatever the cause of the increase, labour costs that are rising faster than amongst competitors must be compensated for by an increase in productivity or a fall in the exchange rate if price competitiveness is not to deteriorate. Table 4.6 sets out for the econo-

my as a whole the major developments in the different elements that make up unit labour costs for the period 1980-95 and for the more recent sub-period 1990-95.

Table 4.6. Development in unit labour costs — Total economy
(annual average growth rate)

1990-95	EUR 10*	USA	Japan
Nominal compensation per employee	5.4	4.7	3.3
Productivity	1.9	0.9	2.2
Nominal unit labour costs in national currency	3.5	3.8	1.0
Exchange rate	-0.4	0	6.0
Nominal unit labour costs in USD	3.1	3.8	7.1

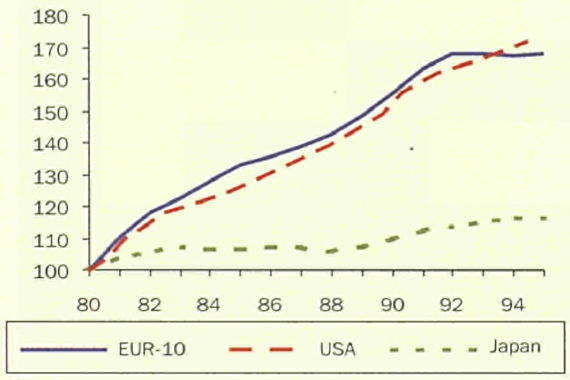
1990-95	EUR 10*	USA	Japan
Nominal compensation per employee	3.5	3.7	1.8
Productivity	1.9	1.1	0.6
Nominal unit labour costs in national currency	1.5	2.6	1.3
Exchange rate	0.5	0	9.0
Nominal unit labour costs in USD	2.1	2.6	10.4

* B, DK, WD, F, I, L, NL, UK, S, FIN.
Source: European Commission.

For the economy as a whole over the period 1980-95, the rise in labour productivity was sufficient to more than compensate for the higher level of increase in labour costs so that in national currency terms unit labour costs in the European Union increased less than in the United States. In Japan, a lower increase in labour costs and a higher increase in productivity meant that unit labour costs increased very little over the same period. In spite of major swings in exchange rates in the 1980s (see Chapter 3), the exchange rate between the ecu and the USD in 1995 was not substantially different from that in the 1980s so that over the period as a whole Europe improved its price competitiveness. The revaluation of the yen however was strong enough to produce a marked increase in Japanese unit labour costs.

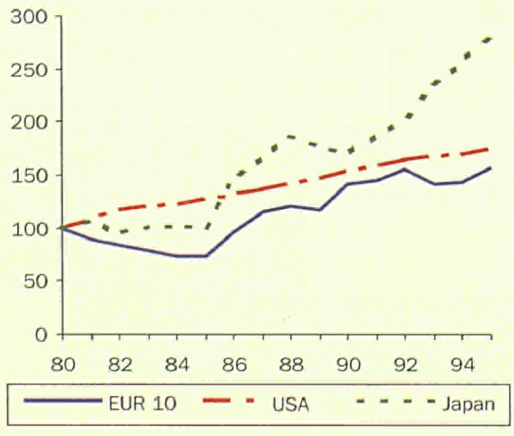
Over the most recent period, increases in European unit labour costs have been subdued with lower rates of increase of labour costs, productivity continuing to increase at its trend rate and relative stability of the exchange rate in 1995 compared with 1990. The increase in national currency is now substantially below that of the United States and close to that of Japan. For Japan, the effect of the rise of the yen on unit labour costs has meant that they rose four times as fast as in the United States or Europe (Figures 4.5. and 4.6.).

Fig. 4.5. Unit labour costs in national currency, 1980 = 100



Source: European Commission.

Fig. 4.6. Unit labour costs in USD, 1980 = 100



Source: European Commission.

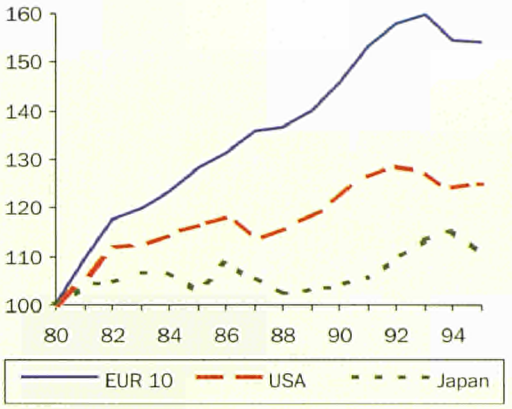
Table 4.7. Development in unit labour costs — Manufacturing industry
(annual average growth rate)

1980-95	EUR 10*	USA	Japan
Nominal compensation per employee	6.1	4.8	3.5
Productivity	3.1	3.3	2.8
Nominal unit labour costs in national currency	2.9	1.5	0.7
Exchange rate	-0.4	0	6.0
Nominal unit labour costs in USD	2.5	1.5	6.7

1990-95	EUR 10*	USA	Japan
Nominal compensation per employee	4.3	3.9	2.0
Productivity	3.1	3.6	0.7
Nominal unit labour costs in national currency	1.1	0.4	1.3
Exchange rate	0.5	0	9.0
Nominal unit labour costs in USD	1.7	1.4	10.4

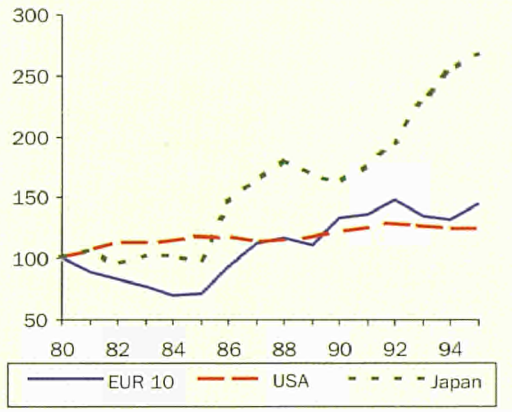
* B, DK, WD, F, I, L, NL, UK, S, FIN.
Source: Commission services (DGII).

Fig. 4.7. Manufacturing unit labour costs
(national currency, 1980 = 100)



Source: European Commission

Fig. 4.8. Manufacturing unit labour costs
(USD, 1980 = 100)



Source: European Commission

For manufacturing industry, the development of European unit labour costs over the last 15 years have been less satisfactory (Table 4.7.). Contrary to the United States and Japan, labour costs have increased faster for manufacturing industry than for the economy as a whole. Productivity increased substantially more than for the economy as whole, but less than in the United States. The result has been an increase in unit labour costs in national currency terms of 1.4% a year more in the European Union. For the most recent period the increase has been 0.7% a year more than in the United States. These differences have not been compensated for by a fall in the exchange rate. For Japan, the marked decrease in the growth of productivity during the current recession has meant that the very low rate of increase in unit labour costs in national currency has not been sustained over the recent period. Combined with the revaluation of the yen, this has led to a severe increase in Japanese unit labour costs relative to those in the European Union and the United States (Figures 4.7. and 4.8.).

Levels of labour costs

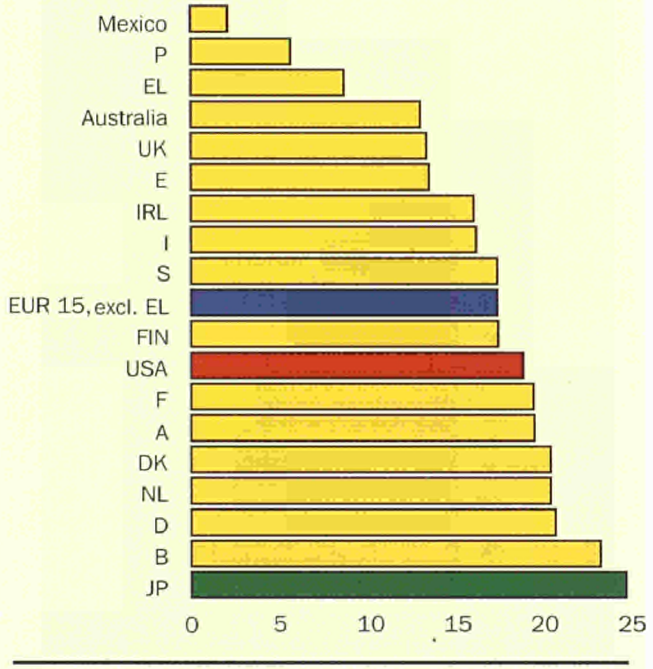
The data presented for developments in unit labour costs are highly aggregated but reasonably robust. However, absolute levels of unit labour costs are much more difficult to measure, because they require adequate measurement of levels of productivity in real terms across countries. For this reason, such data are not compiled by international institutions. From the point of view of price competitiveness, the absolute level of unit labour costs compared to their competitors is of concern to enterprises operating on international markets. In order to exercise a significant influence on competitive per-

formance, differences in unit labour costs need to be both sufficiently large and sufficiently persistent over time. Factors other than price competitiveness play a significant rôle and can, to a certain extent, be used to compensate a lack of competitiveness in this area. Swings in exchange rates also mean that it is impossible for firms to adjust rapidly to changes in their domestic cost base. When differences are both sufficiently large and persist over time, enterprises are obliged to bring their cost basis into line. If they do not do so, the result is a loss of output and employment, beginning in those sectors most affected by international price competition and then feeding through to other sectors of the economy which depend on them.

Because they do not require a measurement of absolute productivity, figures on total labour costs are more generally available. Those established by the US Bureau for Labour Statistics for hourly labour costs are the most widely adopted. Industrialized countries are characterized by labour cost levels far above those of the less developed countries (Fig. 4.9). The European Union is not attempting to compete on low wages. High levels of productivity and specialization in high quality products allow developed countries to compensate for high wages.

Average hourly labour costs for the economy as a whole in the European Union were 8% below those of the United States in 1994. The 9% fall in the value of the USD in 1995 means that there are now no substantial differences in hourly labour costs between the European Union and the United States. However, certain Member States and Japan already had substantially higher labour costs than the United States in 1994.

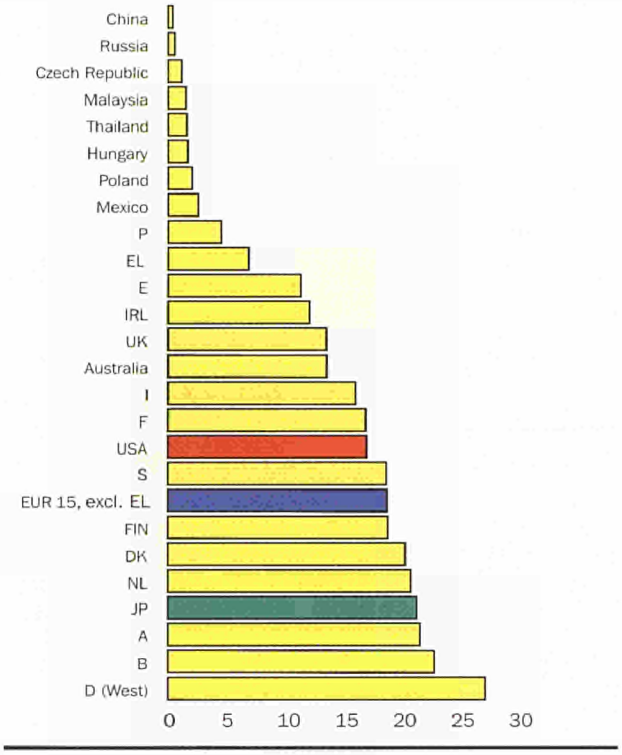
Fig. 4.9. Nominal hourly labour costs in total economy 1994 (USD)



Source: Based on US Bureau of Labour Statistics.
(NB: D inclusive former Eastern Germany)

For manufacturing industry, average hourly labour costs in industry in 1994 were 10% higher in the European Union than in the United States, and the subsequent fall in the value of the US dollar means that differences in labour costs are sufficiently important to affect competitiveness negatively. Again substantial differences are concentrated in a certain number of Member States as well as Japan (Fig. 4.10).

Fig. 4.10. Nominal hourly labour costs in industry — 1994 (USD)



Source: Based on Morgan Stanley and US Bureau of Labour Statistics. (NB: D exclusive former Eastern Germany)

Since there are no major differences in hourly labour costs between the European Union and the United States for the economy as a whole, any differences in unit labour costs can be attributed entirely to differences in productivity. Estimates for real output are produced by the international programme establishing purchasing power parities. Combined with measures of labour input, they allow absolute levels of labour productivity to be calculated. Chapter 1 presented the data for GDP per person employed, which demonstrated that European labour productivity is 20% below that of the United States, but above that of Japan. Since the measure of labour input is not the same as that for labour costs (persons employed versus hours worked), it is not possible to use these estimates to calculate absolute unit labour costs for the economy as a whole. However, were the relationship between relative productivities on the basis of hours worked to be similar to that on the basis of persons employed, this would point to a substantially higher level of unit labour costs in the European Union compared with the United States, but a very low level of unit labour costs compared with Japan.

Analysis of industrial competitiveness needs also to take into account absolute levels of unit labour costs in manufacturing industry. There is at present no official data that would allow such an analysis to be made and the information available is very limited. Studies[1] indicate that there was a gap at the beginning of the 1980s in manufacturing absolute unit labour costs and there is no indication that this has been closed since then, rather the contrary.

Differences in unit labour costs between the European Union and the United States for the economy as a whole over the last 15 years can be attributed essentially to differences in the absolute level of productivity, with the exception of the early 1980s when the sharp appreciation then depreciation of the US dollar played the major role. With regard to Japan, the steady revaluation of the yen has been the decisive factor in increasing Japanese unit labour costs.

For manufacturing industry, the situation has been less favourable. Available evidence points to a wider gap between European Union and US manufacturing productivity along with a deterioration in European unit labour costs. The relative level and performance of Japanese manufacturing unit labour costs are comparable to those of its economy as a whole.

Conclusions

Many different factors play an important role in explaining trends in output and employment, among them the level and development of costs of all factors of production, including unit labour costs (nominal and real). If levels and developments of labour costs for the economy as a whole appear in line with those of major competitors, manufacturing industry still seems to be a problem, which can constitute part of the explanation for the poor performance of European industry.

[1] O'Mahony Mary, *Productivity Levels in British and German Manufacturing Industry*, National Institute Economic Review,(1992); Maddison, Agnus and Bart van Ark: *The International Comparison of Real Product and Productivity*, Institute of Economic Research; McKinsey Global Institute: *Manufacturing productivity*, Washington, D.C., (1993). Hooper, Peter and Vrankovitch, Mary for the US Board of Governors of the Federal Reserve System, international discussion paper No 527, October 1995.

Non-wage costs

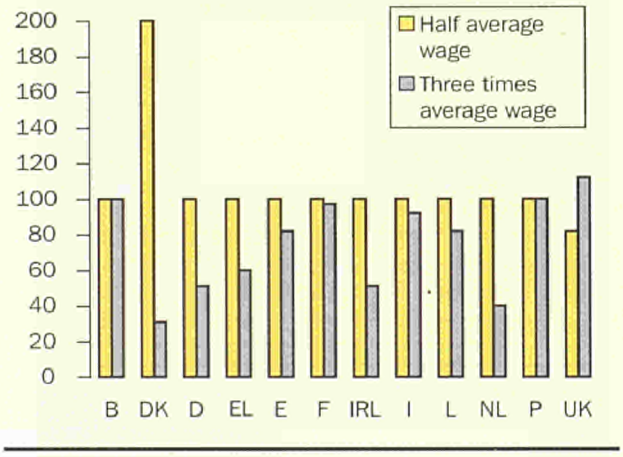
The crucial relationship as regards employment creation is that between marginal cost and marginal product of labour. Employers will take on additional labour only in so far as the additional output produced exceeds the costs of doing so. In industries such as proximity services, high labour costs can impede employment creation because the low-skilled labour used in these industries does not achieve sufficient levels of productivity to compensate for the relatively high costs associated with employing it.

Since most of the employment creating potential of the economy lies in the service sector, the issue of labour costs is also very important for services. In contrast to industry, where goods incorporating low-skilled labour can be imported from low-cost countries, the service sector holds large employment potential for low-skilled as well as high-skilled labour. The cost problem in services is concentrated in the low-skill segment where productivity is not sufficiently high to compensate for the costs imposed by the high wage floor of European labour markets. This translates into unfulfilled demand particularly for proximity services, loss of output and less jobs.

If total labour costs are the important indicator for competitiveness, the structure of labour costs is also important for employment, particular at the low end. As indicated in the White Paper on growth, competitiveness and employment, non-wage costs make up 44% of labour costs in the European Union compared to 28% in the United States and 24% in Japan. This demonstrates a key difference in the structure of labour costs which reflect the extent to which certain services — health, pensions, etc. — are funded through taxation or take home pay.

Employers' social contributions in most Member States are regressive, that is to say they do not increase in line with wages (Fig. 4.11). This effectively sets a floor on labour costs in most European countries.

Fig. 4.11. Employers' social contributions at different wage levels
(Contribution at average wage = 100)



Source: European Commission

Thus, the structure of taxes and social contributions in most Member States is such that their relative burden is generally heavier on low-paid workers. This category of workers, where unemployment is disproportionately high, is also that for which the price variable tends to play a greater role in hiring decisions.

Box 4.1. Labour cost components and the tax wedge

Total labour costs consist of a wage element and a non-wage element. The wage element includes all payments made to the employee, whether in the form of direct wages or salaries, payment in kind, bonuses, etc. The non-wage element consists of social security contributions and other indirect costs.

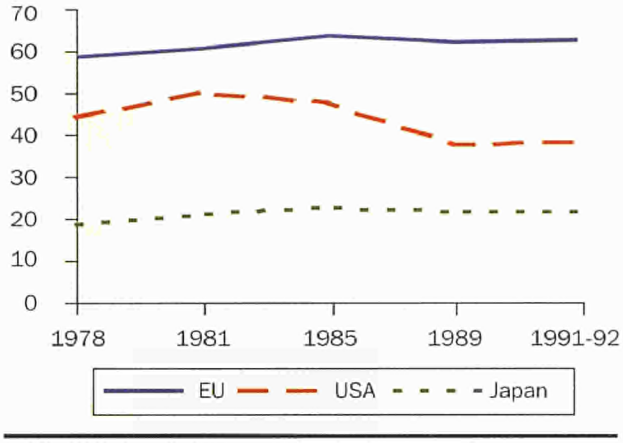
A good measure of the tax burden which is likely to influence the labour market is the 'overall tax wedge' between the cost of employing someone and the take-home pay. The demand-side is determined by those non-wage costs paid by the employer, whereas the supply-side is determined by the difference in gross and net earnings.

The overall tax wedge comprises: (i) non-wage costs paid by the employer; (ii) social contributions and taxes on pay levied on employees.

It should be noted that the level of non-wage costs varies markedly across the Union, as do statutory charges on employees.

High non-wage costs are reflected in the scale of the tax wedge within Europe. A comparison between Europe and its main competitors demonstrates a wide difference in the level of the tax burden. In Europe, more than 60% of any increase in the employers' payroll is paid in taxes, compared with less than 40% in the USA and less than one quarter in Japan (Fig. 4.12.).

Fig. 4.12. Overall marginal tax wedges
(% of total labour cost)



Source: OECD jobs study, 1995.

Thus, only 40% of any increase in labour costs translates into higher incomes for European workers. The high level of the overall tax wedge discourages employment of labour-intensive activities for which labour costs represent a high proportion of total costs.

The problem of 'implicit' wage floors is closely linked to the degree of protection provided through income support. The entitlement to such support combined with taxes on otherwise earned income may result in high net income replacement ratios, in particular at the low end of the wage scale. Where such replacement ratios coincide with a long maximum duration on benefit the incentive to accept a job offer is weakened, leading to long-term unemployment (the 'unemployment trap').

3. Flexibility

The efficiency with which labour markets work depend on systems of legal regulation and collective negotiation, as well as on the general organization of the economy. Different systems affect the flexibility with which labour is used both internally in the firm and externally through the capacity of individuals to change employer and region. Internal flexibility encompasses training, the organization of work and working time and the system of industrial relations. Training is dealt with in the chapter on intangible investment, and the organization of work in the chapter on innovation. External flexibility covers hiring and firing rules, as well as geographical mobility and occupational mobility.

The degree of labour market flexibility does not only stem from labour market regulation. In fact, the main limitations on growth and employment appear to come from the limitations placed on access to key product markets (see also Chapter 6, on services). Other inflexibilities stem from factors not linked to the rules and conditions governing employment, such as company pension schemes, which may act as a disincentive to change firm. Rigidities in the housing market must also be seen as potential barriers to mobility. Lack of rented accommodation and differences in house prices both limit the capacity to change regions.

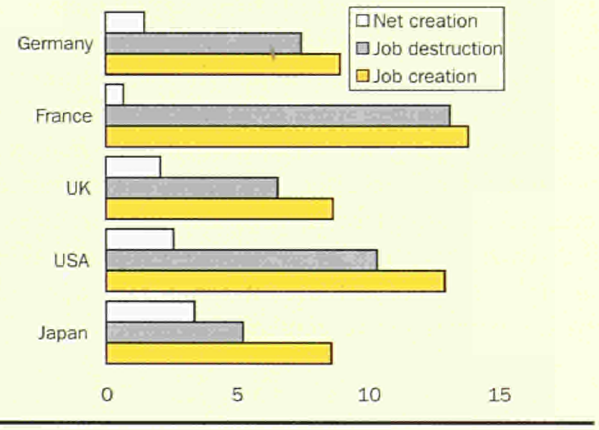
It should be emphasized that increased flexibility needs to be combined with sufficient levels of stability in order to ensure employee motivation. Effective use of human resources remains a key element in ensuring gains in productivity and also for internal flexibility. An increasing turnover of employment bears the risk that the investment in human capital, notably through training, required for long-term growth and competitiveness will not take place.

The recent *Third report of the Competitiveness Advisory Group* (1996) gives interesting examples of enterprises which have improved their productivity, and have maintained or created jobs. The examples mirror the new approach to the way that work is organized within firms, characterized by complex jobs and a simple organization rather than a complex organization and simple jobs inspired by Taylorism. The new, flatter and more decentralized organization structures have ensured a higher degree of internal flexibility. New working practices have been implemented such as multi-skilling, group working and problem-solving, leading to more devolved responsibility and empowerment. The upshot is greater job satisfaction and improved security of employment as a result of companies becoming more competitive.

Contrary to conventional wisdom, European labour markets are as dynamic as that of the USA (Fig. 4.13.). The high levels of job turnover, however, do not mean that Europe enjoys high levels of net job creation. European countries perform less well than the USA and Japan because job destruction in the European Union represents a higher proportion of total job turnover.

Simply looking at the net result may give a misleading picture as the period covers a recession. However, the total flow of job turnover will remain the same within an upturn or downturn of the business cycle, it is usually only the allocation to creation and destruction that differs. Marginal changes in these flows can therefore significantly affect the net outcome.

Fig. 4.13. Employment growth and its components 1985-92
(or closest time period)



Source: Research and progress study, 1995.

Inflexibilities as to job creation may take many forms, of which the most significant concern wage bargaining, working times and employment protection.

Over the 1980s and into the 1990s there has been a shift towards decentralized bargaining. The USA and Japan are characterized by enterprise or plant level bargaining. Such lower-level bargaining has also assumed greater importance in the United Kingdom in the 1980s. Sectorwide bargaining has been the predominant mode of bargaining in Continental Europe, and some of the Nordic countries by and large shifted to sectoral bargaining in the 1980s (Table 4.8).

Table 4.8. The degree of centralization in bargaining (1970s and 1980s)

The level of bargaining in the 1970s and 1980s

Predominant bargaining level in the 1970s	Predominant bargaining level in the 1980s: Central	Sectoral	Enterprise/plant
Central	Finland Norway	Austria Denmark Sweden	
Sectoral	Australia Belgium	France Germany Italy Netherlands Portugal Spain Switzerland New Zealand	United Kingdom
Enterprise/plant			USA Canada Japan

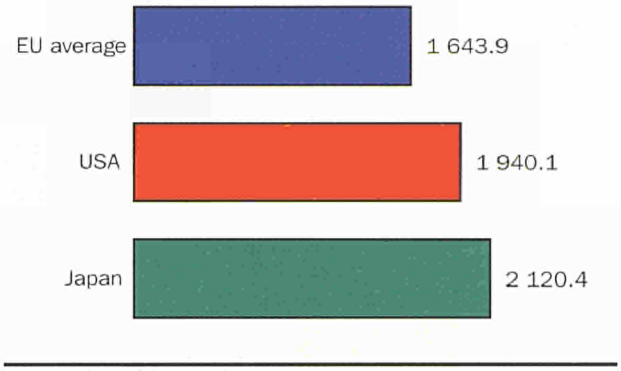
Sources: Based on OECD, *Employment outlook*, 1994, Chapter 5, and K. P. Windmuller (ed.), *Collective bargaining in industrialized market economies: A reappraisal*, ILO, 1987; OECD jobs study.

Different forms of wage bargaining each have their advantages and disadvantages and it is not possible to conclude at the present time that any particular form is inherently superior to another. On the one hand, for example, centralized or sector-wide bargaining has been used to introduce successfully wage moderation in certain countries, with significant impact on inflation as well as costs. It also contributes to transparency of wages and to social and regional cohesion. On the other hand, however, sector bargaining also leads to comparable rates of pay between enterprises irrespective of levels of productivity and across regions in the same country irrespective of differences in the availability of labour.

Working hours are either governed by legislation or by collective agreements, and in some cases by both. Average working hours are higher in Japan and the United States than in Europe (Fig. 4.14).

The important inflexibility, however, lies not so much in the number of hours worked, but rather in when work is carried out. In this way, the ability to run a plant in the optimal fashion to make best use of existing or future investments may be impeded. The level of capital utilization is thereby reduced. Certain services, such as the possibility for shops to

Fig. 4.14. Average annual working hours in industry 1992



Source: Bureau of Labour Statistics, Office of Productivity and Technology, Washington, DC.

stay open to meet the requirements of those at work during normal hours, are also prevented from developing as they might. Innovative uses of flexible working time arrangements can also lead to the significant creation of new jobs.

Inflexibilities stem not only from regulation, but also from attitudes. Recent surveys[1] conclude that 38% of firms surveyed in five European countries have experienced difficulties in finding workers for Saturday work. Also, despite high levels of unemployment in some areas, 68% expected to face such difficulties in the future.

Employment protection legislation concerns hiring and firing rules governing unfair dismissal, lay-offs for economic reasons, severance payments, minimum notice periods, administrative authorization for dismissals and prior discussion with labour representatives.

Levels of labour market regulation vary considerably within the European Union. In general, the regions of the European Union which have higher levels of employment have also a more highly educated and trained labour force and a more developed system of labour relations. Member States with more regulated labour markets have somewhat lower levels of employment than countries with less regulated markets. More advanced labour market systems can also lead to a better market performance.

Table 4.9 from OECD shows legislated maximum severance pay and notice periods for lay offs in selected countries within the European Union and in Japan and the United States. It shows that levels of protection tend to be higher everywhere in Europe than in Japan and the United States. An excessively high level of protection against dismissal can be seen as a significant obstacle to new recruitment. On the one hand, opponents of dismissal protection regulations point out that, when (anticipated) employment costs are high, willingness to recruit new workers falls. With general upward pressure being exerted on labour costs, firms will tend to adopt a cautious recruitment policy. Apart from the effect on the level of employment, this can affect the speed with which companies adjust their labour forces. On the other hand, this impact has been weakened by the increasing frequency of fixed term contracts, which have considerably lower severance costs.

Evidence suggests that, while employment performance is determined primarily by the performance of the economy as a whole, labour market regulation may affect the level of employment creation or, at least, the speed with which firms adjust their labour force in response to change. Restrictions on the capacity of enterprises to adjust their labour forces in the form of regulations or in terms of the cost of taking on and laying off workers are likely, when excessive or outdated, to affect economic performance of companies, although, in practice, enterprises often find ways to circumvent some of these effects through an increased use of temporary and other atypical working arrangements.

Table 4.9. Comparison of severance pay and notice period for OECD countries

	Severance pay (Months)	Notice period (Months)
Belgium	0.0	8.5
Denmark	1.5	3.0
Germany	0.0	4.5
Greece	13.25	0.0
Spain	12.0	3.0
France	1.5	2.0
Ireland	12.0	2.0
Italy	13.0	0.0
Netherlands	0.0	4.0
Portugal	15.0	2.0
United Kingdom	6.0	0.0
USA	0.0	0.0
Japan	0.0	1.0

Source: OECD jobs study, 1995.

Static comparisons do not tell the whole story, however. The dynamic capacity of firms to adjust to structural change also needs to be considered. Outdated regulations can reduce efficiency by limiting the flexibility of enterprises to adjust to changes, but short-run flexibility may not necessarily improve long-run flexibility. The internal organisation of firms, and the «trust» factor, needs to be considered alongside the regulation of the external labour market. Moreover, the deregulation of labour markets may lead not to more regulation by the market, but to alternative modes of legal regulation through the courts, which may increase uncertainties, and costs, rather than reduce them.

When analysing flexibility, a distinction must be made between levels of flexibility and developments over time. As for the latter, clear changes toward greater flexibility have taken place in recent years. Virtually all Member States have seen a significant reduction in working time regulations, and recruitment restrictions have been relaxed. It has become easier for employers to take on part-time as well as temporary workers, and the possibilities for self-employment have increased considerably. Finally, with regard to dismissals, a third of the Member States have reduced restrictions, although these reductions have been less significant than those of other areas.

Chapter 5
Corporate finance

The cost and availability of capital influences the nature, type and size of investment projects. The way a company is financed and the way its management and employees interact with third party investors can have a profound effect on its performance. Public policy matters because it provides the regulatory framework under which corporate financing takes place. Policy can also help to overcome important market failures that could, otherwise, cause deficient investment levels.

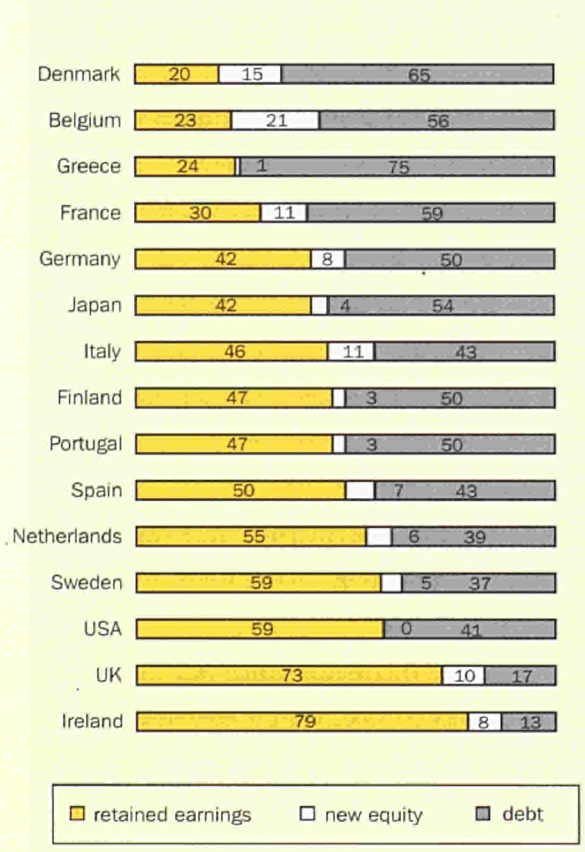
1. Sources of funds

There are a number of striking characteristics about international financing patterns:

- retained earnings and debt finance are the most important sources of finance;
- debt finance can be a more important source of finance than retained earnings (internal finance) and is the most important source of external finance;
- most debt finance is provided by banks and not by securities markets;
- the importance of debt finance varies over the business cycle. In recessions the importance of bank finance increases;
- despite the media attention it receives, new equity finance only plays a minor role as a source of finance.

There are large differences in corporate financing patterns across EU Member states. The variation within the European Union is larger than the differences between the European Union, the United States and Japan (Fig. 5.1.).

Fig. 5.1. Sources of funds %



Source: OECD (1993), Taxing profits in a global economy.

Shareholders are the owners of a corporation. Equity represents a claim on the stream of a company's current and future income and, in the case of ordinary shares, gives shareholders the right to vote at annual general meetings. The total return from equity is any dividend paid plus capital gains.

Internal financing via retained earnings is the most important form of equity financing. Instead of

paying out the earnings to shareholders, the management invests the additional capital on their behalf.

Table 5.1. Market size

Exchange	Market capitalization/ GNP	Debt/equity ratio for 1991	Outstanding amount of corporate bonds /GDP
A (Vienna)	0.18		1.6
D	0.29	1.00	0.1
E	0.24	0.75	4.4
F	0.39	1.44	8.6
FIN	0.29		6.9
I	0.15	0.75	0.2
S	0.70		5.0
UK	1.12	0.20	2.7
USA	0.76	0.69	26.9
JP (Tokyo)	1.25	1.17	7.5

Source: Edey and Hviding (1995), 'An Assessment of Financial Reform in OECD Countries', OECD Economics Department Working Paper No 154, Paris.; Coopers & Lybrand.
NB: Market capitalization for domestic equities for 1991-94; outstanding amounts of corporate bonds as per cent of GDP for 1993.

In Europe, with the exception of the United Kingdom, companies do not have access to well capitalized local equity markets. Market capitalization as a fraction of GNP in continental Europe is lower than in the United States or Japan (Table 5.1.). Although share issues net of repurchases in the United States were zero in 1991 and only 4% of total financing in Japan (Fig. 5.1.), there was significant net issuing in the past.

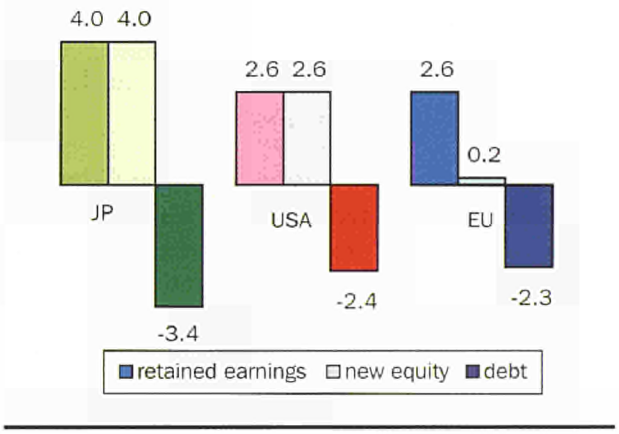
External equity financing takes the form of initial public offerings (IPOs), cash offers and rights issues. Initial public offerings occur when a company sells shares that are traded on the market for the first time. A traded company can raise additional equity capital by selling shares to all investors (cash offer) or to the existing shareholders (rights issue).

Along with retained earnings, debt is the most important source of finance. In addition to the interest rate, there are a number of other factors that are important for debt financing. It is of great importance for a firm when a loan has to be paid back. Longer maturities give companies more room to manoeuvre. Lenders often require that a loan is secured, for example through collateral. If a company is unable to provide collateral it might find it difficult to obtain debt finance.

Companies might not be able to meet their interest payments and repay the principal out of current income or reserves. In such a case the company might be placed into default and ultimately liquidation. With equity financing there is no risk of default. Companies that experience difficulties can pass the dividend and their share-price can diminish without risk of default.

The choice between different sources of finance depends on the relationship between cost and risk. The lower cost of debt is offset by the higher risk attached to it. Corporate and personal taxes affect the underlying relationship, because they influence the cost of the various sources of finance differently. Considering corporate taxes alone, retained earnings attract the highest effective tax rate. The effective tax rate on external sources of funds is much lower (Fig. 5.2a.). The impact of corporate taxes is directly visible for finance officers and can be incorporated easily into post-tax cost of financing calculations.

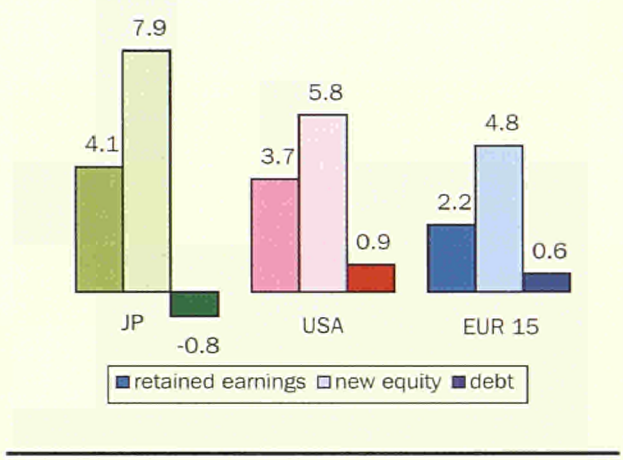
Fig. 5.2a. Corporate tax wedges (%)



Source: OECD (1993), Taxing profits in a global economy.
NB: No personal taxes, inflation at 4.5%, average weights.

The cost of capital to a company also depends on the willingness of investors to supply it with funds. Personal tax wedges and inflation matter because they influence investors' net return. Taking into account personal taxes and inflation, the average tax wedge on retained earnings remains high, while with new equity it is even higher (Fig. 5.2b.).

Fig. 5.2b. Corporate and personal income tax wedges with country specific inflation rates



Source: OECD (1993), Taxing profits in a global economy.
NB: Top marginal rate of personal taxes, country specific inflation, average weights.

Tax systems in the European Union, on average, strongly discriminate against new share issues (Figs 5.2a. & 5.2b.). Marginal effective tax rates in some countries are very high: 93.1% in France, 81.4% in Italy and 50.6% in Germany.[1]

In some extreme cases, tax wedges provide companies with very strong incentives for using retained earnings. For example, the marginal effective tax rate for an investment in the Mezzogiorno region of Italy was 9.9% for debt, 12.5% for new equity and 37.7% for retentions at 0% inflation in 1985. With 10% inflation, the subsidy for retained earnings rose to 134.7% for retained earnings, 19.1% for debt and 14.6% for new equity issues.[2] Overall, the tax system heavily favours debt and thereby increases financial risk for enterprises.

2. Internal equity

Internal equity is the only source of equity for most companies. It is the most common form of financing other than debt. There are other reasons why companies make extensive use of internal equity. Financing investment from current cash flow is easy and involves few risks. The company does not have to engage in complicated negotiations with outside investors.

Retained earnings are financed out of past profits. Hence, only those firms that have been successful in the past have access to large amounts of retained earnings. Past success might be a good indicator for the ability of a company to seek out profitable investment projects again. Retained earnings reward success.

The dominance of internal finance can also be a problem for industrial performance. Retentions lock profits in to existing companies and product markets. Retentions might also cause incentive problems. Financing investment internally reduces the influence outside investors have on decisions that are taken inside the firm. A lack of external control might allow managers to invest in projects that will give them prestige and influence, not necessarily the most profitable ones.

3. External equity

The cost of equity is the real after-tax expected rate of return by investors who hold an equity stake in the company that wants to undertake a project. The cost of equity is hard to measure because it is difficult to obtain a reliable estimate of the expected equity risk premium.

The available cost of equity figures show that the real cost of equity in Europe is generally higher than in the United States or Japan (Fig. 5.3.). The high cost of external equity could explain why new share issues play such a minor role in financing investment. However, there are other cost and non-cost factors that discourage companies from using equity.

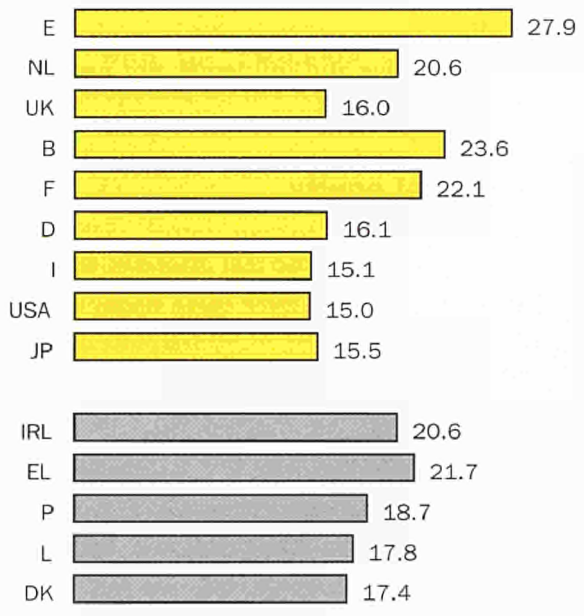
[1] Jorgenson and Landau, (editors), *Tax Reform and the Cost of Capital*, Brookings, 1993.

[2] Alworth and Castellucci (1993), 'Italy', in Jorgenson and Landau (editors), *Tax Reform and the Cost of Capital*, Table 6-20, Brookings, 1993.

Box 5.1. Measuring the cost of equity

Empirical estimates of the cost of equity are unreliable. Different empirical methodologies give very different results. Estimates of the cost of equity based on price-earnings ratios or real holding period returns are too volatile, even when smoothed out over decades. Earnings figures depend on accounting rules which differ across countries and time. Estimates of the risk premium that are based on a capital asset pricing model (CAPM) are also problematic. High price-earnings ratios, high period returns and high estimated betas (from the CAPM) can be due to high expected future returns and might have nothing to do with low required rates of return. All estimates of the cost of equity are based on share prices. Such estimates might not reflect the cost of equity for unlisted public companies which are the most common form of company in most Member States.

Fig. 5.3. Real cost of equity (%)



Source: Coopers & Lybrand.
NB: For the smaller countries at the bottom the figures are unreliable.

There are relatively few initial public offerings (IPOs) in continental Europe. IPOs are expensive. There are substantial administrative fixed costs associated with issuing equity that are proportionally more important for small and medium-sized companies. There are also indirect costs included. It is well documented that IPOs are often 'underpriced'. The price at which the equity is sold is lower than the first market trading price. The cost of underpricing can be 10% of the value of the issue and represents a substantial cost for the company.

The scope for equity finance is limited and loans are difficult to securitize. SMEs are forced to rely on bank finance or on retained earnings. In Europe, the main attraction of issuing equity is that it can provide an alternative to retentions and bank finance.

The absence of deep pools of easily accessible capital in Europe is a problem, particularly for SMEs. If the pools of European equity capital were deepened, external equity finance would be more attractive. Pension funds should play a vital role in making European equity markets more liquid. In many Member States the pan-European activities of pension funds and insurance companies are seriously hampered by outdated regulatory practices.

The degree of international diversification of the pension fund portfolios is an indicator of the restrictiveness of national regulation. The relatively large share of foreign assets for funds based in the United Kingdom and the Netherlands stems from the fact that these are the only two countries, together with Ireland, where pension fund investment is unrestricted (Table 5.2.). There has been little progress on liberalization within the European Union.

Table 5.2. Assets of pension funds

Country	Stock of assets (billion USD)	% Personal sector savings	% of GDP	Foreign assets as % of total assets
D	59	3	3	0.6
DK	22	-	70	2.6
NL	145	26	46	19.1
S	87	-	16	5.9
UK	643	27	60	20.8
AU	62	19	22	14.9
CA	187	17	32	7.6
CH	173	-	70	5.9
JP	182	2	5	7.0
USA	2 915	22	51	4.6

Source: Davies (1995), OECD
NB: data for end-1991; includes only independent occupational pension schemes.

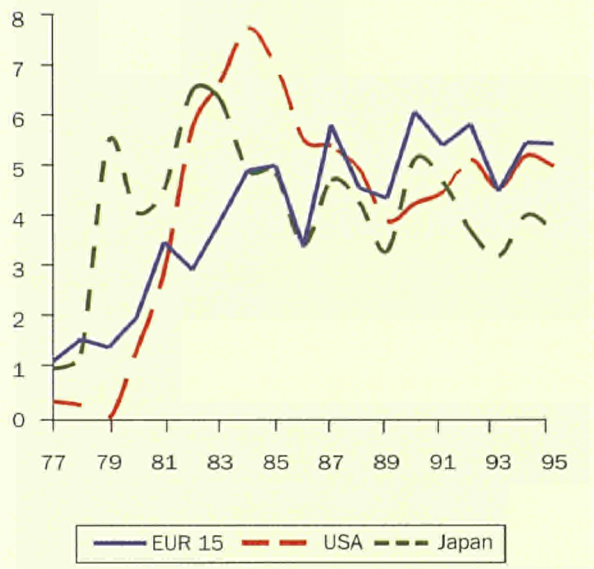
Equity finance is linked to the concentration of ownership and control more generally. In Europe, external equity finance is usually provided by large institutions with considerable influence over company behaviour. In the United States, ownership and control are more dispersed. However, in the United States pension funds are beginning to play a role that is very similar to that of banks and insurance companies in Europe. Here, too, pension funds are likely to play a larger role. Their interests are potentially different to those of banks, insurance companies and other large shareholders that dominate European equity finance at the moment.

4. Debt

Since 1977 *ex post* real interest rates in the EUR 15 have been rising. In 1995 they were higher than the *ex post* real interest rates in the United States and Japan (Fig. 5.4.). The *ex ante* real interest rate is the interest rate that influences investment and savings decisions. The *ex ante* rate is not observable directly because it is difficult to measure inflationary expectations. The *ex post* rate provides an approximation.

In June 1996, the European Union fluctuated between some of the lowest and highest yields on government bonds in the OECD (Table 5.3, Column 1). The rate banks charge their best clients (prime rate) varies substantially across countries. In some countries, the banks' most favoured clients pay less for their debts than the government: the United

Fig. 5.4. Long-term real interest rates (%) 1977-95



Source: European Commission.
NB: % long-term interest rates, GDP deflator.

Kingdom, Denmark, Germany, the Netherlands, Spain and Japan. Corporate bond yields are usually higher than the prime rate, but there are exceptions. In Belgium, Italy and the United States corporate bond yields are lower than the banks' prime rate. In the Italian case the corporate bond yield is even lower than the yield on government bonds.

Table 5.3. Nominal interest rates

Country	Govt. bond yield	Banks' prime rate	Corp. bond yield
A	6.0	8.3	n.a.
B	6.6	7.3	7.0
UK	8.1	6.8	8.9
DK	7.3	6.0	8.5
F	6.4	7.0	7.9
D	6.4	6.1	6.3
I	9.6	11.5	8.2
NL	6.3	4.3	6.5
E	9.0	9.3	9.4
S	8.4	7.3	8.8
USA	6.8	8.3	7.8
JP	3.2	1.6	3.2

Source: The Economist.
NB: data for 5 June 1996, some entries 4 or 6 June.

The cost of bank lending is affected by liberalization in the banking industry. It is generally thought that liberalization in the banking industry should make bank debt cheaper. This is not necessarily the case.

For the borrower, the cost of bank debt is the cost of funds (attracting deposits) plus the banks' margin. Liberalization has three effects:

- competitive forces (the single market) and technological progress exert downward pressure on margins and the cost of bank debt;
- the same competitive forces raise the cost of funds for banks; households benefit from higher returns but there is upward pressure on the cost of bank debt;
- the new capital adequacy requirements have put upward pressure on the cost of bank finance throughout the OECD.

The total net effect of deregulation and increased competition in the banking sector can be a rise in the cost of bank debt.

Financing investment through bank debt can be advantageous for a company because the effective cost of bank debt is lower than would first appear. Banks are often better equipped than capital markets in assessing the creditworthiness of a company. There is some evidence that banks are more willing to provide emergency financing than other types of investors. Bank loans, even when they are syndicated, can be renegotiated much more easily than company bonds.

On the other hand, banks might be too willing to bail out troubled companies, especially when the amounts involved are large. Very often the banks successfully use financial stability arguments to ensure that the government bails them out. In the end it is the taxpayer who pays for management errors or inattentive monitoring of the borrower's status. Such bailouts also increase the cost of capital for good companies.

Small and medium-sized enterprises do not have the same possibilities as large enterprises. Usually, they are confined to their national systems and their ability to take advantage of the international market for debt or syndicated loans is limited. For them, national governments' policies have an important role to play. The capital base of SMEs is usually weak. Most of their external financing is provided by banks. To secure their loans, banks require collateral. Since SMEs often lack collateral they may not be able to obtain all the external financing they need (credit rationing).

For SMEs, the capital adequacy rules can also present a problem. In times of a cyclical downturn, banks are tempted to switch to government loans (0% capital requirement), or mortgages (4% capital requirement). Moreover, in anticipating future recessions, they might want to concentrate their other lending (8% capital requirement) on loans that can be securitized (sold off) as a way to meet capital requirements in bad times — car loans and corporate lending to companies with a credit rating.

In the United States, the most significant development in debt finance has been an accelerating trend toward new forms of securitized debt finance. A loan that originates with a bank or finance house is sold to a specialized company or trust that pools such loans. The company, maybe with the help of an investment bank, resells the pooled loans to institutional investors — pension funds, mutual funds, insurance companies or banks. Very often the reselling process is supported by a credit rating or a bank guarantee.

There are many reasons why this 'unbundling' of lending has not taken place to the same extent in Europe. Europe lacks institutional investors who would buy securitized loans. European pension funds and other potential investors continue to be restricted in their activities and do not benefit from a single licence or other European-wide regulation. Europe also lacks large finance houses that would start the process by selling off loans. The subsidiaries of large US corporations play a very important role in originating securitized loans. In Europe, finance houses and finance companies face regulatory barriers. For example, they do not benefit from a single licence in the same way that banks do.

Debt financing and bank loans in particular are a vital source of financing for SMEs. The developments surrounding debt financing could dangerously increase the cost of bank loans for SMEs. With deposits, banks are faced with increased competition that forces them to pay depositors higher rates of return. On the lending side, securitization

and globalization is taking away the banks' largest industrial clients who are known to be good risks. Some large corporations have a better credit rating than their banks. The remaining borrowers, mostly SMEs, are faced with higher interest rates or credit rationing. SMEs depend on local sources of finance. They can find it more difficult to obtain the external financing they need and at a reasonable price.

5. Cost of capital

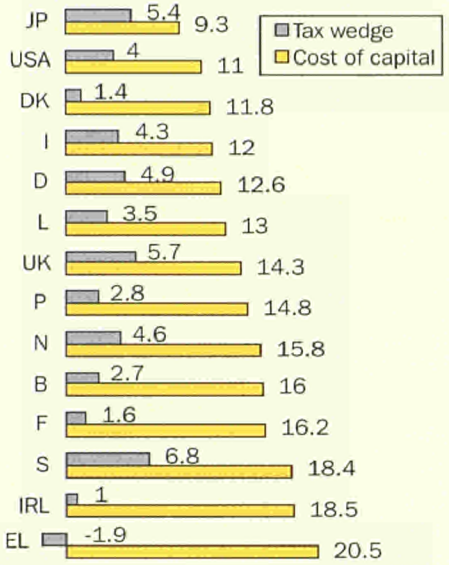
The weighted cost of capital combines the different sources of financing and represents the minimum return an investment project must make. A comprehensive study on the cost of capital in Europe, the United States and Japan was carried out for the European Commission.

Box 5.2. Measuring the cost of capital

The cost of debt is the weighted average of the interest rate for 'riskless' debt plus the bank lending risk premium and the riskless rate plus the corporate bonds risk premium. The cost of equity is the rate of return investors require for a 'riskless' share plus an equity-risk premium. The two costs are weighted by the debt-equity ratio to give the pre-tax cost of capital.

The cost of capital measures was computed for a world with uncertainty and includes risk premiums. The results seem to confirm that the cost of capital is higher in Europe than in the United States and Japan (Fig. 5.5.). The cost of capital is higher for smaller countries, but the reliability of the data is least good for small countries as well.

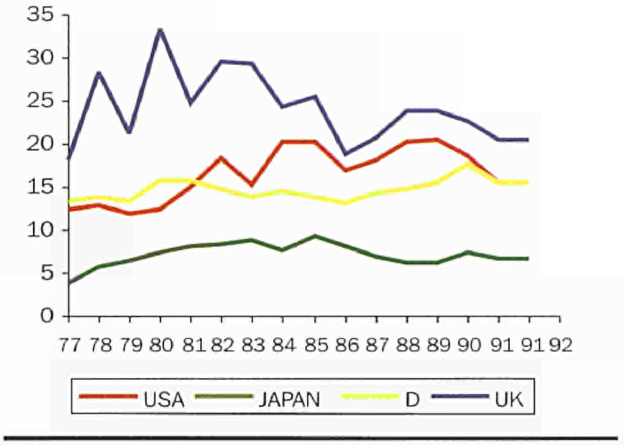
Fig. 5.5. Cost of capital and the tax wedge under uncertainty (%)



Source: Coopers & Lybrand.
NB: For Denmark, Luxembourg, Portugal, Greece and Ireland the figures are not very reliable.

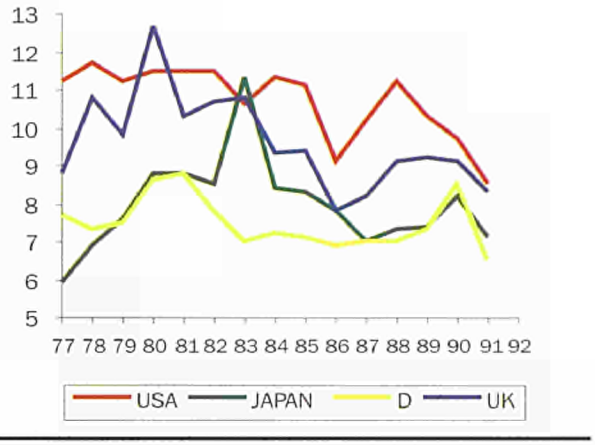
Methodologically somewhat inferior time-series evidence shows that the cost of capital in the United States, Japan, Germany and the United Kingdom has been converging over time (Figures 5.6a and 5.6b.). However, the extent of the convergence is overstated by the figures. Business cycle induced swings in corporate earnings explain much of the apparent convergence around 1990.

Fig. 5.6a. Cost of capital for R&D project with 10-year payoff lag (%)



Source: McCauley and Zimmer, 'Exchange Rates and International Differences in the Cost of Capital', in Yakov and Levich (editors), *Exchange Rates and Corporate Performance*, Irwin Ridge, 1993.

Fig. 5.6b. Cost of capital for equipment and machinery with physical life of 20 years (%)

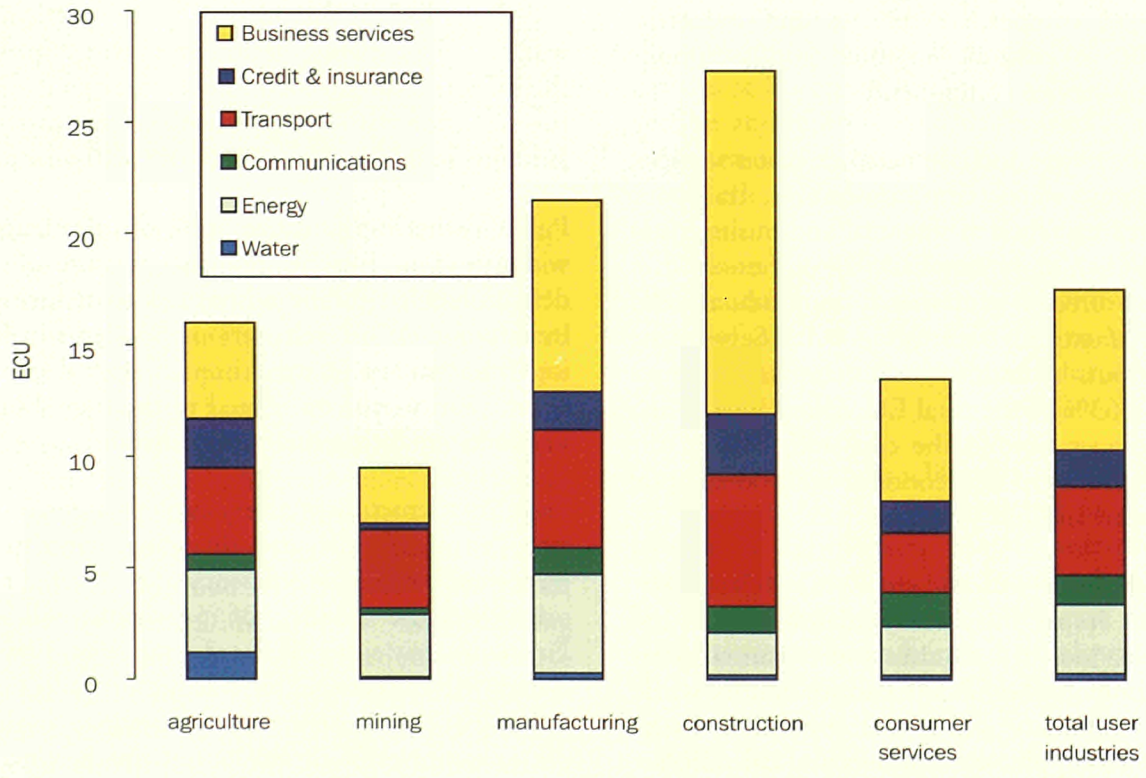


Source: McCauley and Zimmer, 'Exchange Rates and International Differences in the Cost of Capital', in Yakov and Levich (editors), *Exchange Rates and Corporate Performance*, Irwin Ridge, 1993.

Chapter 6
Competition and operation of markets for services

Liberalization in the markets for goods has progressed rapidly over the last decades, while market opening in services is more recent. A single market for products is emerging in the majority of manufacturing sectors, with the exception of some industrial sectors where oligopolist structures prevent a full competitive outcome. Liberalization of services is more complex, as competition needs to be associated with regulatory reforms. This chapter focuses on the service sector to illustrate how market restrictions affect the competitiveness of European industry. Many of the conclusions related to the services markets apply to manufacturing sectors, whenever a low degree of market access prevents new entries.

Fig. 6.1. Key service inputs to main sectors of the economy in the EU
value of services required to produce ECU 100 of output



Source: Eurostat, input/output tables.

1. The significance of markets for services

European industry is dependent on the efficiency of a number of other sectors, which provide key inputs for the productive process. All structural elements that restrict competition in the value-chain (State aids to industrial sectors, market dominance or barriers to entry) increase factor prices, thus limiting the attractiveness of European products in global markets. For most manufacturing inputs, the process of substitution of suppliers within the single market and from third countries acts as a discipline for low-cost performers. Conversely, as many services are non-tradable, imports from low cost suppliers are limited. As a result, many of the cost pressures affecting European industry are currently generated within the service sector.

The presence of market restrictions to the supply of efficient services affects negatively operating conditions at national level, and reduces significantly market opportunities. In today's markets, the capability to offer variety is a key element of growth in market shares. There is thus a strong linkage between the availability of competitive services and industrial performance, as customer-oriented goods embody an increasing service component.

Markets for services include network-based services, such as energy, water, communications, transport, and other sectors, such as financial and business services. Altogether, more than ECU 20 of these services are required directly or indirectly to produce ECU 100 of manufacturing output (Fig. 6.1.). Services are not only inputs to industry, they are also outputs, constituting 63% of the total EU value added. Their significance goes beyond the cost-side, making the overall functioning of the economy conditional upon well-developed and integrated services.

There are different reasons why competitive industrial systems imply increased demand for services. For example, industry requires sophisticated information technologies to obtain information on world market developments, and to establish efficient relationships with suppliers, customers and subsidiaries. In the European Union, data network services increased by 13.6 % and voice network services by 8% in 1995. Cross-border inter-modal transport services are prerequisites for production systems based on just-in-time delivery. Moreover, market research and marketing constitute an inseparable part of product development to meet differentiated consumer needs on a global scale. This increased integration between goods and services makes the availability of efficient services a key factor for the competitive position of the European Union.

Typically, services such as telecommunications, roads, railways and energy distribution are associated with network operation, which need to be interconnected at cross-national level for market integration to proceed smoothly. Infrastructure may either be sited at specific points, such as ports or airports, or take the form of a network linking many different cross-border points. Even point infrastructure usually relies on network infrastructure for access and efficient operation.

In the European Union, missing links and incompatible technical solutions at or around borders abound and cause delay and higher costs. For certain networks, such as telecommunications, railways and energy, interconnectability across Member States requires significant investments, the lack of which will jeopardize the full potential of the single market. It has been estimated that the total cost of providing the infrastructure needed to overcome constraints in the creation of a pan-European infrastructure amounts to 0.5% of EU GDP over a 10-year period.[1]

Public ownership and operation of infrastructure is widespread in Europe, but the pressure of public deficits has led public authorities to reduce public investment. As a result, serious problems in financing infrastructure have arisen in several countries. Even priority projects related to the trans-European networks are facing financial constraints.

Since infrastructure is a very capital-intensive operation, ensuring adequate financing constitutes an important part of the efficiency of the overall service, otherwise the quality of provision will suffer. Financing may either be based on the cash flows associated with the services provided or on collective provision. For private operators to participate in the supply of tomorrow's infrastructures, market incentives to attract new capital formation are therefore

[1] European Investment Bank Forum (1995), 'The provision of infrastructures. The role of the private sector.'

essential, together with a well-defined regulatory framework, which will guarantee sufficient stability for private operators to accept the risk of such investments.

2. Service markets are still fragmented

Competitiveness and competition are two interrelated concepts. More competitive markets create the right environment for efficiency, technological innovation and growth. This is the assumption at the heart of the single market. Thereby, competitiveness of EU industry is strictly related to competition in service markets.

Table 6.1. Market structure of services in the EU

Sector	Regulatory measures	Type of market structure
Banking	High	Oligopolist competition
Insurance	High	Oligopolist competition
Road transport	Medium	Pure competition
Airlines	High	Oligopolist competition
Telecoms	High	Regulated monopoly
Electricity	High	Regulated monopoly
Distribution	Medium	Monopolist competition
Construction	Medium	Pure competition
Hotels	Low	Monopolistic competition
Business services	Low	Monopolist competition

Source: European Economy.

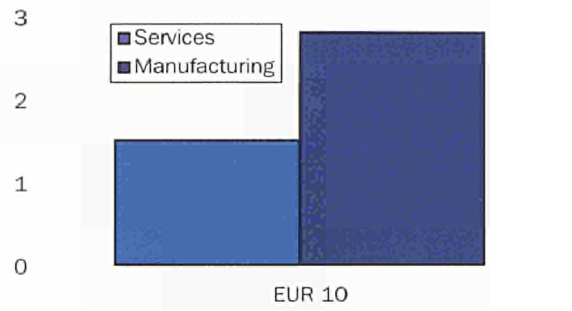
Despite Community efforts to end national fragmentation in services, monopolistic or oligopolistic market structures still tend to prevail (Table 6.1.). In manufacturing sectors, liberalization has progressed fast in the majority of product markets thanks to the removal of non-tariffs barriers and open trade measures. Thus, the persistence of some forms of oligopolist control in some industrial sectors results more from structural factors, rather than regulatory regimes. Conversely, competition in services, for their nature of non-tradables, requires appropriate regulatory reforms. Difficulties in implementing these reforms at national level have led to obstacles to market access and in turn to high prices, low levels of productivity and lower market development. Significant disparities in the degree of liberalization apply across European countries.

The nature of competition differs between heterogeneous service sectors. Different forms of self-regulation govern certain business services. In these sectors, existing obstacles to market integration arise mainly from delays in the implementation at national level of Community Directives setting mutual recognition and minimum harmonization rules, while lack of internal competition may result from anti-competitive practices applied by national governing bodies. A more complex issue is the liberalization of infrastructure-based services (energy, telecommunications and transport), which gives rise to a number of public policy concerns. For public services, characterized by natural monopolies or oligopolistic markets, there is a need to reconcile universal service obligations with liberalization measures.

The European Union has initiated a liberalization process by setting common rules at EU-level to guarantee the right of establishment and to open the market to competition. A number of Community Directives set the regulatory framework for a single market of network-based services. Measures of market opening have been approved to a different degree for all sectors with public utilities. However, in network-based services, effective implementation at national level of competitive principles requires additional regulatory reforms in the home market. These should be aimed at supporting integration of services at European level through higher interconnection and new cross-border entries. These regulatory measures at national level are fundamental to ensure effective market opening in energy, telecommunications, and transports markets to prevent distortions in favour of incumbents. A single market for infrastructures is therefore conditional upon the effort of Member States in setting a stable and favourable regulatory enviroment for new integrated services.

Currently, incomplete liberalization of the service sector represents a critical weakness for the competitiveness of EU industry. Market restrictions in services lead not only to low industrial performance, but also to lower levels of innovation and growth. Comparison between best industrial practices in the United States and in the European Union suggests that inefficiencies in services, transmitted along the value-chain, hinder the development of new processes and products. Flexible production capabilities require well integrated services. Lack of such services penalizes European enterprises in new markets by reducing their responsiveness to customer demands.

Fig. 6.2. Growth in apparent labour productivity, 1980-90



Source: Eurostat.

Over the 1980s, productivity gains in services were lower than in manufacturing sectors, (Fig. 6.2.). Although this productivity differential is common to other developed economies, and might also reflect measurement problems (Box 6.1.), there is evidence that in many European service markets, restrictions are often associated with insufficient restructuring and a low level of internationalization. As a result, limited efficiency gains and a low degree of innovation have reduced the development of market potential in key markets such as transport, telecommunications, business services and distribution.

Box 6.1. Problems in accounting for productivity growth in the services market

The main difficulty of measurement of productivity growth arises from the fact that services embody a large quality component, which renders the measurement of output difficult. Therefore, the use of proxies, such as man-hours worked, is widespread in professional and collective services, and an underestimation of the level of output takes place. National account classifications on services are generally incomplete, so that aggregation problems also occur. This implies that differences in aggregate productivity levels across countries should not necessarily be interpreted as a consequence of different levels of performance, because they may conceal different sector allocations of output, in particular when different subsectors are characterized by different skill intensity.

Within the European Union, service prices have tended to increase more than manufacturing prices, especially in the 1990s (Fig. 6.3a.). The increase in service prices mirrors a decline in relative service productivity, equal to the ratio between productivity in the service and non-service sectors (Fig. 6.3b.). In spite of difficulties with measuring the productivity of services, the different trend between manufacturing and services clearly reveals that efforts in industrial sectors to respond to external competition have not been matched by equal market discipline in service markets.

The effect of this asymmetry represents one of the major constraints to the European Union's ability to create jobs. Several studies, from the OECD and the European Commission, have highlighted potential growth opportunities and a higher degree of product development for service markets if liberalization takes place. This is because without competition not only are costs of services higher, but the degree of service differentiation is lower. As a result new market developments are limited by high prices, which in turn limit new investment. For example, European investment in information and communication technologies accounts for between 20 and 30% of total fixed investments, compared with 50% in the US.[2]

[2] *Information Technologies, Productivity and Employment*, DG III Industry, European Commission, (1996).

Fig. 6.3a. Evolution of relative prices indices in key EU economies, 1980=100

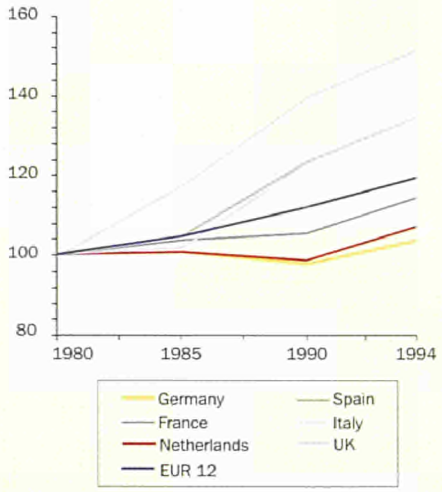
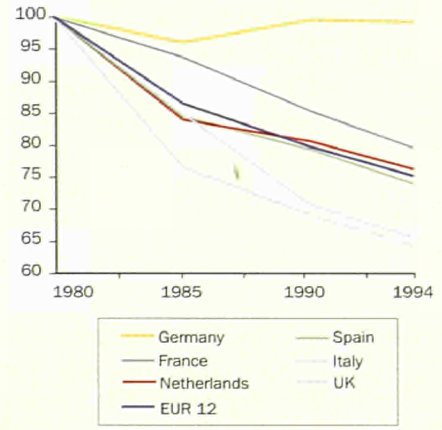


Fig. 6.3b. Evolution of relative productivity indices in key EU economies, 1980=100

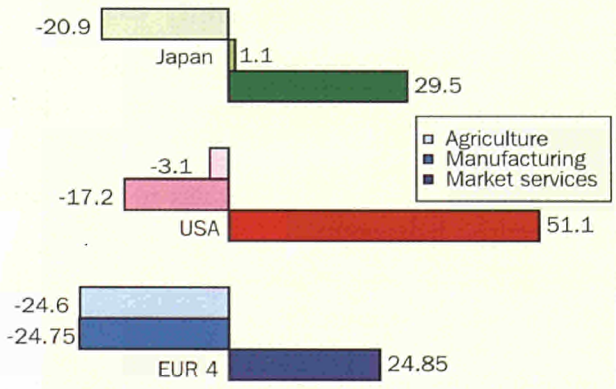


Source: Eurostat.

For example, product market barriers in telecommunications are identified in Europe as a major obstacle to the emergence of information technologies, as the cost of setting-up and using new means of communication is still too high. Since there is evidence that a 10% increase in information technologies investment is associated with a 2-3% output increase, a link exists between high prices and lower growth potential.[3] Also, the rate of job creation in distribution is reduced by high levels of regulation. On the positive side, increased competition in some routes of air transport has increased the size of the market by 4%.

In the European Union, services should become the new engines of development and job growth, with a multiplier effect. The lower growth in the 1980s of employment in services of most European countries compared to the United States points to a significant unrealized potential for job creation (see chapter on the labour market). The European Union is still locked within the first phase of industrial change, when restructuring has been associated with workforce reduction to adjust to economic globalization, (Fig. 6.4.). Achieving market integration can foster economic dynamism. Evidence of success in some countries indicates that liberalization of services speeds up this process of economic transformation by providing incentives to create new markets and new forms of production. For example, in Denmark, the use of advanced communications service was responsible for 60% of new private-sector jobs creation.[4] Also, the incremental output growth of the GDP of the European Union due to the introduction of broadband communications from 1993 to 2008 is estimated at 2.7 % of GDP.

Fig. 6.4. Employment performance in 1980-90
net jobs created per thousand working age population



*Adjusted for growth in the working age population.
EU 4: Germany, France, Italy, Spain

Source: Employment Performance, McKinsey Global Institute, (1994)

There are several other examples of the potential for growth and job creation. Liberalization in GSM telecommunications has created 30 000 jobs in

[3] *European Information Technology Observatory*, DG III, European Commission, (1996).

[4] *Employment trends related to the use of advanced communications*, DG XIII, European Commission.

Germany and a further 350 000 jobs relate to Minitel in France.[5] The air charter market, which is highly competitive, has promoted tourism in several European regions thus improving growth and convergence. In some countries, such as the Netherlands and the United Kingdom, the business service market is growing at a rate of 7% per year, thanks to a high degree of internal and external competition. Also, many regions of Europe which have created a cluster of integrated services are the most dynamic and competitive.

Speeding up liberalization in markets for services is thus a priority for improving the competitiveness of EU industry. Only if each national market provides the context for industry to exploit emerging opportunities can EU enterprises perform well in global markets and guarantee sustainable growth. However, a set of conditions are fundamental for liberalization to deliver the expected gains:

- adequate regulatory frameworks at national level which provide a stimulus for efficiency gains to be transferred to customers or to be invested in new developments;
- interconnectivity of national infrastructures and progress in the setting up of private and public partnerships for new investments;
- mutual recognition of business services for the creation of a single market for services and minimum harmonization of professional standards;
- enforcement of competition rules to avoid anti-competitive behaviour;
- ongoing monitoring of the progress to ensure that the gains are distributed to all customers.

In the rest of the chapter, key services for industry are examined to show the link between competition and productivity growth. These are telecommunications, airlines, energy and business services. The analysis focuses on existing impediments to market access and on how they translate into lower performance.

3. Telecommunications services

The rapidly evolving telecommunications market represents an area of critical importance for the competitiveness of the European Union, both for the direct impact on growth (the telecommunication equipment and service market is expected to expand by 9.8% in 1996[6]), and for the fact that communication highways represent a gateway for the emergence of a European information society. Telecommunications are vital infrastructures for the value-chain of European businesses. For example, 8% of financial sector expenditure is on telecommunication services. This is only one of the many industries, whose efficiency depends on well-developed telecommunications, and which in turn affects the functioning of many other sectors.

While consensus has been achieved in the European Union on the need for more competitive telecommunication services to realize the full potential of information and communication technologies, the speed of Community regulatory reforms has not matched the pace of liberalization in other developed countries. Delays in an agreement at World Trade Organization level on telecommunications liberalization also contribute to a lower degree of competition. As a result, in several EU countries, telecommunications markets are still monopolies, (Table 6.2.).

Table 6.2. Ownership and market structure in the telecommunications market in 1994

Countries	Ownership	Market structure of network
Belgium	Public	Monopoly
Denmark	Mixed	Monopoly
Germany	Public	Monopoly
Greece	Public	Monopoly
Spain	Public	Monopoly
France	Public	Monopoly
Ireland	Public	Monopoly
Luxembourg	Public	Monopoly
Netherlands	Mixed	Monopoly
Austria	Public	Monopoly
Italy	Mixed	Monopoly
Portugal	Public	Monopoly
Finland	Mixed	Competition
Sweden	Mixed	Competition
UK	Private	Competition
USA	Private	Competition
Japan	Mixed	Competition

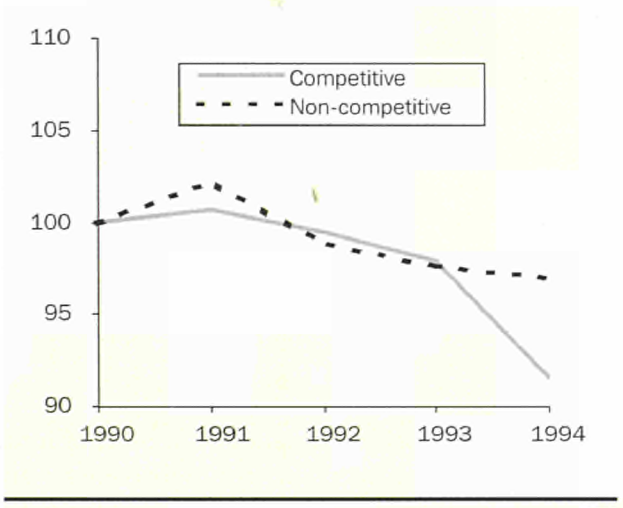
Source: OECD (1995), *Communication outlook.*

[5] Teknibank, *The impact of telecommunications infrastructure on economic growth and development,* OECD, 1994.

[6] European Information Technology Observatory, 1996.

Liberalization of telecommunications has been achieved for value added network services (fax, electronic mail and other low speed data services), and mobile communications. In basic telephony, public monopolies restrict access to new entrants in all cases except the United Kingdom, Finland and Sweden until 1998. This is the date when a single market for basic telecommunication services will begin for all Member States except Ireland, Greece, Portugal and Spain, which may defer until 2003 and Luxembourg until 2001. Moreover, in all European countries, except the United Kingdom, Finland and Sweden, liberalization of leased lines is not yet adequate.

Fig. 6.5. The impact of competition on telecommunication charges

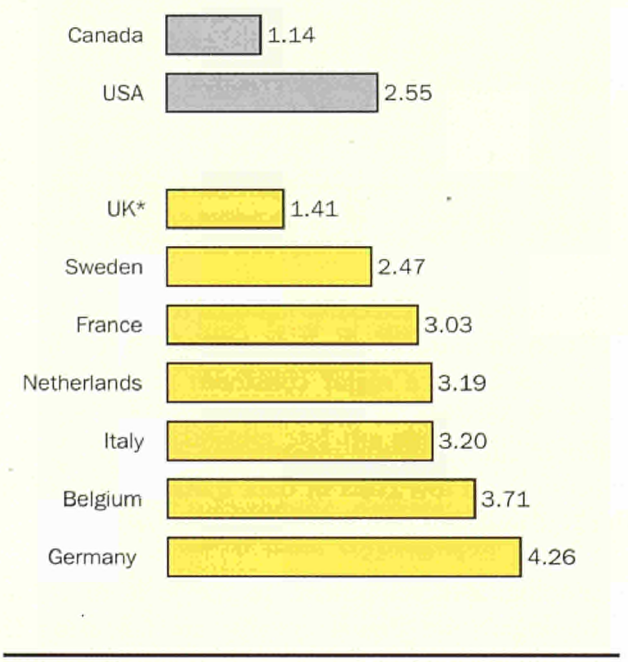


Source: OECD (1995), Communication Outlook.

A recent OECD study[7] indicates that countries which have successfully fostered competition (Fig. 6.5.) have benefited from more efficient pricing with a move towards fixed charges, and lower marginal charges. Over the period 1990-94, in countries with competitive industries, the price of long distance calls declined from 18% to 35% (against 12% and 16% in non-competitive telecommunication industries). Total business charges decreased by 8.6% (against a fall of 3.1%), and for residential charges, private users enjoyed a 3.1% reduction compared with a 8.7% increase in non-competitive countries.

The different degree of competition bears a clear connection with price performance also across key European countries. For example, international telephone charges for a three minute call to New York and Canada are 50% cheaper from the United Kingdom than from any other EU country, with the exception of Sweden, which is the second most competitive market (Fig. 6.6.). The presence of more than one operator explains the lower price performance.

Fig. 6.6. Telephone charges of a three minute call to/from US and Canada, USD 1995



Source: Financial Times.
* Average of Mercury and BT.

Beyond the advantages of competition in terms of price levels, OECD studies indicate that improvements in the quality of service have been observed in competitive telecommunication industries,[8] even if the quality performance of monopolistic telephone operators in the European Union is generally quite high (Table 6.3.).

Differences in performance across European countries indicate that a single market for telecommunications

[7] *Communication outlook*, OECD, 1995.

[8] *Les infrastructures de télécommunications, les avantages de la concurrence*, OECD, 1995.

Table 6.3. Quality of telecommunications services
1992

Countries	Faults dealt within 2 days	Faults for 100 main lines
Competition in infrastructure		
Sweden	94.0	10.0
UK	99.0	15.7
Australia	78.9	:
Canada	91.8	21.6
Japan	:	2.5
Infrastructure under monopoly		
Belgium	77.5	8.0
Denmark	95.1	:
Germany	:	:
Greece	:	:
Spain	77.1	6.3
France	86.6	8.3
Ireland	85.0	38.0
Italy	73.5	16.9
Luxembourg	7 5.0	16.7
Netherlands	91.0	3.7
Austria	93.0	35.4
Portugal	79.0	52.0
Finland	69.0	10.8

Source: OECD (1995), Communication outlook.

is slow to emerge. Excessive national regulations in the EU telecommunications industry and monopolistic structures act as a major constraint to the development of services of electronic transfer. There are spillover effects on the information society, which is dependent on low costs of data transmission and on the availability of new information highways.

Technological developments in the form of cellular technologies and digital systems are favouring the transition from one supplier to an integrated network including several suppliers both for local and long distances services. However, the setting-up of multiple information highways, based on an integrated, fully digital network capable of performing multiple services, such as the combination of voice, video and data, known as multimedia, requires flexible pricing mechanisms that provide the incentives for operators to invest in the creation of infrastructures.[9] Competition between different operators offering a variety of pricing options (for fixed charges and usage of services) constitutes a determinant of the future development of demand, enabling operators to invest in tomorrow's communication networks.

[9] Grout, P. (1996), 'Promoting the superhighways, Telecommunications regulation in Europe', Economic Policy, April.

Currently, the fragmentation of the European Union telecommunications market, together with the resulting single pricing systems within the majority of EU countries (due to the presence of single operators) hinder the development of new on-line services. As a result, information highways are still nationally based, do not cover the full territory and are generally very expensive for the general public. OECD studies indicate that countries where telecommunications networks have been opened to competition, such as the United States and Japan, are investing massively in the construction of tomorrow's cross-country networks.

For example, in the United States cable television has penetrated 60% of households providing a substantial network. In the European Union, cable penetration is 16%, with wide discrepancies between countries (ranging from 80-90 % in the Benelux region to close to zero in Southern Europe). A more developed network means that the United States is capable of providing new services such as video-on-demand and home shopping. The use of on-line information services in the United States is nearly four times higher per capita and costs are significantly lower. With the exception of France (Minitel), there is little use made of information services in Europe as the market is fragmented by national boundaries.

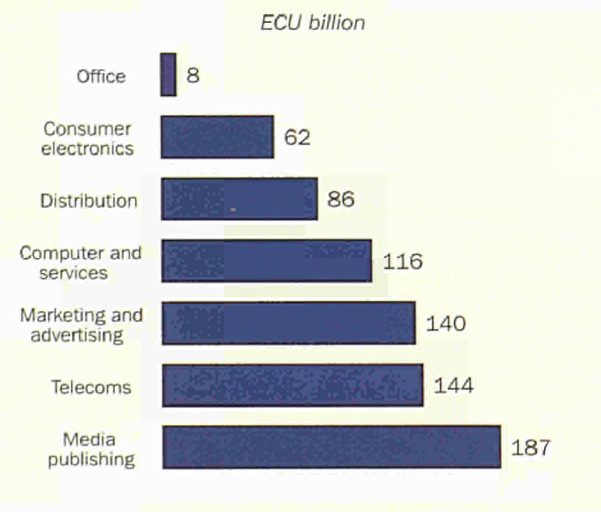
Although it is difficult to quantify the effect of information infrastructures on competitiveness and growth, two examples are worth noting. Firstly, in the EU market (which accounts for 27.2% of the total information and communication technology market) the European Information and Telecommunication Observatory estimates that the volume of potential business from telecommunications, content and computer hardware was in the order of ECU 743 billion in 1993 (Fig. 6.7.). Business potential was derived on the basis of a scenario of increased use of information services by various industries. This contrasts with a realized volume of business of only ECU 282 billion in 1994. The huge gap reveals that the lack of a competitive market and an adequate emerging information infrastructure is costing the European Union a significant share of the potential market. In the European Union, the rate of information technologies investment is 2.07 ratio of GDP, against a rate of investment of 3.05 in the United States.

Secondly, the pricing structure affects the diffusion of Internet connections. For example, in the United States, where unlimited local calls are part of the (fixed) cost of the basic service, a low price for Internet connection has led to the explosion of personal computers sales to households, (which now absorb more than 50% of personal computers sold). Personal computers used with modems have become cheap means of communication. In the European Union, since Internet connections are paid at local rates and according to duration, the diffusion of modems and personal computers is much reduced. Household penetration of personal computers with modems is 35% in the United States, but less than 10% in the largest European countries.

In the United States, private alliances between telephone and cable operators have resulted in attempts to integrate and upgrade their structure to support multi-media, particularly video-on-demand applications. In addition, US universities and research institutions are also involved in a number of high speed test beds. In Japan, the Ministry of Telecommunications is promoting a plan to connect all businesses and households to a nation-wide fibre-optic system by 2010, enabling broadband communications and interactive multi-channel digital video broadcasts.

In the European Union, the slow pace of regulatory reforms in the telecommunication sector constitutes an impediment to the use and development of advanced information technologies. Delays in setting efficient pricing mechanisms negatively affect the application of information technologies to existing sectors and limit the emergence of a new market where economies of scale apply.

Fig. 6.7. The European information business arena



Source: EITO 1995.

Opportunities for exploitation of information are potentially unlimited in developing new household (teleshopping, education, entertainment and leisure) and business services, (telebanking, telemarketing, teleworking). New patterns of organization fostered by information technologies will induce major challenges to many industries. Traditional methods of advertising, television and publishing will change, and ways of doing business will be significantly altered.

Member States need to adopt effective regulatory measures as quickly as possible to facilitate mass diffusion of information technologies solutions to promote this evolution. Implementation of clear, fair and stable regulatory reforms is the key to market development, as new entry is dependent on market incentives not distorted by the presence of national incumbents.

Furthermore, a high level of intellectual property rights is of primary importance to the newly developing information markets. The emergence of information technologies and the global communication infrastructure require harmonized approaches to the security of information systems, protection of privacy and personal data, cryptography technologies and policies.

4. Transport

Industry has always depended on efficient transport systems. Currently, the integration of different forms of transport with telecommunications to form the discipline of logistics is transforming industry's way of doing business. Logistics track all flows of materials and goods through the productive system and enable customer-driven ordering and manufacturing to demand to become effective.

Ensuring that each delivery slot can be met with exactly the right quantity of each product is an exacting task. For their part, manufacturing firms operate similar requirements towards their suppliers so that logistics cover plant movements both inwards and outwards. Lean production and distribution systems

depend upon the effective functioning of multimodal transport systems.

Not all forms of transport have the same significance for industry, although combined forms of transport are becoming more important. External trade depends crucially on maritime transport as do peripheral and insular parts of the Union. The efficiency of ports as well as shipping is a key determinant of transport costs in this area, as studies for the Australian Bureau of Industry Economics have shown. Liberalization of much maritime shipping will depend on progress within the World Trade Organization, where the United States has been holding up the negotiation of an agreement in order to maintain the Jones Act, which restricts access to US ports. Liberalization of coastal shipping (cabotage) is in the process of being achieved within the European Union.

Road freight transport has benefited from significant internal market liberalization measures that have increased competition and brought down costs and delays for business in conjunction with the abolition of border controls. The road haulage sector has been very quick to implement in a flexible way structural changes, through increasing productivity, raising quality and rationalizing capacity. Such liberalization has given a significant boost to cross-border purchases of components which are strengthening the competitiveness of European industry by giving access to low-cost, high-quality sources of supply.

In the last three decades, border crossing by roads has increased by 62%, and the share of road transport represents four fifths of national transport markets. Congestion has resulted in many crucial nodes, as infrastructures have not always matched such developments. Responses to these problems have been different. Some countries have introduced domestic licensing, others have increased fuel and road taxation. However, the issue of how to reduce congestion and address the problem of a deteriorating road infrastructure is still open and appropriate solutions to pricing road transport have yet to be found. Proposals need to take into account the need to find a balance between environmental concerns and cost increases.

A potential solution to road congestion and pollution could be an increase of transport by rail. Rail transport for both goods and passengers has significant potential in Europe, but problems with technical compatibility, underinvestment in track and lack of liberalization of services has held back the development of this sector. The ability to separate the provision of services from network operation represents a key condition for successful liberalization. Already in the UK there are signs of major investments in rolling stock for freight in order to develop the transport of goods by rail following liberalization in service provision. Liberalization provides incentives for operators to invest in upgrading existing infrastructures.

Air transport constitutes an interesting case for demonstrating the connection between liberalization and efficiency in the provision of transport services. Significant measures have been adopted under the internal market programme, but third country liberalization depends on the negotiation of hundreds of bilateral agreements at Member State level. These bilateral agreements tend to be either very restrictive or, in the case of the United States, very unbalanced in the possibilities that they open up for European carriers. The interaction between internal regulatory measures and competition issues is symptomatic of the difficulties facing liberalization in the field of transport.

External trade opportunities and the emergence of a pan-European market rely on well-functioning air transport for passengers and cargo services. It is estimated that 10 million jobs in the European Union are indirectly related to a competitive air transport market, with a potential rate of annual growth of over 6%. The single market requires flexibility of cross-border travel services and price-reduction to facilitate economic integration between European countries.

Three sets of liberalization packages approved by the European Union since 1987 have been aimed at progressively increasing internal competition in a market traditionally characterized by a high degree of monopolistic or duopolist control (Table 6.4.). The effect of the third package, allowing progressive liberalization leading to full access to international and domestic services by 1997, freedom to set price, and uniform conditions to start an airline across the European Union, has been to induce new market entries. As a result, the dominance of national

carriers (the aggregate share of output on scheduled services within the European Union) declined from 85% to about 79% by the beginning of 1994. Even if some routes are too weak to support greater competition, initial positive signs indicate that liberalization will increase the number of companies operating on the 25 to 50 densest international intra-European routes and 35 domestic routes.

While the third liberalization package has proved to be effective in introducing some dynamism in the market, a legacy of previous cooperative behaviour prevailing in the market, economic recession and remaining regulatory impediments explain why the full effects of the programme have yet to come. In addition, the removal of some regulatory constraints in the assignment of airport slots and in the management of ground services, currently under discussion, should speed up the process of new entry. Congestion in some key airports and traffic control difficulties have also prevented more competition.

Table 6.4. Competition on European scheduled routes

		Monopoly	Two or more competitors
Domestic			
Routes	1992	90%	10%
Routes	1994	87%	13%
Flights	1992	74%	26%
Flights	1994	64%	36%
International		One or two competitors	Three or more competitors
Routes	1992	95%	5%
Routes	1994	93%	7%
Flights	1992	81%	19%
Flights	1994	75%	25%

Source: The single aviation market: progress so far. Civil Aviation Authority London, 1995.

The effect of liberalization has not been uniform across all Member States. The evolution towards a more competitive market reflects both different starting conditions in the regulatory environment and the degree of public participation as well as the prevailing economic climate. As a result, varying degrees of competition can be observed across Member States (Table 6.5.). The countries that have benefited most from liberalization are Spain and Germany, while the United Kingdom remains the most competitive market. In some countries, dominance of established national carriers prior to liberalization delayed or limited market liberalization on a number of domestic and intra-EU routes. On others, new entrants have significantly challenged incumbents. Overall, the increase in the number of new entrants has not been significant. Over the period 1992-96, only three new major carriers (with a fleet of over 70 aircraft) and 20 small carriers entered the market successfully. The low rate of net entry conceals the creation of more than 80 operators and the destruction or absorption of 60 small carriers.

Table 6.5. Proportion of flights on routes with two or more competitors
December 1994

Carriers	% of domestic scheduled flights on routes with two or more competitors	% of international scheduled flights on routes with three or more competitors
Belgium	n.a.	28
Denmark	4	11
Germany	40	15
Greece	0	16
Spain	60	20
France	9	35
Ireland	0	46
Luxembourg	n.a.	0
Netherlands	0	18
Austria	0	12
Italy	26	15
Portugal	35	20
Finland	19	0
Sweden	47	12
UK	56	45

Source: The single aviation market: progress so far. Civil Aviation Authority London, 1995.

The most dramatic changes in market concentration have occurred in those markets where new entrants have challenged incumbents. Improvements in the quality of services, cost effectiveness and a reduction in air fares have been the benefits of increased competition. For example, the business fare from London-Heathrow to Nice (1 032 kms), a route with more than two operators is 70% less than the the business fare from Paris to Madrid (1 043 Kms), where only national carriers serve the route. Where routes are served by more than two competitors, business fares per kilometre are on average 50% lower than those served by two or less competitors. Most importantly, competition leads to a lower

increase of fares over time. Since 1986, over the 40 busiest European routes, the increase of business fares averaged 36% in routes with competition, and 48% in routes without competition, while tourist fares increased by 28% against 46%.

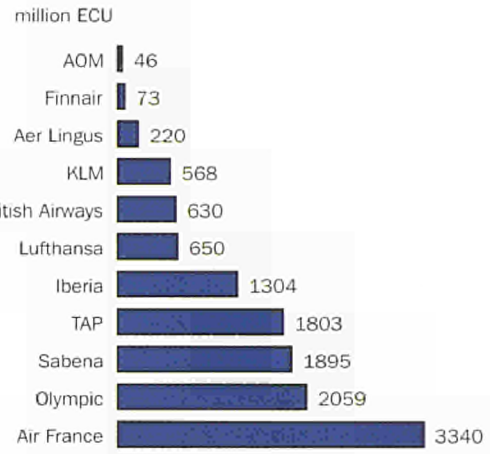
Discounts on economy fares have also been observed on routes where competition has intensified. The presence of a third operator has caused a significant reduction in fares. The overall impact of more competition on some routes has also been seen in terms of a significant growth in passengers, thus implying that new entrants increase the size of the market. Routes with more than two carriers showed an increase of passengers of 9% against an increase of 5.8% of routes with only one carrier.

The liberalization packages and global competition have fostered a wave of restructuring and new strategic responses from airlines. These are currently under way, even if they have yet to spread to the same degree to all airlines. Different strategic responses include differentiation of pricing policies, improved services and entering into new alliances. Many national carriers remain under public ownership, which provides them with a certain amount of insulation from the market.

In the past, the readiness of governments to intervene with State aid, when financial pressures threatened the existence of national carriers, (Fig. 6.8), has often delayed restructuring plans, thereby preventing national carriers from coming under the same market discipline as commercial competitors. Recently, stricter enforcement by the European Commission of the principle of 'one time, last time' is inducing national carriers to implement more effective restructuring plans. Limiting the extent of State aid is a fundamental condition of the liberalization programme. Public intervention acts as a barrier to entry where the effects of market forces are distorted between national carriers and commercial operators.

In the first phase of liberalization, a wave of national mergers, beginning with that of British Airways with British Caledonian and continuing with those of Air France and Air Inter and UTA, has also taken place (Fig 6.9.). These mergers reduced the number of potential competitors in national markets and increased the share of landing slots under the control of main carriers. Recently, the nature of mergers has become more international and global alliances tend to prevail. After the Merger Regulation introduced

Fig. 6.8. State aid to EU airlines *1990-95*

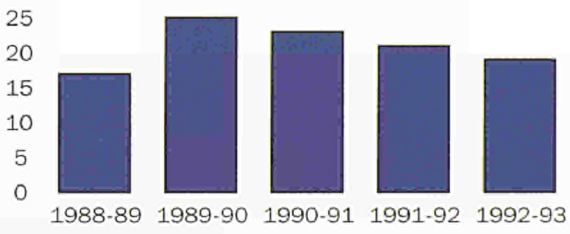


Source: European Commission.

in 1990, the Commission has also progressively attached stricter conditions to the merger approval. These include obligations to sign cooperation agreements with new entrants. Franchising and code-sharing agreements are also other forms by which airlines respond to more competition.

Although it is difficult to judge the full long-term effects of these partnerships, and in some cases they might bring benefits to customers by allowing better services, it is fundamental to ensure that they do not translate into anti-competitive practices. Evidence from the market in which new competitors have challenged incumbents shows that the presence of commercially independent operators ensures higher customer value. A market with high sunk costs for entry needs competition between existing operators as a yardstick for better performance. Newcomers can establish themselves only slowly by starting in niche markets.

Fig. 6.9. Number of mergers in the EU airline industry



Source: European Commission.

Europe is now in the paradoxical situation that a fragmented air transport market, with many carriers attempting to offer a full range of local, European and inter-continental services, is also characterized by a lack of effective competition within and between national markets. In the United States a much higher level of overall concentration, accompanied by effective competition both between major players on the same routes and between these players and regional or low cost airlines, has led to a very different outcome. Even if the model of US deregulation cannot be applied in the European Union, effective competition between operators has to increase beyond the current 7% share of the scheduled city-pairs routes. Consolidation of charter operators can contribute to this dynamic evolution.

Significant differences in prices between the United States and the European Union and within the European Union still persist. Comparison of airline fares across different regions shows that European airfares are amongst the highest in the world. Data on average air fares per flight indicate an average price differential of around 40% on short-haul and on long-haul flights between the European Union and United States (Table 6.6.).

Table 6.6. Comparison of EU and US 1995 air fares in ECU

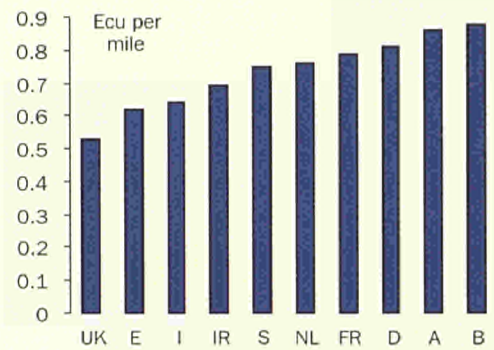
Km	US airlines	European airlines
400	152	267
960	213	427
1280	288	463

Source: The Economist, 13 July 1996.

However, as a result of increased competition a greater segmentation of the market is also emerging. Economy fares have been declining in many European markets, and on some national routes. But business fares have tended to increase if new operators do not compete with incumbents. Significant variations apply from country to country. Within the European Union, it has been estimated that for a businessman, the cost of a 500-mile (805 km) air journey differs according to the place of departure (Fig. 6.10.).

In most countries, the high costs of air transport are a reflection of a lower performance by European airlines measured across a number of functions, but also of significant operational charges that are beyond the control of airlines. This reflects a significant cost and productivity disadvantage in the past. In 1992, the overall productivity of European carriers was 28% lower than American carriers.[10] European carriers suffered from specific handicaps in the global market, and lag far behind their competitors in adapting their cost structures. In 1992, overall operating costs of major European Airlines per available tonne kilometre were about 48% higher than the operating costs of major US airlines. Although significant efforts have been made to reduce this competitive disadvantage, (Table 6.7.), European carriers still have a long way to go to achieve the operating performance of US competitors.

Fig. 6.10. 1994 Business class fares for 500 miles



Source: Financial Times.

Table 6.7. Total operating costs per available tonne km (ATK) in 1993 prices

US Cents	1989	1993
KLM	59	47
British Airways	68	48
Air France	56	59
Lufthansa	81	60
Alitalia	63	62
Iberia	70	65
TAP	82	81
Sabena	79	92
SAS	124	110
Average	77	69

Source: ICAO, Financial Data (1983, 1988 and 1993).

To bring airline costs into line with those of competitors, costs beyond airlines' control also need to fall. In the European Union, fuel costs, airport

[10] *Expanding horizons.* A report by the Comité des Sages for Air Transport to the European Commission.

charges and en-route charges are significantly higher than in the United States. External costs represent a substantial burden to the airlines. Differences in costs arise for three main reasons: airport charges, air navigation charges and fuel costs. In 1992, airport charges for scheduled European airlines accounted for about 5% of operating costs, compared with less than 2% in the United States. This difference has even more impact on domestic costs where no en-route charge exists for domestic US traffic. Average European airport charges amount to USD 1 539 (including security taxes), but only USD 505 in US airports. Charges at monopoly airports are about 30% higher than in airports with competitive handlers. Recent increases in airport charges above inflation have added new problems to the efforts of airline management to improve internal cost-effectiveness. Fuel costs are also 15% higher for European airlines compared with the US industry.

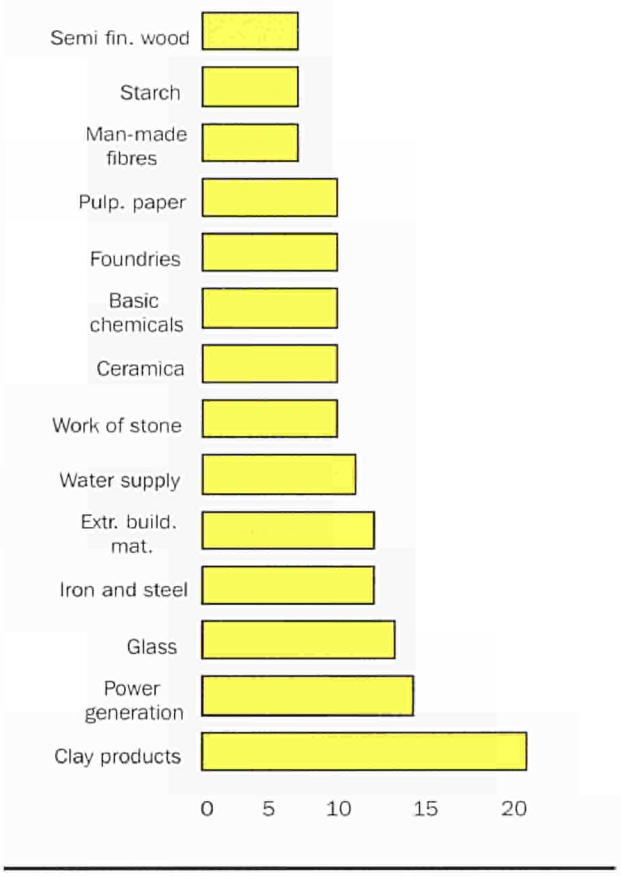
The current situation of high costs beyond management control puts European carriers at a competitive disadvantage in the face of global competition. Liberalization of the air traffic market needs to be accompanied by other measures to enable more cost-efficiency. Only significant restructuring associated with a reduction of operating charges will enable European airlines to restore their efficiency and pave the way for a single market for air transport. While the effects of liberalization will increase when restrictions in airport slot allocations and ground service handling are removed, the airline sector will maintain a competitive position only if cost-effectiveness of other services increases in parallel.

5. Energy market

Energy represents a primary input of all industries. Energy costs represent between 5% and 17% of direct costs of manufacturing industries (Fig. 6.11.). Since energy constitutes a significant cost element mainly for intermediate products, the total impact on costs is much greater.

Prices in the gas market have fallen in parallel to oil prices but, on average, remain 30% higher than US prices. As regards the electricity market, the difference is even bigger (50%). The recently agreed opening to some competition of the European Union's electricity market should narrow the gap, although the US electricity market is also entering a stage of greater liberalization. In this section, the analysis concentrates on the electricity market to illustrate some of the issues in the completion of a single market for energy. Most assessments on market restrictions will also apply to the gas sector.

Fig. 6.11. Average energy cost shares (%)



Source: European Commission.

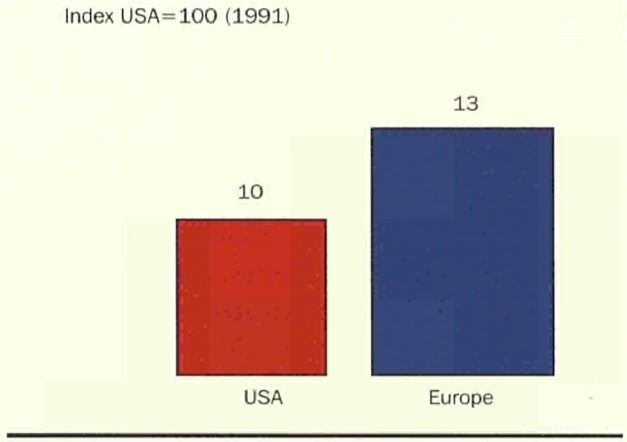
Competition is very limited in the electricity market, as markets are highly imperfect and in the majority of cases closed to competition. The energy market in Europe, and in particular the European electricity supply industry, have developed in the majority of European countries on the basis of monopoly suppliers (Table 6.8.). In the past, this structure reflected the need to exploit economies of scale and guarantee a universal service, but today new technologies (such as information technology and combined cycle gas turbines) allow models other than monopoly of supply to fulfil public service obligations.

Table 6.8. Market structure of electricity networks in the EU

Countries	Ownership	Network market structure of
Belgium	Private	Monopoly
Denmark	Mixed	Duopoly
Germany	Mixed	Local monopolies
Greece	Public	Monopoly
Spain	Public	Monopoly
France	Public	Monopoly
Ireland	Public	Monopoly
Italy	Public	Monopoly
Luxembourg	Mixed	Oligopoly
Netherlands	Mixed	Monopoly
Austria	Public	Monopoly
Portugal	Public	Monopoly
Finland	Mixed	Oligopoly
Sweden	Mixed	Oligopoly
UK	Private	Oligopoly

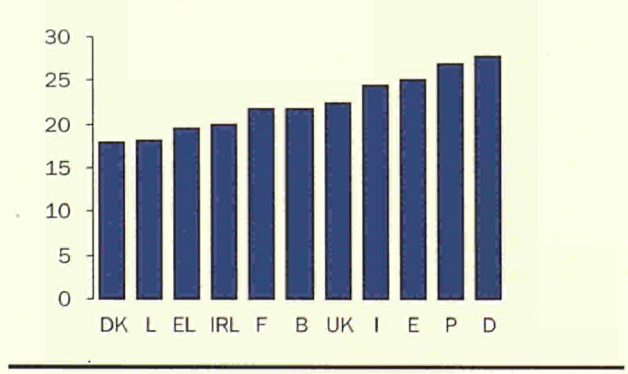
Source: OECD (1995).

Fig. 6.12. Comparison of energy costs in chemical sector



Source: Unice.

Fig. 6.13. Energy prices in the EU for industrial consumers, tax excluded
24 GWH per year, 1994



Source: Eurostat.

The high costs of electricity penalize European producers. For instance, the chemical sector suffers from a significant competitive disadvantage with regard to the United States (Fig. 6.12.). Even if part of the price difference is due to different resource availability rather than to competition factors, the divergence in the price levels across Member States (Fig. 6.13.) indicates scope for reducing inefficiencies, and thus prices.

Since 1989, liberalization in the United Kingdom of electricity supply (but not distribution) has induced a significant restructuring of the electricity market. This has been reflected in a price reduction of 16% for a typical industrial customer and 8% for large industrial customers. Service quality has also improved. Preliminary studies on the impact of the single energy market, under the Negotiated Third Party Access, have estimated a potential reduction of prices of 8% in the European Union. This amounts to ECU 5.8 billion per annum, and covers only direct cost reduction arising from increased competition.

Two systems of liberalization are under consideration: the Negotiated Third Party Access and the single buyer system. Experience in Norway, Australia, the United States, New Zealand, Sweden, Finland and the United Kingdom demonstrates that market access at supply and generation level is a key condition for competition, as control of the distribution network by one single operator reduces the degree of market access.

On 20 June 1996, after long and difficult negotiations, the Council adopted a common position on the proposal for a directive concerning common rules for an internal market for electricity. The major issue for the creation of the internal electricity market has been the conciliation of competition and public service obligations — mainly long-term planning, the degree of separation and transparency of the different level of activities and the pace of further market opening, taking into account the very different national situations. In addition, interconnections are needed to ensure trade in electricity while

guaranteeing the security and stability of the network. Implementation at national level of effective regulatory reforms represents the key for the effects of liberalization to translate into lower costs for users.

6. Business services

In today's business environment, efficiency, specialization and flexibility are becoming the key factors for gaining competitive advantage. As a consequence, enterprises are increasingly outsourcing non-core activities. This process of externalization is fostering the creation of a wide range of specialized business services, which contributes to a significant share of the value-creation chain of enterprises of all sizes. While the development of competitive clusters of industrial activities largely depends on the presence of efficient business services, in the European Union restrictions from professional governing bodies and a high level of national regulation still restrict cross-border development of professional and business related services.

Specialized business services cover a wide range of heterogeneous activities, including professional services (e.g. lawyers, accountants, management consultants), technical services (e.g. consultant engineers, architects, quality control), operational services (e.g. cleaning, leasing of electronic office equipment and computers, linguistic services), marketing services (advertising, direct marketing, sales promotion, market research, public relations and fairs and exhibitions). For every major function in an enterprise, equivalent external business services can be identified.

National market access restrictions, (Table 6.9.), are major obstacles for the creation of pan-European business services. As a result, a high degree of market fragmentation can be observed among European business services, which tend to retain a national identity. For those professions for which public interest protection has led to the requirement that a specific qualification be obtained in order to practise, mutual recognition (or harmonization) of professional qualifications is necessary to guarantee market access across different national markets. Currently, qualifications are still obtained at national level and under the control of local corporatist organizations and mutual recognition is not fully effective.

Lack of mobility and integration in the European business service sector has resulted in a declining external trade surplus in the sector, which fell from ECU 4 billion in the 1980s to less than ECU 1 billion in the 1990s. The legacy of national orientation and the small size of European business services is reflected in the difficulty of national companies to set up cross-border operations. On the contrary, foreign companies especially from the United States have established themselves on European Union markets thanks to their ability to operate cross-border on the basis of an integrated network of national subsidiaries.

National regulations in business services are dictated by safety or consumer protection requirements. However, regimes of self-regulation by governing bodies may also translate into anti-competitive practices, such as fixing prices. For example, notaries, a professional service highly regulated in many Member States, compute their fee as a percentage of the value of the case they handle. Similar practices of market control apply to other professions.

Table 6.9. Restrictions to market access for business services

Area of restriction	Example of the sector affected
Entry barriers for professionals though national corporatist professional orders setting capacity and fixing prices	Professional and Technical services
Limitations for marketing and market research through restrictions on media promotion and direct marketing.	Advertising, market research, sales promotion

Source: European Commission.

To analyse the regulatory situation and identify the main existing restrictions to market access, it is worthwhile focusing on four major subsectors of business services which represent key inputs for industry: legal, accounting, technical, and marketing services.

Although liberalization of legal services has started with two Directives at EU level, in practice mutual recognition of legal qualifications is not yet operative

in all Member States. The Diploma Directive addresses the issue of mutual recognition of diplomas, and provides grounds for cross-border integration of legal professions. By taking an aptitude test, lawyers may qualify to practice in a host country. However, the organization of these tests has not yet been implemented.

The delay in liberalization is reflected in the level of market share that foreign companies are gaining in Europe, due also to significant differences in the provision of legal services across the European Union. While 90% of legal practices are individual in Belgium, Greece and Portugal, and over 50% in other European Union countries, 25 of the 40 biggest law firms are American, only 10 British, 4 Australian and 1 Canadian.

With increased international competition, legal services are becoming a vital export product. Already lawyers from Europe and North America are competing to export their system of law to govern commercial contracts in Eastern European countries and newly emerging markets. The implementation of a simplified regulatory framework for the legal professions at EU level is thus of primary importance, not only in itself for the integration of legal services, but also for the role of efficient pan-European services in setting contractual bases for all type of business activities world-wide.

Similarly, barriers to cross-border practices apply to accounting services. A high degree of regulation at national level has resulted in substantial differences in the practices and rules of the profession between European Union Member States. For example, accountants cannot offer insolvency and tax services in France, but can in other EU countries, where accountancy services are extended to a wider range of functions than auditing. The high level of differences in commercial law and accounting procedures across Member States constitutes a major obstacle to harmonization in the field of accounting services. Only statutory auditing is currently regulated at EU level, with a Directive which sets minimum education requirements.

Accounting and auditing services have a significant impact on investment and foreign direct investment, and could affect the degree of development of financial and commercial markets. The existence of simple, more transparent rules in accounting culture has given American and UK enterprises a leading edge in the market for corporate transactions. Simple and harmonized accounting rules at EU level could promote financial innovation and the internationalization of economic activities.

Likewise, technical services, including architects, construction engineering and geodetic surveying, are still very fragmented at European level and tend to operate within national borders. For example, only 3-4% of engineering services are exported between Member States, in comparison with 30% of such services exported to third countries. This is explained by the presence of several barriers to entry in national markets, which require the adherence to many local rules and membership of national associations.

Three directives affect the degree of market opening at European level: the Directive on services, the Directive on public procurement, and the Directive on minimum safety. The first directive on services is aimed at increasing competition at cross-border level by publishing calls for tenders for public service contracts which exceed ECU 200 000.

However this Directive does not cover regulations on fees, and national associations can set additional criteria. Similarly the directive on public procurement requires public tendering for the award of public contracts. The Directive has been incorporated into national law only in Denmark, the Netherlands, and the United Kingdom. The Directive on the minimum safety standard has been enacted only by Luxembourg, and there are still many issues open on quality assurance.

As a result, competition in technical services is still very limited. One of the most serious implications is that markets for infrastructure and major engineering projects are, in the majority of countries, still locked into national boundaries. Both delays in the transposition of directives and difficulties in harmonization of regulatory regimes imply inefficient public procurements policies, which translate into high costs and poor standards in some countries. A high number of pending cases of infringements regarding public contract awards, which totalled 184 in 1994, signals the existence of serious barriers to cross-border entry.

Marketing and commercial services are highly regulated at national level. These services are of critical importance for the ability of companies to enter local markets. They play a fundamental promotional function for many industries, signalled by the overall expenditure by firms on marketing of more than ECU 1 000 billion.

Regulations on the provision of marketing services are still national in nature. As a result economies of scale and scope in marketing are very limited. Lack of harmonization in the rules governing these services reinforces national segmentation of the European market for many products, preventing firms from designing coherent and coordinated marketing of their products Europe-wide and raising costs compared with competitors who do not face such restrictions in their domestic markets.

Chapter 7
Intangible investment

The knowledge and skill content of developed economies has been rising quite markedly. The capacity to generate new knowledge and develop a high level of human resources affects industrial performance to an ever greater degree. This chapter examines the extent to which Europe is investing in intangibles and whether the best use is being made of that investment.

Intangible investment includes a large variety of components: research and development (R&D), licences, patents, engineering, human resources, organization and structuring of information, investment in software, investment in information systems and marketing.

R&D and human resources are the most important components of intangible investment. According to OECD estimates, R&D and investment in human resources account for more than 70% of the total volume of intangible investment.

1. Problems with intangible investment

The special nature of intangible investment leads to problems with its provision. A lack of appropriability of the returns, market failures and information problems can result in the underprovision of intangible investment. General skills or technologies are more difficult to appropriate than specific skills or technologies.

The widespread dissemination of knowledge and the adoption of productivity-enhancing technological breakthroughs has a positive effect on economic growth. The growth effects that result from the dissemination of transferable skills or technologies are larger than the growth effects that could result from sharing specific skills or technologies.

Patents and trademarks make the returns to intangible investment more appropriable. The degree of appropriability depends on the scope and duration of the patent or trademark protection. The effectiveness of protection afforded depends on the legal system: the average length of a trial, legal fees and the expected size of the fines. Hence the degree of appropriability is directly influenced by government policy.

Intellectual property rights play a vital role in providing private incentives to intangible investment. However, strong protection of intellectual property rights can prevent the widespread use of growth generating knowledge. Intellectual property rights provide individuals and enterprises with monopoly rights. The owners of a patent can decide to limit its use by others and to extract monopoly returns to their invention. Knowledge-sharing rules are crucial for striking a balance between rewarding R&D, spreading growth generating knowledge and preserving competition in product and factor markets.

Increased R&D, foreign direct investment, transfer of technology and international trade require international standards of intellectual property rights at the highest possible level. The adoption of the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs Agreement) in the framework of the World Trade Organization has been a major achievement in this area. The agreement will allow enterprises to operate on international markets and exploit mar-

ket opportunities while ensuring that protected rights enjoy equivalent protection in third countries.

The TRIPs agreement might help to give some companies world-wide monopoly power and prevent the global implementation of technological advances. The parallel development of international licensing rules and international agreements on competition policy are crucial for striking the right balance between the protection of property rights and the widespread diffusion of knowledge.

Human resource investments are subject to similar problems. Employers generally accept that training can lead to higher productivity, reductions in costs and improvements in quality. This view is reinforced by some research into the quantitative effects of training. The relationship of the return on investment in human resources with competitiveness remains difficult to quantify.

Unlike R&D, investment in training is shared to varying degrees by enterprises and employees, in terms of direct expenditure and indirect costs (such as levels of wages foregone and time spent away from the job). However, difficulties remain in calculating who benefits from the investment made. In the case of the self-employed it is clear that they can appropriate the returns on their own investment in human capital. However, people and therefore skills are mobile, and a third party can appropriate the skills of an employee without investing in training. This is a disincentive to investment in human resources which can in turn lead to a reduction in the skills available on the labour market.

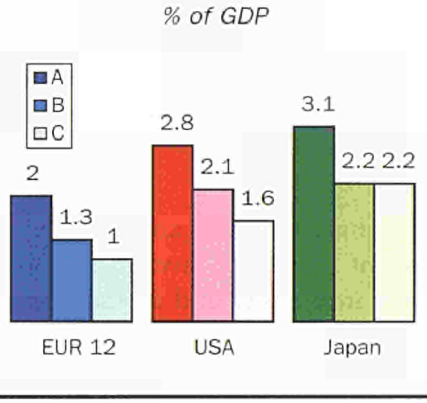
There is some evidence that fixed investment receives a more favourable tax treatment than intangible investment. In part, this is due to the fact that intangible investment is hard to measure and does not usually appear, for example, on company balance sheets. As a result, intangible investment does not benefit from depreciation allowances and other fiscal measures that benefit tangible investment. The returns from fixed investment are more predictable than those from intangible investment. Fixed investment can be sold off when a firm goes bankrupt and, hence, can be used as collateral.

2. Research and development

Europe's spending on R&D is proportionately lower than in the US or Japan. Total figures for R&D spending include basic research (Fig. 7.1., A). Expenditure on research which is conducted in industry (Fig. 7.1., B) and research funded and conducted by industry (Fig. 7.1., C) is also lower in the EUR 12 than in the United States or Japan.

In Japan, almost all R&D conducted by industry is self-financed. In the United States and the European Union a part of research in industry is also financed from other sources, particularly government. The figures suggest that Japan takes a different approach to the funding of industry based R&D than the United States and the European Union.

Fig. 7.1. Total expenditure on R&D (A), R&D in industry (B) and self-funded R&D in industry (C)



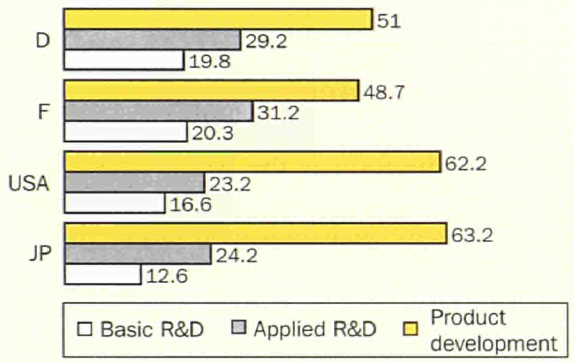
Source: European Report on Science and Technology Indicators (1994).
NB: % of GDP in 1991.

Within the European Union, there are large differences in performance between the Member States. Within the German R&D system, for instance, levels of industrial research spending are of the same magnitude as those in the United States, while the cohesion countries spend very little on R&D, particularly R&D in industry. In Greece, for instance, only 0.12% of GDP was spent on R&D financed by industry in 1993, compared to 1.49% in Germany and just over 1.1% in the UK and France.

The nature of R&D expenditure is as important as its volume. Relative to its main trading partners, the European research base does appear to be less mar-

ket-oriented. A breakdown of R&D expenditure by objective clearly indicates that Europe devotes fewer resources to actual product development. Fig. 7.2 compares spending in France and Germany with that in Japan and the United States.

Fig. 7.2. Distribution of total expenditure by closeness to market (%)



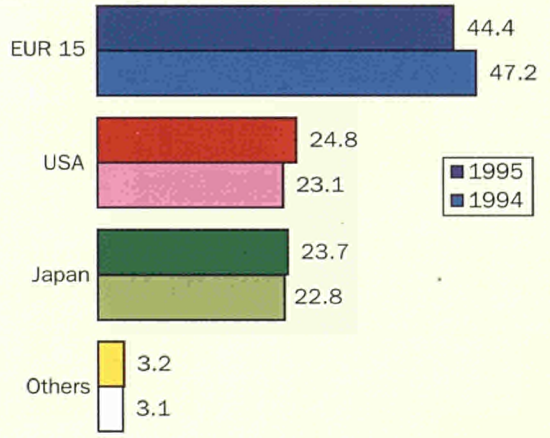
Source: European Commission.

In addition to these low levels of R&D spending, within the European Union a lower level of human resources are dedicated to R&D. Scientific research personnel represents only 0.47% of the labour force, compared to 0.74% in the United States and 0.80% in Japan.

R&D spending and human resource indicators are input measures. However, what is important from the perspective of knowledge creation is innovative output. In terms of scientific output, the European Union and its Member States fund approximately 25% of worldwide R&D (public and private), but account for almost 30% of world scientific publications. In addition, the European Union's share has continued to increase throughout the 1980s.[1]

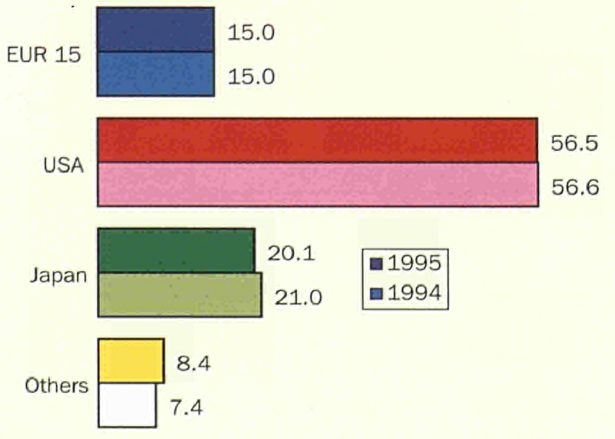
In terms of patents granted by the European Patent Office, EU countries have a lead over the USA and Japan (Fig. 7.3a.). However, in terms of patents granted in the USA, the EUR 15 lags behind (Fig. 7.3b.). While the United States has recovered ground lost during the 1980s, the European Union, despite enlargement, has seen its share of US patenting fall each year since 1981. This assessment is valid irrespective of the fact that firms tend to patent more domestically (which partly explains the much larger figure for the US). There are, however, large differences between European countries in the level of US patenting. Historically, Germany accounted for approximately half of the EU's US patents, although its share has fallen recently in line with a fall in the number of German US patents (down from 10% of total US patents in 1989 to 7.6% in 1993).[2]

Fig. 7.3a. Share of EU patents granted



Source: European Patent Office.

Fig. 7.3b. Share of US patents granted



Source: United States Patent & Trademark Office.

[1] *European Report on Science and Technology Indicators, 1994.*

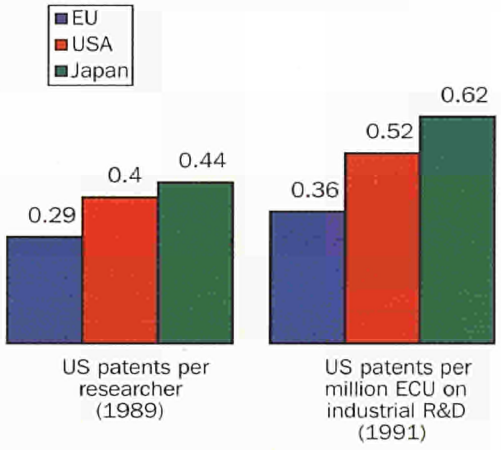
[2] *European Report on Science and Technology Indicators, 1994.*

Patent data have some well-known deficiencies. For instance, there are wide differences in the tendency to patent between industries and between countries, while not all patents lead to useful commercial outputs.[3] Nevertheless, patents represent an observable indicator of innovative output, or at least of the appropriable component of the knowledge factor.

The figures reported above relate to inputs (measured by research personnel and expenditure on R&D), and outputs (proxied by scientific publications and US patents granted). Combining input measures with outputs can give some indication of the efficiency of the EU's R&D effort.

Comparing the patent output to the number of researchers and industry spending on R&D, it appears that the United States and Japan outperform the European Union, although a 'home bias' undoubtedly inflates the US figures (Fig. 7.4.). Japan, however, appears to be more efficient at producing patents than the European Union, producing almost as many per researcher as the United States, in spite of the latter's home advantage.

Fig. 7.4. Patents per researcher and per million ECU spent on industrial R&D



Source: The European Report on Science and Technology, 1994.

Both indicators suggest that the extent to which resources dedicated to R&D produce patentable outputs is lower in the European Union than in the United States and Japan. Overall these indicators appear to show that the European system is not performing as well as its competitors in terms of the provision of commercially relevant outputs.

European scientists are producing a high and growing percentage of worldwide scientific publications, but a low and falling percentage of United States patents. The European scientific research base appears, therefore, to be more effective at producing intellectual output than patentable technologies.

3. Human resources

Good basic education is the basis for further skill development. Good initial vocational training can ensure that latent capacity is used productively. The upgrading of skills throughout working life is required to improve initial skills and to keep pace with change. The extent to which Europe's learning systems generate and maintain the levels of skills required to sustain high levels of productivity and competitiveness is a key issue. In all EU countries expenditure on education is substantial and as a percentage of GDP is broadly comparable to that in the United States and higher than in Japan (Table 7.1.). As with R&D expenditure, there are large differences within the European Union, reflecting the different structure of the systems in the Member States and different methods of financing vocational education and training.

Table 7.1. Total public expenditure for all levels of education as a percentage of GDP

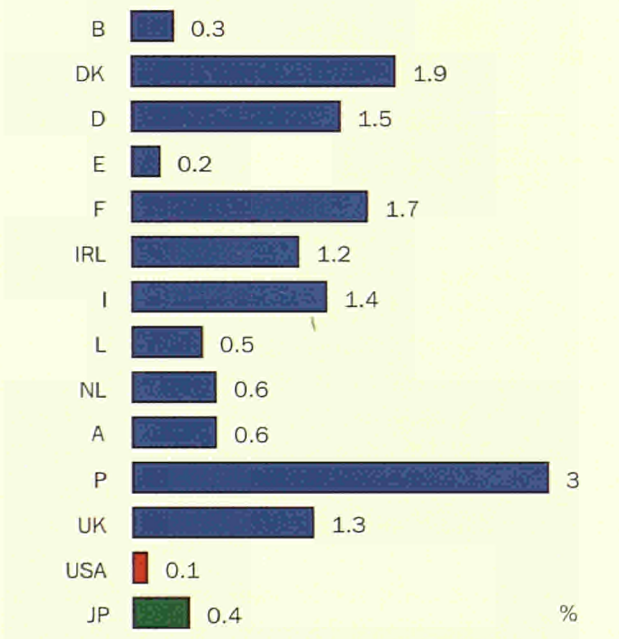
	1986	1988	1991	1992
B	6.2	5.5	n.a.	5.2
DK	5.9	6.4	6.1	5.9
D	4.5	4.3	4.1	3.7
E	3.6	3.9	4.5	4.3
F	:	:	5.5	:
IRL	5.8	5.4	5.2	5.0
I	4.8	4.9	4.8	4.8
L	5.2	5.7	:	:
NL	:	:	5.6	4.5
A	5.8	5.5	5.4	5.4
P	4.2	:	5.5	:
FI	:	:	7.3	:
S	6.0	5.7	6.2	6.4
UK	4.8	4.7	5.1	4.6
EUR 15	5.2	5.2	5.4	5.0
JP	4.0	3.7	:	3.5
USA	5.0	5.0	5.7	5.2

Source: OECD.

[3] David, P. and Foray, D., 'Assessing and Expanding the Science and Technology Knowledge Base', *STI Review, 16*, OECD, 1995.

However, these figures underestimate the total amounts invested in education and training. Little is known about public and private expenditure on education and training outside the traditional domains of schools and universities. The expenditure by employers on education and training is substantial, for example, when measured by vocational training costs as a fraction of total labour cost in manufacturing (see Fig. 7.5.).

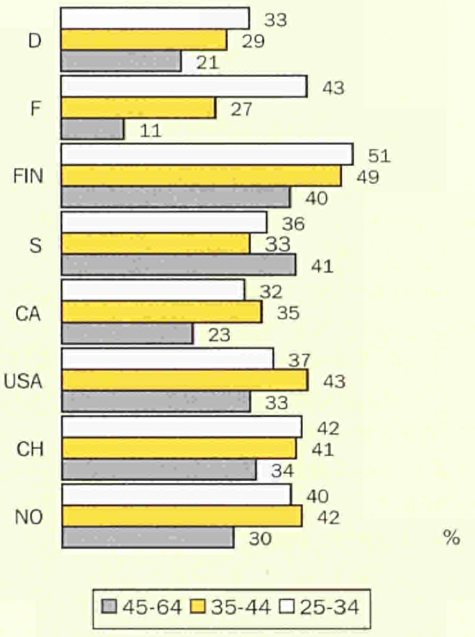
Fig. 7.5. Vocational training cost as a percentage of total labour cost in manufacturing



Source: Labour cost surveys, 1988.

Inter-country differences in the levels of continuing education and training are difficult to identify and quantify. Definitions of continuing education and training vary and some countries have a strong tradition of on-the-job-training. However, what does emerge is that participation in continuing education and training is related to age (Fig. 7.6.). With the notable exception of Finland, the updating of skills decreases with age. Statistics also indicate that participation in continuing education and training is related to previous education and training. People with a higher educational attainment are much more likely to participate in continuing education and training.

Fig. 7.6. Participation in job-related training as a percentage of the employed population in three age groups



Source: OECD.
NB: participation in 12-month period preceding the survey. Years vary by country (1990-93).

There is also a clear trend in rising qualification levels, particularly in Greece, Spain, Ireland, Italy and Portugal. In these countries, the number of people aged between 25-29 who have completed secondary education is twice as high as those aged between 50-59 (Table 7.2.).

Table 7.2. Population achieving secondary-level studies by age group (%)

	25-29 years	30-39 years	40-49 years	50-59 years
B	72	62	52	39
DK	86	82	79	67
D	88	87	84	77
EL	66	55	41	26
E	50	38	22	12
F	76	67	58	43
IRL	62	54	40	31
I	52	47	36	21
L	55	52	48	41
NL	86	83	78	71
P	35	29	20	12
UK	57	55	53	43
EUR (12)	67	63	54	45

Source: Eurostat.

Evidently, the quality of skills cannot be measured simply by the amount of money spent on education and training. Indicators of educational attainment also have weaknesses.

Box 7.1. Measuring literacy

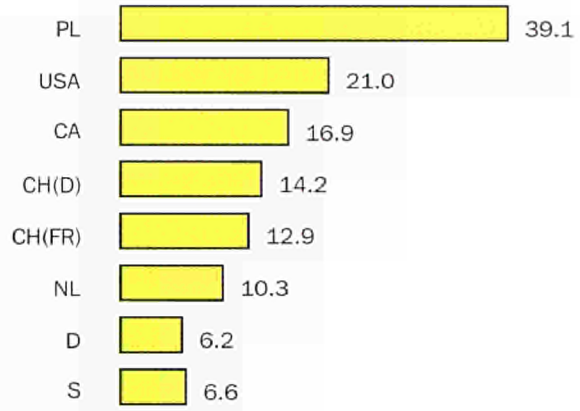
The International Adult Literacy Survey (IALS) is a joint effort of the OECD, the European Union, Unesco and eight governments: Canada, Germany, Ireland, the Netherlands, Poland, Sweden, Switzerland and the United States. The IALS defines literacy as: 'Using printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential'. Hence, literacy indicators so defined should come very close to measuring the sort of skills that generate and sustain high levels of productivity and competitiveness.

The International Adult Literacy Survey (IALS) argues that traditional measures of human resources attainment can be misleading. In the United States, 47% of the labour force had completed upper secondary education (41% in the Netherlands and 45% in Sweden). By traditional measures, the United States should have a high level of educational attainment. The IALS casts doubt on the meaning of this figure. It shows that of those who had completed upper secondary education in the United States, 18.4% were unable to interpret a weather chart in a newspaper.

The three EU Member States whose International Adult Literacy Survey (IALS) results were published scored well. Only 4.1% of high school leavers in Germany, 2.7% in the Netherlands and 4.8% in Sweden were unable to interpret a weather chart. The level of 'quantitative illiteracy' in the population as a whole was higher: 6.7% in Germany, 10.3% in the Netherlands and 6.6% in Sweden.

In the United States, high school leavers barely perform better than for the population as a whole. The results of the IALS survey, based on a representative sample, suggest that 21% of US citizens are unable to interpret a weather chart in a newspaper (Fig. 7.7.).

Fig. 7.7. Share of all respondents below Level 2 on quantitative scale



Source: OECD.

However, the good performance of EU participants in the International Adult Literacy Survey (IALS) does not imply that the average level of literacy in the European Union is satisfactory. The Netherlands, Sweden, and Germany are considered to have three of the best learning systems in the European Union. The other EU Member States were not covered in the IALS report. It will be important to obtain comprehensive data of this kind for all Member States.

Internationally comparable achievement data is also available for numeracy. However, in the light of the IALS findings, the results of the Second International Mathematics Study (SIMS) are surprising. Sweden, which had the top score in the IALS, scored lowest in mathematics and algebra, whilst the overall performance of the participating countries is in line with the other indicators presented in this section.

Box 7.2. Measuring numeracy

International comparisons of numeracy rely on standardized tests that are administered to pupils in a particular age group. As the World Bank (1993) and Unesco (1993) point out, the scores are influenced by what a national syllabus is meant to teach and at what age.

Despite the increase in general levels of educational attainment, skill shortages are a common problem for business in many European Union countries. Skill shortages can arise because of restrictions in mobility. This points to inflexibility in education and training systems and an inability to supply specific skills to meet labour demand. Furthermore, although qualifications are a measure of skills acquired, very often they are also the key to access to certain restricted product markets, particularly in services.

In certain cases, the need to restrict market access to certain qualifications is justified. For example, public safety requires restrictions on the type of person who can practise as a doctor. In these professions, there will always be a link between tightly regulated training standards and restrictions on market access.

However, a common practice in Europe has been for areas requiring these qualifications to extend market access restrictions well beyond those required by the public interest. For instance, it may be justified for prescription medicines to be dispensed by a qualified pharmacist, but it does not follow that the sale of non-prescription medicines should be restricted to pharmacies, or that there should be a limit on the number of pharmacies per head of population. However, such restrictions are prevalent in Europe. They demonstrate how rigidities on factor markets interact with those in product markets.

A second case arises when market access restrictions that are based on qualifications are not justified on general interest grounds. Reducing the number of restricted professions at the national level would make it easier to complete the internal market in services. It would also make it easier to make the mutual recognition directives work where they are really needed — in those cases where restrictions are justified on public interest grounds.

All education and training systems in the European Union, despite their variety, are based upon a formal block of concentrated learning at the beginning of working life. The qualifications system — which as an indicator of skill levels improves the operation of the labour market by making it more transparent — is structured around formal initial education and training systems. This makes access to qualifications, which might improve employment prospects for workers and respond to employers' needs, more difficult at later stages of working life.

Education and training systems can only contribute towards providing a highly-skilled and adaptable workforce. The key for productivity and competitiveness lies in how those skills are used and this is beyond the scope of the systems themselves.

Given the importance, but limitations, of education and training systems, the focus must lie with Member States making their systems as effective as possible. There is substantial difficulty in evaluating the effectiveness of education and training systems and the return made on the investment in — the most important of resources — people.

Validating skills irrespective of how they were acquired would also contribute towards an open EU skills area and support mobility. Many Member States are reluctant to recognize qualifications gained in other Member States, arguing that the standards are different and not equivalent. The opportunity to validate skills acquired in another Member State would enable Member States to maintain standards, but also provide an access route to those trained elsewhere.

It should also be noted that although training arrangements are not harmonized, the setting of common standards in other areas, such as health and safety and product or service standards, introduces common elements into the education and training of a wide range of occupations. These changes are gradually bringing content and standards closer together. However, it is also increasingly important that employers are able to understand more readily and easily the content of different qualifications. Systems to improve the transparency of qualifications should also be examined, to contribute to greater mobility and flexibility.

Europe could aim for 300 to 400 certified, general qualifications. A huge number of narrow qualifications would be counterproductive. Germany, France and the Netherlands already have just under 400 general vocational qualifications. There is ample evidence that these qualification standards are one of the fundamental reasons why the workforce in these Member States has aquired high skill levels. Benchmarking European vocational qualifications at

a high level enables employers to evaluate objectively the skills of their employees and Member States their progress in achieving appropriate skill levels. They could be analogous to the idea of open product standards.

However, in order to achieve the high levels of skill required, national systems must be able to deliver appropriate vocational training. Process type standards such as the ISO 9000 series can help to assess the capacity of national systems to deliver a given level of skill and to find ways of improving their efficiency.

Chapter 8
Organizational and product innovation

In view of the link between innovation and performance at enterprise level (Chapter 2), the efficiency with which enterprises manage innovation is an important issue. Such an issue is not susceptible to detailed quantitative analysis, but organizational forms and diffusion mechanisms can affect the degree of innovation in an economy. The extent to which European firms have difficulty in raising finance for innovation is also examined in this chapter.

1. Innovation and organization

By its nature industrial innovation requires change, in management practices and in production processes as well as in products. Adaptive organizations have become a prerequisite for innovation. Indeed, the absence of adequate structures for organizational change may be central to Europe's difficulties in innovative performance. The establishment of fluid departmental structures enabling mutual exchange of information and cooperation within and between companies is generally seen to be an effective means of fostering innovation.

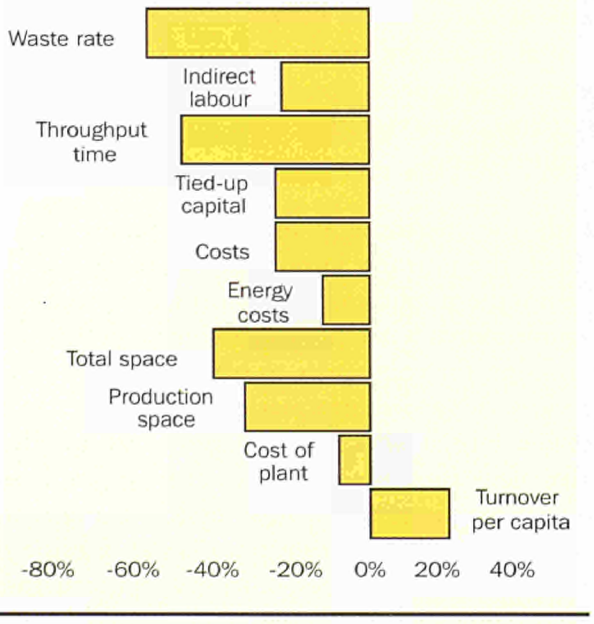
At the basis of innovative organizations lie multi-skilled employees, decentralization of responsibility, considerable recourse to team work and the integration of different functions within the firm from research, engineering, production to marketing and distribution around joint projects. Cutting across traditional hierarchical and functional boundaries, flexible organizations are also harder to manage.

A viable organization is one for which change and flexibility are fundamental. Organizations need to acquire the ability to evaluate and embrace improvements in the organizational field as they have already been attempting to do in the areas of new technologies and products.

Changes in management practices are central to process innovation, which in turn is central to product innovation. The development of lean production systems including total quality management, continuous incremental improvement (kaizen) and just-in-time production systems are dependent upon internal changes in the organization of firms.

Benefits from changing organizational and work practices can be substantial (Fig. 8.1.).[1]

Fig. 8.1. Benefits of organizational innovation



Source: Kidd.

In order to respond to new competitive challenges, the adoption of new forms of production based on Japanese models has been proceeding at an

[1] Paul Kidd, *Organization, people and technology in European manufacturing*, FAST, November 1990.

accelerating pace over the last decade. However, Europe still lags behind the United States in this field, in part because Japan invested earlier and more substantially in the United States than in Europe and the demonstration effect was stronger there. Many small firms are either wedded to traditional practices or reorganizing production systems piecemeal, when the benefits from new production models can only be reaped from coordinated implementation.

Crucially, adoption of Japanese models has not been matched by innovation in production processes to provide a further competitive stimulus. The need to match technology, including the application of information technology throughout the productive cycle and the introduction of numerically controlled machine tools and robots, with organizational change is now well understood. However, specific aspects of Europe's industrial tradition are not being used to modify or improve on imported models.[2]

Historically, organizational innovation has lagged behind product and process innovation. However, product market developments require complementary developments in the internal structure of organizations. Advances in micro-electronics were instrumental in quality checks becoming inherent to the production process (for example through total quality management), rather than only in final product quality control.

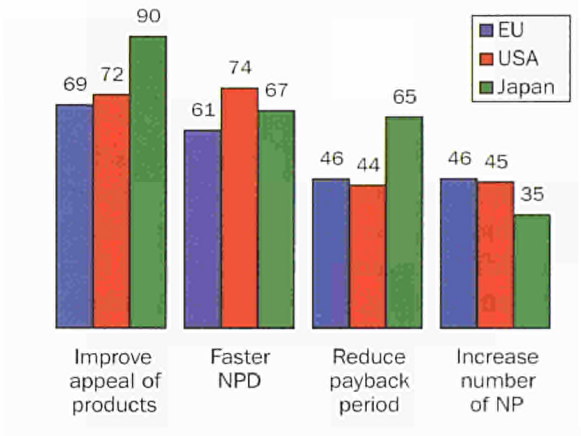
With the increasingly intangible nature of value added, the growing importance of services and the rise in the application of information technology, organizational flexibility has become a necessary precondition for companies to offer new products and services. Advanced information technologies accelerate the rate at which service providers are able to offer new products. Equally, changes in internal structures may result in new services being created. Unfortunately accounting practices in Europe have not kept pace with these changes in the nature of investment. This has resulted in intangible investment remaining a more expensive option for companies.

The indicators discussed in the last chapter give us some idea of the efficiency with which new knowledge and technologies are being produced in Europe. However, innovation is not just about developing new ideas, or even ensuring their transposition into new products. Its impact on competitiveness is mainly related to bringing successful new products to market, and this is an area where good indicators are rare.

The limited data that does exist indicate that different innovation systems foster quite different levels of new product development. In the consumer electronics industry, for instance, a survey carried out by McKinsey found that the percentage of sales from products introduced in the last year was 64% in Japan compared to 33% in Germany. German industry showed higher levels of new product introduction than the US, however, where the figure was 22%.[3]

In a recent survey of companies in Europe, the United States and Japan, managers were asked on which aspects of innovation they concentrated their efforts (Fig. 8.2.). The chart indicates the percentage of positive replies for each aspect (NPD represents New Product Development and NP New Products). It is clear that Japanese managers put a higher priority on cost effectiveness of new product development and introduction, as well as focusing on the appeal of their products. [4]

Fig. 8.2. Priorities for product innovation



Source: Arthur D. Little.

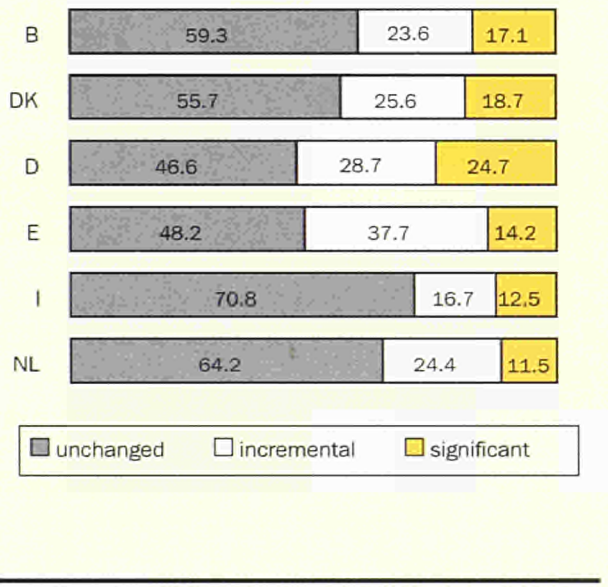
[2] *Organization, people and technology in European manufacturing,* Paul Kidd, FAST 1990.

[3] *Employment Performance,* McKinsey Global Institute, Washington, 1994.

[4] Deschamps, J-P., Ranganath Nayak, P., *Product Juggernauts,* Arthur D. Little, 1995.

There are, however, large differences in innovative behaviour within Europe. Figure 8.3., derived from the Community Innovation Survey,[5] reveals that German companies have a greater tendency to introduce successful new products than other European countries. In addition, their innovations have a greater tendency to be significant, rather than incremental. Thus certain European innovation systems appear to be more successful than others in bringing profitable new products to the market.

Fig. 8.3. Sales by type of product



Source: Eurostat.

The complex nature of the product development process is illustrated by research into the pharmaceutical industry which found that the number of successful products introduced by a country's industry appears to be unrelated to the proportion of new chemical entities discovered domestically. Rather, the success of national industries is related to key choices in the development process which result in bringing the best innovations to market.[6]

In this example, the United Kingdom industry performed particularly well. Having produced only 4% of new chemical entities in the period 1981-85, they produced 12 of the world's 50 top selling drugs in 1990. This was considered to be a result of UK firms' apparent ability to identify potentially successful drugs at an early stage, and terminate research projects that offer poor prospects.

The importance of these strategic choices is supported by a close analysis of plant level data which reveals that the internal organization of businesses is probably the most potent factor explaining the different ability of firms to introduce new products in a timely manner.[7] For instance, the creation of multifunctional teams that group R&D scientists, production engineers and marketing personnel has contributed to reduce time to market by up to 50% in certain industries (e.g. photocopying machines).

2. Sources of innovation

Innovative activity is often the result of dynamic relations between actors rather than the simple transfer of information or technology. Feedback loops between different actors are very important in the innovation process. This should be kept in mind when considering the sources of innovation.

There have been several surveys on the key sources of innovation for companies. One of the most recent and extensive is the Community innovation survey. This found that, irrespective of size, external sources (made up of suppliers, customers, competitors and business services) were found to be more important drivers of innovation than internal sources or universities and research establishments. For SMEs, external sources are proportionally more important, since internal development and academic research represent less of a stimulus relative to larger firms.[8]

Cooperative activities with external firms or institutions enhance the transfer of tacit knowledge and other intangible assets. This is particularly relevant in the context of inter-regional cooperation, since knowledge is often locally generated. Fig. 8.4. contains information on the international distribution of strategic technology alliances. Over half of such alliances take place within the geographic area from

[5] The Community Innovation Survey is a survey of 40 000 EU companies conducted jointly by Eurostat and the European Commission in 1991-92.

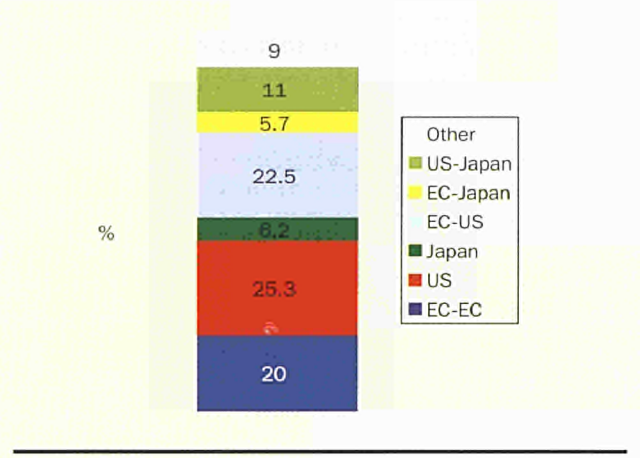
[6] Freeman, C., *Technology and the Future of Europe*, London, Pinter, 1992.

[7] Voss et al., *The Competitiveness of European Manufacturing - A Four Country Case Study*, Business strategy review, 6(1), spring 1995.

[8] *Green Paper on innovation, CEC, 1995.*

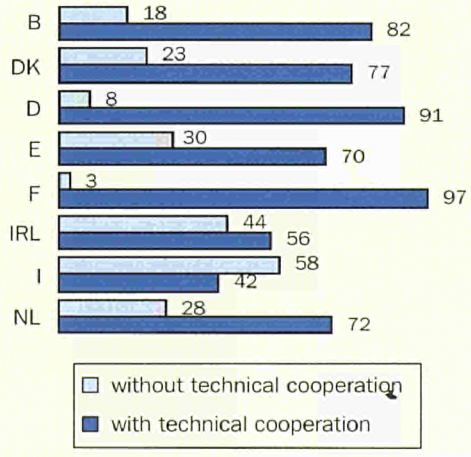
which firms originate. Strategic alliances between firms originating in different areas nevertheless account for 40% of such alliances, with a particular emphasis on European-US alliances followed by US-Japanese alliances. In terms of the numbers of strategic technology alliances in which they engage, US firms are the most active participating in 60% of the total, followed by the European Union with 48% and Japan with 24%.

Fig. 8.4. International strategic technology alliances 1985-89



Source: Duysters & Hageddord, Research policy, 1996.

Fig. 8.5. Percentage of sales represented by improved or new products for firms with technical cooperation agreements and those without



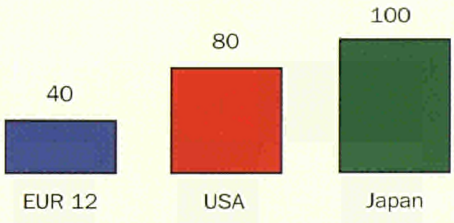
Source: Community innovation survey.

The importance of external sources for successful innovation is supported by evidence on the role of technical cooperation in innovative activity. Figure 8.5 depicts the average share of new or improved products in total sales of innovative firms surveyed by the CIS. Firms are classified in two groups: those that have cooperated with other external partners, and those which have not.

Firms which had engaged in some technical cooperation with an external partner usually have a larger proportion of new or improved products in their total sales. The European Commission seeks to encourage such cooperation, on a cross-border level, through the fourth Framework Programme, which will provide funding of ECU 12.3 billion for cooperative research projects over the period 1994-98.

In terms of cross-border cooperation, EU enterprises tend to cooperate less with enterprises outside Europe. However, including intra-EU, firm cooperation would probably significantly increase the figure for the EU (Fig. 8.6.). It should be noted that regulations on such inter-firm cooperation differ between regions and could account for some of the differences.

Fig. 8.6. Research cooperation with firms in other regions



Source: UNICE.
NB: Japan = 100.

3. Diffusion mechanisms

The mechanisms to diffuse new ideas or technologies are an important aspect of the innovation system. There are significant differences in national systems that foster innovation diffusion. Studies of innovation sources and stimulants conclude that linkages outside the firm are important (see above). Some of

Box 8.1. Regulation and innovation

Depending on how they are conceived and applied, regulations can help promote innovation, or stifle it. The following general principles help to evaluate whether a regulation is likely to support innovation or not.

Focus on outcomes and not technologies. Forcing firms to adopt specific technical solutions, rather than leaving them the flexibility to develop the solutions that best suit them, discourages innovation.

Aim for a stable, predictable regulatory process that minimizes time delays and administrative costs for firms. Uncertainty about the regulatory process can stall innovation because of a fear of going down the wrong path.

Employ phase-in periods which take account of investment cycles, economic conditions, etc.

Ensure industry participation in setting standards from an early stage to help ensure appropriate phase-in periods, realistic standards and the least-cost approaches to achieving them are adopted.

Develop strong technical capabilities among regulators to ensure a better understanding of industry's constraints and opportunities, both technically and economically, and to provide a better basis for cooperation in meeting environmental objectives.

Table 8.2. Diffusion instruments for selected EU countries

	Affiliates	Joint ventures	Suppliers	Clients	Res. institute	Tech. analy.
B	74.2	41.7	47.8	50.0	41.6	47.8
DK	35.7	14.6	33.3	47.6	45.2	26.1
D	39.0	30.4	42.4	41.1	43.5	51.4
I	36.3	33.8	39.1	36.8	26.0	57.9
NL	46.3	51.3	51.2	42.5	39.1	46.3
UK	48.4	42.0	40.2	40.2	29.7	39.1

Source: Confindustria.

these channels are formal and institutionalized, while others are not. Table 8.1 provides a taxonomy of these diffusion mechanisms and reveals information as to their relative importance for a sample of EU countries. The figures relate to the percentage of companies that considered the sources mentioned to be important.

Differences exist however in the importance of formal linkages between industry and the research system. The German infrastructure is often considered to be exemplary in respect of fostering innovation diffusion. In particular, the Fraunhofer centres, which bridge the gap between university-based research and industry, represent an important channel for the diffusion of innovation. This is reflected in the figures reported in Table 8.2. Along with Danish companies, which also benefit from an organized diffusion infrastructure, German firms interact more with public and university research institutions than their European counterparts.

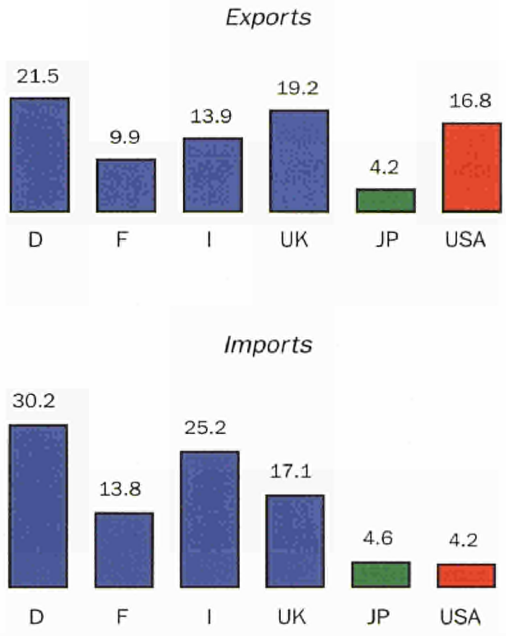
However, case study evidence suggests that there are strong complementarities in national institutional designs.[9] This effectively means that institutions are reliant upon one another and are thus difficult to transpose across borders. Although this means that the solution to the problem of encouraging more effective diffusion remains primarily national, cross-border cooperation can, nevertheless, contribute to mutually beneficial interaction and exchange. While innovation systems are rooted within a specific institutional context, there is a certain degree of interaction between national innovation systems.

The extent to which technologies and innovations developed in other systems are effectively utilized is also an important factor contributing to performance. Data on cross-border purchases and sales of patents is regularly collected by the OECD in the form of 'technology balance of payments' statistics (Fig. 8.7.).

Data on technology sales abroad, standardized by domestic industrial expenditure on R&D, give an indication of the attractiveness of technology and innovations developed at home. In parallel, the level of purchases of technology developed abroad reflects the ability of domestic firms to absorb and exploit innovations produced elsewhere.

[9] Nelson, R. (ed.), *National Innovation Systems.*

Fig. 8.7. Technology exports and imports as a percentage of industrial R&D



Source: OECD.

Export data indicate that Germany, the United Kingdom and the United States export proportionately more technology than the other selected countries. France and Italy export relatively high levels, especially in comparison to Japan. This is at odds with the view that European innovation systems are not sufficiently creative and outward oriented. However, high technology export levels are not necessarily a positive indicator. The low level of exports from Japan may reflect unwillingness to sell their technological developments to competitors.

In the case of technology import figures, Germany again shows high levels, indicating a high overall interaction with the outside technological environment. It is noteworthy that both the United States and Japan have low levels, indicating a high level of self-reliance. The low level of both indicators in the latter could also be related to the fact that Japanese innovation is less reliant on formal R&D. It is also a reflection of the relative size of the economies, which means that much technology is available domestically.

These figures do not provide information on the origin and direction of flows for individual countries. Data on bilateral flows between EU Member States, and between EU countries and other developed nations, could provide a proxy of the inter-action between innovation systems across Europe. In addition it would be useful to have more precise indicators of the extent and speed of diffusion of key technologies to industry. In spite of work by OECD and Eurostat, data in this area is limited.

4. Financing innovation

As the Commission's Green Paper on innovation has noted, access to adequate finance is one of the key factors influencing successful innovation. Financial requirements vary across sectors, but most innovative activity requires large amounts of, often intangible, investment. The extent to which access to such finance can be secured is therefore an important aspect of the innovation system.

Generally innovation expenditure varies through the lifetime of a project. Thus, innovation projects require a large proportion of their total financing at a time when the potential returns are most remote and market and technological uncertainties are high. This applies particularly to R&D, which is the stage where returns are least appropriable. Public intervention to reduce the inherent risk of such spending can help to promote innovation. Table 8.2 shows the percentage distribution of innovation expenditure by type for three EU countries. In all cases, start-up investment was the largest single expenditure item.

Debt finance often requires collateral. The typical research and development project does not involve many assets that could be put up as collateral. In sectors like software development, R&D mostly consists of hours worked. Debt-financing such innovation projects can therefore be difficult. Banks lacking

Table 8.2. Innovation expenditures

	Germany	Italy	Finland
R&D	26	17.9	39
Design & engineering	22	25.2	6.3
Patents & licences	2	-	4
Start-up investment	46	51.5	46.2
Marketing	4	5.4	4.5

Source: OECD.
NB: Germany and Italy 1988; Finland, 1981-85.

specialized knowledge can also find the evaluation of such projects problematic.

Equity finance poses similar problems. Purchasing equity means that an investor takes a direct stake in the innovation project. In return, investors are given a say in the running of the company that is undertaking the project. Founders are often unwilling to surrender such control.

'Business angels', wealthy individuals who take a personal stake in a project, are one example of a classic source of risk capital. In the United States they play an important role in innovation start-ups.

More recently, special financial instruments have been developed that aim to channel savings from those who want to invest in high-risk, high-return projects into such projects. Very often these financial instruments are provided by specialized institutions.

Venture capital and the venture capital industry are one example. In the United States, venture capital plays a significant role in financing innovation. In Europe it does not. The explanation lies in part in the different structure of their financial systems. However, it is also due to administrative and regulatory barriers that have hindered the growth of the European venture capital industry.

Venture capital financing is usually undertaken via independent venture capital funds. In practice, many of these funds are not independent, but associated with large corporations, pension funds, banks or insurance companies. Banks are the largest source of funds for the European venture capital industry. Pension funds are relatively important as well. In the United States, pension funds 'are estimated to account for 53% of total private venture capital funding in 1990, endowments and foundations another 13% and individuals and families 11%'.[10]

In Europe, the scale of markets and investment volumes is also an important factor. Although there may be sufficient investors willing to back a particular innovation project in the European Union as a whole, they may not reside in the country where the project is being undertaken. Nationally, there may not be enough projects to make it profitable to set up a market for innovation financing.

The investment services Directive and the creation of pan-European equity markets that seek to attract high-technology companies, like the Nouveau Marché and EASDAQ, might help to resolve the problem of the geographical mismatch between investors and investment opportunities.

The European venture capital industry has pointed out that it faces important legislative gaps. In the United States venture capitalists can pool capital in special fund structures. They are available to investors throughout the United States, regardless of their State of residence. In Europe, the equivalent fund structures do not exist, even at the level of the Member States. Many Member States do not have fund structures that suit local and foreign investors. A pan-European fund structure is not available.

5. Innovation as a system

Case studies of innovation systems have identified three important characteristics.[11] Firstly, innovation systems are rooted within a given set of national and sub-national institutions. Secondly, Europe's innovation systems are characterized by a high degree of diversity. Thirdly, the role of supporting institutions, both private and public, formal and informal, is of crucial importance.

Successful innovation requires more than basic research and R&D expenditure. Case studies have stressed the importance of factors internal to firms, such as business organization, or industry specific characteristics, such as distribution networks, contacts with clients, and supplier-producer relationships.

From a broader perspective, the access to finance for innovation and the regulatory environment, as well as access to relevant information, local research-industry links and the availability of supporting business services, all impact on innovative perfor-

[10] COM(93) 528 final. On the financial problems experienced by small to medium-sized companies.

[11] Nelson, R., *National Innovation Systems — A Comparative Analysis*, OUP New York, 1993.

mance. The role of these supporting services and institutions increases as innovation moves towards commercialization. They are also particularly relevant for SMEs, which do not have the necessary resources to develop these services in-house.

This chapter has considered the above aspects of the European innovation system in order to identify some key difficulties, in relation to competitiveness. It appears that European companies suffer from several disadvantages relative to their main competitors. Apart from a generally low level of intangible investment, as discussed in the last chapter, there are other factors which have a negative influence on the innovative potential of European industry. The financial environment in Europe does not appear to be sufficiently open to the financing of the sort of intangible investments that innovation requires. Several European countries also lack a broader supporting infrastructure to ensure access to information and technology.

In particular, however, there appear to be disadvantages in the internal structure of European industry which are inhibiting innovation. Open, flexible organizational structures are vital to effective management and incorporation of change. Rigidities in European company structures appear to work to resist change and impede development of new products and processes.

Chapter 9
Environment

Environmental quality is an important factor of our standard of living. As such, meeting high environmental requirements has become an integral part of doing business and an intrinsic condition for the long-term competitiveness of industry. Meeting this challenge will depend on the ability of industry and the policy-maker to identify and encourage opportunities for efficiency improvements, new product and service innovations and changing consumer behaviour.

There is, however, much debate on how and to what extent the requirement to meet strict environmental standards is actually affecting the competitive performance of EU industry. This chapter examines this issue as well as assessing the opportunities it presents for improved business efficiency and innovation.

1. Impact of environmental requirements on competitiveness

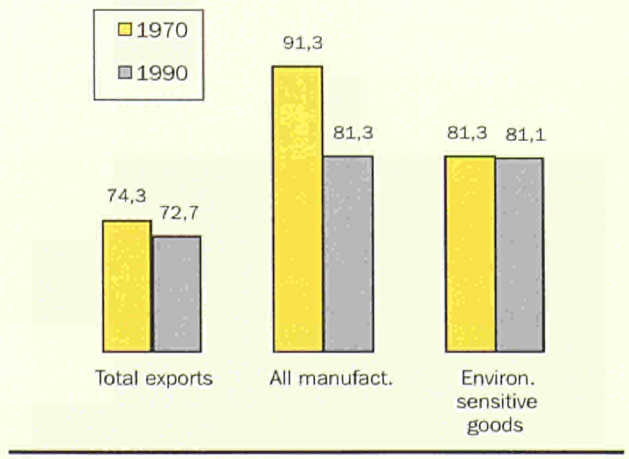
Although environmental regulations tend to impose costs on industry, there is little empirical evidence, at the aggregate level, that existing requirements have had significant negative or positive competitive impacts, but in specific sectors these can be important.

For example, the available, if somewhat limited, evidence at the aggregate level indicates that the relative stringency of environmental requirements in different countries does not appear to have had a significant effect on the export performance of Europe's pollution-intensive industries as a whole. It must be added, however, that exports are a very general indicator which incorporates the impact not only of environmental costs but also a wide number of other unrelated factors such as market access, demand, raw material supplies, etc. As such, it is difficult to isolate the precise role and impact that environmental compliance costs have had on the export performance of the EU 's pollution-intensive industries.

However, case study evidence at the firm and sectoral levels suggests that certain European industries and companies have suffered adjustment costs following the introduction of high environmental standards.

Nevertheless, a preliminary analysis made recently by the World Bank (Fig. 9.1) found that the industries most affected by higher environmental standards have performed relatively well in international trade over a period in which regulatory compliance costs have been rising (period assessed was 1970-90). Industries covered by the analysis included pulp and paper, petroleum products, chemicals, coal mining, fertilizer, cement, ferrous and non-ferrous metals, metal manufactures and wood manufactures such as veneers and plywood.

Fig. 9.1. Percentage share in total world exports of manufactures and of environmentally sensitive goods, industrial countries 1970-90



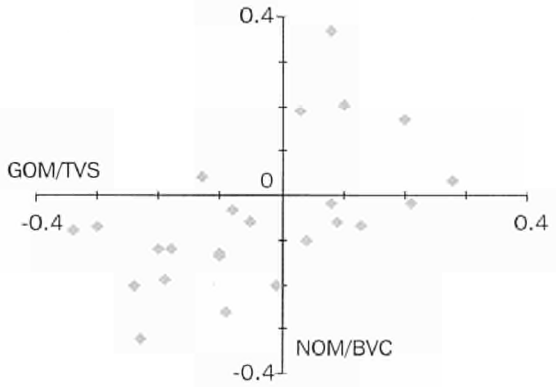
Source: Piritta Sorsa, World Bank.

In fact, it would seem that industrial countries (with strict environmental standards) have had more export success in these environmentally sensitive industries than they have had in their manufacturing industry as a whole.

While their share of total world exports decreased from 74.3 to 72.7% between 1970 and 1990 and their share of all manufactures declined from 91.3 to 81.3%, their share of exports in environmentally sensitive industries was almost stable, displaying only a marginal decline from 81.3 to 81.1%. The trend is similar for the individual countries analysed.

To date, there has been little analysis of the effects of environmental measures on company profitability in the European Union, but this issue is currently investigated by the European Commission in several research projects within the 'Human dimension of environmental change' programme.[1] However, recent analysis of thousands of US-based companies and plants (Fig. 9.2) suggests that the link between lower environmental expenditure and increased profitability appears to be a weak one.

Fig. 9.2. Correlation factors of toxic emissions and plant profitability for selected pollution-intensive industry sectors



NOM/BVC = Net operating margin as a proportion of book value capital.
GOM/TVS = Gross operating margin as a proportion of total value shipments.
Source: World Resources Institute, 1995

[1] For example, the research projects 'Environmental regulation, globalization of production and technological change' and 'Measuring the competitiveness effects of environmental compliance: the importance of regulation and market pressures'.

Indeed, it appears equally likely, and perhaps somewhat more likely, for plants with lower emissions (relative to production) to achieve higher operating margins and returns on invested capital.

Concerning foreign direct investment (FDI), most analyses on the possible links between industrial flight and FDI suggest that location and physical investment decisions are not significantly influenced by the cost differentials of complying with environmental regulations in developed and developing countries. These cost differentials appear small enough not to offset other more important decision drivers, such as access to markets, labour skills and costs, raw material supplies, political stability, availability of supporting infrastructure, and transport costs. Delocalization to 'pollution havens' does not appear to be happening at any significant level.

FDI data appears to show that of the FDI flowing from developed countries to developing countries, only a small proportion of the investment is made in the pollution-intensive industries when compared to the levels of investment directed towards other developed countries. In other words, to the extent that developed countries are 'exporting' their pollution-intensive industries via FDI, they predominantly seem to be sending them to each other and not to 'lower-environment standard' countries.

Costs

The lack of apparent significant effects on competitiveness at the aggregate level could arise for a number of reasons, including data and methodological limitations, relatively small differences in standards between the European Union and its major competitors, and the fact that compliance costs may have been largely offset by benefits.

It is also likely that until now the marginal costs of abatement have been relatively low. Enterprises have been able to significantly reduce their emission levels for relatively low investment levels. This is consistent with the available data on compliance costs in the European Union. For the business sector as a whole pollution control and abatement expenditures are relatively low compared to other cost factors representing only 0.2 to 1.1% of GDP. However, since most of these costs are incurred by industry, which accounts for approximately one-third of GDP, this

means environmental compliance costs amount to 0.6-3.3% of industrial value added.

Impacts at the sectoral level

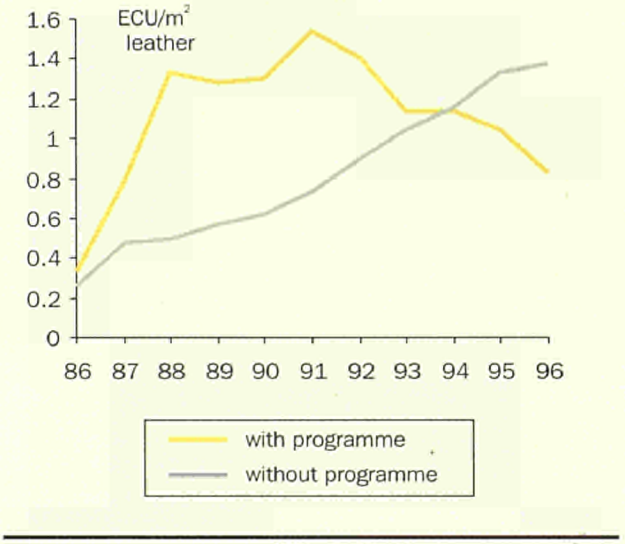
Analysis at the firm level points to a more heterogeneous scenario regarding the competitiveness effects of environmental requirements in Europe. Case study analysis shows clear evidence of some sectors and firms suffering adjustment costs following the introduction of strict environmental standards. There are, however, a number of well-documented case studies of sectors and firms which have been able to turn the imposition of strict standards into first-mover advantages through innovation, efficiency and productivity gains. The innovations resulted in cost reductions, yield improvements, market share increases or the development of new products and markets.

Recent case study analysis undertaken for the European Commission's Forward Studies Unit demonstrates that meeting high environmental requirements can have positive competitive effects. One example focused on an enterprise in the leather tanning industry; an industry that has generally found strict environmental requirements to be an increasingly negative pressure on their ability to compete in world markets.

Driven by a forward-thinking management philosophy, the enterprise invested more than ECU 2.4 million in environmental protection (compared to an annual turnover of ECU 20 million) between 1985 and 1995. This sum included ECU 710 000 invested in the development and implementation of a new epilation (hair removing) technology aimed specifically at reducing the company's solid waste and wastewater emission levels.

It was estimated that the new technique added about ECU 280 000 to the company's gross profit between 1989 and 1993 for a net operating income of ECU 390 000 in 1993. The increase in profits was due mainly to lower chemical, water treatment, waste disposal and labour costs. The internal rate of return was estimated to be 40%. It was calculated that without the investment in the company's environmental management programme, its total environmental costs would have risen significantly (Fig. 9.3) in the coming years as wastewater and solid waste disposal charges and standards increase.

Fig. 9 .3. Total environmental costs with and without environmental programme
1986-96



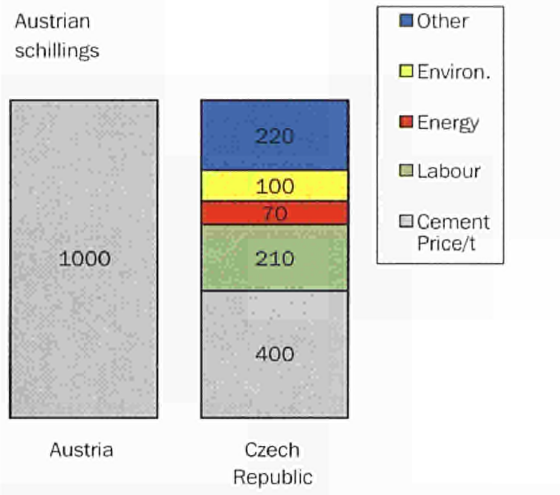
Source: Arthur D. Little Inc.

In addition, the investments were made by the enterprise during an economic downturn in the European and national leather tanning industries which saw a number of competitors go bankrupt partly because they had failed to invest in efficiency-oriented environmental protection measures.

On the other hand, an analysis by the Austrian Federal Economic Chamber highlighted a number of specific cases where recently introduced, strict environmental standards (relative to those faced by their competitors) seem to have contributed to the difficult competitive position of some firms.

One example is that of a cement manufacturer which competes with imports from neighbouring Central and East European countries. The cement industry in Austria is subject to much stricter air emission limits than competing installations located in these neighbouring countries.

Fig. 9.4. Cement industry case study: cost differences between Austria and the Czech Republic, 1995



Source: Austrian Federal Economic Chamber.

It is estimated that the environmental cost differential of meeting the higher standards is ATS 100 per tonne of finished product (Fig. 9.4). This cost differential may contribute to the competitive disadvantages already faced by the enterprise with regard to the other factor inputs such as labour and energy.

2. Environment and efficiency

Well-designed environmental protection measures can help promote efficiency improvements. Until now, much of industry's efforts to meet environmental requirements have focused on implementing end-of-pipe (EOP) solutions such as wastewater treatment, dust filters, solid waste treatment, etc. This is partly because many of the required EOP technologies already existed and where they did not, research and development times for new ones have been typically only two to four years. EOP solutions, however, do not usually result in efficiency or productivity gains, therefore representing a pure cost to the firm.

Clean technology, on the other hand, reduces the actual level of emissions produced in the first place thus improving the process efficiency. Although initial investment costs are typically higher than those for EOP solutions, there is often a short pay-back period. Furthermore, clean technology usually reduces polluting emissions to all media instead of shunting them from one to the other; something that often occurs when applying EOP technologies (e.g. dust emission scrubbers shift the environmental burden from the atmosphere to the solid waste environment).

Box 9.1. Small and medium sized enterprises

Small and medium-sized enterprises (SMEs) can be disproportionately burdened by regulations if account of their size and scarce resources is not taken.

Environmental regulations designed for large companies or plants, and applied without due account to the specific characteristics of SMEs, can impose significant, and perhaps excessively high, costs on the latter. These costs can take various forms: administrative and legal burden of interpreting requirements, obtaining permits, supplying monitoring data, etc.

Regulations and standards are also often media specific. This lack of integrated approach can be particularly burdensome for small-scale production processes where it can be difficult to separate the emissions to the various media.

Because of limited resources (finance and management), SMEs find it harder to access the relevant information concerning pollution abatement options and their financing. They also lack the R&D capabilities enjoyed by larger firms. There are, however, a number of Community and national schemes aimed at facilitating the access to environment-relevant information and preferential financing conditions by SMEs, thereby encouraging them to adopt a more proactive attitude towards the environment.

Many pollution abatement technologies have been designed for large plants with large wastewater, atmospheric pollution and solid waste flows and may not be suitable for much smaller operations.

One well-studied example that demonstrates the benefits of investing in resource efficiency measures is that of the Swedish pulp and paper industry. In the United States, water discharge regulations were imposed on the pulp and paper sector during the 1970s without adequate phase-in periods, forcing companies to adopt best available technologies quickly. At that time the requirements usually meant installing costly end-of-pipe water effluent treatment systems.

In Scandinavia, a more flexible regulatory approach was adopted involving the initial use of loose standards and adequate phase-in times coupled, however, with a clear signal that tighter standards would follow. This enabled Scandinavian companies to focus on the production process itself, and not just on the secondary treatment of wastes.

Scandinavian companies developed innovative pulping and bleaching technologies that not only met emission requirements but also lowered production costs. Spurred by Scandinavian demand for sophisticated process improvements, local equipment suppliers ultimately made major international gains in selling innovative pulping and bleaching technologies.

In addition, the Scandinavian pulp and paper industry reaped spill-over advantages as they were able to meet the growing niche market of the late 1980s and early 1990s for totally chlorine-free paper, whilst its competitors lagged behind, and thus were able to charge premium prices.

Investment cycles for clean technologies are typically six to ten years. New product research and development times are generally anywhere between three to eight years. To maximize the potential benefits, companies must combine the two elements together. Total combined product and production investment cycles could, therefore be up to 18 years for certain industry sectors, although this is an extreme case.

The implications for policy and regulatory design are important. Well-designed measures need to include predictable targets that take account of related investment cycles and to send clear messages about likely future requirements so industry can anticipate these in its innovation programmes and investment decisions. The importance of phase-in periods for new regulations is critical in this respect. Such phase-in periods are generally foreseen in EU legislation.

A lack of appropriate data means there are currently few reliable indicators available for assessing the environmental efficiency performance of EU industry *vis-à-vis* its competitors. However, preliminary analysis suggests the performance of EU industry varies considerably.

Water is one area which will become of critical importance for industry over the coming years. The supply of clean water is becoming increasingly problematic even though water is not yet perceived as a scarce resource. The efficiency with which industry uses water will therefore become an important element for the overall environment performance of European industry. One measure of efficiency is that of industrial water recycling rates (for example how many times each cubic metre of water is used before being discharged). Unfortunately, existing data on recyling rates is very weak and no conclusive evaluation of current levels of efficiency can be made.

Table 9.1. Energy intensity 1992

Country	kJ/$GDP
USA	13.33
Greece	12.41
Netherlands	9.87
Belgium/Luxembourg	9.28
United Kingdom	8.68
Finland	8.52
Ireland	7.97
EUR 15	7.67
Portugal	7.24
Sweden	7.10
Germany	7.03
France	6.87
Spain	6.81
Italy	5.58
Austria	5.10
Denmark	4.92
Japan	4.72

Source: WCR 1995.

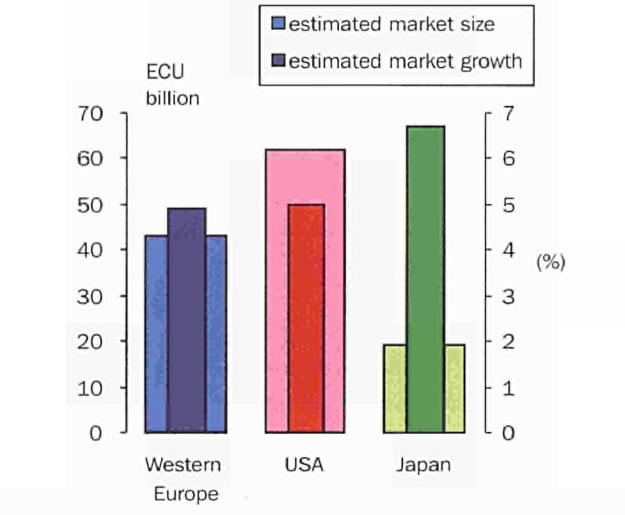
Another measure of environment/resource efficiency is energy intensity (Table 9.1). The average level of European industrial energy intensity compares well with that of the United States. The European Union is almost twice as efficient but there is wide variation between individual Member States and even

Denmark, the most efficient EU energy user, lags behind Japan's performance. It suggests there is room for increasing energy efficiency in Europe which would not only meet environmental concerns but also improve industrial competitiveness.

3. Environment and innovation

Used in the right way, environmental requirements can lead to the development of new products and new markets. Europe has witnessed significant growth of its 'eco-industry' which includes, amongst others, the wastewater treatment, waste management, air quality control, environmental consultancy and monitoring sectors. Because of a lack of common definitions and methodologies, most data concerning the size and growth of the industry are estimates and need to recognized as such.

Fig. 9.5. Estimated market size (1990) and annual growth (1990-2000) of eco-industry.



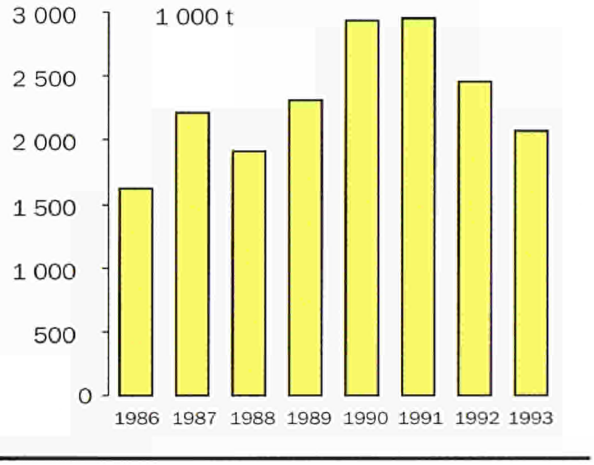
Source: OECD.

The OECD estimates that the market size of the Western European eco-industry in 1990 was approximately ECU 43 billion (Fig. 9.5.) with an expected growth rate of 4.9% per annum between 1990 and 2000. This compares to ECU 62 billion and 5% for the United States and ECU 19 billion and 6.7% for Japan.

However, the provision of end-of-pipe technology accounts for a large proportion of this industry and thus its growth is not necessarily a good indicator of improved industrial competitiveness. Indeed, much of the eco-industry's growth probably reflects a transitory stage during which industry as a whole is coming to grips with meeting environmental requirements imposed on them.

The next stage is likely to see industry internalizing the management of these requirements and shifting to resource efficient clean technology solutions. There is already some evidence that this is happening. For example, the quantities of industrial hazardous waste generated in the United Kingdom have decreased by 29% between 1990 and 1994 (Fig 9.6.). Thus the demand, in Europe, for the goods and services of the specific industry supplying end-of-pipe solutions is likely to decline in the long run; its future prosperity will increasingly rely on sales to newly industrialized and developing countries. Increasingly integrated solutions will be found in investment goods and will be a significant driver of their competitiveness.

Fig. 9.6. Generation of industrial hazardous waste in the United Kingdom
1986-93



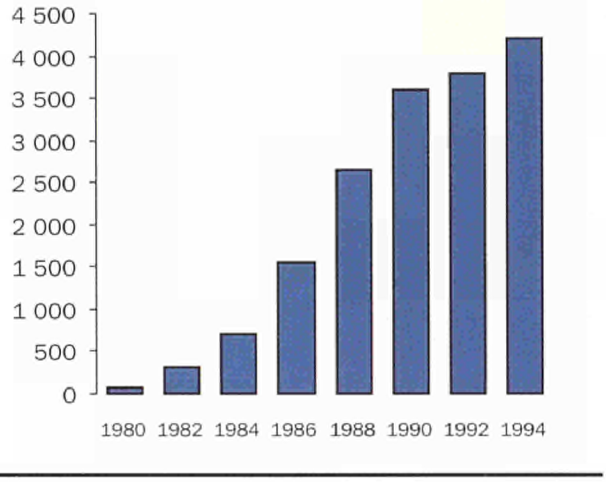
NB: Data for 1993 are provisional.
Source: OECD.

The development of environment-friendly goods and services is a significant potential source of improved competitiveness for EU industry. There is currently little data concerning the size and growth of these markets in Europe but there is little doubt that demand for goods and services that meet stringent environmental requirements is growing. The growth and success of, for example, the Blue Angel

eco-labelling scheme in Germany reflects this trend (Fig. 9.7.). Environmental criteria are rapidly becoming part of a product's overall quality specification.

The successful development of these markets is strongly dependent on consumer confidence. This requires effective regulations to ensure the reliability of environmental quality information. One example is the development of eco-label schemes. Credibility with the consumer is vital. Schemes that are not bureaucratic, set the criteria in a transparent and visible way and are quick to adapt to changing technical standards are more likely to promote the demand for environment-friendly goods and services.

Fig. 9.7. Number of different products awarded Blue Angel eco-label in Germany



Source: Umweltbundesamt.

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