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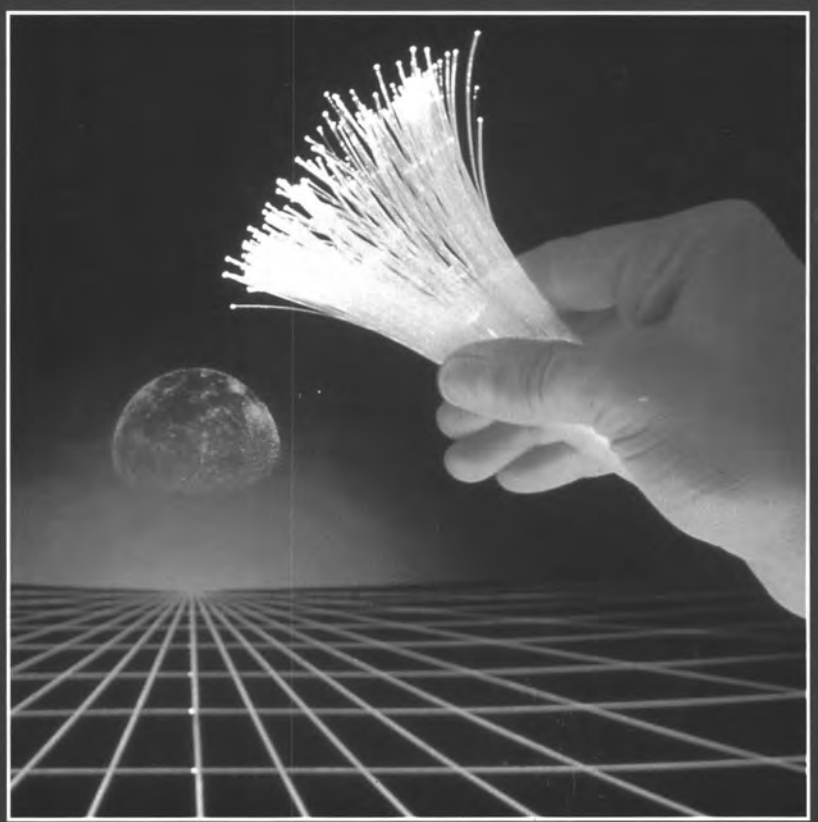
European
Commission

An industrial competitiveness policy for the European Union



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3/94 An industrial competitiveness policy for the European Union

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An industrial competitiveness policy for the European Union

Communication from the Commission to the Council and Parliament and to the Economic and Social Committee and the Committee of the Regions

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EUROPEAN UNION

Commission

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Summary and conclusions

1. It will not be possible to restore growth and consolidate the revival in the European Union unless they are based on competitive, efficient and innovatory industry.

The Union must remain an attractive site for production and investment.

The Commission's White Paper on growth, competitiveness and employment, endorsed by the European Council as the bench-mark for the action taken by the European Union and its Member States, advocated an approach to industrial development aiming at global competitiveness.

The objective of this approach is to bolster the Union's position on the markets of the future, generating jobs and value-added.

2. In recent years European industry has improved its competitiveness considerably, both in commercial terms and in areas such as companies' research effort and financial structure.

But now, at a time when it is making an unprecedented effort to restructure and innovate, it is facing:

☐ mounting international competition;

☐ far-reaching changes in the conditions for industrial competition, particularly under the impact of the emergence of the information society and of the uncertainties concerning the environment in which it will develop;

☐ the need for industrial change in the less-developed regions;

☐ the inadequacy of the major European networks (telecommunications, energy, transport, etc.) for reaping maximum benefit from the large market, which is certainly more integrated but is still highly diverse and is not yet operating satisfactorily;

☐ combinations of technological innovations (information technology, biotechnology, new materials, etc.) which have led to intangible investment (in research, patents, training, etc.) growing faster than capital investment.

3. The Treaty on European Union calls on the Community and the Member States, acting in line with the subsidiarity principle, to ensure that the conditions necessary for the competitiveness of the Community's industry exist. The Commission considers that this objective must be pursued vigorously and dynamically in order to create and attract new jobs in Europe.

Although it is primarily up to businesses to ensure that they are competitive on the market, the public authorities in turn must ensure the consistency of all the measures which could enhance industrial efficiency.

4. To this end, the Commission is submitting 'An industrial competitiveness policy for the European Union', based on the principles set out in the 1990 'Industrial policy in an open and competitive environment' and centring on four priorities: to promote intangible investment, to develop industrial cooperation, to ensure fair competition and to modernize the role of the public authorities.

The Commission has identified the action to be taken on these priorities and intends to proceed immediately with the measures for which it is directly responsible. It has made a number of proposals already in the communication entitled 'Europe's way to the information society. An action plan', the follow-up to the May 1994 report on Europe and the global information society by the high-level Working Party chaired by Mr Bangemann.

It calls on all concerned to join forces to ensure rapid implementation of all the action necessary, based on the following guidelines and practical measures:

To promote intangible investment

The Commission:

☐ will give greater priority to intangible investment in all its policies to support investment and will include improved vocational training and promotion of human resources amongst the top objectives, taking account of the subsidiarity principle;

☐ will ensure, in keeping with the commitment given in the Community's fourth framework programme on research and development activities (1994-98), that research policy takes

fuller account of the needs of the market, notably by means of closer cooperation with the operators concerned;

☐ will develop an integrated approach to the exploitation of intellectual property.

To develop industrial cooperation

The Commission:

☐ will identify the obstacles to industrial cooperation both inside the Union and outside and will take the measures necessary to facilitate such cooperation and ensure that businesses can gain easier access to information and assistance which could contribute to their schemes;

☐ will support the organization of industrial round tables to enable industrialists from inside and outside Europe to identify and harness their mutual interests;

☐ will propose the development of support mechanisms, exploring solutions similar to partial guarantees for investments and appropriate technical expertise to assist operations of interest to the Community as a whole;

☐ will submit specific proposals on industrial cooperation with some of the Union's partners, such as the countries of Central and Eastern Europe, the Latin American and Mediterranean countries, with which the Union has traditional ties, and certain Asian countries;

☐ will ensure that the instruments at its disposal are used jointly and closely coordinated for the benefit of industrial cooperation.

To ensure fair competition

The Commission:

☐ will step up the policy to reduce public aid, taking account of the regional imbalances, and will shortly look at possible changes to the mechanisms for controlling State aid. The intention will also be to simplify the monitoring mechanisms for minor cases;

☐ will re-examine the criteria for approval of aid and simplify the rules, by reformulating certain texts and facilitating opportunities for making comments by third parties competing;

☐ will make the rules on State aid and non-structural Community funding more compatible;

☐ will continue efforts to find a solution to those issues remaining unresolved by the Uruguay Round;

☐ will grant priority to combating fraud, in particular that which concerns product origin;

☐ will submit proposals for the development of international rules on competition;

☐ will establish a database on the obstacles to proper operation of the markets and an industrial assessment mechanism to identify the industrial problems encountered by European businesses on markets in third countries;

☐ will continue to improve the structure of the Common Customs Tariff in order to better take into account the industrial interests of producers and users;

☐ will consider ways of applying commercial policy instruments to services and of coordinating the schemes to promote exports;

☐ will continue to play an extremely active role in removing distortions of competition both inside the Union and at international level.

To modernize the role of the public authorities

The Commission:

☐ will support the Working Party set up at the request of the European Council to simplify legislation and administrative procedures and will continue its efforts to streamline procedures systematically and make them more transparent;

☐ will examine the possibilities offered by the Treaty to end the legislative, administrative or regulatory disparities creating problems for businesses;

☐ will make use of the opportunities offered by the Community instruments (particularly the Structural Funds) to facilitate the development of competitive industrial activities in the Union, based on the specific situation in the different regions;

☐ will encourage administrative cooperation between the Member States and the Commission to overcome any difficulties encountered by businesses wishing to benefit from proper operation of the internal market;

☐ will examine ways of improving the decision-making structures, based on the experience acquired in the Union and by its partners.

5. In accordance with the Treaty, the Commission will take any useful initiative to promote coordination of national and Community action to foster industrial competitiveness.

Priorities for a competitiveness policy for the European Union

1. To promote intangible investment

Objectives	Action
☐ to adapt vocational training to needs	• promotion of intangible investment in the general support for investment; examination of ways of taking fuller account of intangible assets, particularly in the context of taxation
☐ to encourage greater participation by both sides of industry in seeking new ways of organizing work	• stepping-up of research – by proceeding with further action to take fuller account of the needs of the market in R&TD policy – by modernizing the approaches in order to produce more effective industrial spin-offs from research – by facilitating the establishment of consortia of European companies
☐ to facilitate the emergence of new markets, of new forms of training and of total quality production	• promotion of quality
☐ to apply economic intelligence	• fuller integration of vocational training schemes in other policies
☐ to increase the capacity to keep ahead of changes in technology and on the markets	• creation of a legal environment conducive to research
☐ to ensure expansion and take-up of R&D efforts	• development of clean technologies and economic incentives
☐ to promote sustainable industrial development	• introduction of new ways of organizing work and improvement of the fiscal environment, particularly for small firms
	• improvement of the dialogue between the two sides of industry
	• rational use of statistics

2. To develop industrial cooperation

Objectives	Action
☐ to bolster the presence of the European Union's industry on high-growth markets ☐ to take fuller account of the industrial situation of the European Union's partners ☐ to encourage private cooperation schemes of interest to the Community ☐ to facilitate transfers of experience and know-how between businesses, particularly small businesses	**(a) General measures** • identification and removal of legal and fiscal obstacles to industrial cooperation • development of industrial cooperation tools, using as an example the experience of BC-Net • support for the development of trans-national initiatives targeted on growth markets using Structural Funds • industrial round tables • recourse to the Working Party of the Heads of Industrial Policy Departments to facilitate industrial cooperation operations and efforts to find information and partners • development of a coherent legal approach towards a communal and efficient promotion of European foreign investment **(b) Central and Eastern Europe** • exploring solutions similar to partial guarantees for investments • support for standardization and certification • expertise in international financial engineering and offset activities • support for harnessing potential energy resources **(c) Latin American and Mediterranean countries** • closer technological cooperation • participation in the fourth framework programme on R&D activities and in the developments connected with the information society • establishment of networks of businesses **(d) Asian countries** • cooperation programmes • scientific and technological cooperation schemes • training and dissemination of technology

3. To ensure fair competition

Objectives	Action
External measures	**External markets**
☐ to take account of the growing number of strategic alliances	• continuation of efforts to resolve problems not completely dealt with by the end of the Uruguay Round
☐ to identify the obstacles to export growth and increased investment	• combating fraud efficiently
☐ to put an end to discriminatory bilateral agreements	• development and effective application of international rules on competition
☐ to promote more open trade, while encouraging social progress	• taking account of the European Union's industrial interests, both as an exporter and as an importer
☐ to consider the establishment of multilateral rules to reduce distortion of competition caused by businesses themselves	• establishment of an industrial assessment mechanism
☐ to establish environmental protection criteria and apply them effectively	• continuing to improve the structure of the Common Customs Tariff in order to better reflect the industrial interests of producers and users
☐ to harness more fully the commercial potential of the region with which the European Union has close ties for historical and cultural reasons	• database on the obstacles to smooth operation of the markets
Internal measures	• improvement of commercial policy instruments with the aim of making them more efficient and operational
☐ to define a consistent approach to open up markets and make them more competitive	• consideration of application of commercial policy and defence instruments to services
☐ to increase discipline within the Union	• coordination between the measures taken to promote exports and investment and the other policies
☐ to make competition policy more consistent with other policies	**Internal market**
	• further reduction of State aid, taking account of regional imbalances
	• an examination, as soon as possible, of possible changes to the State aid control mechanism
	• re-examination of the aid authorization criteria
	• improvement of the coherence between the structural policies and the policies for monitoring State aid
	• improvement of the coherence between the rules applicable to State aid and the arrangements for Community financing under non-structural policies
	• strengthening of the internal market (in gas, electricity and telecommunications)

4. To modernize the role of the public authorities

Objectives	Action
☐ to ensure smooth operation of the internal market	• further deregulation, examining, for example, the expediency of invoking Articles 101 and 102 of the Treaty
☐ to improve administrative cooperation between the Member States and the Commission	• redefinition of public service objectives
☐ to simplify the public mechanisms affecting industrial competitiveness	• using the Structural Funds to support industrial change and to facilitate the development of clusters of competitive activities
☐ to continue deregulation and administrative simplification	• development of partnerships between big businesses and small firms
☐ to modernize the public authorities	• streamlining and effecting greater transparency of procedures (contribution to the Working Party set up to simplify administrative procedures and legislation)
☐ to ensure closer consultation with operators on matters affecting industrial performance	• faster establishment of trans-European networks for the interchange of data between administrations
☐ to bring the administrative departments responsible for research and industry closer together	• using the Community instruments to support cooperation projects of Community interest
☐ to reduce the costs arising from the regulations	• examination of ways of improving decision-making structures

Introduction

A. The objective

As the year 2000 approaches, European industry is making an unprecedented effort to restructure and innovate in order to boost its competitiveness on the world market. At the same time it is facing:

☐ mounting international competition;

☐ a longer economic recession than foreseen, in a context where the renewed growth expected will not by itself be a decisive factor in job creation;

☐ combinations of technological innovations (information technology, biotechnology, new materials, etc.) which have led to intangible investment (in research, patents, training, software, etc.) growing faster than capital investment;

☐ the inadequacy of the major European networks for reaping maximum benefit from the revolution in progress in the telecommunications and information sectors and the room for improvement in transport and energy transmission on the large market, which is certainly more integrated but is still highly diverse and is not yet operating satisfactorily;

☐ the need for industrial change in the less-developed regions.

In a global economy in which the various sectors of activity are interdependent, the pressures generated by the twin imperatives to innovate and to combat unemployment call for reconsideration of the conventional forms of organization of work, production and innovation and of the methods of management and intervention employed by companies and the public authorities.

The communication adopted by the Commission in 1990 on 'Industrial policy in an open and competitive environment', the conclusions of which were fully approved by the Council, defined the basic principles of an industrial policy for the Community.

These principles were enshrined in the industry section of the Treaty on European Union.

The White Paper on growth, competitiveness and employment, and in particular the Chapter entitled 'Towards global competitiveness', mapped out how these principles could be put into action.

The objective of, and value-added by, this communication is, based on this past work, to identify and propose action to make the Union's industry more competitive, taking account of:

☐ the new challenges facing industry;

☐ the need to create jobs and attract new jobs in Europe;

☐ the fact that competitiveness is not an end in itself, but is an essential means of improving the population's living conditions.

B. Previous achievements

The 1990 communication from the Commission entitled 'Industrial policy in an open and competitive environment' paved the way for a new approach to industrial policy which:

☐ clearly established the division of responsibilities between businesses which, naturally, are in the front line, and the public authorities whose role is, above all, to create a dynamic environment favourable for industrial development;

☐ abandoned the defensive, protectionist sectoral approaches followed all too often in the past.

This communication made it possible:

☐ to reach a consensus on a policy tailored to the globalization of the markets and of the problems facing industry;

☐ to highlight the European problem of the different national approaches which, until then, had been artificially over-confrontational;

☐ to devise a modern approach to industrial policy based on the need to keep the various policies with an impact on industry complementary: foreign trade, competition, internal

market, environmental protection, research and development, networks, economic and social cohesion, and small business policy.

Naturally, a stable, predictable macroeconomic environment remains a *sine qua non* for boosting industrial competitiveness.

Since 1990 these basic principles have been applied successfully in various industrial policy initiatives taken by the Commission, particularly in the case of:

☐ the motor industry, for which a balance has been sought to make Europe more competitive during the transition period set by the arrangement with Japan;

☐ the maritime industries, for which a broad-based forum has been set up in which all parties concerned can define jointly solutions suited to the future of undertakings;

☐ biotechnologies, where the objective is to make the Community as attractive as its rivals for development of such technologies, while taking due account of the needs to protect public health and the environment.

The Commission is continuing to follow this general approach, particularly in two major new fields of activity:

☐ the information society which, once established, will have a decisive effect on all industrial activity in the Union;

☐ cooperation with the countries of Eastern Europe, which, of course, in no way precludes closer cooperation with the Union's other partners, particularly with countries with which it has strong historical and cultural links.

Several of the objectives identified in the 1990 communication to promote industrial competitiveness have been largely achieved:

☐ the completion of the area without internal frontiers in 1993 marked the most significant progress made by the Union towards making European industry more competitive;

☐ the GATT negotiations have been completed;

☐ substantial sums have been made available to promote industrial change under the cohesion policy;

☐ the Union's research policy now takes fuller account of the needs of the market and of businesses, particularly of small firms, as indicated by the priorities set for the Community's fourth framework programme on research and development activities (1994-98);

☐ greater support is being provided for the establishment of trans-European networks;

☐ the foundations of a human resources policy have been laid.

The consensus reached on the principles set out in the 1990 communication allowed inclusion in the Treaty on European Union of the legal bases for implementing the industrial policy which, in line with the subsidiarity principle, is defined as a general obligation shared between the Community and the Member States for 'the strengthening of the competitiveness of Community industry' (Article 3 of the Treaty) and to 'ensure that the conditions necessary for the competitiveness of the Community's industry exist' (Article 130(1)).

It is primarily up to the Member States and the decentralized authorities to foster industrial competitiveness with the aid of a system of open and competitive markets.

However, Article 130(2) adds that in order to attain these objectives the Member States 'shall consult each other in liaison with the Commission and, where necessary, shall coordinate their action'. The Commission is assigned the specific duty to 'take any useful initiative to promote such coordination'.

To support this national action, the Community will generally help to achieve this objective of improving competitiveness by taking horizontal measures under a series of common policies (on research, cohesion, vocational training, networks and foreign trade), implemented by qualified majority vote in most cases, and by implementing the competition policy.

The Council may also, ruling unanimously on a proposal from the Commission, 'decide specific measures destined to support actions taken by Member States in order to attain stated objectives' according to Article 130, paragraph 1 of the Treaty.

Accordingly, a policy for industrial competitiveness has a coherent legal basis in Title XIII on industry of the Treaty on European Union, Title XV (Articles 130f *et seq.*) on research and technological development, Title VIII (Article 123) on social policy and industrial changes, Title XIV on economic and social cohesion (Articles 130a and 130b) and Title XII on trans-European networks.

C. The new challenges

Today the measures taken to implement industrial policy must take account of a series of new factors:

☐ Persistent unemployment: the transformation of the economic situation — with the strong growth of the late 1980s giving way to one of the deepest economic crises since the 1930s — has generated particularly severe levels of unemployment which endanger cohesion. Moreover, this high unemployment reduces the capacity of all concerned to accept the changes necessary in order to boost industrial competitiveness throughout the Union.

☐ The changes in the international context marked by the geopolitical upheaval, the general constraint for mobility in all fields, the conclusion of the Uruguay Round and the decision to establish a World Trade Organization. There are now clear signs that the worldwide recession of the early 1990s is being overcome. The renewed growth, rapidly falling interest rates and the gradual increase in the number of job vacancies only confirm this trend.

☐ The emergence of new technologies, particularly those associated with the information society, which has broken the link between economic growth and raw-material consumption. This has shifted the principal sources of value-added towards control of 'intangibles', as reflected by the growing importance of services which are steadily becoming an integral part of industrial activity, a development described by some as the 'intelligence revolution'. At the same time the substitution of capital and labour allowed by the emergence of new production technologies has broken the link between growth and job creation. Renewed growth is no longer enough to increase employment.

☐ Environmentally sustainable development implies, as stressed in the Commission's communication on industrial competitiveness and environmental protection, that environmental quality and growth must be considered interdependent.[1] Implementation of a global environment policy can help industry to manage its resources better and rally public confidence while at the same time opening up new commercial outlets. This is all the more important now that the shorter life of certain products or the global consequences of using them can call into question their economic viability or their contribution to growth. Consequently, industrial development must take fuller account of the needs of society.

☐ The mounting competition is forcing European companies into continuous productivity drives. As economies grow increasingly interdependent the competitiveness of businesses in the European Union is becoming more and more sensitive to their rivals' industrial strategies. Added importance must therefore be attached to the problem of relocation and to relations between big businesses and their subcontractors, many of which are small firms. From now on companies' strategies and decisions on the international division of their production will play a more important part in the pattern of trade than conventional commercial policy measures (in-house trade is now thought to account for over 50% of trade between the countries in the triad (European Union, USA and Japan).

☐ In addition, the sharp fluctuations in recent years, sometimes by as much as 50 to 100%, in the exchange rates between the currencies of the European Union Member States, the USA and Japan are a powerful incentive for companies to move production closer to their markets.[2]

It is primarily up to businesses to react to these changes, although they also call for updating of the policies with an impact on competitiveness. As underlined in the White Paper, the conditions for long-term competitiveness depend, in particular, on the establishment of a stable macroeconomic framework permitting sustainable growth and creating jobs. In such an environment, businesses and consumers may operate in a predictable manner, which in turn reduces the costs of economic operations. Improving the coordination of economic policies will, furthermore, reinforce exchange-rate

1 The Treaty on European Union also strengthened the links between environmental protection and other policies by stressing that 'environmental protection requirements must be integrated into the definition and implementation of other Community policies' and that 'in preparing its policy on the environment, the Community shall take account of (...) the potential benefits and costs of action or lack of action' and 'the economic and social development of the Community as a whole and the balanced development of its regions', aspects of primordial importance for industrial competitiveness policy.

2 See Table 1 of Annex II.

stability. At the same time these policies must take account of the overriding objective of creating jobs, of the faster pace of industrial change and of the new debates on, for example, the relocation of industrial activities. This shows how important it is for the competitiveness of European industry that the Union adopt a single currency within the time-scale provided for in the Treaty.

☐ The new dimension of the internal market, where the emphasis has now shifted from completion to effective and efficient operation.

The aim is no longer simply to endow the European Union with legislation removing the barriers to trade but to put into operation a 'market' in the true sense of the term. This will entail liberalization of financial services, sustained deregulation of certain sectors to allow effective access to the markets, greater flexibility on the labour market, reduction of the tax disparities which lead to fragmentation of the markets and open, confident acceptance, by the Member States, of mutual recognition of standards.

The internal market has also taken on a new dimension with the establishment of the major networks, particularly of the telecommunications and energy transmission infrastructure, where the lowering of tariffs and liberalization are decisive factors in making industry more competitive.

The public authorities will play an essential role in this respect, both as the bodies responsible for the regulatory environment and as investors and purchasers in certain fields. This is demonstrated particularly vividly by the recommendations in the report on 'Europe and the global information society' compiled, at the request of the European Council, by the high-level working party on the information society, chaired by Mr Bangemann.

☐ Greater privatization, more effective regulatory methods and the new role of the public services: out of concern to achieve greater economic efficiency, most Member States[1] have embarked on policies on the privatization of industrial activities, reduction of the costs arising for industry from the regulations and modernization of public services. All measures which aim at improving overall economic productivity in the European Union must be encouraged, taking account of experience acquired and of national differences.

D. Generating new jobs

It will not be possible to substantially increase levels of employment and consolidate the revival in growth in the Union unless they are based on efficient, innovatory industry operating within an effective regulatory framework combined with a more labour-intensive development model. Steps must be taken to ensure that the European Union remains an attractive site for production and investment, including investment from outside the Union.[2]

By adopting the White Paper as the frame of reference for the action taken by the European Union and its Member States, the European Council backed an approach to industrial development based on global competitiveness as a key factor in growth and employment, with the objective of bolstering the European Union's presence on the markets of the future, particularly in telecommunications, information, biotechnology, environmental protection, new materials and energy.

In practice, employment prospects are brightest, especially amongst small businesses, in the fields constantly turning to new technologies, particularly if industrial development is backed up by development of the appropriate services. The integrated programme for small businesses recently proposed by the Commission bears witness to the importance attached to the contribution which businesses like these can make to industrial competitiveness. These are also the fields in which the public authorities have a specific role to play, not only because the Member States and the European Union are investors and clients but also because the market and, in particular, the potential demand depend on their efforts to promote pilot projects and steer the choices made on health care, transport and environmen-

[1] See, for example, the UK White Paper entitled 'Competitiveness — helping business to win', HMSO, May 1994.

[2] See on this subject the German Government's report on the future of Germany as an industrial site and how to maintain it, Ministry of Economic Affairs, publication 338.

tal protection infrastructure. As demonstrated by the work on the information society, a change of direction seems essential for certain common Community policies, particularly on:

- ☐ research, which must take industry's needs into consideration at an earlier stage, as was the case when preparing the fourth framework programme on R&D activities;
- ☐ vocational training and, beyond that, education in new technologies;
- ☐ common commercial policy to establish genuinely equitable conditions of competition at international level.

Accordingly, this communication starts with a microeconomic evaluation of the potential competitiveness of the European Union's industry in the context of the global economy for these growth markets, which are such an important source of jobs. [1]

In the light of this diagnosis, Part II of the communication defines the four basic priorities of a competitiveness policy for the European Union tailored to the imperatives of technological change:

1. to promote intangible investment;
2. to develop industrial cooperation;
3. to ensure fair competition inside the Community and at international level;
4. to modernize the role of the public authorities.

[1] Annex I contains an updated analysis of the state of European industry compared with the 1990 communication. This evaluation is based on the latest information available, particularly from *'Panorama of EU Industry 1994'* compiled by the Commission each year, with the collaboration of all the trade associations.

I. The industrial competitiveness of the European Union

A good third of the value-added in the European Union is generated by industry, and almost one out of every three jobs is provided by manufacturing industry. It is necessary that industry be efficient and innovatory if Europe is to return to sustained economic growth and to the generation of jobs.

Many new service activities also depend directly on industrial activity. Industrial innovation and investment are vital driving forces for progress in other important fields where the public authorities play a key role, such as education, health care and environmental protection.

Consequently, one of the central objectives must be to ensure that Europe remains attractive for industry.

In a properly functioning market-economy the drive for industrial competitiveness must come primarily from businesses. The public authorities must assume their responsibilities by supporting development of the markets of the future and keeping ahead of the changes rather than reacting to them.

Consequently, steps must be taken to capitalize on the Union's advantages in order to increase its presence on growth markets and create the most favourable conditions for industry's transition to the 21st century.

A. Making the European Union more competitive in the global economy

Competitiveness is a complex concept, much debated by economists.[1] The OECD defines it as the capacity of businesses, industries, regions, nations or supranational associations exposed, and remaining exposed, to international competition to secure a relatively high return on the factors of production and relatively high employment levels on a sustainable basis. More specifically, in the long term, increased competitiveness will lead to improved global productivity. In particular, increased work productivity is essential to improve competitiveness on markets open to international competition, to permit a long-term improvement in the quality of individual life and to create new jobs. Finally, an increased level of productivity will permit better use of competitive advantages, which will no longer be limited to the abundance of natural resources in the economy, and world-wide competition.

Given the multiple factors to be taken into account when assessing competitiveness and the big impact of currency fluctuations, any general judgment about competitiveness is of little relevance.

Over the last 10 years, particularly since 1990, the following points must be stressed:

(i) the apparent productivity of labour in manufacturing industry has risen faster in the USA and Japan than in the European Union;

[1] See on this subject the analyses in the Commission's latest Annual Economic Report.

(ii) labour costs in the European Union have risen less rapidly than in the USA and Japan. However, the trends vary widely from one Member State to another;

(iii) European industry has less of a presence on high-technology markets and markets with high-growth potential than US and Japanese industry.

Beyond these indicators of an extremely complex situation, it must be added that competitiveness depends on far more varied qualitative factors, where the European Union is better placed than it appears.

1. The competitive position of European industry

The most marked features of the industrial competitiveness trends in the European Union are the contrasting situations, not only on the markets but also with regard to the strengths and weaknesses of the individual Member States or of the Union as a whole.

This is due to the fact that several traditional industries and national champions are in decline but other industries and operators, often offering products and services with a higher value-added content, are emerging. Industrial change and the mounting competition throughout the world generate a sense of insecurity and pessimism which is accentuated by the weak growth and the calling-into-question of established values.

In recent years the Union's industrial competitiveness has improved on several fronts.

☐ Exports of goods grew again in 1993, with extra-Community exports accounting for 9% of GDP and intra-Community exports 13%. In this connection, with the growing economic integration within the European Union some of the trade with the rest of the world has been replaced by trade between the Member States.[1]

☐ From a deficit of 2.7% of GDP in 1980 the European Union's balance of trade improved in the early 1980s to a surplus of 0.5% in 1986, then deteriorated again in the late 1980s to a deficit of 0.8% in 1992 (see Table 6 in Annex II) before recovering again at the start of the 1990s.[2]

The European Union had a trade deficit with the USA in the late 1980s,[3] but improved its position appreciably in the early 1990s when it cut its trade deficit with the USA by 90%, from ECU 21 billion in 1991 to ECU 2 billion in 1993.

At the same time the European Union's trade deficit with Japan shrank by 17% from ECU 30 billion to ECU 25 billion, while the USA's trade deficit with Japan rose by almost 45% from ECU 35.1 billion to ECU 50.7 billion.

In 1991 the European Union's trade deficit with Japan was equivalent to 85% of the USA's deficit but by 1993 it was down to scarcely 49%.

☐ The research and development effort by the biggest undertakings in the Union has been growing faster than that of their US and Japanese counterparts, based on the 50 undertakings with the highest research investment in each of these three regions; research spending by European companies as a proportion of turnover almost doubled between 1984 and 1992 to stand at 4.5% in 1992, whereas it increased by just under 40% for Japanese companies which, none the less, remain in the lead (5.8% in 1992) and by less than 30% for US companies (3.7% in 1992) (See Table 18 in Annex II).

☐ European companies' average long-term debt ratio (gearing) remains well below their rivals' and their rate of return is generally higher.

[1] See Table 5 of Annex II.

[2] The OECD forecasts confirm the significant changes in world trade: Europe is expected to move from a deficit at the start of the 1990s to a surplus in 1994, while the USA's deficit will continue to grow and Japan's surplus will rapidly rise.

[3] Analysis of trade between the triad reveals that trans-Atlantic and trans-Pacific trade predominates (see Table 4 in Annex II).

☐ Unit labour-cost trends in the Union compare favourably with those of these leading rivals: between 1980 and 1993 real unit wage costs fell more sharply in the Union (down 9.7%) than in the USA (1.2%) and Japan (8.3%).

However, a series of handicaps remain or have been aggravated:

☐ the European Union's share of world-wide exports of manufactured goods, although still larger than that of the USA and Japan, has declined; [1]

☐ the Union is still less specialized in high-technology products and still has less of a presence on high-growth markets than either of its two leading rivals;

☐ since 1986 the Union has had a trade deficit in high-technology products; this deficit has been giving particular cause for concern on the markets of most direct relevance to the establishment of the information society;

☐ European industry's productivity has been improving at a slower rate than that of US and Japanese industry;

☐ the research and development effort supported by the public authorities in the Union is far more scattered than in Japan or the USA. Competition in the R&D field can speed up technical progress and innovation in businesses but the public authorities must ensure that the best possible use is made of the limited resources at their disposal, in particular those which encourage cooperation.

To help it withstand this situation, the European Union has considerable assets.

2. Knowledge and human resources

The European Union must be competitive on world markets in terms of quality, design, product reliability and deliverability. These factors are more decisive for export success than production costs alone. They imply investment in human resources and flexibility internally, externally and in management methods and intervention by the public authorities. The process of structural change will continue at a rapid rate and jobs could continue to be lost in traditional fields, while being created only very slowly in the emerging activities. Consequently, the European Union must find ways of generating new jobs while continuing to support training, advice and assistance for all who lose their jobs as a result of structural change.

National prosperity depends, increasingly, on the use of information and knowledge, with the aid of the enormous progress made in information and telecommunications technologies. There is a close correlation between the development prospects of individual technologies and products (telephones, active disk readers and combinations thereof) of the programs (computer software, databases, audiovisual programmes, etc.) and of the associated services and networks. The European Union is in a strong competitive position in several of these fields and has every means of retaining or winning a substantial share of the market (for example, the GSM market created on the basis of a European standard).

The European Union's greatest asset for boosting its industrial competitiveness is its capacity to generate and use knowledge, with the aid of the great potential of its labour force and the social consensus laying the foundation for harnessing it. Accordingly, involvement of the two sides of industry in managing economic and social change is a key component of the European model. Their contribution to modernization of labour relations is a powerful factor in increasing cohesion and improving performance.

The impact of the rapidly emerging information society on all aspects of economic and industrial life and society makes human beings' capacity to extend and manage knowledge more important than ever. The Community's fourth framework programme on research and development activities provides for measures to improve training and make researchers more mobile, including those working in industry.

Infrastructure and environments must be developed:

☐ to stimulate the spirit of enterprise;

☐ to raise training standards;

☐ to manage industrial change;

[1] The share of world trade taken by exports from the European Union fell from 29% in 1980 to 25% in 1986 and 24% in 1992. In 1992 exports from the USA and Japan accounted for 17.3 and 16.6% of world trade respectively (see Figure 3 in Annex III).

☐ to take up new technologies;

☐ to speed up dissemination of innovations;

☐ to allow the reorganization needed to boost industrial efficiency and to increase the value-added by production in the Community.

3. Development of trans-European networks and better organization of production

The fact that wealth creation depends increasingly on intangibles is making the economy increasingly fluid and volatile. As a result, the mobility of factors of production and the capacity to combine them effectively have become more important than raw material resources in the current context of world-wide competition between businesses and nations. The geographical thinking, on which most policies with a bearing on industrial competitiveness are based, must gradually make way for thinking in terms of world-wide networks.

Rapid establishment of extensive integrated networks allowing efficient movement of persons, goods, services, information and energy inside and outside the European Union is therefore a key factor in industrial competitiveness.

The pipeline network is a good example of how integration of the major networks can contribute towards improving competitiveness. Because industry in the European Union does not yet have the benefit of a large European pipeline network it operates under less favourable conditions than its rivals in North America, where such a network already exists. Establishment of a large European pipeline network providing a safe means of transport while reducing congestion on the roads would therefore help to make European industry more competitive.

Energy costs affect not only industries with large energy consumption but also industry as a whole, because, for example, of the impact of energy prices on transport costs. Only an open market on which energy users are free to choose the fuel they wish and the most efficient suppliers can generate competitive pricing. Completion of the internal energy market is therefore needed more than ever.

Better organizational methods, leaving wide scope for the spirit of enterprise, teamwork and cooperation, will have an increasingly decisive impact on the prospects for increasing overall productivity and value-added. To achieve these, efficient use must be made of all the opportunities offered by information and communication technologies and far closer relations must be established between producers and users. Undertakings in the private and public sectors must constantly rethink their organizational methods and strategies. This has given birth to the BPR (business process re-engineering) concept. All administrative systems must be adapted to achieve greater efficiency, transparency and coordination.

By virtue of this fact — and this takes us to the heart of the debate on the information society — the conditions of access to information, to the networks carrying it and to the services facilitating use of the data, are playing an increasing role in industrial competitiveness. The availability and quality of telecommunications infrastructure and services (including high value-added services, databases, etc.) and, above all, cutting the cost thereof and developing new market opportunities are now vital components of the Union's future competitiveness...

Industry remains central to production processes and must continue to play a fundamental role in the European economy. Increasingly, the efficiency of capital investment depends on the associated intangible investment (in R&D, training, commercial measures, software, etc.). Already, intangible investment amounts to over half the sum spent on capital investment. This trend dictates that investment should be regarded as any expenditure which improves the future profit potential of the existing assets. Business strategies and public policies must take this into account.

The Union has the richest, most varied territory in the world, in terms of quality of infrastructure, way of life, environment and cultural diversity. Greater use can be made of this considerable asset by adopting a more concerted approach to planning and land use, taking account of the need for interconnection with other economic blocs, particularly where their geographical proximity and similar cultures offer added advantages.

4. Industrial competitiveness and economic and social cohesion

The regions covered by the Cohesion Funds currently face numerous challenges resulting from the completion of the internal market, the opening of trade linked to GATT and the opening of EU economies to East European economies. To respond to these challenges it is necessary that the objectives of industrial competitiveness be integrated into economic strategies for these regions and, conversely, that cohesion policy be taken fully into account.

A potential economic loss for the Union is caused by the high degree of centralization of industrial activities in certain areas. This centralizing tendency is not preordained: future competitiveness must rely less upon economies of scale and large series and more upon the capacity to assimilate information and to ensure its appropriate dissemination, thereby offering the possibility of decentralized industrial growth.

In practice, interaction between industrial competitiveness policy and cohesion objectives signifies that industrial competitiveness policy may initially provide an analysis of the fundamental axis of future competitiveness such as proposed in the present document. This may lead certain regions to fundamentally re-examine their current actions, such as is already happening, for example, in the discussions concerning the next generation of Community support frameworks.

For their part, the Structural Funds may contribute to the creation of new jobs not only by the development of valuable jobs in less-favoured regions but also by the promotion of growth markets in this segment of the Union.

The genuine differences between the situation in the less-developed and the other regions nevertheless serve as a reminder that globalization could militate against cohesion.[1] The European Union must therefore ensure that industrial competitiveness and economic and social cohesion each add strength to the other. Greater economic and social cohesion can generate externalities which make the private sector more efficient by improving infrastructure, particularly health care, education and research infrastructure, and optimizing the general level of investment. There is an increasingly direct correlation between economic and social cohesion and industrial and economic performance. The Union must make full use of this correlation.

Future competitiveness will depend far more on the capacity to combine information and disseminate it appropriately. This could create potential for decentralized industrial growth provided appropriate support is given, particularly at regional level.

5. Scientific and technological experience

The European Union must place its science and technology base at the service of industrial competitiveness and the needs of the market more effectively. The fourth framework programme on research and development activities drafted after detailed consultations with industry will contribute towards this objective. Greater attention must be paid to dissemination, transfer and industrial application of research results and to bring up to date the traditional distinction between basic research, pre-competitive research and applied research which, in the past, has not always allowed European industry to benefit from all the research efforts made. In this regard account must also be taken of the strategies of our principal trading partners while, at the same time, respecting our international obligations (e.g. the GATT code on aids).

As recommended in the White Paper, all the authorities responsible for supporting research activities (the Member States and industry) must step up their overall research effort. The Community's R&TD activities will help to define, with the circles concerned, a forward-looking approach to technologies of interest to Europe as a whole. They are separate from but complement the Eureka programme. All in all, the time has come for the European Union to give greater priority to specific applications. This is one of the principal lines followed by the Community's fourth framework programme on R&D activities, which, alongside the fundamental objective of developing generic technol-

[1] See on this subject the fifth report on the socioeconomic situation and trends in the Community.

ogies, also aims at ever closer involvement by users. The research and technological development Chapter of the Treaty on European Union sets the Community the primary objective of strengthening the scientific and technological bases of Community industry and encouraging it to become more competitive at international level. Practical measures must be taken to attain this objective, including encouragement for the establishment of research and development consortia of businesses from different Member States.

Greater innovation can be achieved if transparent information and stronger competition allow wider dissemination of the progress made amongst consumers and operators. Further innovation can also be achieved, closer to the market, by providing better protection for intellectual property rights in all fields, both in the European Union and throughout the world, and pursuing an active policy to improve the collection, dissemination and competitive use of information of all kinds.

In the specific field of the defence industries, as the common foreign and security policies are developed the European Union must envisage closer coordination of its research and standardization work, develop common programmes and, above all, preserve and harness its science and technology capacity (particularly its teams of researchers and engineers).

B. Targeting growth markets

Efficient companies can be found in every branch of industry and on every market. The European Union's overall success against international competition depends on companies' capacity to build up strong positions on growth markets, whatever the product and wherever it is sold, from the Union, which must remain a leading production site. Awareness of current trends is particularly important to enable operators to adapt to the changes on the markets.

1. The potential of the European Union's industry on growth markets

(a) Strengths and weaknesses of the European Union on global markets

A series of imbalances lie between the European Union's industrial capacity and its relative position on certain high-growth markets:

☐ in geographical terms, i.e. growing presence on neighbouring markets and on the markets of the countries with which the European Union traditionally cooperates but insufficient presence on Asian markets, creating a risk of imbalance;

☐ in terms of products, with the Community's position often strongest on stable or slow-growing markets but not strong enough in fields with extremely fast-growing demand.

Diagnosis of this situation points to two conclusions:

☐ greater efforts must be made to penetrate these markets; and

☐ in order to achieve this, the European Union must support European industry to secure or increase the opening-up of our trading partners' markets. The measures taken to implement the results of the Uruguay Round, determined action to remove obstacles to trade and the activities of the World Trade Organization to be set up, must enforce the rules on fair competition and fair trade to guarantee everyone equal access to world markets, while observing the disciplines imposed on international trade.

(b) The growth areas: a few examples

The public authorities do not know which products tomorrow's market will demand. However, they must adapt to market trends and

ensure that the markets are driven by competition. The important role played by the public authorities as purchasers and investors can make a significant contribution to the dynamic growth of such markets: environmental protection, health care and communications are all examples. [1]

Markets in knowledge and culture

The emergence of multimedia activities harnessing the opportunities opened up by the digitalization of information in all its forms (text, image and sound) is creating new markets generating considerable numbers of jobs. The European Union's industry, particularly telecommunications, has proved its capacity to design and produce the tools needed for the information society of the future. Increasingly, the development of services generating and using such information is becoming the crucial question. This goes hand-in-hand with the development of an industry capable of generating this information whatever its form, whether audiovisual, scientific, economic or artistic. [2] This was the central issue discussed at the recent European conference on the audiovisual media held from 30 June to 2 July 1994.

Markets in health care and biotechnologies

The growth prospects in the field of health care and, more generally, industrial application of biotechnologies, are extremely promising. The European Union has all the capacity needed to remove the remaining obstacles to the development of these markets. These obstacles have been to blame for leaks of industrial property or technologies to the Union's partners in certain fields. This problem is examined in detail in the communication on the outlines of an industrial policy for the pharmaceutical sector in the European Union. [3]

Environmental protection markets

The growth potential of the environmental protection markets is widely recognized, although at the moment the size of the market far from reflects the real needs. This market can be attributed not only to the new goods and services supplied to abate or control pollution but also to all the spending to improve production processes and products and increase energy efficiency, combined with the growing markets in 'green' products and technologies.

Also, increasingly, the raising of environmental protection standards on certain markets outside the Union is turning the use of clean technologies into a precondition for success on international markets.

Top-of-the-range products

Utilization of know-how and of the brand image of quality top-of-the-range products with a high value-added provides a means of harnessing the diversity of local production, preserving highly-skilled trades and penetrating the most impregnable markets. It is not only a question of European industry's performance in luxury products, but also in its most traditional industries which must develop appropriate advanced technologies or adapt to technical progress and in very high-technology industries such as the space and nuclear industries.

In order to maintain the acquired social rights and overcome the differences in wage costs, the European Union's industries must build on their strengths in manufacturing, the application of production technologies and the development of global solutions allowing top quality. Production structures must change wherever necessary in order to attain the critical mass required for competitiveness.

Effective legislation to combat counterfeiting — such as the Regulation agreed by the Council on 16 June 1994 — must be developed to ensure fair trade in these products.

This can be backed up by cooperation with certain non-Union countries with know-how limited mainly to the design and marketing of less complex products, thereby strengthening the European Union's overall position on world markets.

To reap full benefit from this cooperation, steps must be taken to strengthen all possible links with the developing countries, whether indus-

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1 See the Annex for figures on this point.
2 See the Green Paper on the audiovisual policy of the European Union (COM(94) 96).
3 COM(93) 718.

trial, economic, commercial, investment or in the form of transfers of know-how, in order to contribute to full integration of these countries in the world economy. In this connection, the ECIP (European Community Investment Partners) scheme and the Generalized system of preferences offer great opportunities. The Commission recently proposed a new Generalized system of preferences for the next 10 years incorporating a number of significant innovations to encourage, for example, more sustainable forms of development and strengthen the links between the economies of the Union and of the newly industrialized countries.

2. Harnessing the European Union's industrial tradition

(a) Conditions for competitiveness on established markets

On the established markets on which its industries are already in a strong position, the European Union must cope with the general trend towards products with higher value-added and with the changes in production methods which face all industry, but assume an added dimension in view of the importance of the industries concerned to the Community's economy. These markets could be revitalized by creating a favourable environment for the efforts made by businesses on quality, creativity and productivity and on modernization of their production and marketing structures.

In the basic industries, particularly the steel, aluminium and chemical industries, which face specific problems (world price trends, environmental constraints, disequilibrium between supply and demand, industrial consequences of the transition of the countries of Central and Eastern Europe to a market economy), raw materials, energy, transport and capital investment remain the biggest cost items. All the action being taken to cut costs of these types in the European Union must therefore be encouraged. New opportunities for cooperation could be opened up by innovatory plurilateral measures such as those agreed by the European Union with Russia, the USA, Canada, Australia and Norway which have culminated in a Memorandum of Understanding linking Russian reduction in production (together with an estimation of reduction of Western aluminium production) to future industrial cooperation. This type of approach could no doubt be used for other basic products.

Certain natural resources (non-metallic ore, rocks, etc.) and secondary resources (waste) are in abundant supply in the European Union and can be tapped competitively, hence the need to create an environment conducive to rational, sustainable use of such resources and to avoid regulations creating unnecessary obstacles.

The capital goods industries with their important specific role will have to contribute to rapid establishment of trans-European infrastructure networks.

The European Union must also take account of the impact of the world-wide redistribution of production in response partly to the growing strength of certain rival countries, whether or not newcomers to these markets, and partly to their comparative advantages, particularly on wage, raw-materials and energy costs. In some cases, in order to achieve the structural changes needed, a concerted capacity-reduction policy could prove preferable to an approach based solely on natural market forces. This is particularly the case where there are barriers to leaving the market, in the form of heavy costs which cannot be recovered. Steps must therefore be taken to make it easier to leave. The Commission set out the general lines of action which it recommends on crisis cartels in its XXIIIrd Report on Competition Policy 1993.

(b) Harnessing the traditional industrial base

Preservation of the diversity of the Union's traditional industrial fabric plays an important role for employment, balanced town and country planning, and the web of small businesses and subcontractors. It must also be stressed that rural development is becoming increasingly closely linked to the development of industrial activity and of the ancillary services, particularly of small businesses.

Transitions will therefore have to be organized:

☐ to ensure that the industries concerned make the necessary adjustments as quickly as possible;

☐ to put into action the Community policies which can help speed up these adjustments;

☐ to avoid perpetuation of situations which prevent competition and damage the European Union's overall industrial efficiency;

☐ to provide industries and, in particular, small businesses with the support of efficient infrastructure.

II. Priorities for action

The basic premise underlying the European Union's industrial policy is to follow a dynamic horizontal approach smoothing the way for implementation of a consistent package of policies to help make industry more competitive.

In keeping with Article 130 of the Treaty which gives the Commission the opportunity to take any useful initiative, this communication is intended to identify areas in which it would be in European industry's interest to step up the action by the Community. The objective is to show how the industrial competitiveness policy can be implemented effectively, by pin-pointing a limited number of objectives and activities in order, in particular, to strengthen European industry's presence on growth markets generating jobs.

In essence, these are:

(i) to promote intangible investment;

(ii) to develop industrial cooperation;

(iii) to ensure fair competition;

(iv) to modernize the role of the public authorities.

A. To promote intangible investment

Effective exploitation by the European Union of the new factors determining industrial competitiveness calls for promotion of knowledge, human resources and the quality of products and services, encouragement for innovation to improve the response to market trends and adjustment of organizations and structures.

It calls for all government policies to take fuller account of intangibles and of the needs of the market.

1. Objectives

Promotion of human resources, quality and innovation calls for efforts by both the public and private sectors, particularly at local level. But the European Union must facilitate coordination of these efforts and:

☐ bring the vocational training available, closer into line with demand, in order to respond to industry's specific needs;

☐ promote closer involvement by the two sides of industry at both national and European Union level in seeking new ways of organizing work;

☐ facilitate the emergence, within the European Union, of:

- new markets, such as the markets in knowledge and culture, environmental protection, health care and biotechnologies;
- new forms of training, such as distance learning, and of organization, such as dynamic management of economic data; and
- 'total quality' production;

☐ capitalize on the European Union's assets for application of the new concept of 'economic intelligence', which is one of the main features of the information society. The aim must be to ensure efficient exploitation, from the retrieval stage to the distribution to businessmen, of all the information which they need in order to devise and implement consistent strategies and organizational structures to improve their competitiveness;

☐ increase industry's capacity, with its partners (users, public authorities, etc.), to keep ahead of changes in technologies and on the markets (demand, regulatory and fiscal framework, etc.) and to employ appropriate strategies, particularly in the research and technology fields (creation of the ETAN (European technology assessment network) and of the Seville Institute in the fourth framework programme);

☐ ensure expansion and take-up of the European Union's research and development efforts by means of a cross-disciplinary, multisectoral approach taking into account the needs of the market in dialogue with industry;

☐ promote sustainable industrial development by harnessing the competitive advantages stemming from improved environmental protection.

2. Action

☐ Promote intangible investment, particularly training and learning which must become the priority within the general policy to support investment (for example, by improving tax treatment for such investment).

A range of measures must be taken to overcome the fact that the existing education and training systems are not up to the challenge of long-term competitiveness. Particular attention will be paid to continuing training, to improving qualifications and to raising standards in basic skills and new technologies. The Commission intends to proceed rapidly, in keeping with the subsidiarity principle, with a review of the prospects of taking fuller account of intangible assets, particularly in the context of taxation, and of introducing incentives in favour of business and private investors in continuing training.

☐ Step up the research effort:

• by companies, the Member States and the European Union;

• by taking fuller account of the needs of the market, based on the Community's fourth framework programme on research and development activities, and ensuring closer involvement of users by means of appropriate forms of interaction: industrial advisory panels, as already the case with the new R&TD programme on information technologies, on industrial development centres and on the networks of 'laboratories without walls';

• by modernizing the approaches and practices to produce even more effective industrial spin-offs, modelled on the best international examples and schemes, while taking account of the appreciable differences in social structures, culture and traditions;

• by facilitating the establishment of consortia of European companies in order to increase the synergies in the R&D sector.

☐ Promote quality, fitting in with the European Union's approach to standardization, taking account of the many factors influencing it (total quality management) since this is necessary to harness the know-how of businesses in the European Union, while avoiding fragmentation of the markets. The Commission will submit a communication on this specific subject to the Council.

☐ Promote fuller integration of vocational training in the European Union's policies aiming at improving industrial competitiveness, particularly in the ADAPT Community initiative, without calling into question decentralization and the primacy of national policies in this field.

☐ Create a legal environment conducive to research, by developing an integrated approach to intellectual and industrial property, particularly in the field of patents — including patents for inventions stemming from biotechnology — trade marks, designs and models, designations of origin, etc.

☐ Step up and coordinate the research into clean technologies and develop economic incentives to ensure earlier, wider use thereof in the European Union. In the general context of environmental protection, a global approach along the lines followed to reduce CO_2 emissions taking account of the conditions imposed by world-wide competition would be preferable to a plethora of different product-by-product taxes.

☐ Introduce new methods of organizing work and improve the fiscal environment, particularly for small businesses, by means of measures such as those proposed by the Commission on taxation of small businesses, transfers of businesses and improvement of the fiscal environment for small businesses.

☐ Improve the dialogue between the two sides of industry, taking account of national practices and experience.

☐ Promote rational use of data managed and generated by information systems in order to increase the availability and quality of economic data.

B. To develop industrial cooperation

Since 1990 the trend towards industrial cooperation in the European Union has gained pace despite the slow-down in economic activity, as illustrated by the large number of strategic alliances and mergers of companies.

Industrial cooperation schemes are, above all, the responsibility of the businesses and businessmen themselves. However, it is necessary for the public authorities to develop a dynamic approach in this area in order to establish a framework conducive to taking account of mutual interest and to develop forums bringing together all concerned (round tables).

The Commission's primary objective in this field is to promote cooperation between operators in the Community, by encouraging private initiatives of benefit to Europe as a whole wherever justified, particularly amongst small businesses.

As regards the East European countries in particular, a consistent approach is needed to globalization, to integration of these countries into the European area and to bolstering European industry's presence on expanding markets, while at the same time abolishing the restrictions on imports from these countries and abiding by the rules in force in the Union.

1. Objectives

Although the European Union is not responsible for setting up industrial cooperation schemes, it must nevertheless endeavour to promote such schemes and:

☐ help to bolster the presence of the European Union's industry on high-growth markets, on the basis of harnessing mutual interests;

☐ take fuller account of each side's industrial situation in dealings with the European Union's partners and, particularly in the case of the countries of Central and Eastern Europe, of the objective of bringing their economies closer to the European Union with a view to accession, integration in the world economy and strengthening economic ties between them;

☐ encourage private schemes involving operators from several Member States, particularly where the operators face R&D costs beyond their industrial capacity;

☐ make businesses more competitive by facilitating transfers of experience and know-how between businesses, particularly small businesses.

2. Action

General measures

☐ Identify and remove the legal and fiscal obstacles to industrial cooperation (for example on the protection of intellectual property rights).

☐ Develop industrial cooperation tools (including legal instruments). The European Union has no appropriate legal instruments to support industrial cooperation. EEIGs are unsuitable for industrial cooperation schemes, while the proposal concerning the European Company Statute is only for major companies and has been blocked for political reasons. Ways in which the new statute being discussed for European associations could facilitate industrial cooperation must be examined or, where appropriate, a new instrument must be devised to enable undertakings or local authorities to conclude cross-frontier industrial cooperation agreements, particularly on networks. This would make it possible, for example, to avoid resorting to international treaties before going ahead with projects such as the Channel Tunnel.

☐ Continue to support the development of industrial initiatives targeted on growth markets, particularly schemes involving small businesses, and facilitate appropriate use of the Structural Funds, for example to assist schemes to set up venture capital undertakings. This approach has proved particularly beneficial for implementing the Community's PEDIP programme.

☐ Organize industrial round tables as have already been set up with Japan and the Baltic countries and for specific industries (the maritime industries forum and the round tables with the countries of Central and Eastern Europe on the agri-food and consumer electronics industries). The objective is to enable industrialists from inside and outside Europe to identify their mutual interests from both the multisectoral and geographical angles and to encourage the development of private initiatives in the form of joint projects.

☐ Have recourse to the Working Party of Heads of Industrial Policy Departments to make it easier to identify and implement industrial cooperation schemes and for companies to find partners and information on markets in third countries.

☐ Continue to reinforce a favourable climate for investment and industrial cooperation by the development of a coherent legal approach towards a common and efficient support of European investment in host countries. Such an approach may be developed along the lines of the EU position on the principles of protecting investments in ACP countries within the context of the Lomé Convention, which was set up on the basis of bilateral agreements on investment protection agreed by the Member States and these countries.

In the case of the countries of Central and Eastern Europe

The Commission will soon be preparing a communication on the industrial competitiveness of the countries of Central and Eastern Europe with a view to their integration in the European Union. The following action could be taken already:

☐ Promotion of financial engineering, including considering the possibility of improving existing instruments and seeking solutions which may partially guarantee investment, in order to stimulate specific projects for which there is demand in the partner countries (in Central and Eastern Europe) and which businesses in the European Union have the capacity to meet (energy saving, water purification, telecommunications, transport schemes, etc.).

Such an initiative could be based on an analysis of the Member States' guarantee schemes to ensure that the action taken by the Community genuinely provides added-value.

Furthermore, PHARE's emphasis should continue to shift towards support for investment and the private sector and the provision of assistance directly to end-users in beneficiary countries.

In addition, the Commission may envisage proposing financial medium-term assistance to complement PHARE subventions and loans by the European Bank for Reconstruction and Development and the European Investment Bank intended for structural adjustment.

☐ Continuation of the support for standardization and certification in Central and Eastern Europe already being provided under the PHARE programme and provided for in the Europe Agreements with a view to harmonization with the European Union's industrial standards and to application of certification criteria and procedures accepted at international and European level: in particular, adoption and observance of European and international standards are essential preconditions for the success of industrial cooperation schemes which will smooth the way for subsequent integration of these economies in the European Union's single market.

☐ Development of expertise in international financial engineering and offset[1] activities to explore the technical prospects for developing cooperation between European industry and the countries of Central and Eastern Europe, for raising the financial resources needed to acquire the durables, technologies and know-

[1] The objective of developing this expertise is to supply information on the extremely sophisticated techniques necessary in order to mount industrial cooperation operations.
One such technique is 'offset', a form of compensation which places an obligation on foreign suppliers to invest in the country which purchases the equipment they sell. In offset arrangements, the seller of complex, costly equipment undertakes to grant the purchaser a series of industrial and commercial benefits related directly or indirectly to the sale.

how necessary to restructure their industrial base and establish modern market economies. Promising applications could be found in the transport, telecommunications and energy sectors.

☐ Support for action or initiatives based on the European Energy Charter in order to enable the countries of Central and Eastern Europe and the former Soviet Union to harness their potential energy resources and contribute towards improving the European Union's security of supply and promoting investment by companies from the Union.

The introduction of guarantees covering part of investments and provision of technical assistance, primarily in the form of advice for undertakings in the Union, would imply Community funding which would have to be considered separately from the aid for economic reform provided by the Commission.

Latin American and Mediterranean countries

Cooperation with the countries with which the Union has traditional ties could lead to introduction of a more integrated approach to industrial modernization. This will become increasingly important as these countries' growth rates increase, fuelled by their policies on stabilization of the economy, opening up of their markets, regional integration and privatization.

The European Union has always been one of the leading partners and investors in most of these countries. Bilateral and regional cooperation agreements, programmes, instruments and institutions to promote cooperation already exist and must be stepped up as regional economic integration advances.

☐ Closer technological cooperation: this will take the form of projects, notably in high-technology fields where it is opening up industrial opportunities already.

☐ Participation in the Community's fourth framework programme on R & D activities and in the developments connected with the information society: such participation opens up numerous opportunities to strengthen scientific, technological and industrial ties with the European Union in both sides' mutual interest.

☐ Establishment of networks of businesses from the European Union and non-member countries: also, active promotion of the instruments already at the Commission's disposal, such as the EC International Investment Partners (ECIP) scheme, combined with encouragement for European Investment Bank operations in these countries, would go a long way towards improving the situation.

Asian countries

Historically, the Commission has conducted detailed, structured industrial talks with Japan and these talks on industrial cooperation policy have indubitably helped to relieve the trade problems and have given birth to particularly successful industrial cooperation schemes in both sides' interest.

Based on this experience, the following action is proposed to improve cooperation with the Asian countries:

☐ Developing cooperation programmes with countries with which mutual interests can be identified, following the example of the pilot programme between the European Union and Japan on parts and components for consumer electronics and of the cooperation project on automobile components or on components for computers and office equipment.

☐ Developing scientific and technological cooperation activities with a high industrial content to which industrial cooperation schemes can be added, for example the pilot programme on automated production set up between the European Union and China or the project on training engineering, also with China.

☐ Developing training and schemes to promote the transfer and dissemination of technologies and know-how acquired in certain third countries (as in the case of various programmes with Japan).

C. To ensure fair competition

One of the objectives of the Treaty on European Union is to open the markets to free competition. The Union was the first to adopt a policy designed to correct the impact of distortion of competition on trade. The Union has a fundamental interest in ensuring that all its trading partners also effectively and systematically apply conditions allowing fair competition. Tightening-up of the rules on competition within the Union must be accompanied by fair conditions of competition at international level.

The European Union must implement an industrial approach making it possible to reap the full benefits of the GATT agreements and to make rapid progress on the questions raised by the globalization of the markets, which led to the decision to set up a World Trade Organization.

One particularly important point for the European Union's industrial competitiveness is that the opening-up of international trade should be accompanied by development of competition on the internal market, with each fuelling the other. Fair competition and fair trade are the corollary of free trade.

1. Objectives

The current situation as regards the competition on and openness of the markets and application of common rules and disciplines remains far from perfect, despite the efforts made by States and international organizations.

External measures

The European Union must define the terms of a consistent approach striking a balance between the requirements for competitiveness, market competition, the necessary degree of protection for the environment and sustainable economic development.

☐ One consequence of the internationalization of industry is that companies now have production activities in many third countries, creating, in the process, new, complex situations. For example, in certain anti-dumping cases the Community's industrial interests can no longer be approached in purely geographical terms.

☐ International competition is assuming an increasingly regional dimension: new Member States will soon be joining the Union, the world's leading economic bloc, which has also concluded economic agreements with the countries of Eastern Europe and Russia. Elsewhere, the USA, Canada and Mexico have formed their own economic community (NAFTA) and free trade associations are being developed in other parts of the world (South-East Asia and South America).

☐ Account must be taken of the increasing number of strategic alliances in order to avoid the build-up of dominant positions world-wide. Parallel measures must be taken to encourage the development of alliances of industrial and technological interest while at the same time allowing stronger competition on world markets. A balance must be struck between these two objectives.

☐ European companies' export and transplant potential is far from fully exploited because of the difficulties created by the continued closure of some markets. Identification of these precise obstacles to growth and specific action to remove them could make a significant contribution to improving the outlets for the European Union's industries for the products and markets concerned.

☐ One of the European Union's major concerns must be to avoid recourse to discriminatory bilateral agreements, such as the initial phase of the agreement between the USA and Japan on semi-conductors. Markets must be opened up without discrimination. In this connection, it must be stressed that failure to apply the rules on competition rigorously would allow industries in third countries to adopt practices which would stop competition and block or curb imports into their countries.

☐ At the moment a growing number of countries are industrializing and becoming capable of producing an ever wider range of manufac-

tured goods. Many of these countries have liberalized their economies, often in an extremely difficult climate. These countries depend on easier access to the markets in the industrialized world for their future prosperity. In return, they offer attractive export opportunities for European industry. To ensure equal access to the market and growth and job prospects, it is essential that the rules of the multilateral trading system should be accepted and observed and that the decisions of the new disputes settlement mechanism expeditiously implemented by all contracting parties. It will therefore be necessary for the new World Trade Organization to deal with these issues in the appropriate way from the start and for the procedures for implementing the regulations to offer the flexibility, transparency and simplicity required to create a climate in which European businesses can flourish. Care must be taken to ensure that this situation does not deny European industry access to growth markets and give rise to unfair competition which puts European industry in difficulty on many markets on which it is well established, and even on the Community market.

☐ The heavy protection of the markets of a limited number of industrializing countries with low social conditions puts the exporting industries at an advantage but creates distortion of competition which becomes more and more serious as skill levels improve.

☐ It is therefore desirable that, beyond the results of the Uruguay Round, the industrializing countries should continue to open up their markets for all, by taking action on customs duties and non-tariff measures, and that they apply the rules and disciplines accepted by all their partners and agree to combat practices which restrict trade.

☐ Particular attention should also be accorded to the development of mutual recognition agreements with our principal trading partners which will significantly contribute to trade liberalization.

These circumstances clearly demonstrate that the World Trade Organization will provide a forum for ensuring fair international trade on a stable multilateral basis defined by the agreements stemming from the Uruguay Round.

Consequently, the objectives of the action taken by the European Union must be:

☐ to promote more open trade, while encouraging social progress. The Union will have to identify means of contributing to economic and industrial development in the countries which subscribe to this objective. It should play an active part in the discussions on social issues within the WTO, in collaboration with the International Labour Office, without impinging on the comparative advantages enjoyed by the developing countries. However, the concern for greater social progress must not turn into a pretext for obstructing these countries' right to economic development. In any scenario, in order to ensure effective action in this area, steps must be taken to encourage ratification of the ILO conventions and to step up the resources for monitoring them;

☐ to raise, at multilateral level, within both the OECD and the WTO, the question of the introduction of rules to reduce distortion of competition caused by businesses themselves and to provide our companies with effective access to markets not yet governed by provisions of this type;

☐ within the committee on trade and the environment, to strive for the establishment and effective application of environmental protection criteria which safeguard the fundamental principles of the GATT, particularly non-discrimination;

☐ based on the fact that over the last 10 years international trade has grown faster inside regional trade areas than between them, to endeavour to harness the potential of the geographical area with which it has close ties for historical and cultural reasons;

- by promoting the international specialization between the Union, the countries of Central and Eastern Europe, Russia and other CIS States and also the Mediterranean countries;

- by discussing strategy with regard to the specific needs of these countries and on adaptation of industrial production to satisfy them, and not just major export needs;

- by promoting trade within this vast area, not only between the Union and each of the individual countries but also by encouraging these countries to open their markets up to each other in order to attain significant economies of scale for local production;

- by following the example set by the NAFTA Agreement between the USA, Mexico and Canada and seeking, together with the countries concerned, strict common rules of origin to ensure closer economic cooperation and integration within the area plus clauses to avoid

social and environmental dumping which would inevitably create protectionist tensions detrimental to the objective pursued.

Internal measures

The procedures for establishment of the European Union's internal market have been completed. Now the priority is to make it operate efficiently. In particular, this will imply adequate implementation of the measures to complete the internal market in every Member State, effective opening-up of public contracts, further mutual recognition of standards, more transparent rules for the internal market and simplification of VAT, particularly the switch to the definitive taxation system in 1997, when the taxes will be collected at the place of purchase, i.e. in the selling country.

☐ Clear, rigorous application of the rules on competition contained in the Treaty or adopted to take account of the new international situation (the Regulation on mergers) stimulates activity and reduces inflationary pressures. It makes it possible to adapt industrial structures to the new competitive environment and, in particular, to the technological revolution and to the new alliances being formed.

☐ The European Union is an economic bloc with an extremely elaborate, highly structured competition policy. Completion of its internal market makes this policy even more important for encouraging improvements in industrial competitiveness. In practice, since the removal of the internal frontiers the risks of dominant positions and the distortions caused by State aid — which remain too great — are growing appreciably.

☐ A stronger competition policy is not an end in itself. It is implemented with an eye to the objectives of the other Community policies, as steadily demonstrated during implementation of the Regulation on mergers, and helps to make them more effective. The disciplines imposed by the European Union on competition policy set an example for non-member countries but can be made more effective and more transparent.

☐ The system for monitoring aid is based on a body of rules which have been built up in the course of time and have gradually become more complex. In particular, this system includes sectoral codes introduced originally for economic or serious structural reasons. Sometimes it is based on heterogeneous criteria, such as 'overcapacity', for which the definition and implementing provisions have gradually been refined to take fuller account of the features of the specific market in question such as progress in production technologies and the degree of globalization. Moreover, in the words of the White Paper, some aid criteria encourage 'firms to increase the capital intensity of production and to boost their physical as opposed to their non-physical investment in order to improve productive efficiency'.

☐ The Commission intends to make the system for monitoring State aid even more rigorous, efficient and neutral. In order to reflect the orientations contained in the White Paper, it will shortly look at possible changes to the mechanism for controlling State aid. At the same time another objective will be to simplify and speed up the procedures for dossiers of minor importance.

☐ The policy for monitoring State aid can still be made more compatible with the Community's objective of increasing economic and social cohesion. The relatively large amounts of State aid in the more prosperous regions remain an obstacle to economic and social cohesion.

☐ Finally, a similar effort must be made to make the Community's competition policy with regard to State aid and mergers between companies more compatible with the action taken by the Union under other policies implementing the Treaty, for example on research and transport.

2. Action

External markets

☐ Continue to seek resolution of issues which were not able to be resolved by the conclusion of the Uruguay Round (aeronautics, steel, audiovisual, financial services, etc.).

☐ Combat fraud effectively, in particular that which concerns product origin (for example, high-technology products and textiles) by applying modern detection methods (notably that of electronic detection).

☐ Develop international rules on competition and mechanisms to ensure effective application thereof, which take account of the consequences of the trend towards concentration and interpenetration of industries world-wide and

open up markets still closed by practices which curb competition.

☐ Take account of the European Union's industrial interests both as exporter and as importer in developing preferential relations with its trading partners.

☐ Establish an industrial assessment mechanism along the lines of the trade assessment mechanism (TAM) based on the conclusions of the White Paper and on the Commission's existing resources in order to determine, with the cooperation of the non-member countries concerned, the nature and causes of the European Union's inadequate industrial performance on markets on which the European Union's industry is potentially strongly competitive and drawing results therefrom in terms of priorities.

☐ Continue to improve the structure of the Common Customs Tariff in a manner which better reflects the industrial interests of producers and users.

☐ Establish a database (inventory), in collaboration with European industry, on the obstacles standing in the way of European companies, market by market.

☐ Improve with the intention of making them more effective and operational commercial policy instruments, taking account of the changes in production structures and trade trends, particularly of the consequences of the increasing internationalization of production.

☐ Consider ways in which commercial policy and defence instruments may contribute to the development of services associated with the growing move away from a purely production-based economy and to the smooth operation of markets.

☐ Improve coordination between the measures taken to promote exports and investment and other policies.

Internal market

☐ Continue to reduce overall public aid, taking account of regional imbalances, particularly by making such aid more transparent, clarifying and simplifying the rules, which will entail reformulating some texts, and allowing easier intervention by third parties competing.

☐ Examine, as soon as possible, possible changes to the mechanism for controlling State aids.

☐ Re-examine the aid authorization criteria in order to redress the current bias towards physical investment and to simplify the mechanisms for monitoring cases of minor importance.

☐ Continue the efforts to make the structural policies more consistent with the policies for monitoring State aid.

☐ Improve coherence between the rules applicable to State aids and the arrangements for Community financing under non-structural policies.

☐ Strengthen the internal market, *inter alia* by supplying products and services on a competitive basis to undertakings which, as industrial users, must have the best quality at the lowest cost if they are to withstand international competition, particularly in the gas, electricity and telecommunications sectors.

D. To modernize the role of the public authorities

Modernization of the Community and national authorities' organizational structures and support procedures just as fast as those applied by businesses will avoid adding to taxes and social security contributions. This is essential in order to improve industrial competitiveness. Traditional administrative and managerial practices, often excessively cumbersome and slow, no longer correspond to current economic developments. Public authorities must rapidly adapt to this new reality.

The public authorities must also play their role effectively both in order to create an attractive environment for industrial activity in the European Union and to promote the development of areas for which they bear direct responsibility as a customer or investor, such as health care, education and communications.

1. Objectives

The European Union has played a decisive role in the establishment of a single internal market, which has removed a host of unnecessary inspections and forms created by the bureaucracy of the past. The existence of this single market is a great asset. Completion of the single European market without frontiers presents businesses with an opportunity to benefit from economies of scale, to cut their administrative and financial costs, to gain easier access to more competitive markets and to cooperate more closely with other firms. This integrated market must be harnessed dynamically and further improvements made, for example on indirect taxation, standardization and the opening-up of public contracts. In order to reap the full benefits, the European Union must modernize its support and:

☐ move on from the phase of establishing a legal framework (the objective for 1992) to the phase of giving priority to cooperation. The objective now, in a context marked increasingly by deregulation and in which conventional harmonization has reached its limits, is to enable businesses in the Union to reap the full benefits of the integrated internal market by continuing to eliminate the distortions created by the legislative, regulatory or administrative disparities. To this end, consideration must be given to application, case by case, of the provisions of Articles 101 and 102 of the Treaty, as proposed in the Commission's communication on the subsidiarity principle (SEC(92) 1990 final), in order to remove certain remaining obstacles with an adverse effect on competitiveness;

☐ encourage administrative cooperation between the Member States and the Commission to overcome the difficulties encountered by businesses wishing to benefit from the internal market;

☐ simplify the ways in which the public authorities organize and exercise their responsibilities with a bearing on industrial competitiveness, for example by a more systematic cost-benefit evaluation of any proposed legislation on the EU's competitiveness;

☐ continue deregulation and administrative simplification in order to remove unnecessary constraints which impair companies' competitiveness and act as a disincentive for innovation and employment, particularly with a view to facilitating the introduction of new methods of organizing work;

☐ encourage public authorities to adapt to the globalization of the world economy, which is already having consequences in the area of the information society for example, along lines shared between competing activities and those applicable to the non-competitive sector;

☐ ensure closer cooperation with operators on matters affecting industrial performance, by improving the information on market trends, technologies and framework conditions likely to influence the performance of European industry;

☐ bring the administrative departments responsible for promotion of research and industrial development closer together;

☐ continue the efforts to reduce the costs arising from the national and Community regulations by evaluating the costs of and simplifying all new proposals;

☐ create conditions conducive to business expansion, innovation and research by removing the regulatory and other obstacles and guaranteeing the free movement of factors of production in the European Union.

The public decision-making centres shaping industrial activity are growing in number and exercising their powers without any real overview or constant coordination:

☐ at world level, these responsibilities are shared between a large number of structures, some permanent, others of various forms; often their effectiveness is disputed;

☐ at Community level, decisions on industrial issues are taken at Council meetings on many different subjects (general affairs, industry, telecommunications, internal market, research, environment, transport or energy). What is more, Article 130h of the Treaty expressly recognizes the need for coordination, which was stressed by the European Council in Corfu, which invited the Commission to take all necessary initiatives to promote such coordination in the area of research, notably in connection with all the issues arising from the information society, which will be dealt with by the same Council of Ministers;

☐ at national and regional level, administrative structures vary from one Member State to another and the sharing of responsibility is extremely diverse (arbitrary division between industry, research, telecommunications, business policy, etc.).

The USA and Japan have addressed these problems by setting up broader cooperation bodies such as the Competitiveness Policy Council in the USA, which brings together representatives of the leading players involved in industrial development. The public authorities in Europe, including the Commission, must consider the action to be taken on these trends.

2. Action

☐ Continue the deregulation processes:

• by examining, on the basis of the problems encountered by businesses, the prospects of using Articles 101 and 102 to remove certain disparities stemming from the continuation of national legislation diverging from that of other countries;

• in particular, by drawing on the telecommunications scheme started by the Commission with the aid of Directives based on Articles 90 and 100a, as regards the harmonization aspects, on Article 129 in the case of the trans-European networks, on the Council Resolution of 22 June 1993 and on the conclusions of the high-level Working Party on the information society; and

• adopting a dynamic approach to reinforce competition on the energy market in conjunction with redefinition of tasks of general economic interest.

☐ Redefine public service objectives to make it clearer which tasks cannot be performed on the basis of competition alone and define a management framework ensuring better use of regulatory instruments.

☐ Use the European Union's Structural Funds to bring forward and accompany industrial change, both in general and with the aid of the new Objective 4 of the Community initiative programmes.

☐ Facilitate, notably in the new Community initiative programmes,[1] particularly the PME[2] and ADAPT[3] initiatives, the development of partnerships between big businesses and small firms and the establishment of the networks and clusters[4] essential to promote:

• closer coordination between big businesses and their suppliers, for example between car makers and component suppliers;[5]

• access for small firms to new technologies or technologies to add on to those already at their disposal in order to reduce their 'entrance fee';

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1 The Community initiatives are proposals by the Commission to the Member States on action of particular interest to the European Union to be taken in certain fields under the Structural Funds.

2 The PME initiative is designed to help small firms in industry or the services sector, particularly firms in the less-developed regions, to adapt to the single market and become competitive at world level.

3 The ADAPT initiative is designed to help the workforce to adapt to industrial change and to improve the way the labour market works in order to restore growth, employment and the competitiveness of undertakings in the European Union.

4 A 'cluster' is a group of industrial competitors who cooperate to form a dynamic pool of knowledge generating external benefits. (*Source:* 'European industrial competitiveness', Torger Reve and Lars Mathiesen, joint study by the European Commission and the UNICE, June 1994).

5 See the communication from the Commission on the European Union automobile industry (COM(94) 49).

• harnessing of the European Union's regional diversity, by combining its industrial, technological and geographical advantages.

☐ Systematically streamline procedures and make them more transparent, in order to facilitate decision-making by operators, based on an analysis of the impact of the national and Community regulations on competitiveness and employment; for example, in fields such as technical standards for machinery, rules on biotechnologies, legislation on emissions of pollutants, health and safety at work, working hours and admission to certain professions. This exercise will centre on the work of the Working Party set up within the Commission by the European Council in Corfu to simplify legislation and administrative procedures.

☐ Speed up the establishment of trans-European networks for the interchange of data between administrations and facilitate the development of information infrastructure and services for businesses.

☐ Use the Community's instruments (research, Structural Funds, etc.) to support specific-industrial cooperation projects involving companies from several Member States and to set a particularly good example (notably by coordinating the appraisals of files by the national authorities within the Community support frameworks).

Finally, the Commission proposes examining the expediency of simplifying the many structures involved in industrial policy and making them more consistent and of evaluating the experience with broader consultation bodies such as the competitiveness policy councils.

Annexes

Annex I. Analysis of the state of the European industry

Annex II. Statistical tables

Annex III. Figures

Annex I

Analysis of the state of the European Industry

A. Diagnosis of industry's performance

In spite of the encouraging economic outlook in the short, medium and long terms, most assessments of the state of EU industry continue to emphasize its worrying loss of competitiveness compared with its main competitors, particularly the other members of the triad.

Although a strict comparison of the European Union's performance in terms of certain macroeconomic factors clearly shows that the Union is in an unfavourable position (see the tables and figures annexed to the communication), this pessimistic finding must be seen in perspective:

☐ it is based on analysis of a narrow range of factors, while industrial competitiveness is a very complex problem extending far beyond a simple comparison of macroeconomic variables, however important these may be;

☐ the aggregated average figures for the Union do not take account of the relative situation of the Member States, some of which have produced remarkable performances compared with other OECD countries;

☐ the growing importance of service industries, which it is estimated account for over 60% of the added-value and employment generated by total EU production, is not fully taken into account;

☐ it cannot reflect certain fundamental elements underlying all competitive performance: the microeconomic dimension, the enterprise spirit, individual effort, the commercial approach of individual companies, and the dynamism of subsidiaries and clusters of companies. The European Union has numerous examples of success stories which can be traced back to these elements, the recipes for which merely have to be more widely disseminated within the industrial fabric.

These comments are fundamental, because assessments of the state of EU industry are being made in a context of economic crisis when it is difficult to determine to what extent the unfavourable comparison of certain quantitative factors is not a reflection of the poor economic environment.

It is also important to remember that industrial competitiveness is based essentially on the existence, within the industrial fabric, of the largest possible number of companies in a position to expand and make profits on all markets on which they are active. The more exacting the demand and the stronger the competition, the more a company's positive performance is indicative of competitiveness.

These conditions exist in the European Union, and the positive results achieved by a very large number of companies demonstrate that they have been able to adjust to this competitive environment.

B. Relative position of the Member States

While EU manufacturing industry as a whole has clearly not yet managed to overcome certain structural disadvantages, the 1993 edition of the World competitiveness report paints a less alarming picture of the competitive position of the European Union. Taken individually, certain Member States are up among the leaders for most of the 370 (quantitative and qualitative) factors assessed in this annual report.

This is true in particular of Denmark (3rd), Germany (5th), the Netherlands (6th) and the Belgo-Luxembourg Economic Union (10th).[1] Germany's slide to 5th position (2nd in 1992) is largely due to the impact of unification. Other States (France and the United Kingdom) have improved their positions compared with previous years and are at absolute levels comparable with the best. Only certain countries in the south of the Union continue to have low levels of competitiveness due, to a large extent, to structural problems linked to the restructur-

[1] Japan (1st) and the USA (2nd) took the first two places in 1993.

ing of certain basic industries with low value-added.

These rankings are important, because debates about competitiveness are often limited to a comparison of certain quantitative (macroeconomic) factors which effectively exclude both the relative performances of companies and the growing contribution of services and other qualitative factors.

C. Opinion of industry[1]

Industry itself is of the opinion that there is no single factor in Europe to which the relative decline in the competitive position of European industry (which is essentially expressed in terms of trade performance on external markets) can be attributed. Likewise, there is no single solution.

In addition to the well-known unfavourable elements (deterioration of the balance of trade, exchange-rate appreciation, lower growth rate, lack of flexibility of the human factor, etc.), industry identifies the following additional factors:

- ☐ hourly pay rates have increased faster, reaching a differential of about 20% in 1992,
- ☐ the tax burden averages 40% in the European Union, compared with 30% for its partners,
- ☐ there is a major difference in the productivity of manufacturing industry — about 30% compared with the USA and 10% compared with Japan (McKinsey) — in spite of similar growth rates over the last 10 years,
- ☐ there are deficiencies in the promotion of physical and intangible investments by companies (especially small and medium-sized companies) and weaknesses in management expertise.

Among the solutions put forward, industry proposes the adoption of a series of policies designed to improve the macroeconomic environment and to make markets work more efficiently.

[1] The UNICE competitiveness report 1994.

D. Competitiveness, cost of factors and relocation

In general, EU industry has focused its drive to regain competitiveness on costs and productivity, and has achieved significant results in recent years.

Analysis of the financial state of the 1 380 largest European industrial companies[2] for the period 1987-92 shows that turnover per employee grew from ECU 99 000 to ECU 136 000,[3] or about 6% a year, whereas the number of jobs increased by only 2.5%. Moreover, the increase in jobs was partly due to mergers and acquisitions (carried out in preparation for completion of the internal market) rather than real needs.

The World competitiveness report 1993 shows that eight Member States are among the top 10 OECD members in terms of growth in GDP per employee (period 1983-91), with rates nearing or exceeding 2% a year (Ireland — 3.68%, Italy — 2.60%, Portugal — 2.29%, France — 2.15%, Benelux — 1.92% and Spain — 1.91%). Only Germany experienced negative growth (−2.33%) as a result of unification. As regards value-added per employee in manufacturing industry (base: 1989), the report shows that six Member States (Benelux, France, Germany, Italy) are among the 10 leaders, behind Japan. However, Japan's performance is 14% better than that of Benelux (the best placed Member States). The USA is down in 11th position with a performance similar to that of Italy. In terms of the productivity of capital (value-added per ecu invested), the USA is well in the lead with ECU 6.63, ahead of three Member States (United Kingdom — ECU 5.15, Denmark — ECU 5.06, Ireland — ECU 5.00). Japan's performance is the weakest of all the countries studied (ECU 2.7, or about one third of that of the USA).

These data tend to confirm that EU companies have clearly targeted their productivity drive on reducing the labour factor and its cost, for obvious reasons.

This trend appears to be far from over. It started in large companies, and is now spreading to small and medium-sized companies,

[2] DABLE database (DG III).

[3] The figures for the USA and Japan for the end of the period are ECU 150 000 and ECU 220 000, respectively.

even though the production labour cost factor is falling as a proportion of the costs of production of most products and services (at least in manufacturing industry), while other factors, such as development, industrialization, control and distribution costs, are rising.

This drive for improved cost competitiveness is sometimes accompanied by the drawing-up of industrial relocation strategies to regions with comparative advantages in terms of the cost of certain factors, in particular labour.

Analysis of the direct foreign investment (DFI) flows of EU companies shows that the main objective of relocation strategies is to improve the companies' position on growth markets rather than substitution strategies (production intended for re-exportation to Europe). The relocation of EU production to low-labour-cost countries is taking place on a much smaller scale than is generally believed. [1]

Relocation is still limited to specific sectors (such as textiles, clothing, footwear, consumer electronics, and electronic components) and activities (subcontracting of intellectual work with little innovative content) for which the cost and flexibility of the labour factor are still relatively important.

The DFI flows in 1991 of the four* most active Member States (France, Germany, Netherlands, United Kingdom) break down as follows:

1991	ECU billion	%
Total direct foreign investment (DFI)	57.1	100
☐ in other Member States	32.5	57
☐ outside the Union	24.6	43
in non-OECD countries	9.4	16
in Asia	3.6	6
Total national investment of the four* States	707.5	—

These figures show that DFI accounts for a relatively small proportion (8%) of total national investment, that the European Union is a major destination for DFI flows (ECU 32.5 billion), and that the proportion of DFI going to the least industrialized countries (ECU 9.4 billion) is relatively modest.

From a sectoral point of view, DFI outside the European Union by EU companies is concentrated in manufacturing and energy (mainly oil). No data are available on which activities are subcontracted. The leading manufacturing sector is chemicals, followed by electrical engineering; food, drink and tobacco; and motor vehicles. However, DFI in the chemicals sector outstrips DFI in all these other sectors put together, accounting for nearly half of extra-EU direct foreign investment (1991 data for the UK).

E. Competitiveness and differentiation strategies

Although some efforts have been made in this direction, EU industry appears to be less active in implementing measures to increase the added-value of products by means of differentiation and the development of competitive advantages. This is particularly true of a very large number of small and medium-sized firms which form part of the logistical industrial fabric of large companies.

The problem of costs of production is very often approached exclusively from the angle of reducing the cost of the labour factor by improving productivity. More detailed analysis shows that reductions in production costs tend to involve structural changes accompanied by increased qualification of labour and added-value, rather than simple mechanical reductions in numbers of jobs, particularly production jobs.

This type of situation tends to affect all products, not only those intended for the final consumer, but also capital goods and intermediate products and their upstream manufacturing processes and the services incorporated into them.

Industry itself recognizes the validity of this analysis when it recommends measures tending to encourage the development of dynamic industrial clusters and to improve management practices within companies. [2]

[1] 'Investment strategies of EU companies in non-European countries', *Panorama of EU Industry 1994.*

[2] The UNICE competitiveness report 1994.

F. Importance of service industries

Measurements of the competitive performance of EU industry (and that of its competitors) generally fail to take account of the growing importance of service industries.

In the broad sense, service industries include both market services (repairs, commerce, catering, accommodation, transport, communications, banking, insurance, etc.) and non-market services (health care, education, research, social welfare and public services). These all help to strengthen the competitive advantages of the Union.

A recent essay[1] gives a clearer understanding of this dimension, in spite of problems of methodology, data collection and data analysis.

In terms of added-value and jobs, the services sector accounts for almost two thirds of the EU economy. Three quarters of the services sector is made up of market services, mainly repairs and wholesale and retail distribution. The remainder is made up of non-market services.

Since 1980 the added-value of services has increased by 8.7% a year, whereas the average annual increase in total added-value in the EU was 7.8%. As a result, the contribution of the services sector to total added-value has increased by 5.6 points, the share of market services having increased slightly during the 1980s and that of non-market services having fallen. This growth is largely due to the increase in the share of other market services.

In terms of intra-EU direct foreign investment (DFI), services accounted for ECU 21.3 billion in 1989. Intra-EU investment exceeded both investment in the EU from non-EU sources (ECU 16.8 billion) and EU investment outside the EU (ECU 11.9 billion). The banking sector accounted for about 40% of intra-EU investment, totalling ECU 9.6 billion between 1984 and 1989, thus contributing to the increase in intra-EU DFI. During the same period, non-EU banking groups increased their investments in the Union by nearly ECU 7 billion, out of a total for all services sectors of ECU 13.2 billion.

Similar trends are observed in terms of jobs. In 1990, nearly two thirds of EU jobs were in service-related activities (about 80 million people in 10 Member States). Compared with the situation in 1980, total employment in these sectors had increased by 13.5 million (+1.9% a year), whereas in agriculture and manufacturing industry it had decreased by 3 million and 4 million respectively. The percentage of jobs accounted for by the services sector increased by 7.8 points, which is above the rate of growth in value-added.

These data merely confirm the analyses of R. Reich on the new segmentation of the labour market.[2] They also underline the absolute necessity of developing adequate data collection and measurement instruments in this field.

G. Performance of manufacturing industry

Analysis of manufacturing trends shows that consumer goods sectors have made the most progress in the last six years. Of the 65 sectors analysed (see Table below), about 40% (28 sectors) recorded constant growth, and three quarters of these (20 sectors) recorded higher export rates than internal production rates, examples being food and soft drinks. Most sectors producing intermediate products recorded medium to strong growth, the best placed sectors being rubber and plastics processing and secondary transformation of metals.

The investment goods sectors, on the other hand, recorded slow growth during this period. The weak performance in these sectors appears to be continuing and remains a source of concern for the public authorities in so far as these are high-value-added products accounting for a large share of extra-EU trade.

Most of the sectors recording strong growth are high-technology sectors characterized by growing worldwide demand in recent years. In contrast, many of the sectors which recorded the weakest growth rates or negative growth are directly affected either by changes in consumer tastes (e.g. furs, alcoholic beverages, tobacco) or by the increasing market share taken by foreign competitors (e.g. musical instruments, watches, toys and sports goods) to the detriment of EU producers.

[1] *Panorama of EU Industry 1994:* 'Service industries in a changing EC economy', ed. by NEI.

[2] 'The work of nations' 1991. See also the study of 'European industrial competitiveness', T. Reve and L. Mathiesen, 1994, carried out by SNF for DG III and UNICE.

Sectoral analysis of the growth of EU production and the trade balance (manufacturing industries) (1986-92)

(Base = annual % growth)

Number of sectors	Capital goods	Intermediate products	Consumer goods	Total
Growing				
Improvement of trade balance greater than growth of EU production	5	3	20	28
Improvement of trade balance less than growth of EU production	1	1	1	3
Growth in EU production accompanied by deterioration of trade balance	3	13	7	23
Declining				
Fall in EU production partly offset by improvement in trade balance	1	1	5	7
Fall in EU production accompanied by deterioration in trade balance	3	—	1	4
Number of sectors analysed	13	18	34	65

Source: Panorama of EU Industry 1994.

The following tables (see also Statistical Tables 24 and 25 in Annex II) analyse the intensity of exports and imports in the main sectors of manufacturing industry for the period 1986-92, using the following classification: rapid-growth sectors (>5% a year), moderate-growth sectors (3-5% a year) and slow-growth or negative-growth sectors.

Rapid-growth sectors and intensity of foreign trade

(Base 1992)

	Annual % growth in production (1986-92)	Intensity of exports	Intensity of imports
High intensity of exports			
Pharmaceuticals	7.3	15.4	8.9
Medical and surgical equipment	6.2	31.5	33.7
Telecommunications equipment	5.4	15.7	14.4
Office and computer equipment	5.1	21.6	40.3
Low intensity of exports			
Plastics processing	7.1	9.0	7.1
Secondary transformation of metals	5.7	4.8	4.5
Rubber and plastics	5.3	10.0	8.1
Soft drinks, mineral waters	5.0	2.2	0.4

Source: Panorama of EU Industry 1994.

Two of the eight sectors that have experienced rapid growth (more than 5%), pharmaceuticals and medical and surgical equipment, are closely linked to the rapid rise in demand for health services. Two other sectors, telecommunications equipment and office computer equipment, have benefited from the sustained demand for industrial services and the trend towards 'electronification'. The growth of three other sectors, rubber, plastics and the secondary transformation of metals, is due to the rapid expansion of demand in the transport sector. The growth in the soft drinks and mineral waters sector must be interpreted in the light of changes in consumer tastes.

Medium-growth sectors and intensity of foreign trade

(Base 1992)

	Annual % growth in production (1986-92)	Intensity of exports	Intensity of imports
High intensity of exports			
Electric lighting	4.6	17.5	12.7
Electrical engineering	4.0	17.7	19.4
Domestic electrical appliances	3.8	16.0	11.3
Chemicals and man-made fibres	3.5	16.9	13.0
Consumer electronics	3.2	22.4	40.1
Low intensity of exports			
Fruit and vegetable processing	4.9	8.4	17.7
Motor-vehicle parts	4.8	11.3	7.2
Semi-finished wood products	4.6	5.6	21.2
Cocoa and confectionery	4.5	6.9	2.3
Wooden packaging	4.4	2.0	1.8
Constructional steelwork	4.4	7.3	3.7
Paper, printing and publishing	4.3	6.1	11.0
Oils and fats	4.3	8.8	19.3
Industrial preparation of wood	4.3	4.4	50.6
Baking	4.3	2.8	0.8
Meat	4.2	4.7	5.1
Soaps, detergents and toiletries	4.0	1.9	2.3
Pulp, paper, board	4.0	8.7	34.3
Forging	3.9	3.7	2.8
Motor vehicles and components	3.8	11.5	8.8
Animal feedingstuffs	3.7	8.6	2.5
Marine products	3.7	8.2	27.3
Metal products	3.6	7.7	5.3
Paper and board processing	3.5	7.5	6.5
Glass	3.3	11.2	8.2
Wooden furniture	3.3	9.1	7.2
Food, drink, tobacco	3.0	6.2	4.8

Source: Panorama of EU Industry 1994.

The medium-growth sectors with a high intensity of exports achieved major productivity improvements during this period (while employment levels stagnated), which helped to maintain their competitiveness on world markets. Those with a low intensity of exports include a number of sectors where import penetration is also generally weak (the exceptions being wood and pulp, which import a large proportion of their raw materials from the Nordic countries). No significant employment trend (upwards or downwards) can be detected on account of the heterogeneity of the sectors concerned.

The main cause of the relative decline of the slow-growth sectors with low intensity of exports is the weakness of domestic demand. Many of these sectors are linked to the construction industry and were severely affected by the crisis, while certain foods have been affected by a change in consumer tastes.

Slow-growth sectors and intensity of foreign trade

(Base 1992)

	Annual % growth in production (1986-92)	Intensity of exports	Intensity of imports
High intensity of exports			
Basic industrial chemicals	2.7	18.7	17.7
Optical and photographic instruments	2.6	50.3	60.4
Footwear	2.6	22.3	23.5
Instruments	2.5	34.7	41.7
Shipbuilding	2.0	25.8	14.4
Ceramic goods	1.6	20.4	9.1
Aerospace equipment	1.6	39.5	35.0
Toys and sports goods	1.2	27.8	60.1
Railway rolling stock	1.2	29.3	8.7
Mechanical engineering	0.9	31.5	17.7
Measuring and precision instruments	0.8	20.8	16.7
Knitwear	0.3	22.1	38.7
Textile machinery	– 0.2	61.6	26.4
Alcohol and spirits	– 0.2	28.0	3.4
Leather and leather goods	– 0.2	31.8	35.2
Transmission equipment	– 0.3	25.8	17.7
Musical instruments	– 1.4	36.0	55.7
Machine tools	– 1.6	28.1	18.8
Clocks and watches	– 2.9	73.5	88.2
Agricultural machinery	– 4.0	22.0	11.5
Furs and fur goods	– 5.3	65.1	59.4
Low intensity of exports			
Non-metallic mineral products	2.8	8.6	4.5
Cement, lime, plaster	1.9	2.3	2.4
Grain	1.8	8.0	0.4
Clothing	1.8	14.9	29.8
Clay products	1.6	3.9	0.7
Dairy products	1.6	5.9	1.2
Cycles and motorcycles	1.5	12.5	42.6
Boilers and metal containers	1.0	7.3	2.2
Foundries	0.6	5.2	3.3
Tobacco	0.4	3.7	1.3
Wine	0.1	6.9	0.6
Brewing and malting	0.0	4.5	0.4

Source: Panorama of EU Industry 1994.

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1. Exchange-rate fluctuations

Because of the considerable fluctuations in exchange rates between European currencies, including the ecu, on the one hand, and the US dollar and Japanese yen, on the other, the following assessments of competitiveness should be viewed with caution.

The US dollar lost 54% of its value against the ecu between 1985 and 1993, while the yen appreciated by 29% between 1990 and 1993.

(%)

	1980-84	1985-89	1990-93
ECU/USD	- 43	44	- 8
ECU/YEN	- 41	- 16	- 29

Source: Eurostat.

2. Link between industrial production and employment creation in the European Union

The downward trend of industry's share of GDP and the corresponding upward trend in services must not blind us to the essential role that industry plays in the economy. There is a clear correlation over a long time-scale (1970-95) between growth in industrial production and employment creation.

Competitive situation of the European Union

3. Market shares of main economic regions

Although it is still higher than that of the United States or Japan, the European Union's market share of world exports of manufactured goods has fallen: from 29% in 1980 to 25% in 1986 and 24% in 1992.

(market share as % of world exports of manufactures (current prices and exchange rates))

	1980	1986	1992
EU	29	25	24
USA	18	14	17
Japan	15	18	17
Others	39	43	42

Source: OECD.

4. Total trade in the triad

Analysis of triangular trade between the members of the triad — the European Union, the United States, and Japan — shows a predominance of transatlantic and transpacific trade.

The balance of trade between the European Union and the United States went into the red in the late 1980s, but recovered substantially in the early 1990s: between 1991 and 1993 the European Union's trade deficit with the United States fell by 90% from ECU 21 billion to ECU 2 billion.

At the same time, the European Union's trade deficit with Japan fell by 25% from ECU 30 billion to ECU 25 billion, while the United States' trade deficit with Japan increased by 45% from ECU 35.1 billion to ECU 50.7 billion.

In 1991, the European Union's trade deficit with Japan was equivalent to 85% of the United States' deficit with Japan. In 1993 it was equivalent to just 49%.

(trade balance (ECU billion))

	1991	1992	1993
EU-USA	- 21.0	- 13.0	- 2.0
EU-Japan	- 30.0	- 31.0	- 25.0
USA-Japan	- 35.1	- 38.0	- 50.7

Source: OECD.

5. EU trade in goods

The increased integration of the European Union has been accompanied by the substitution of trade with the rest of the world by trade between Member States of the Union.

Since the end of the 1960s, intra-EU trade (13% of GDP in 1994) has exceeded exports to non-EU countries (9% of GDP in 1994). In recent years this gap has widened on account of the relative decline of exports to non-EU countries as a proportion of the GDP of the European Union.

(international trade as % of GDP)

	1980	1990	1994 (estimate)
Intra-EU trade	12	14	13
Extra-EU exports	10	9	9

Source: Eurostat.

6. Total EU trade balance

Goods still make up the bulk of the European Union's exports. Since the mid-1980s, however, the contribution of trade in goods to the trade balance has been declining and even became negative in the early 1990s. In spite of a relative decline, trade in services continues to make a positive contribution to the overall balance of trade.

(ECU billion)

	1985	1990	1991
Goods	9	0	– 27
Services	27	12	10

Source: Eurostat.

7. Trade by region (in value terms)

World trade totalled USD 3 700 billion in 1992. Asia is the leading trading area, followed by North America and the European Union (extra-EU trade).

(USD billion)

1992	Imports	Exports	Balance
Asia	806	885	79
• of which Japan	233	340	107
North America	684	583	– 101
• of which USA	554	448	– 106
Latin America	173	151	– 22
Middle East	128	125	– 3
Africa	102	95	– 7
Central and Eastern Europe and CIS	90	92	2
EU (excl. intra-EU trade)	636	569	– 68

Source: GATT — Eurostat.

8. Trade by region — average annual growth (1980-92)

The rapid expansion of world trade is a result of the structural changes which have been taking place for many years in the world economy and of more recent developments. The structural changes include the growing share of manufactured goods in world trade, the boost given to world trade by the multiplication of international investments, and the fall in the price of transport and communications, while the recent trends include the unification of Germany and the resulting surge in imports, the strong growth of imports into North America and Latin America and the continuing strength of the markets in certain Asian countries.

The trade figures for these regions for 1992 clearly show that the expansion in world trade is due to the large rise in the volume of imports into and exports from North America, Europe and Asia, in particular the dynamic economies of Asia.

(volume %)

Annual growth (1980-92)	Imports	Exports
Asia	7.3	8.9
North America	6.5	5.9
Western Europe	5.6	6.4
Latin America	2.8	2.5
Middle East	1.9	– 4.4
Africa	5.0	– 1.9

Source: GATT

9.-10. Leading importers and exporters in world trade

Outside the European Union, in 1992 the United States remained the world's leading goods exporter, followed by Japan and Canada.

The fastest growing markets were Hong Kong, China, South Korea, Taiwan, and Malaysia.

	(USD billion — 1992)			[Annual growth (1980-92) volume %]	
	Imports	Exports	Balance	Imports	Exports
EU (extra-EU)	636	569	- 68	5	5
USA	554	448	- 106	7	6
Japan	233	340	107	4	8
Canada	129	134	5	6	5
Hong Kong	123	120	- 4	15	16
South Korea	82	77	- 5	11	13
China	81	85	4	12	14
Taiwan	72	82	10	11	13
Singapore	72	64	- 9	10	10
Switzerland	66	66	0	5	7
Mexico	62	46	- 16	9	8
Austria	54	44	- 10	7	8
Sweden	50	56	6	3	5
Australia	44	43	- 1	6	6
Malaysia	40	41	1	11	10

Source: GATT.

11. New industrial economies of Asia

Trade is developing rapidly in Asia. However, the new industrial economies of Asia are still minor trading partners for Europe, and Europe invests much less there than the United States and Japan.

(USD billion — 1992)

	Exports	Imports	Trade balance	International investments
EU	39	51	- 12	842
USA	55	83	- 28	1 298
Japan	79	32	47	1 065

Source: OECD.

12. Foreign direct investment outflows

The countries of the triad generate the bulk of international investment.

Foreign investment by the European Union increased substantially in the 1980s, from an annual flow of ECU 10 billion in 1982 to ECU 32 billion in 1991. Investment flows increased dramatically after 1985, reaching ECU 43 billion in 1989, before falling to ECU 32 billion in 1991.

During the 1980s, foreign investment by the United States and Japan followed a similar trend to that of the European Union. US foreign investment started rising rapidly in the mid-1980s, then slowed down from 1988. In 1989, Japanese foreign investment was greater than the foreign investment of the European Union, but it has slowed down considerably since then.

(ECU billion)

	EU	USA	Japan
1982	10	1	8
1983	13	8	9
1984	19	15	13
1985	21	17	16
1986	28	18	23
1987	39	25	29
1988	42	15	40
1989	43	34	61
1990	28	22	45
1991	32	26	34
1992	NA	29	26

Source: DRI.

13. EU foreign direct investment

The stock of foreign investment in the European Union doubled between 1987 and 1991, while European investment in the rest of the world increased by 50% over the same period.

In spite of the faster growth of foreign investment in the European Union, the balance remains negative for the European Union, which invests more abroad than it attracts from abroad.

(ECU billion)

	Inward FDI	Outward FDI	Balance
1987	108	201	93
1988	134	253	119
1989	169	275	106
1990	170	275	105
1991	195	297	103

Source: DRI.

Intangible investment

14. Educational expenditure

Education is a prime example of intangible investment, as it prepares the future of the individual and of society.

The resources devoted to education can be measured in terms of public expenditure on education expressed as a percentage of GNP. During the 1980s the relative weight of public expenditure on education fell slightly in the triad to a similar level of about 5% of GDP/GNP.

(educational expenditure as % of GDP/GNP)

	1980	1985	1989
EU	5.3	5.1	4.9
USA	6.7	5.0	5.3
Japan	5.8	5.0	4.7

Source: Unesco.

15. R&D investment by economic region (1991)

Total EU expenditure on R&D expressed as a percentage of GNP is barely equal to the world average and is much lower than that of Japan, the United States and the new industrial economies of Asia.

(R&D spending as a % of GDP)

	1991
EU	2.0
USA	2.8
Japan	3.1
Industrialized Asia	2.7
World	2.0

Source: Unesco.

16. EU R&D investment by sector (1989)

Industrial R&D is generally concentrated in high-demand, high-technology sectors, which account for 75% of total research and development.

(R&D in industrial production (EU) — %)

	1989
Aerospace	17.0
Pharmaceuticals	12.1
Electronics	11.5
Chemicals	3.8
Land transport	3.2
Capital goods	2.5
Other industries	0.5
Total	2.3

Source: OECD

17. Growth in R&D investment by companies

In the European Union, the average annual rate of growth of industrial R&D was around 5% during the 1980s. In the United States, which accounts for almost half of all R&D in OECD countries, R&D expenditure has more or less stagnated since 1985. In Japan, R&D expenditure rose rapidly up to 1985 (increasing by more than 10%). The rate of increase in R&D spending by Japanese companies also appears to have slackened since 1985, but is still high compared with other countries (about 8%).

(average annual growth rate (%))

	1975-81	1981-85	1985-89	1989-92
EU	4.8	4.9	4.8	2.1
USA	4.5	8.6	1.3	– 0.8
Japan	8.2	11.2	7.4	8,5

Source: OECD

18. Intensity of R&D investment by companies

EU companies have increased their spending on research and development more rapidly than their US and Japanese competitors: if we look at the 50 companies with the highest research budgets in each of these three areas, research spending as a percentage of turnover almost doubled between 1984 and 1992 in European companies, reaching 4.5% in 1992, while in Japanese companies it increased by a little under 40%, although Japan still has the highest level (5.8%), and in US companies it increased by less than 30% (to 3.7% in 1992).

(R&D as % of turnover (50 big R&D spenders))

	EU	USA	Japan
1984	2.7	2.9	4.2
1988	4.4	3.3	5.4
1992	4.5	3.7	5.8

Source: DABLE.

19. Inventions by region of origin

In terms of the number of inventions of supranational importance, Europe was the leading producer of new technologies during the last two decades: it registered 40% of world patents between 1985 and 1989.

However, the European Union's leading position is slowly being eroded: its share fell from 43% in the period 1975-79 to 40% during the period 1980-84 and 38% during the period 1985-89. Japan has shown the fastest growth in the number of inventions.

(inventions in thousands)

	1975-79	1980-84	1985-89
EU	120	136	147
North America	82	97	105
Japan	43	68	95
Others	37	43	42

Source: Panorama of EU Industry 1994.

As regards scientific production, the European Union, with 30% of scientific publications in 1993 compared with 24% in 1983, comes second after the United States (40%). The disciplines in which the European Union has made the greatest progress are clinical medicine, biomedical research, biology, chemistry and science in general.

20. Balance of technological payments

Trade in technology covers imports of technologically complex goods, the purchase of technologies (patents, licences, know-how, services with a technical content, etc.) and the setting-up and purchase of production and distribution units as part of direct foreign investment operations.

Technological imports into the European Union are far higher than technological exports, whereas the United States has a large technological trade surplus and Japanese technological trade is broadly balanced.

(technological payments in USD — billion 1990)

	Receipts	Payments	Balance
EU	13.1	18.4	-5.3
USA	16.5	3.1	13.4
Japan	2.3	2.6	-0.3

Source: OECD.

21. Link between R&D and trade performance (1990)

The degree to which R&D spending is reflected in an economy's trade performance depends on its capacity to innovate: paradoxically, and in contrast to the situation observed in Japan, the European Union's research spending yields a poorer performance on high-technology markets than on the market in general.

(as % of OECD total — 1990)

	Company R&D investment	High-tech exports	Total exports
EU	28	36	41
USA	45	24	15
Japan	21	19	13
Others	6	21	31

Source. OECD.

22. Link between technological intensity and wage level (1990)

High-technology industries generally have high wage levels. Economies with a higher proportion of high-technology industries also have a higher proportion of high-wage industries.

(share of added value (1990))

	High-tech industries	High-wage industries
Italy	14	16
UK	20	25
Japan	22	23
USA	20	29
Germany	21	29

Source: OECD.

23. Wage level as a function of technological intensity

The positive correlation between the degree of technological sophistication and the wage level is observed everywhere, except in the medium-technology sectors in Japan, Germany and the United Kingdom, which have a wage level equal to or higher than that of the high-technology sectors.

(total manufacturing = 100)

	High tech-nology	Medium tech-nology	Low tech-nology
UK (1988)	108	108	93
Germany (1989)	110	116	83
USA (1989)	118	112	86
Japan (1989)	100	115	91

Source: OECD.

EU position on growth markets

24. Production growth for some sectors in the EU (1986-92)

(average real annual growth (1986-92) (%))

Pharmaceuticals	7.3
Plastics processing	7.1
Secondary transformations of metals	5.7
Telecommunications equipment	5.4
Rubber and plastics	5.3
Computer and office equipment	5.1
Soft drinks, mineral water	5.0
Processing of fruit and vegetables	4.9
Motor-vehicle parts	4.8
Electric lighting	4.6
Semi-finished wood products	4.6
Cocoa and sugar confectionery	4.5
Wooden containers	4.4
Constructional steelwork	4.4
Paper, printing and publishing	4.3
Oils and fats	4.3
Sawing and first processing of wood	4.3
Bread and flour	4.3
Meat	4.2
Soaps, detergents, perfumes and toiletries	4.0
Pulp, paper and board	4.0
Forging	3.9
Motor vehicles and parts	3.8
Domestic electrical appliances	3.8
Compound feed	3.7
Processing and preserving of fish	3.7
Metal products	3.6
Man-made fibres	3.5
Paper and board processing	3.5
Glass	3.3
Wooden furniture	3.3
Consumer electronics	3.2
Food drink and tobacco	3.0
Non-metallic mineral products	2.8
Basic industrial chemicals	2.7
Optical and photographic equipment	2.6
Instrument engineering	2.5
Footwear and clothing	2.1
Shipbuilding	2.0
Grain milling	1.8
Clothing	1.8
Clay products	1.6
Ceramic goods	1.6
Aerospace equipment	1.6
Dairy products	1.6
Cycles and motorcycles	1.5
Toys and sports goods	1.2
Railway rolling stock	1.2
Boilers and metal containers	1.0
Mechanical engineering	0.9
Measuring and precision instruments	0.8
Foundries	0.6
Tobacco	0.4
Knitwear	0.3
Wine	0.0
Brewing and malting	0.0
Textile machinery	−0.2
Alcohol and spirits	−0.2
Leather and leather goods	−0.2
Transmission equipment	−0.3
Musical instruments	−1.4
Machine tools	−1.6
Clocks and watches	−2.9
Agricultural machinery	−4.0
Furs and fur goods	−5.3

Source: DEBA.

25. Trade balance for some sectors in the EU (1986-92)

	1992 (ECU million)	1986-92[1]
Mechanical engineering	36 543	0.4
Motor vehicles and parts	8 367	- 13.8
Food, drink and tobacco	6 601	15.2
Pharmaceuticals	4 889	4.4
Metal products	4 647	- 6.8
Non-metallic mineral products	4 282	- 2.4
Textile machinery	4 065	7.4
Soaps, detergents, perfumes and toiletries	3 320	9.3
Dairy products	3 221	5.9
Alcohol and spirits	3 216	8.4
Aerospace equipment	3 010	31.5
Machine tools	2 414	- 3.5
Shipbuilding	2 400	15.7
Rubber and plastics	2 317	- 9.1
Motor vehicle parts	2 181	- 15.3
Ceramic goods	2 024	2.4
Plastics processing	1 755	- 5.7
Agricultural machinery	1 429	- 4.9
Basic industrial chemicals	1 322	- 18.8
Telecommunications equipment	1 295	- 12.6
Domestic electrical appliances	1 247	8.7
Railway rolling stock	1 209	8.4
Cocoa and sugar confectionery	1 149	8.9
Constructional steelwork	1 147	- 7.9
Transmission equipment	1 138	1.6
Brewing and malting	1 061	2.5
Boilers and metal containers	1 022	0.0
Tobacco	941	18.7
Grain milling	874	10.6
Wooden furniture	777	- 13.7
Glass	731	- 7.9
Wine	629	- 1.8
Bread and flour	568	5.4
Electric lighting	494	- 2.0
Paper and board processing	483	- 5.3
Measuring and precision instruments	468	- 6.8
Foundries	366	- 5.8
Soft drinks, mineral water	316	8.0
Clay products	194	- 3.1
Forging	140	- 5.0
Secondary transformation of metals	79	- 15.9
Furs and fur goods	74	- 12.3
Wooden containers	6	- 16.1
Meat	- 278	- 12.6
Man-made fibres	- 348	- 2.6
Musical instruments	- 354	7.4
Leather and leather goods	- 510	16.7
Optical and photographic instruments	- 1 563	13.3
Semi-finished wood products	- 1 589	4.7
Clocks and watches	- 1 694	10.0
Processing of fruit and vegetables	- 2 088	12.1
Oils and fats	- 2 320	- 4.3
Processing and preserving of fish	- 2 325	14.2
Cycles and motorcycles	- 2 445	40.6
Instrument engineering	- 2 949	38.0
Toys and sports goods	- 4 592	33.6
Sawing and first processing of wood	- 5 466	3.5
Knitwear	- 5 472	50.5
Paper, printing and publishing	- 9 139	6.5
Clothing	- 9 739	23.5
Footwear and clothing	- 10 863	57.6
Pulp, paper and board	- 11 875	- 4.5
Computer and office equipment	- 14 500	16.1

[1] As a percentage of annual growth

Source: DEBA.

26. Manufacturing output growth forecast (1992-2010)

The growth forecasts for the main industrial sectors identify the following growth markets:

(average annual growth in the EU)

	1992-2010 (%)
Office and EDP equipment	4.2
Rubber and plastics	4.1
Electrical equipment	3.0
Transport equipment	3.0
Pulp, paper and printing	2.9
Mechanical engineering	2.8
Metal products	2.8
Chemicals	2.7
Non-metallic minerals	2.6
Average	2.6
Miscellaneous products	2.6
Textiles and clothing	1.8
Food, drink and tobacco	1.7
Ore and metals	- 1.9

Source: DRI.

27. Sectoral specialization of exports of manufactured goods (1992)

To assess the extent to which industries have succeeded in adjusting to changes in the structure of demand, manufacturing subsectors have

been grouped into three categories according to demand growth:

☐ strong-demand sectors for which international demand is growing more rapidly than economic activity in general (chemicals, pharmaceuticals, office machinery and computer equipment, precision and optical instruments, and electrical equipment and machinery);

☐ moderate-demand sectors for which demand is keeping pace with the average growth of the economy (machinery and equipment, transport equipment, food, drink and tobacco, paper and printing, rubber and plastics);

☐ weak-demand sectors for which international demand is growing slowly (ferrous and non-ferrous metals, non-metallic minerals, metal products, textiles, clothing, leather goods and footwear, and other manufactured products).

Most of the strong-demand sectors have a high technological content. Conversely, weak-demand sectors are characterized by low technological content, high natural resources and/or labour input and low-wage levels.

The situation of the EU industry is marked by a higher level of specialization than the triad average on low-growth markets but a lower level on medium- and high-growth markets.

(sectoral distribution of manufacturing exports (1992), average = 0))

	Weak demand	Moderate demand	Strong demand
EU	19	– 4	– 11
USA	– 27	8	11
Japan	– 44	7	29

Source: Comext, Commission departments.

28. Geographical specialization of exports of manufactured goods (1992)

For our analysis of the geographical specialization of European exports of manufactured goods, world markets have been divided into eight economic areas: EFTA, United States and Canada, Japan, NICs, China, Latin America, ACP countries and the rest of the world. This breakdown shows whether the European Union is performing well on the most dynamic international markets, such as Latin America and certain countries in Asia (newly industrialized countries and China), where forecast medium-term growth rates exceed 3%.

Geographical specialization within the triad is measured by dividing the shares of the European Union, the United States and Japan by the triad average.

On this basis, we find that the European Union trades mainly with EFTA member countries and ACP countries, and very little with the NICs, China and Latin America. The United States trades mainly with Japan, Latin America and the European Union. Japan's trade focuses on the European Union, the United States and Canada, the newly industrialized countries and China.

(geographical distribution of exports of manufactured goods (1992), average = 0))

	EU	USA	Japan
NICs	– 46	– 7	79
Latin America	– 43	98	– 49
China	– 26	– 23	68
USA and Central America	– 16	– 8	34
Japan	– 8	95	NA
Other	49	– 46	– 22
ACP	52	– 31	– 45
EFTA	112	– 80	– 79

Source: Comext.

29. Sectoral and geographical specialization of EU exports of manufactured goods (1992)

Neither the sectoral nor the geographical specialization of the European Union's manufacturing industry is optimal.

Analysis of the sectoral and geographical breakdown of the European Union's exports of manufactured goods shows that:

☐ for sectors with strong demand and high technological content, the European Union has a clear specialization only in exports to the ACP countries and Latin America;

☐ for sectors with moderate demand, the European Union is specialized only in exports to China;

☐ the share of the sectors with weak demand in total EU exports is the highest of the triad as regards exports to all geographical areas except China and Latin America.

As regards the most dynamic geographic markets, the European Union has a slight specialization in strong-demand sectors in its exports to Latin America, a specialization in weak-demand sectors in its exports to the newly industrialized countries, and a specialization in moderate-demand sectors in its exports to China.

However, the European Union is the only industrial region with a substantial presence in all industrial sectors.

(1992 — average = 0)

	Weak demand	Moderate demand	Strong demand
EFTA	9	-5	-3
USA and Central America	29	-7	-4
Japan	7	-6	3
NICs	23	8	-21
China	-37	20	-7
Latin America	-12	2	4
ACP	0	-5	13
Others	15	-8	2

Source: Comext.

30. Sectoral specialization trends

To stimulate growth in manufacturing industry, production capacity must be redirected towards products for which demand is strong (office machinery and computer equipment, information technology, electrical and electronic equipment and machinery, chemicals and pharmaceuticals). The more companies focus on growth markets, the stronger and more sustained will be the growth of manufacturing industry.

Between 1980 and 1990, European industry did not succeed in adjusting as quickly as industry in the United States and Japan in order to take advantage of openings on growth markets: the contribution to value-added of European companies producing goods for which demand is strong increased less quickly than in Japan, while the contribution of sectors with weak growth fell less quickly than in the United States and Japan.

(gross value-added in manufacturing (1980-90) (%))

	EU-6	USA	Japan
Weak demand sectors	-4	-5	-9
Moderate demand sectors	-1	-1	-8
Strong demand sectors	5	4	17

Source: national accounts.

Growth markets: some examples

31. Data-processing and telecommunications industries (1995)

The world market for data-processing and telecommunications is forecast to be worth ECU 880 billion in 1995. Of this, 45% will come from data-processing (hardware, software and services) and 55% from telecommunications equipment and services.

The European market for data-processing and telecommunications is expected to account for more than a quarter of the world market — ECU 250 billion in 1995 — of which 45% will come from data-processing (hardware, software and services) and 55% from telecommunications equipment and services.

(%)

1995	World market	EU market
Data processing hardware	20	18
Software	8	8
Data-processing services	17	19
Telecommunications equipment	13	10
Telecommunications services	42	45
Total (in ECU billion)	880	290

Source: EITO 94.

32. US information market (1995)

The US information market is forecast to be worth USD 993 billion in 1995. Of this, 45.3% will come from data-processing (hardware, software and services) and 25.3% from telecommunications equipment and services. The remaining 29.2% is accounted for by media markets.

1995	Annual sales (USD billion)	Relative share (%)
Computer and electronic equipment	318	32.0
Telecommunications equipment	47	4.7
Long-distance service	52	5.2
Local and cellular telephone services	140	14.1
Yellow Pages	13	1.3
Radio	11	1.1
Video	23	2.3
Cable TV	17	1.7
Broadcasting	33	3.3
Printing and publishing	207	20.8
Software and information services	132	13.3
Total	993	100.0

Source: Columbia University, CTIS.

33. Environment market: breakdown by region and market (2000)

The market for environmental protection products is growing rapidly, especially in the industrialized countries. The average rate of growth is estimated to be between 5 and 6% a year. The world market is expected to be worth USD 300 billion in the year 2000.

In the year 2000, the largest national market is expected to be the United States, accounting for 38% of the total. Europe is expected to account for 26%.

The main segments of the environmental protection industry, defined according to their final use, are water and effluent treatment, waste management, and air quality monitoring.

(%)

Breakdown by region		Breakdown by market	
Others	23	Services	27
Japan	13	Other equipment	11
USA	38	Air	14
Europe	26	Waste	21
		Water	28

Source: OECD.

34. Environment industry: production and exports (2000)

The main producers of environmental equipment and services are the United States, Germany and Japan. Production straddles a number of sectors, including industrial machinery, electrical equipment, chemicals and services.

2000	Production (USD billion)	Export rate (as % of production)
Europe	68	20
USA	80	10
Japan	30	6

Source: OECD.

35. Top-of-the-range products market — breakdown by segment and growth rate

Top-of-the-range products are those which can sustain a high price, i.e. a price substantially higher than that of products which are functionally comparable.

The main top-of-the-range markets are *haute couture*, motor vehicles, clothing and footwear, cosmetics and perfumes, spirits, wines and champagne, clocks and watches, porcelain, crystal glass and silverware, and jewellery. Between 1985 and 1989, all these markets recorded annual growth rates of between 4 (porcelain) and 17% (clocks and watches), i.e. substantially higher than the average rate of market growth.

(%)

	Breakdown by segment (1989)	Growth rate (1985-89)
Haute couture	23	8.5
Automobiles	18	6.0
Fashion accessories, leather goods	14	9.0
Cosmetics	10	7.0
Perfumes	10	11.0
Spirits	9	7.0
Watchmaking	4	17.0
Champagne	3	10.5
Shoes	3	6.5
Chinaware	3	4.0
Jewellery	2	13.0
Wine	1	5.5
Goldware	1	4.5
Crystal-making	1	7.5
Total top-of-the-range products	100	8.2
Total manufacturing industry		5.4

Source: McKinsey.

36. Top-of-the-range products market — geographical breakdown

In 1989, the total market for top-of-the-range products was worth ECU 42 billion. Europe is the main market for top-of-the-range products, accounting for 43% of the world market in 1989. However, demand for top-of-the-range products is growing most rapidly in the United States (13%), followed by Europe (10%) and Japan (7.5%).

(%)

Geographical breakdown	Market share (1989)	Annual growth (1985-89)
EU-4	43	10.0
USA	32	13.0
Japan	17	7.5
Others	8	7.9

Source: McKinsey.

37. Health and biotechnology market

The European Union is world leader in terms of production and exports of pharmaceutical products. Total EU production was worth ECU 64 billion in 1992. This sector has a sustained trade surplus.

The production and consumption of pharmaceuticals increased rapidly from 1983 to 1992, at an average real rate of about 7% a year. Exports grew by 2.6% a year, while imports grew by an average 5.4% a year: these rates of growth are much higher than the average rates for manufacturing industry.

Pharmaceuticals will remain a rapid growth sector throughout the 1990s on account of health concerns and demographic ageing.

(pharmaceutical products in the EU (ECU billion))

	Apparent consumption	Production	Exports
1985	35	39	6
1990	55	59	8
1995	74	79	12

Source · Eurostat/DRI.

38. Specialization in high-technology industries

In 1990, the United States accounted for 24% of OECD exports of high-technology products, 13% of exports of medium-technology products and 11% of exports of low-technology products. The European Union, on the other hand, accounted for 36% of OECD exports of high-technology products, 44% of exports of medium-technology products and 41% of exports of low-technology products.

By specializing in relatively unsophisticated products for which world markets are not growing, European industry is becoming increasingly exposed to price competition.

Indeed, European industry is already facing growing competition from the countries of South-East Asia for labour-intensive, low- to medium-technology products.

(average = 0)

	1970	1992
EU	– 14	– 18
USA	59	51
Japan	24	44

NB: Specialization index = relative share of high-technology exports.
Source: OECD.

39. High-technology products market — EU trade

The definition of high-technology products used here is based on a classification of each industry according to its spending on research and development (R & D expenditure as a proportion of turnover or production). Products which are highly dependent on R & D expenditure are considered to be high-technology products.

At the end of the 1980s, high-technology products accounted for about a quarter of the value of all trade in manufactured products among developed countries. The value of EU exports of high-technology products increased from ECU 27 billion in 1978 to some ECU 71 billion in 1990, while the value of EU imports had increased fivefold since 1978, reaching ECU 93 billion in 1990.

During the period 1982-90, EU exports of high-technology products increased a little more rapidly (59.5%) than total EU exports (47.8%), while during the same period EU imports of high-technology products increased three times as much (137.8%) as total EU imports (38%). In other words, EU imports of high-technology products increased at an average annual rate of 11.4%, double the rate of increase of EU exports of such products (6%). This resulted in a progressive deterioration in the European Union's trade balance in high-technology products, which went from a surplus of ECU 5 billion in 1982 to a deficit of ECU 22 billion in 1990.

(EU trade — ECU billion)

	Exports	Imports	Balance
1978	27	19	7
1984	59	60	– 1
1989	71	93	– 22

Source: Eurostat.

40. High-technology products market — level of opening-up

Analysis of the openness of those economies for which these figures exist shows that the propensity to import high-technology products is inversely proportional to its capacity to export such products.

(level of opening-up (1990) (%))

	Proportion of consumption imported	Proportion of production exported
Germany	33	15
UK	37	9
USA	17	24
Japan	7	19

Source: OECD.

41. High-technology products market — trade performance

The European Union's relative trade performance on high-technology markets deteriorated between 1980 and 1990: the European share of world exports fell from 40 to 36%.

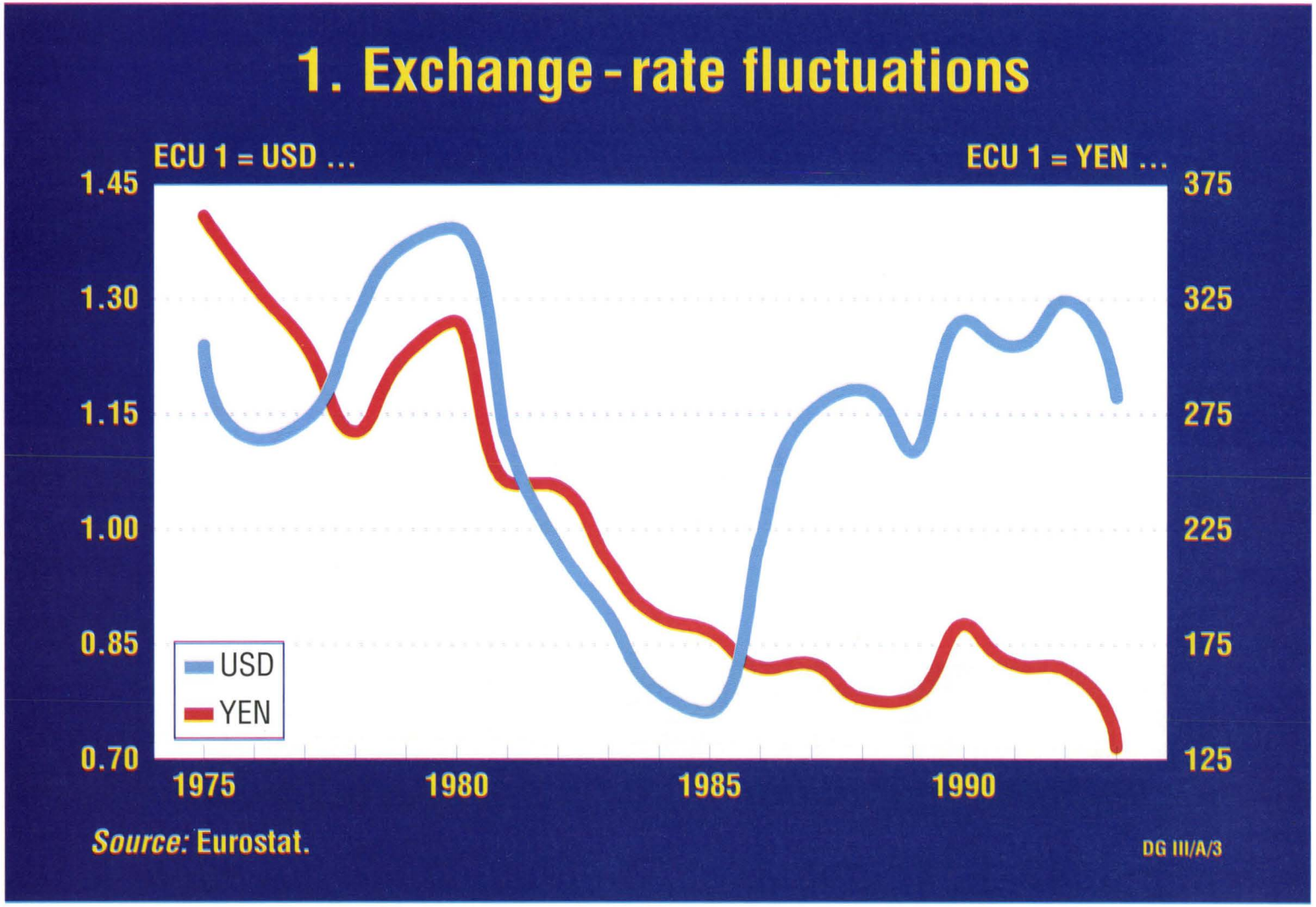
(trade performance (relative share of world exports) (%))

	1980	1990
EU-4	40	36
USA	25	24
Japan	15	19
Others	20	21

Source: OECD.

Annex III

Figures


1. Exchange-rate fluctuations
ECU 1 = USD ...
ECU 1 = YEN ...
1.45
1.30
1.15
1.00
0.85
0.70
375
325
275
225
175
125
USD
YEN
1975
1980
1985
1990
Source: Eurostat.
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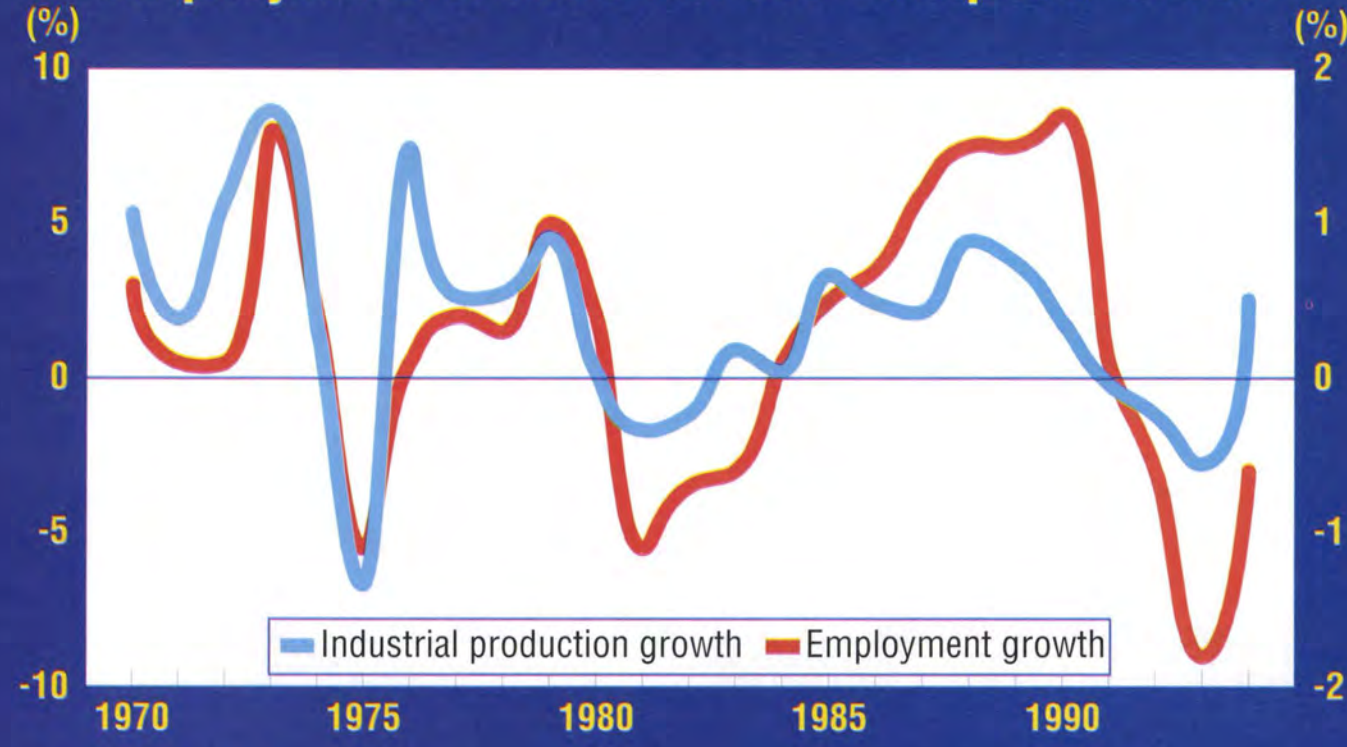
2. Link between industrial production and employment creation in the European Union



Source: Eurostat.

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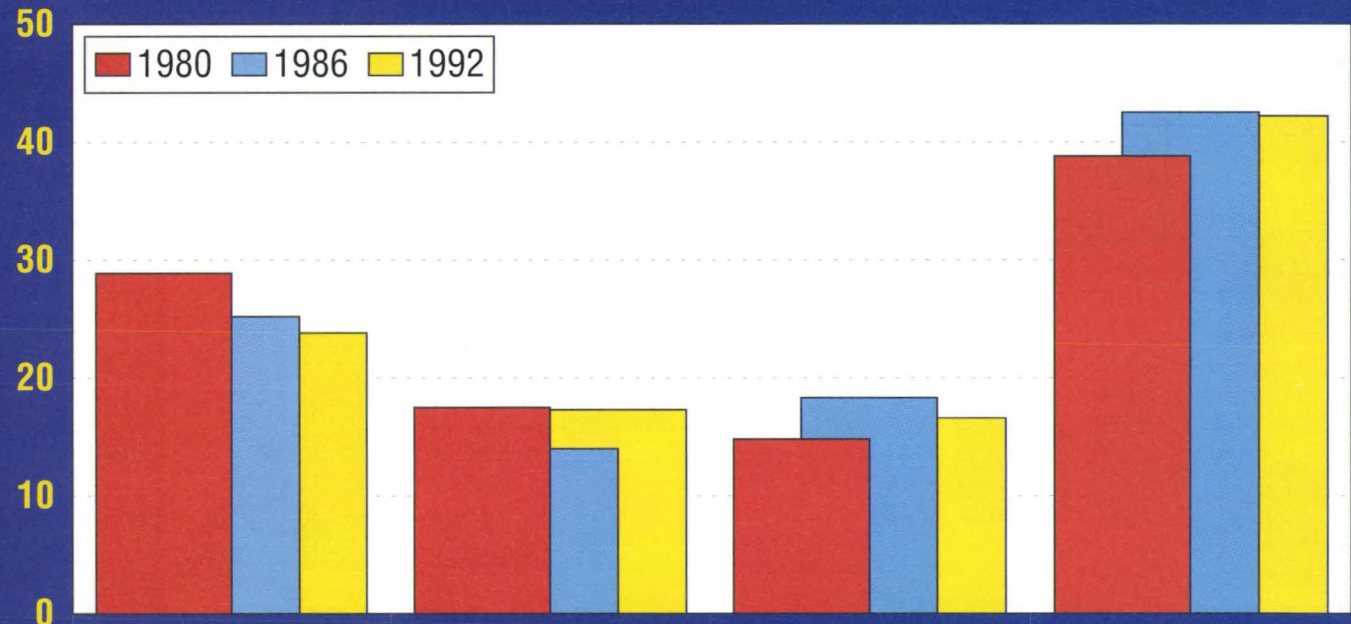
3. Market shares of main economic regions as % of world exports of manufactured products



	EU	USA	Japan	Others
1980	28.9	17.5	14.8	38.8
1986	25.2	14	18.3	42.5
1992	23.8	17.3	16.6	42.2

Source: OECD.

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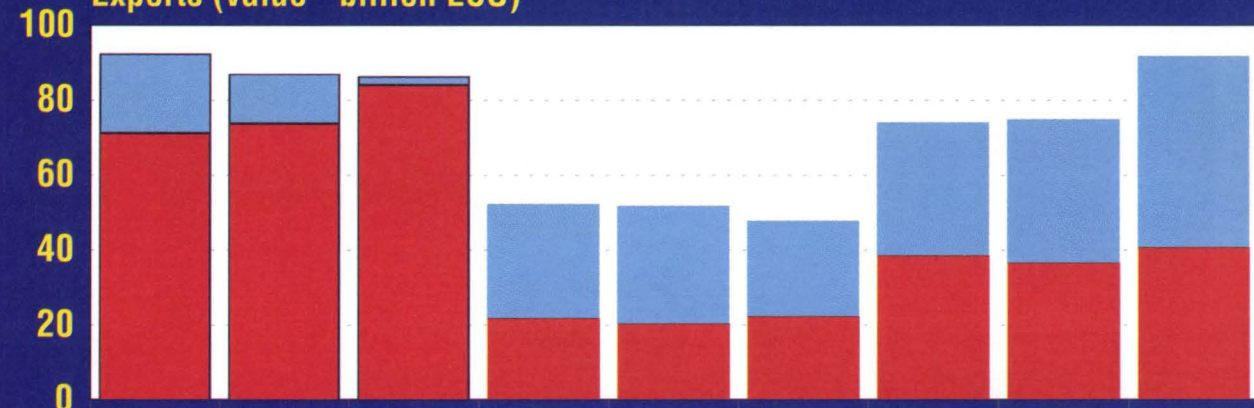
4. Total trade in the triad



	1991	1992	1993	1991	1992	1993	1991	1992	1993
USA->Japan							38.8	36.8	40.9
Japan->USA							73.9	74.8	91.6
balance							-35.1	-38	-50.7
EU->Japan				22.1	20.6	22.6			
Japan->EU				51.8	51.5	47.6			
balance				-30	-31	-25			
EU->USA	71.2	73.8	84.1						
USA->EU	91.9	86.8	86.3						
balance	-21	-13	-2						

Source: **Eurostat and OECD.**

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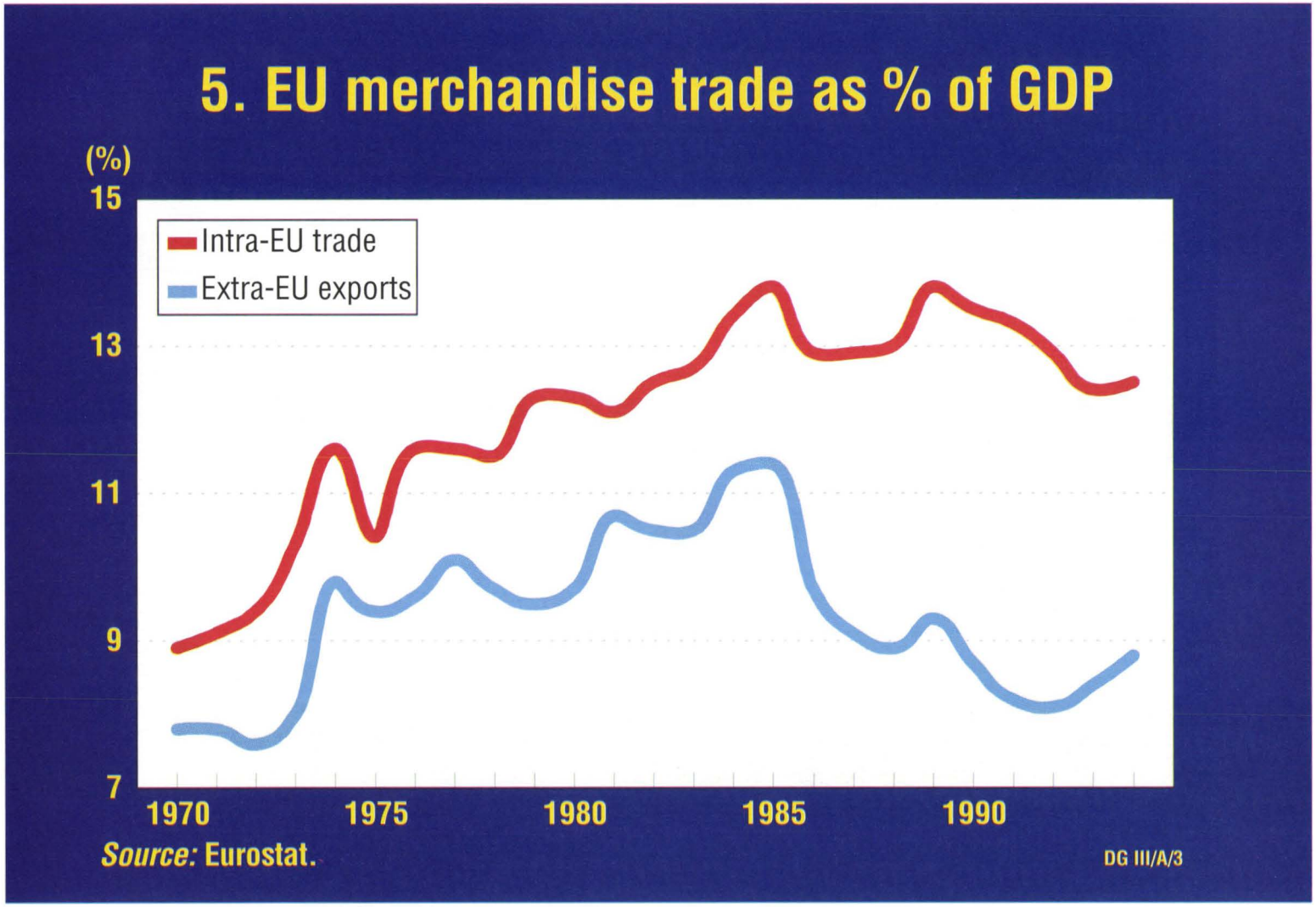
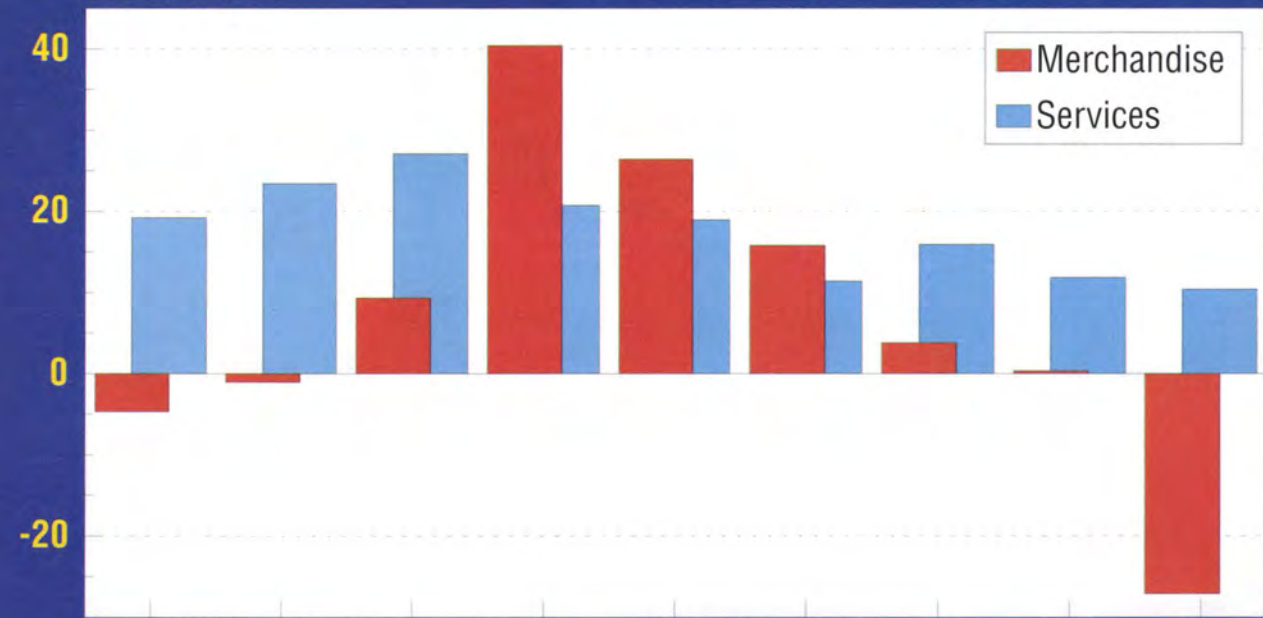

5. EU merchandise trade as % of GDP
(%)
15
13
11
9
7
Intra-EU trade
Extra-EU exports
1970
1975
1980
1985
1990
Source: Eurostat.
DG III/A/3

6. Total EU trade balance

billion ECU



	1983	1984	1985	1986	1987	1988	1989	1990	1991
Merchandise	-4.7	-1.1	9.3	40.4	26.4	15.8	3.8	0.3	-27.1
Services	19.2	23.4	27.1	20.7	18.9	11.4	15.9	11.8	10.4

Source: Eurostat.

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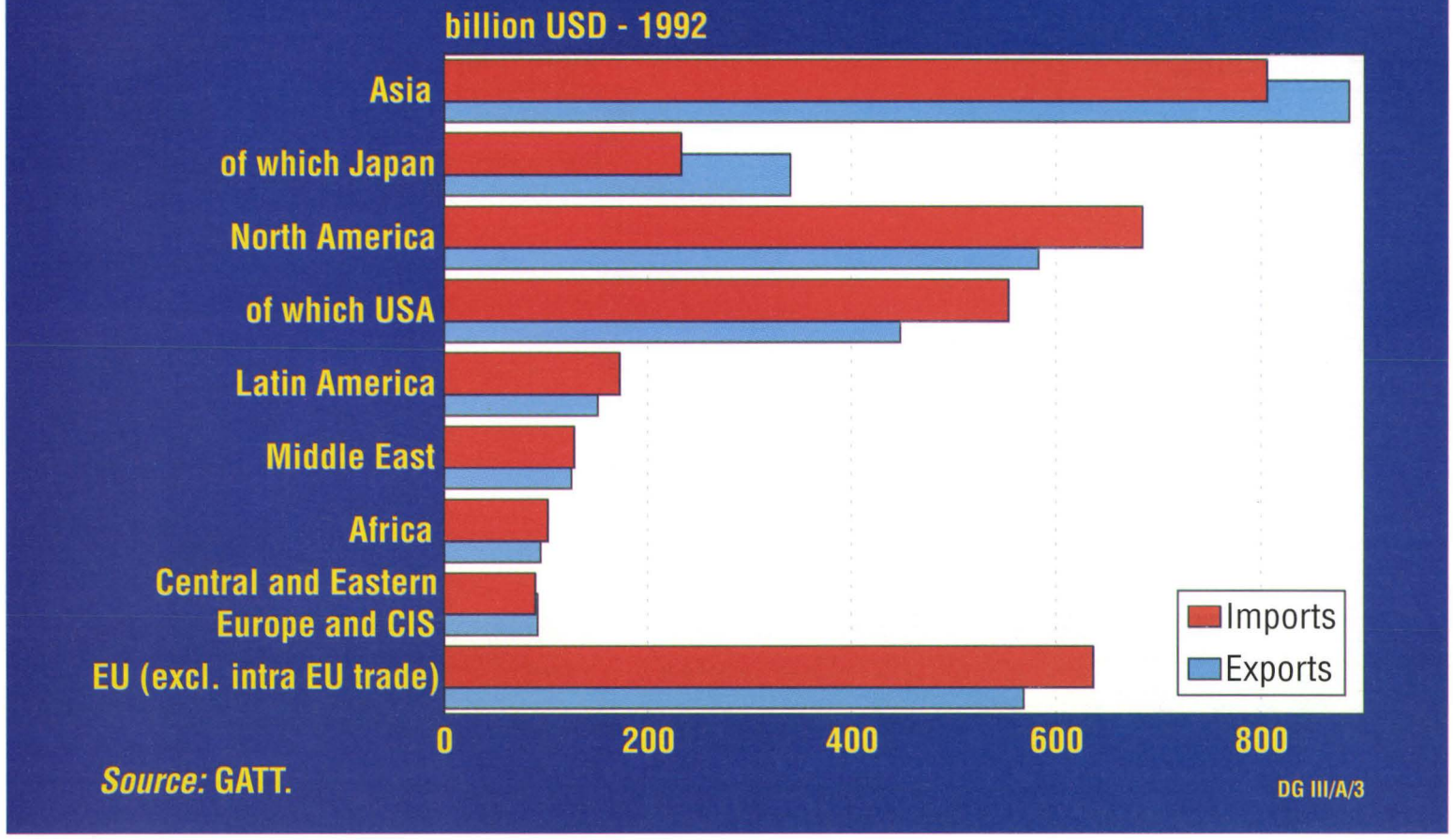
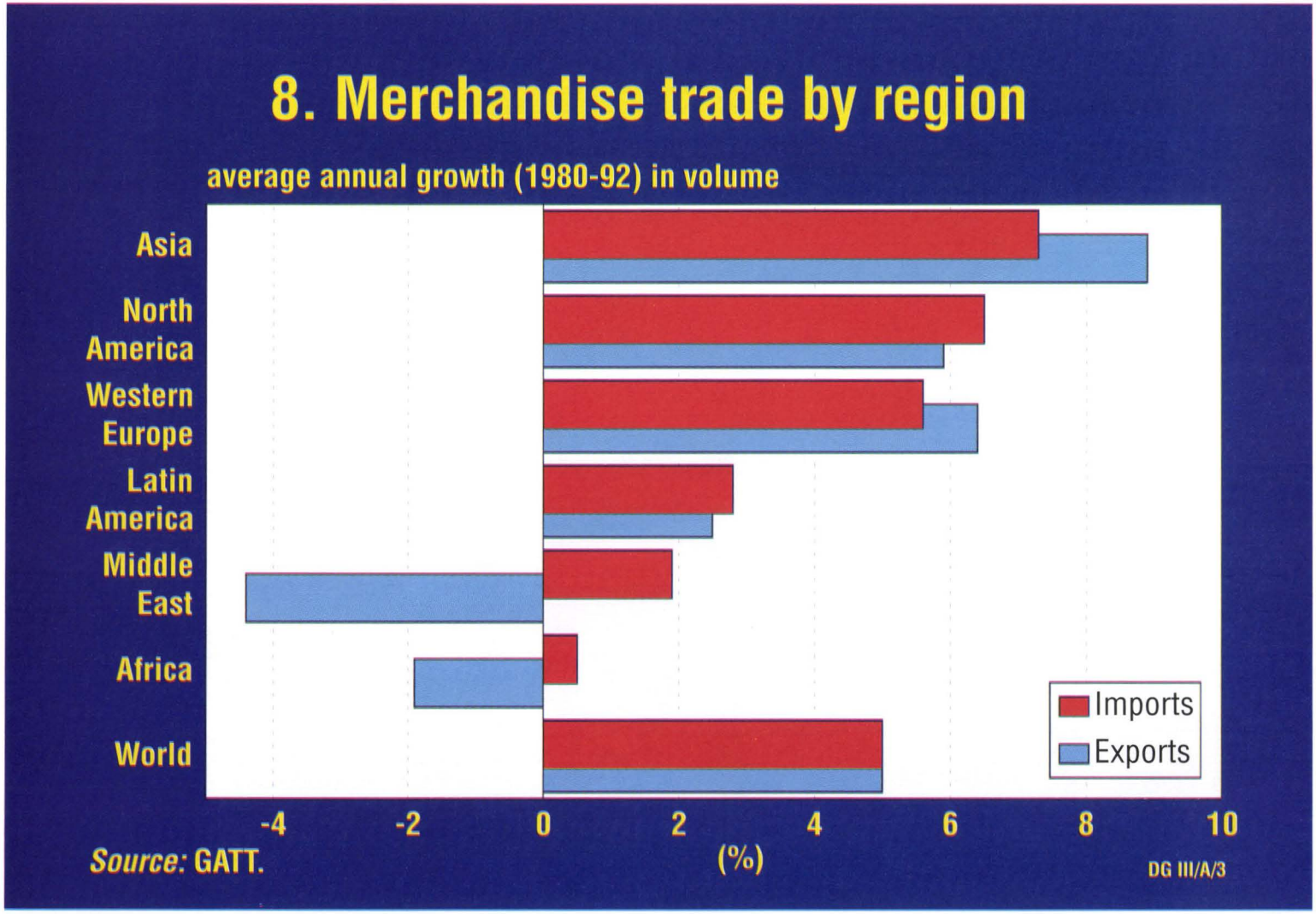
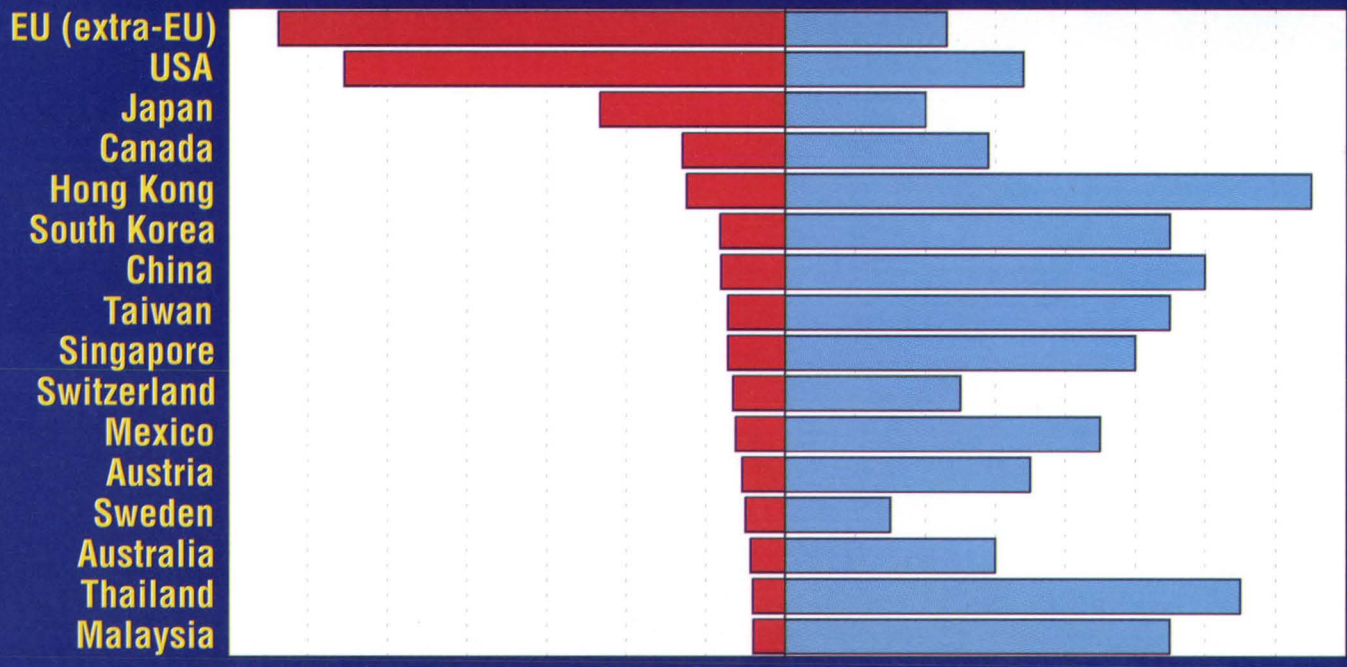
7. Merchandise trade by region



8. Merchandise trade by region



9. Leading importers in world trade



Source: GATT.

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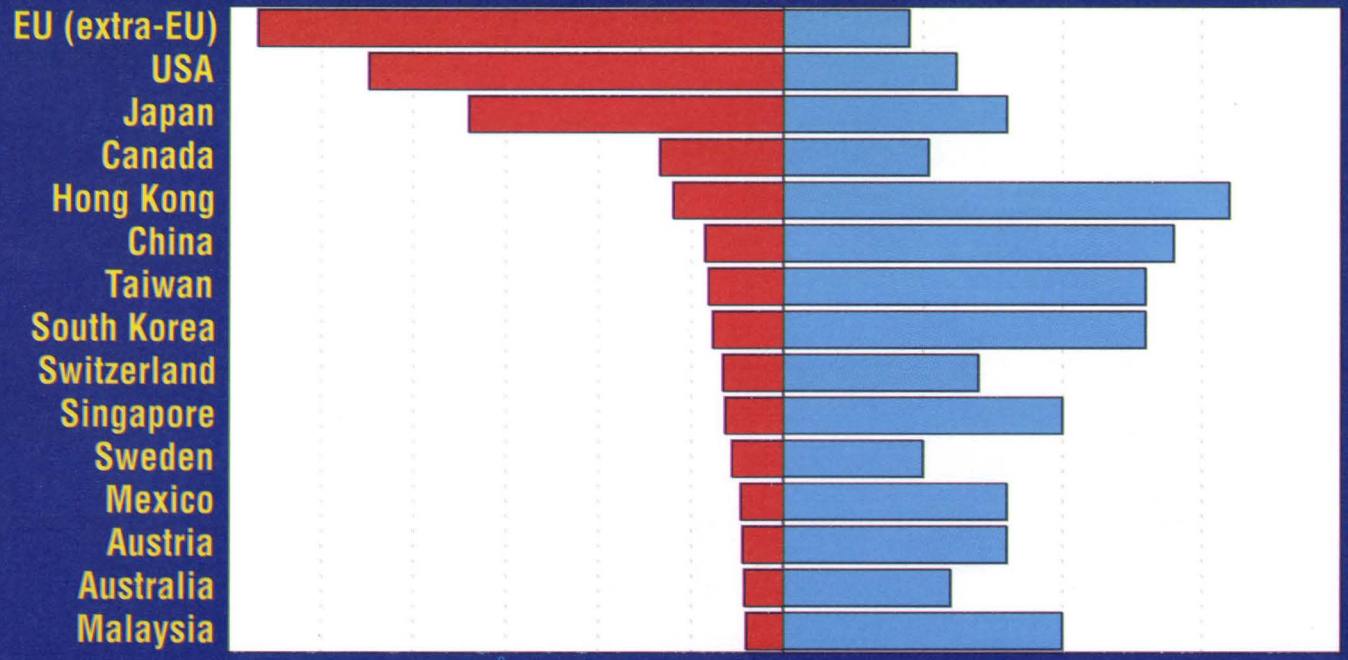
10. Leading exporters in world trade



Source: GATT.

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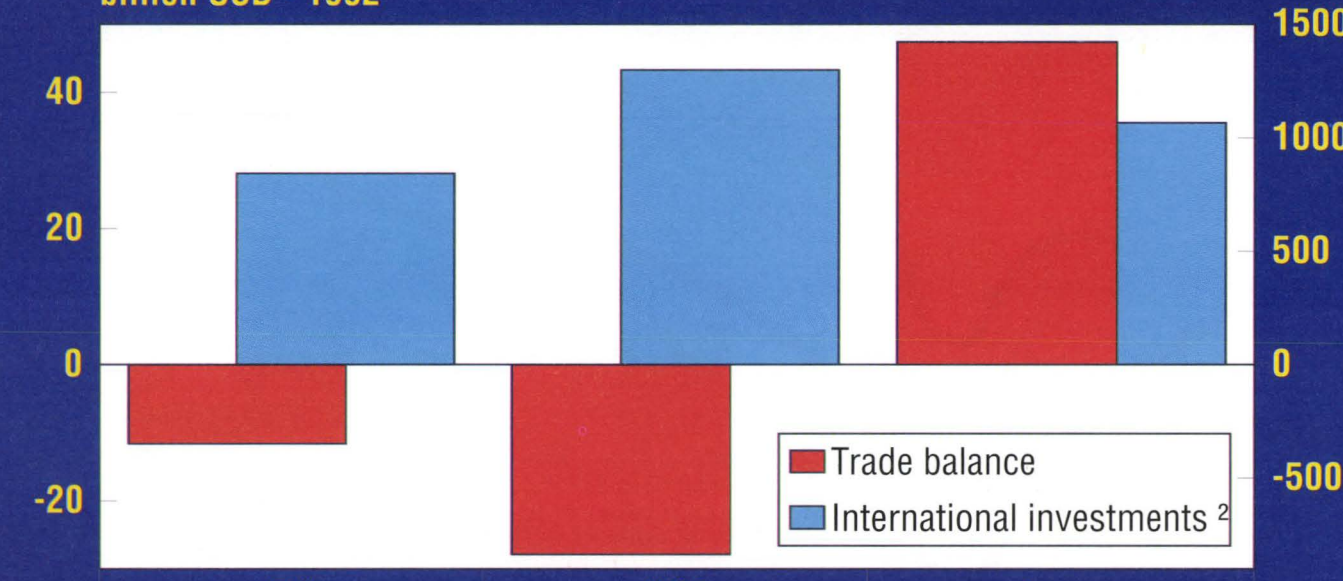
11. New industrial economies of Asia [1]

billion USD - 1992



	EU	USA	Japan
Exports	39.1	54.8	78.9
Imports	50.7	82.6	31.5

[1] Hong Kong, Taiwan, South Korea and Singapore.

[2] Investments coming from the EU, USA and Japan in the new industrial economies of Asia.

Source: **OECD.**

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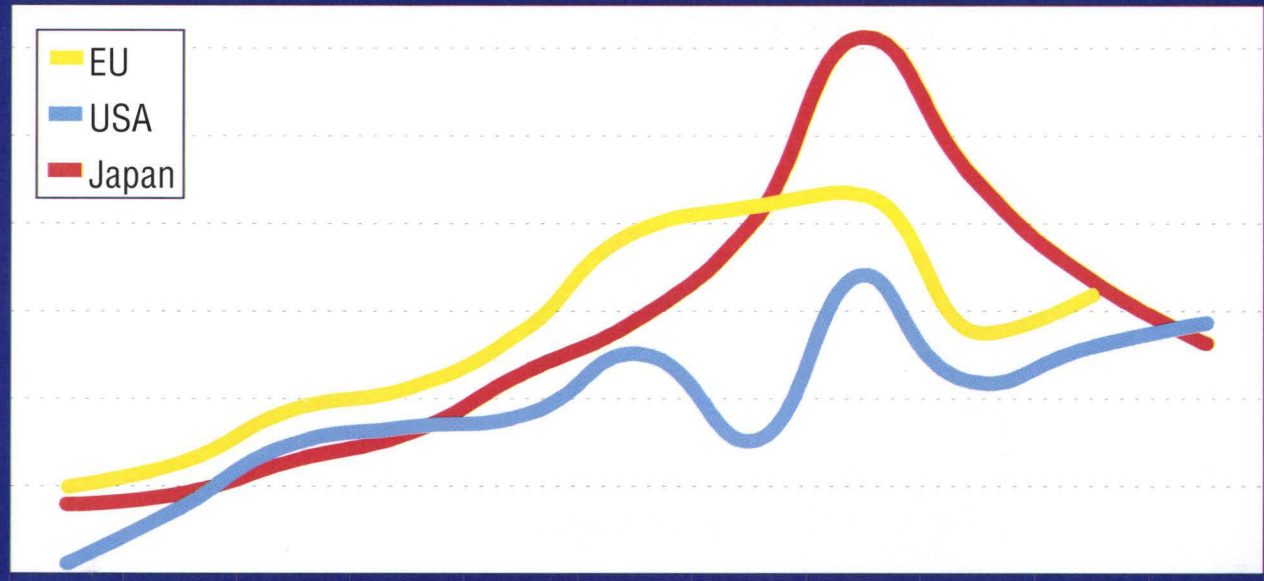
12. Foreign direct investment outflows

billion ECU



	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
EU	9.9	12.7	18.8	21.2	27.7	39.1	41.9	43.2	27.5	31.9	NA
USA	1.1	7.5	14.8	16.7	18	25.1	15.1	34.1	21.8	25.9	28.6
Japan	7.9	9.1	12.9	16	22.8	28.9	39.7	61.3	44.7	33.5	26.3

Source: DRI.

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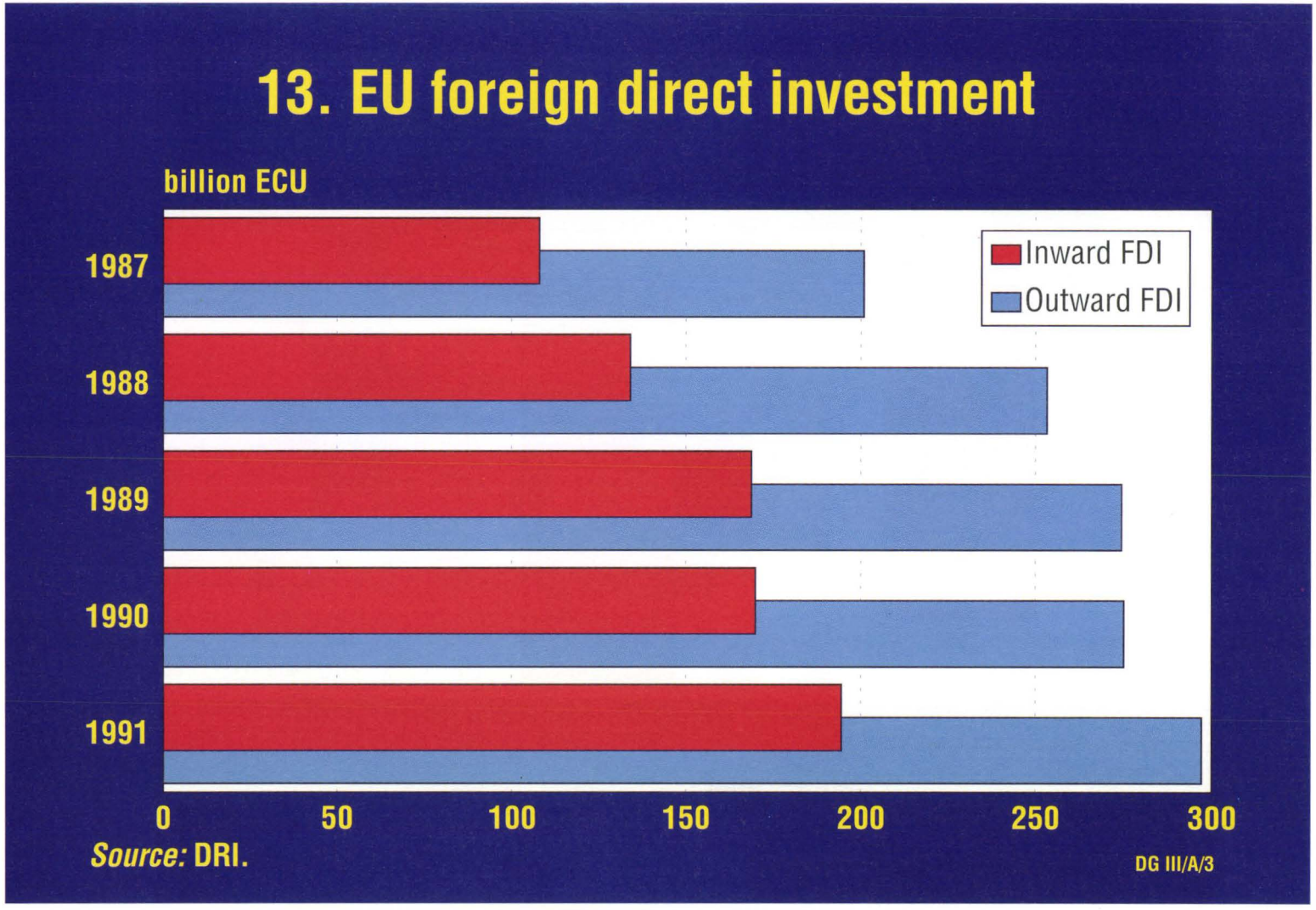
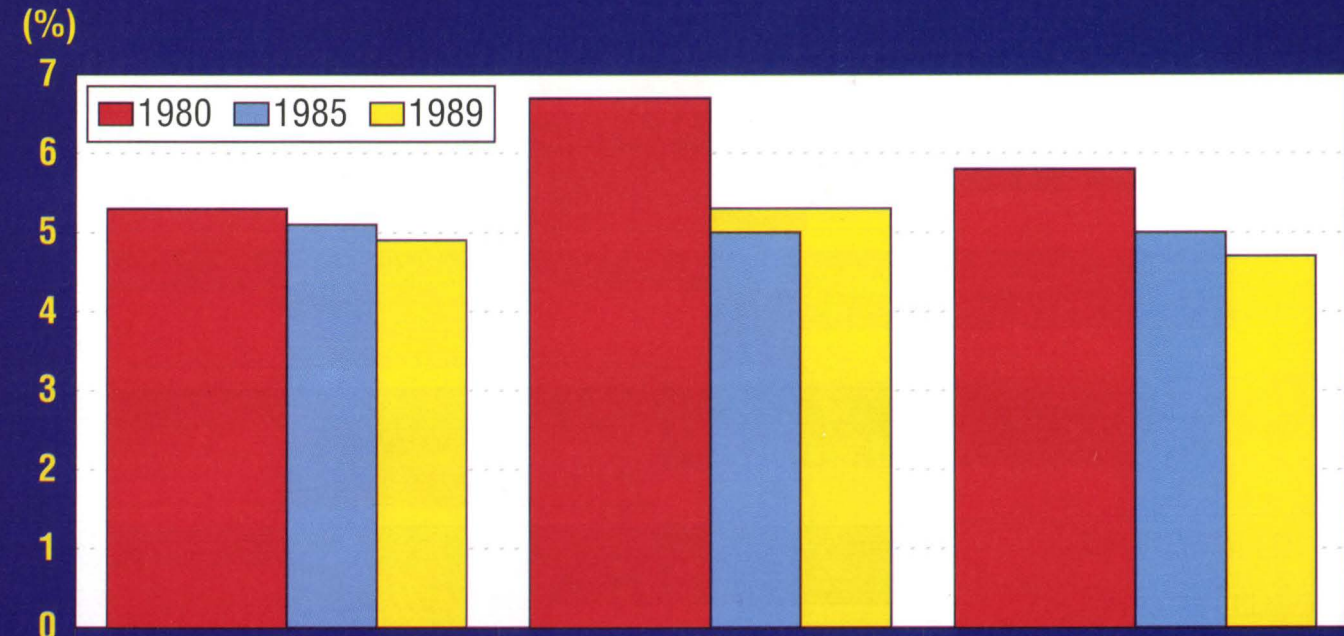

13. EU foreign direct investment
billion ECU
1987
1988
1989
1990
1991
Inward FDI
Outward FDI
0
50
100
150
200
250
300
Source: DRI.
DG III/A/3

14. Educational expenditure as % of GDP/GNP



	EU	USA	Japan
1980	5.3	6.7	5.8
1985	5.1	5	5
1989	4.9	5.3	4.7

Source: Unesco.

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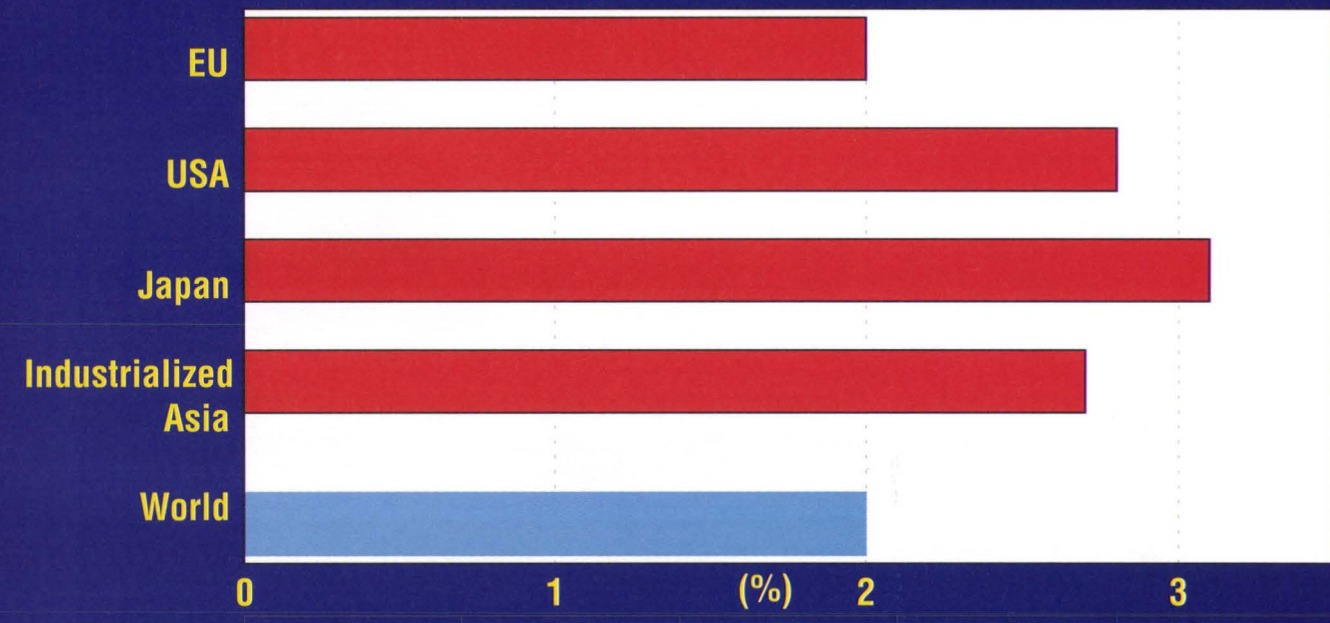
15. R&D investment by economic region



	EU	USA	Japan	Industrialized Asia	World
R&D spending/GDP (%)	2	2.8	3.1	2.7	2

Source: Unesco.

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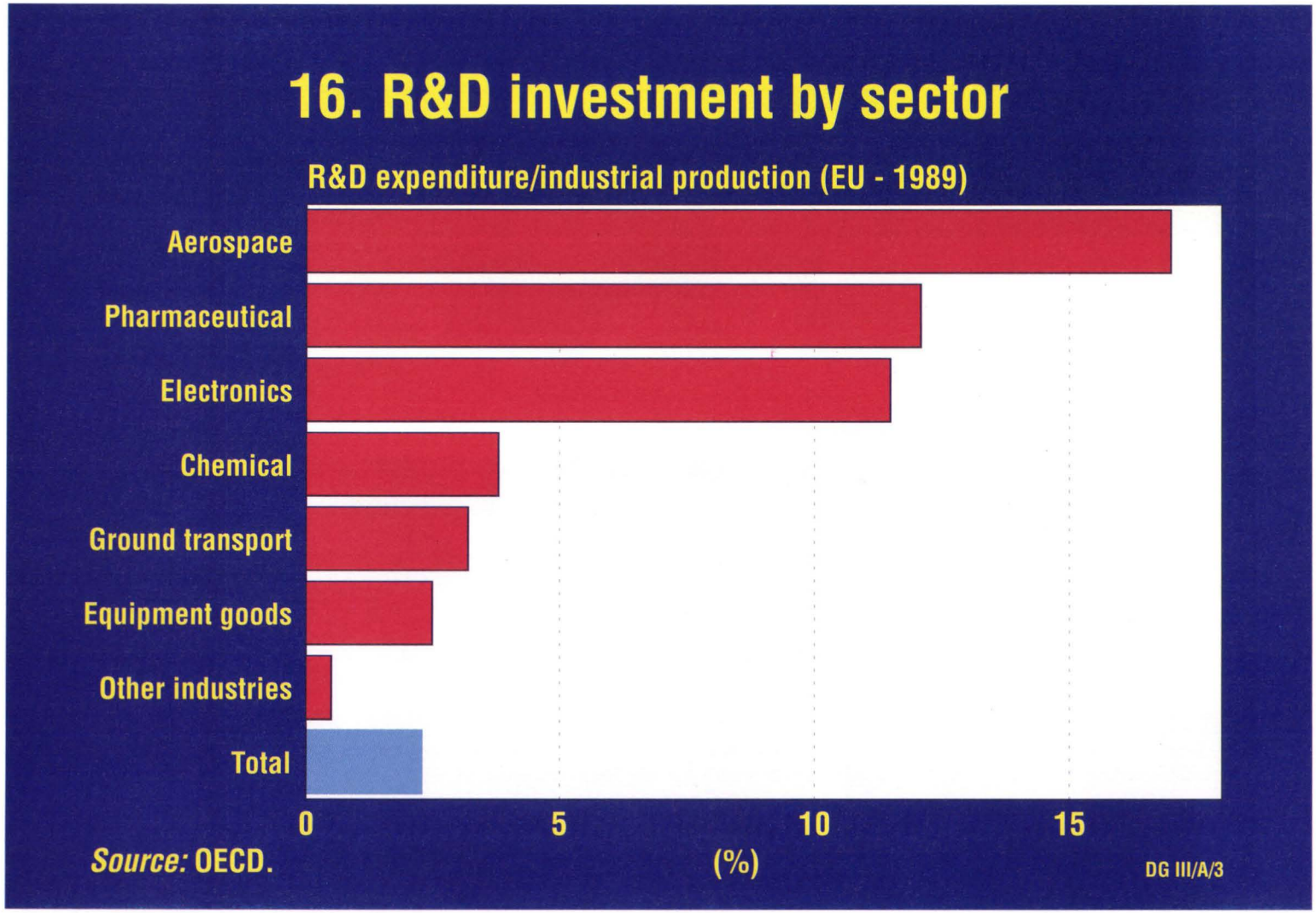
16. R&D investment by sector
R&D expenditure/industrial production (EU - 1989)
Aerospace
Pharmaceutical
Electronics
Chemical
Ground transport
Equipment goods
Other industries
Total
0
5
10
15
(%)
Source: OECD.
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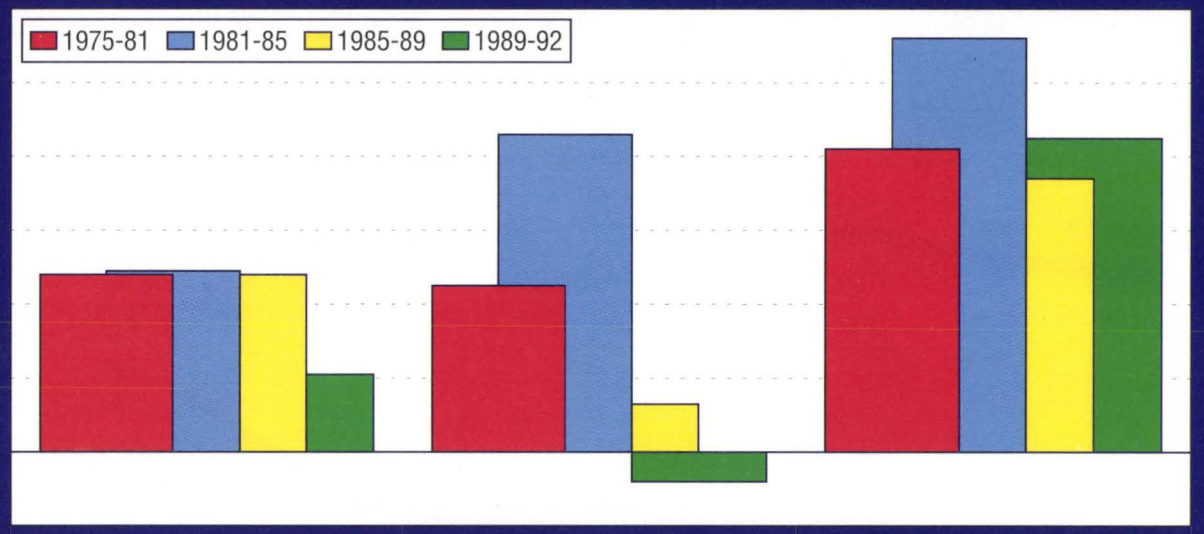
17. Enterprises R&D investment

(%) average annual growth rate (current prices and exchange rates)



	EU (%)	USA (%)	Japan (%)
1975-81	4.8	4.5	8.2
1981-85	4.9	8.6	11.2
1985-89	4.8	1.3	7.4
1989-92	2.1	-0.8	8.5

Source: OECD.

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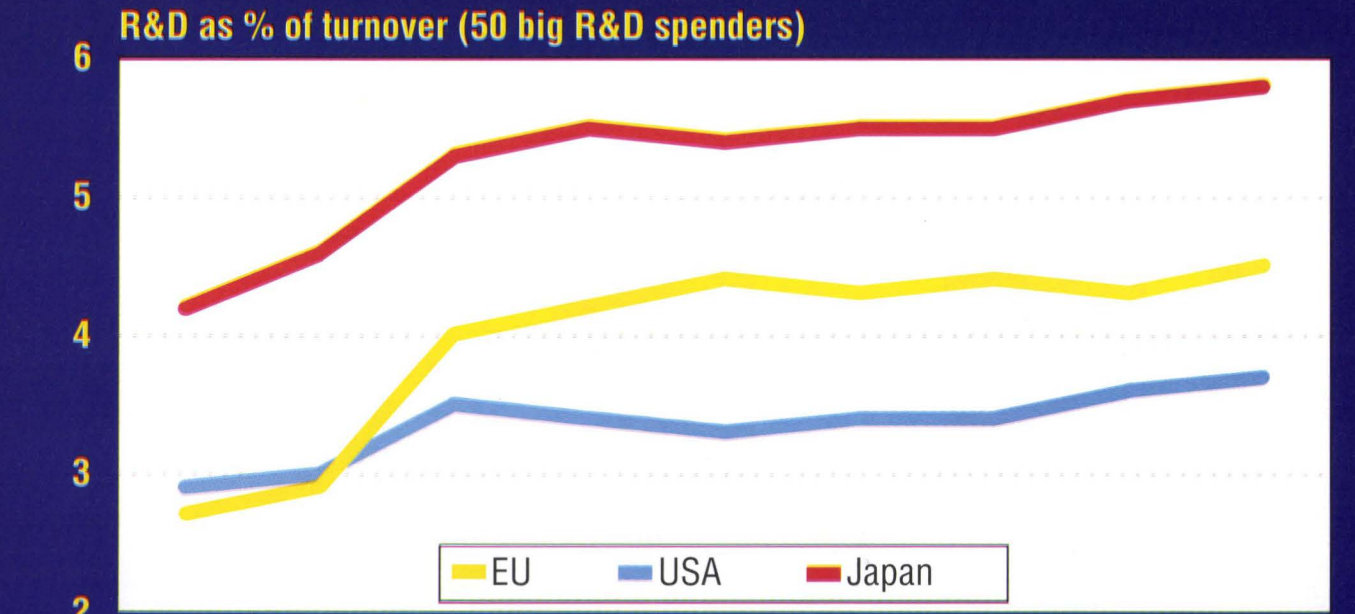
18. Enterprises R&D investment



	1984	1985	1986	1987	1988	1989	1990	1991	1992
EU (%)	2.7	2.9	4	4.2	4.4	4.3	4.4	4.3	4.5
USA (%)	2.9	3	3.5	3.4	3.3	3.4	3.4	3.6	3.7
Japan (%)	4.2	4.6	5.3	5.5	5.4	5.5	5.5	5.7	5.8

Source: **DABLE.**

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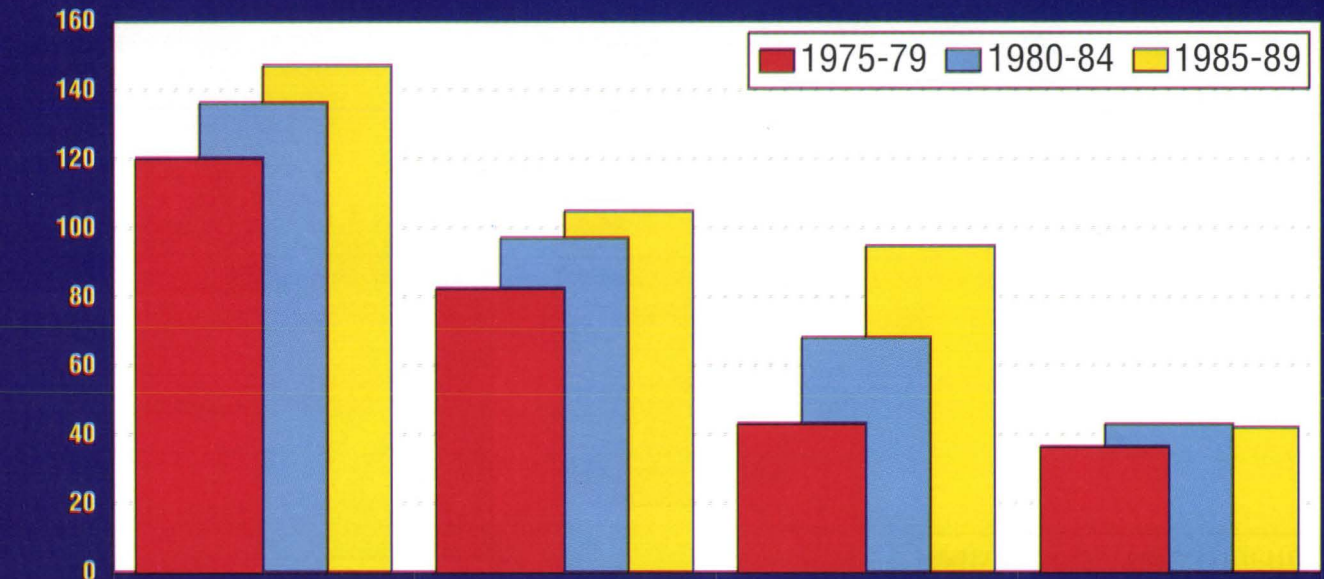
19. Inventions by region of origin in thousands



	EU	North America	Japan	Others
1975-79	120	82	43	37
1980-84	136	97	68	43
1985-89	147	105	95	42

Source: Panorama of EU Industry

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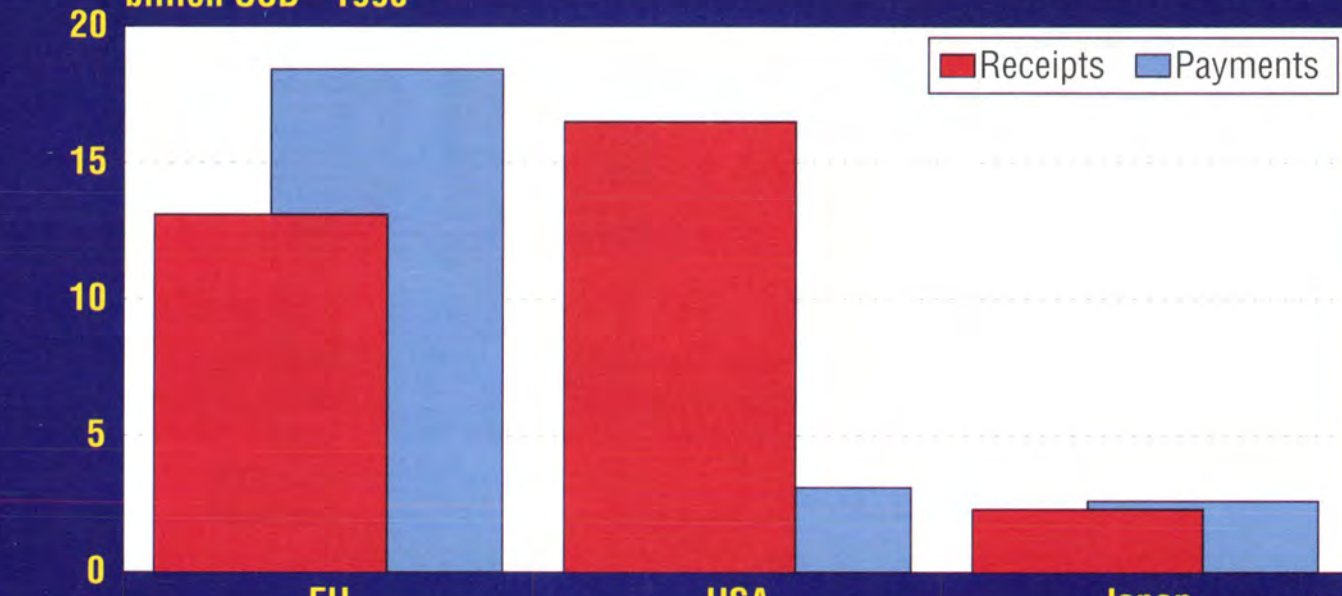
20. Balance of technological payments [1]



	EU	USA	Japan
Receipts	13.1	16.5	2.3
Payments	18.4	3.1	2.6

[1] Operations related to elements of industrial property (patent, technical licences, process, know-how, drawings, models) and to services with technical content and to intellectual services (engineer studies, technical assistance, R&D services, etc.).

Source: **OECD.**

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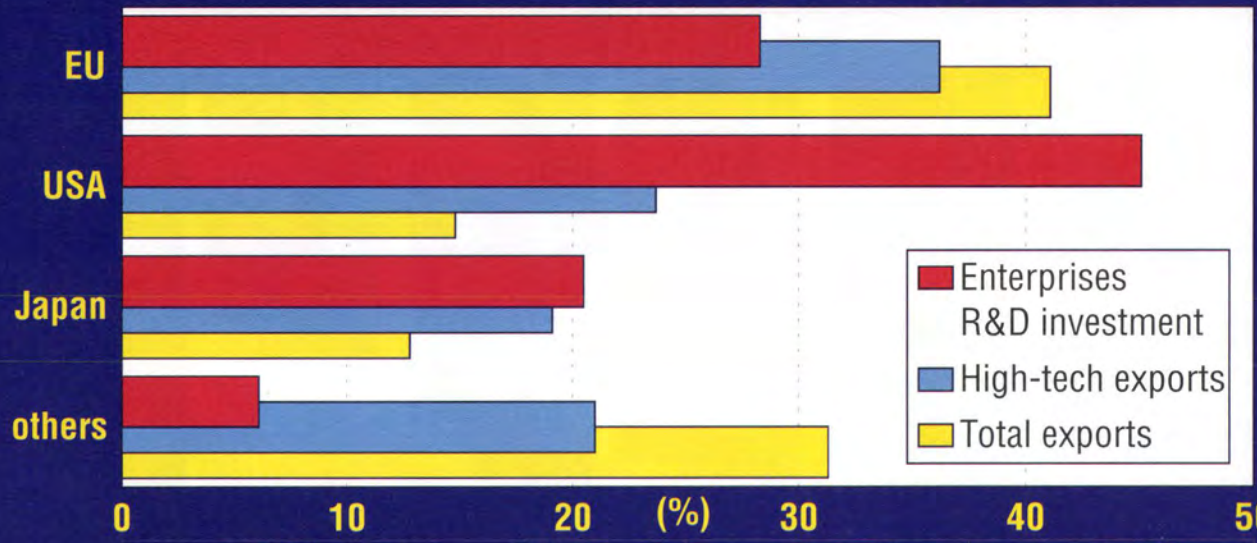
21. R&D effort and trade performance in % of OECD total (1990)



	EU (%)	USA (%)	Japan (%)	others (%)
Enterprises R&D investment	28.3	45.1	20.5	6.1
High-tech exports	36.2	23.7	19.1	21
Total exports	41.1	14.8	12.8	31.3

Source: **OECD.**

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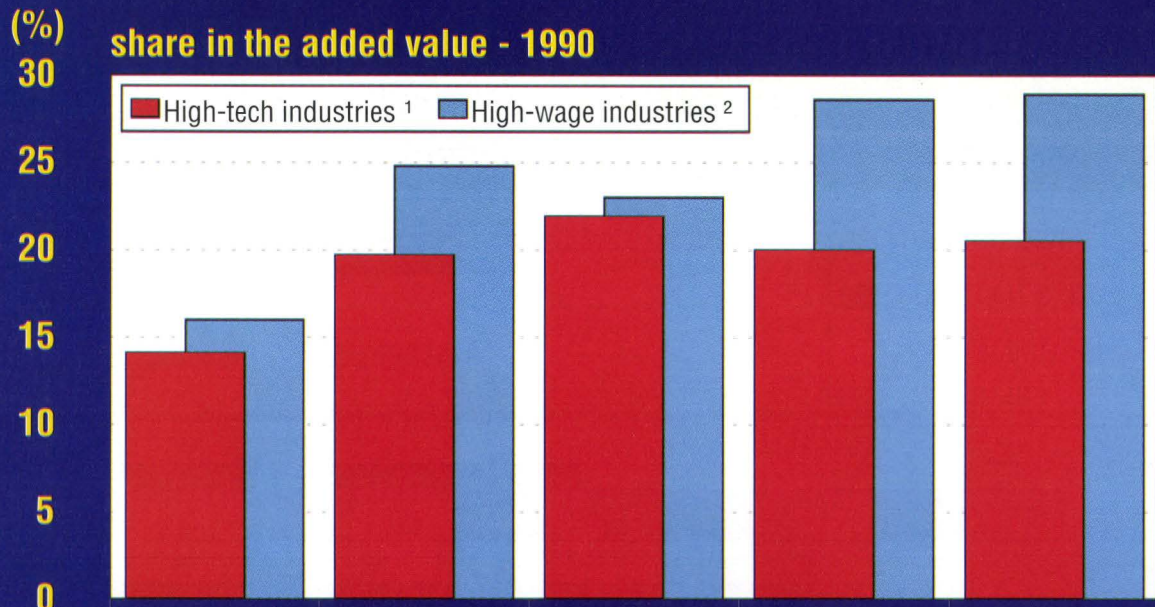
22. Technological intensity and wages



	Italy	UK	Japan	USA	Germany
High-tech industries [1]	14.1 %	19.7 %	21.9 %	20 %	20.5 %
High-wage industries [2]	16 %	24.8%	23 %	28.6%	28.9%

[1] High-technology industries include aerospace, EDP, radio and telecommunication equipment, electrical machinery, pharmaceutical products and precision instruments.

[2] High-wage industries include industries in which wages are 15% above average.

Source: **OECD.**

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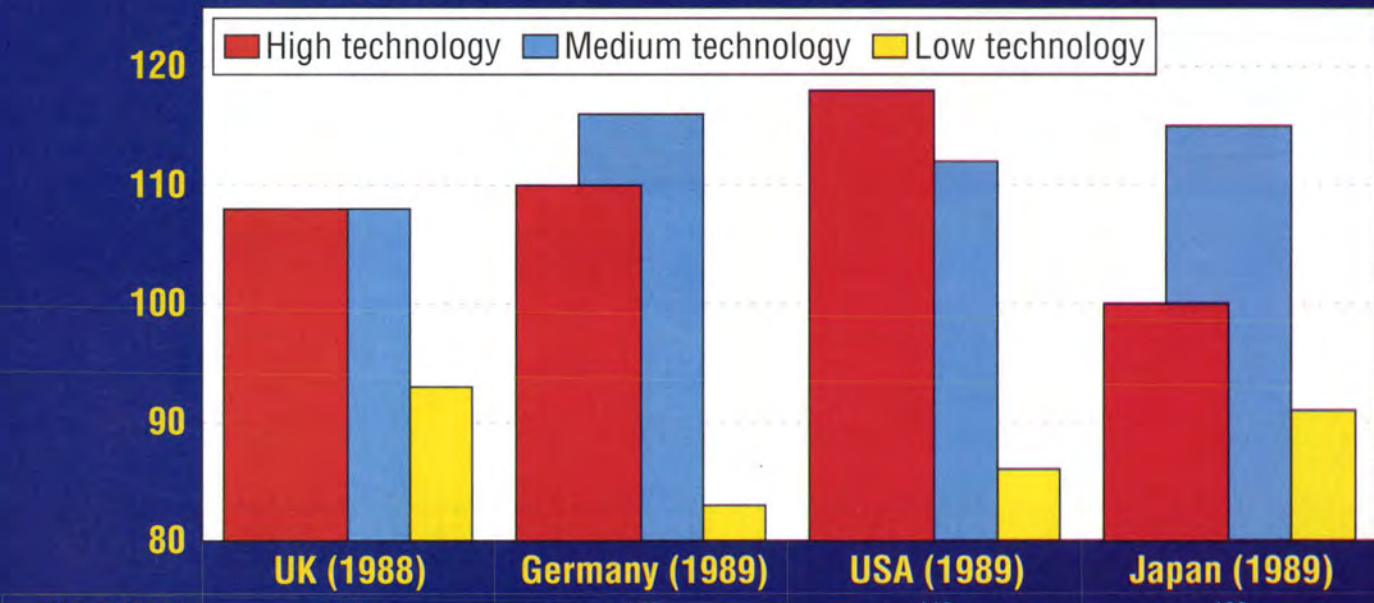
23. Wage level and technological intensity [1]



	UK (1988)	Germany (1989)	USA (1989)	Japan (1989)
High technology	108	110	118	100
Medium technology	108	116	112	115
Low technology	93	83	86	91

[1] Industries are grouped according to the R&D intensity which is defined as the R&D/turnover ratio.

Source: **OECD.**

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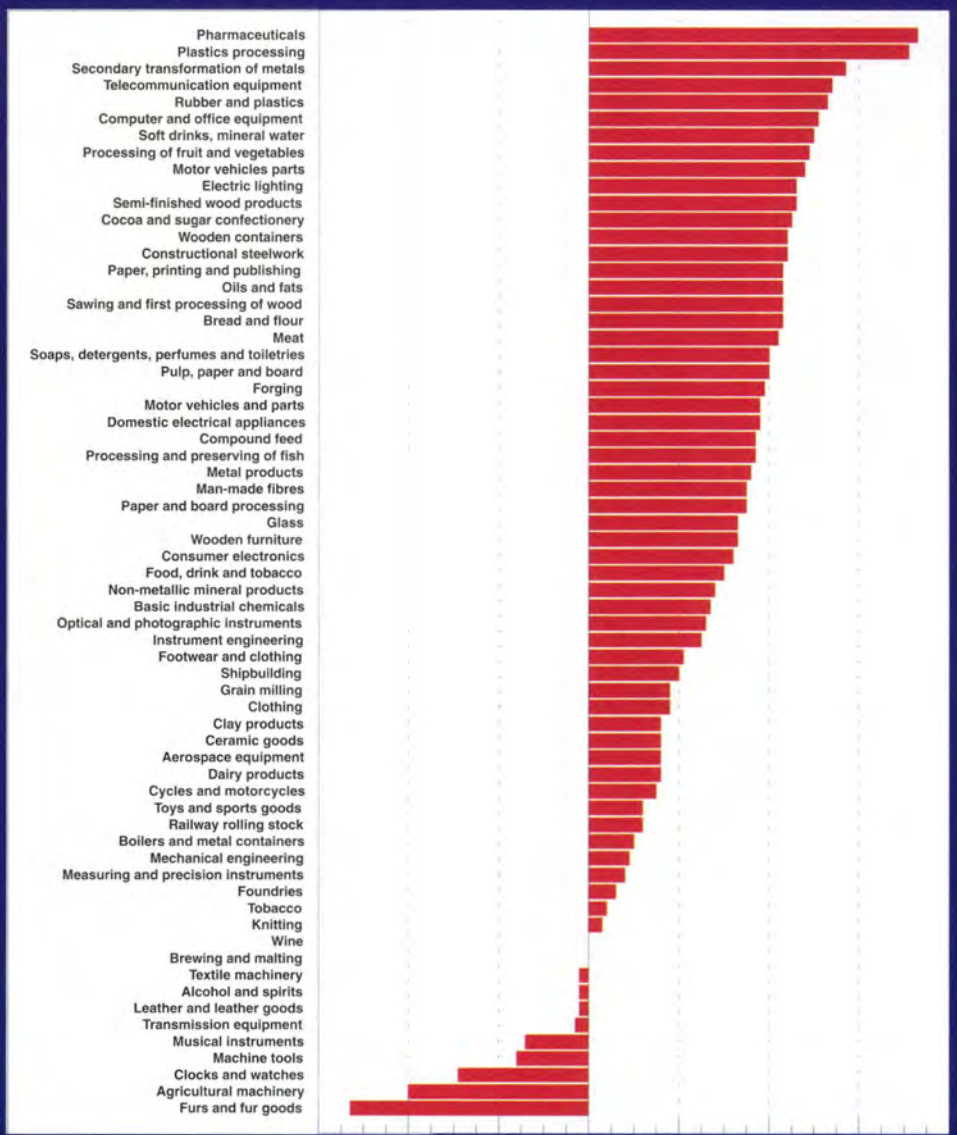
24. Production growth for some industrial sectors in the EU



Source: **DEBA.**

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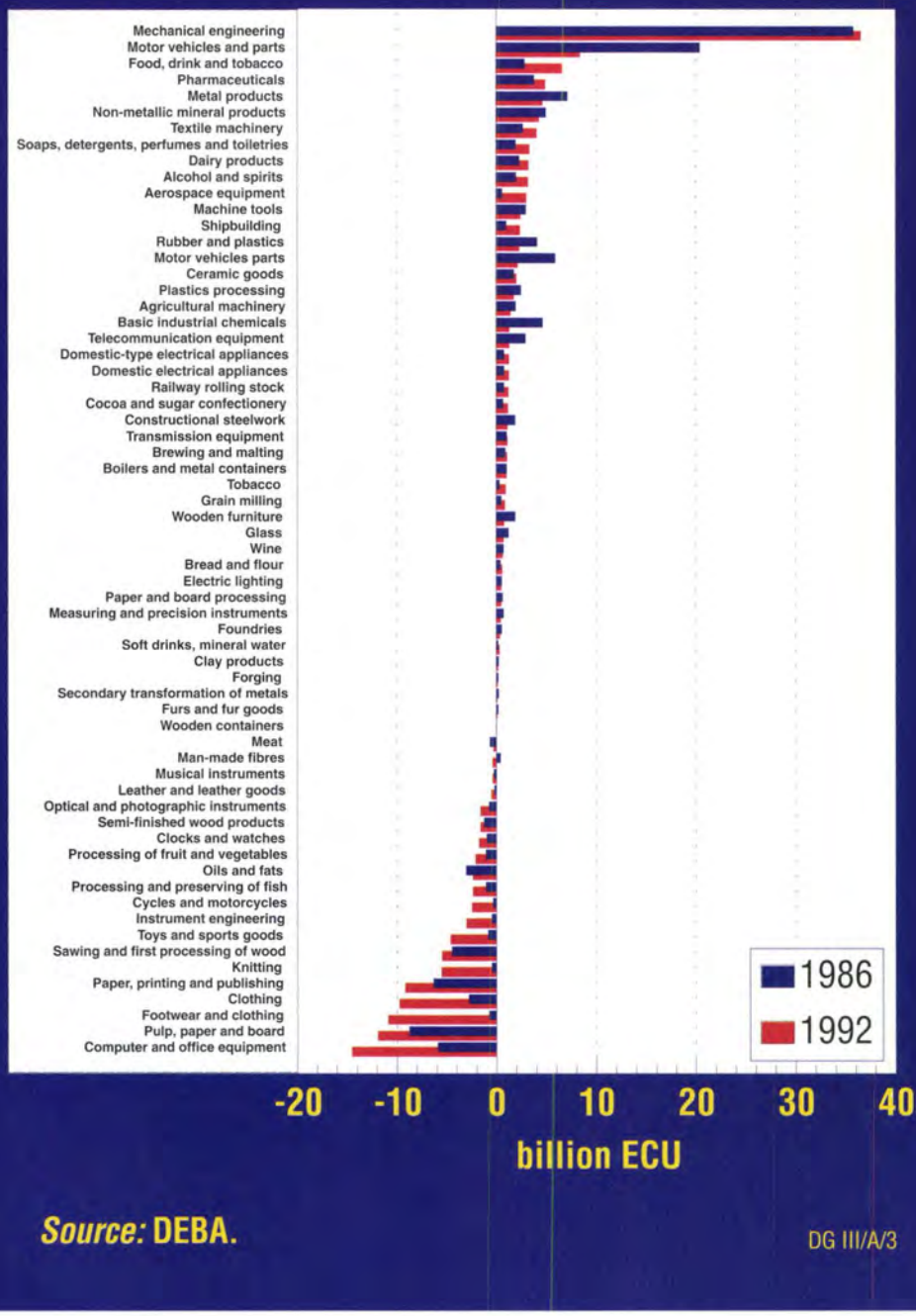
25. Trade balance for some industrial sectors in the EU



Source: DEBA.

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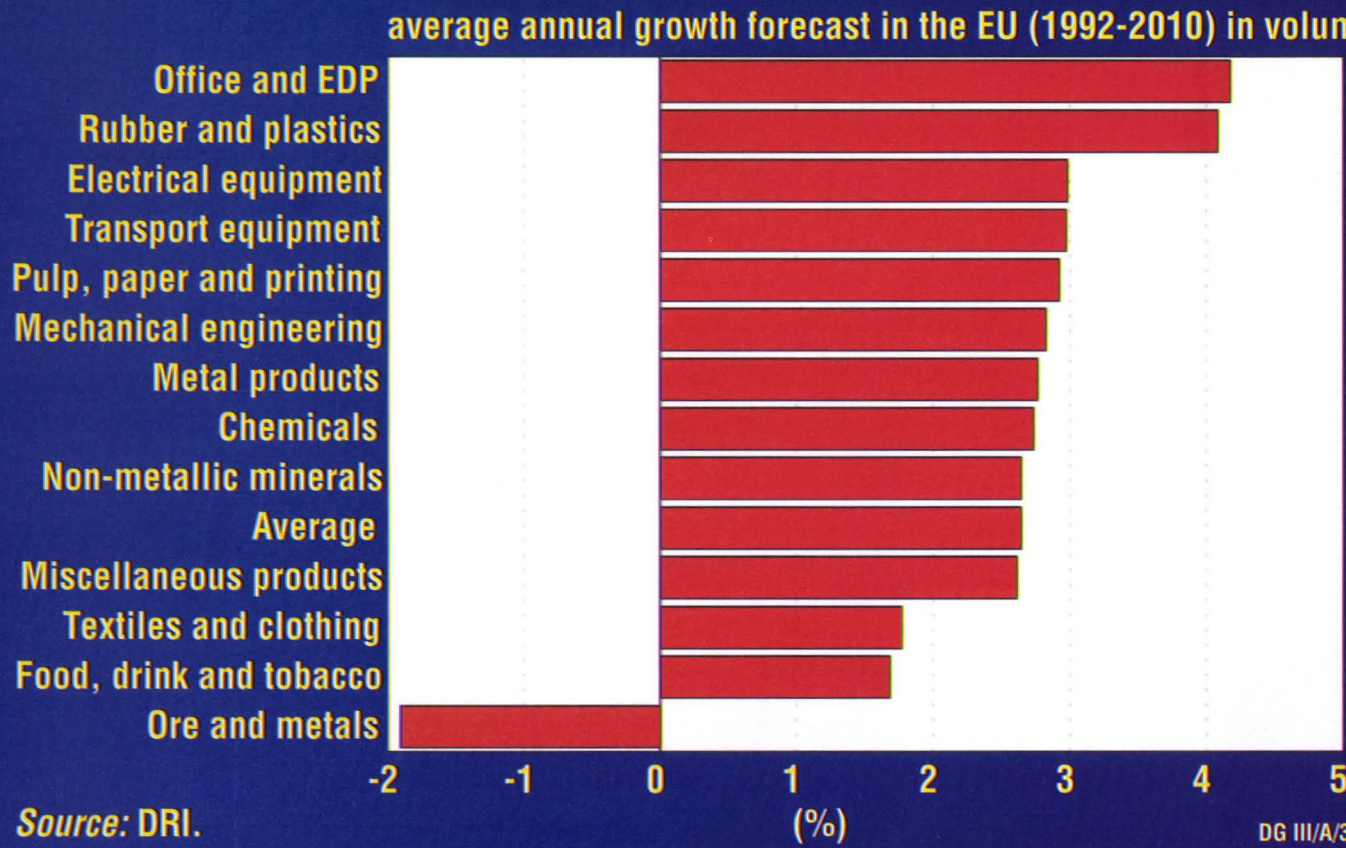
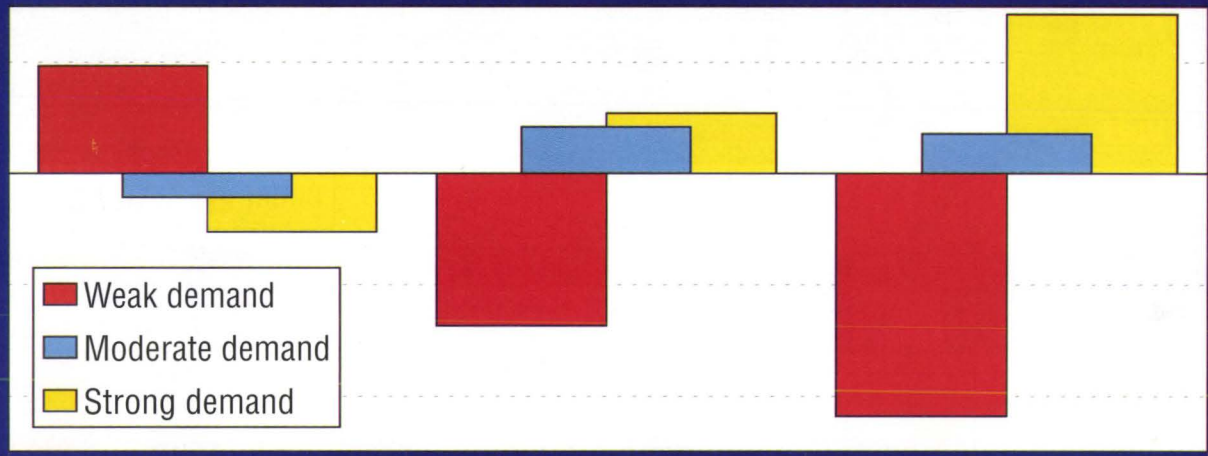
26. Production growth in manufacturing



Source: DRI.

27. Specialization of exports

sectoral distribution of manufacturing exports (1992)



	EU	USA	Japan
Weak demand	19.3	-27.4	-43.6
Moderate demand	-4.3	8.4	7.2
Strong demand	-10.5	10.8	28.6

Specialization index = market share in a given sector compared to average market share of the triad.
Strong demand sectors = chemicals, pharmaceuticals, EDP, precision and optical instruments and electrical goods.
Moderate demand sectors = machinery, transport equipment, food, beverages and tobacco, paper and printing products, and rubber and plastics.
Weak demand sectors = metals, non-metallic minerals, metal products, textiles, clothing, leather and footwear, and other manufactured products.

Source: **Eurostat, Commission services.**

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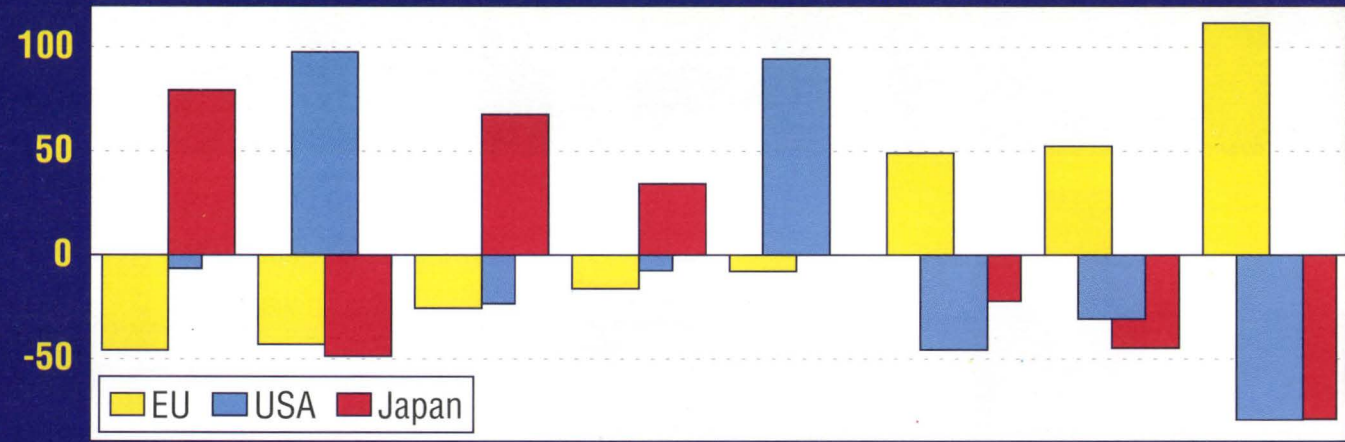
28. Specialization of exports

geographical distribution of manufacturing exports (1992)



	NICs	Latin America	China	USA and Central America	Japan	Other	ACP	EFTA
EU	-46	-43.2	-25.7	-16.2	-7.8	49.2	52.4	111.6
USA	-6.7	97.8	-23.4	-7.6	94.5	-45.7	-30.8	-79.5
Japan	79.4	-48.9	67.8	34.2		-22.2	-44.9	-79.1

Specialization index = market share in a given sector compared to average market share of the triad.

Source: **Eurostat.**

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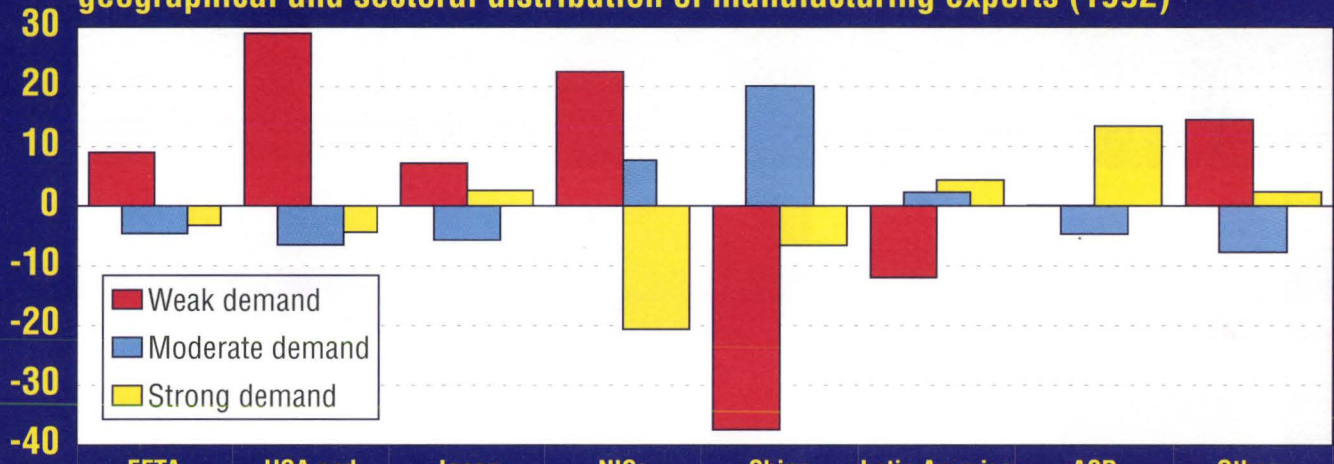
29. Specialization of EU exports

geographical and sectoral distribution of manufacturing exports (1992)



	EFTA	USA and Central America	Japan	NICs	China	Latin America	ACP	Others
Weak demand	9	28.9	7.2	22.5	-37.4	-12	0.1	14.5
Moderate demand	-4.6	-6.5	-5.7	7.7	20.1	2.3	-4.7	-7.7
Strong demand	-3.2	-4.4	2.6	-20.6	-6.6	4.4	13.4	2.4

Specialization index = market share in a given sector compared to average market share of the triad.
Strong demand sectors = chemicals, pharmaceuticals, EDP, precision and optical instruments and electrical goods.
Moderate demand sectors = machinery, transport equipment, food, beverages and tobacco, paper and printing products, and rubber and plastics.
Weak demand sectors = metals, non-metallic minerals, metal products, textiles, clothing, leather and footwear, and other manufactured products.

Source: **Eurostat.**

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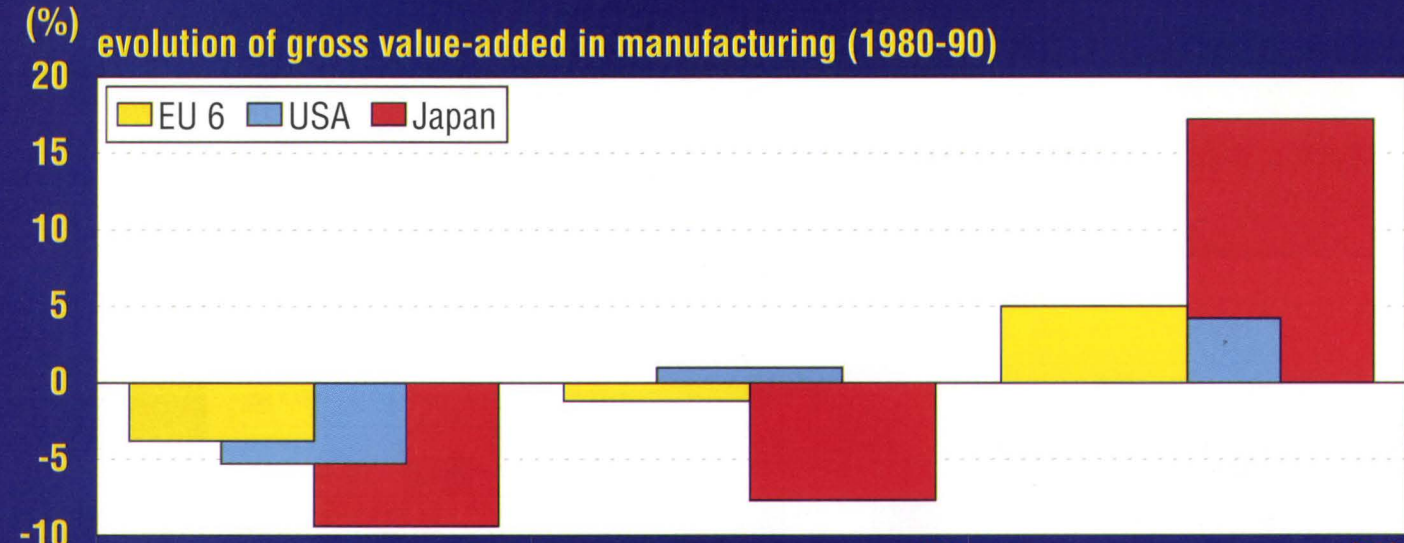
30. Sectoral specialization of industry

evolution of gross value-added in manufacturing (1980-90)



	Weak demand sectors (%)	Moderate demand sectors (%)	Strong demand sectors (%)
EU 6	-3.8	-1.2	5
USA	-5.3	1	4.2
Japan	-9.4	-7.7	17.2

Strong demand sectors = chemicals, pharmaceuticals, EDP, precision and optical instruments and electrical goods.
Moderate demand sectors = machinery, transport equipment, food, beverages and tobacco, paper and printing products, and rubber and plastics.
Weak demand sectors = metals, non-metallic minerals, metal products, textiles, clothing, leather and footwear, and other manufactured products.

Source: **National accounts.**

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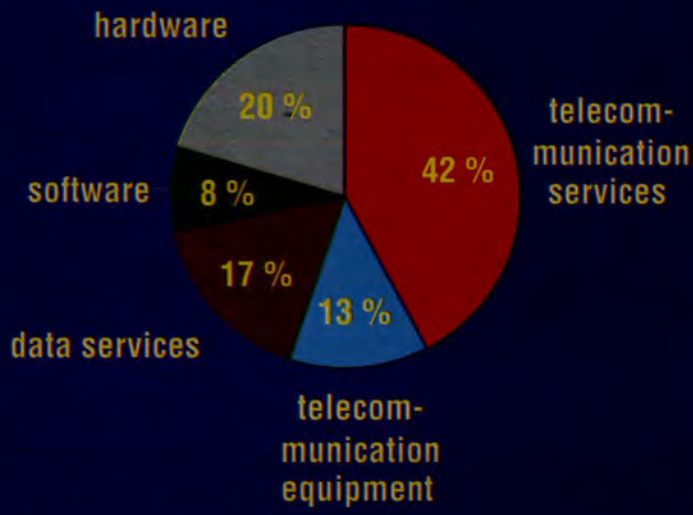
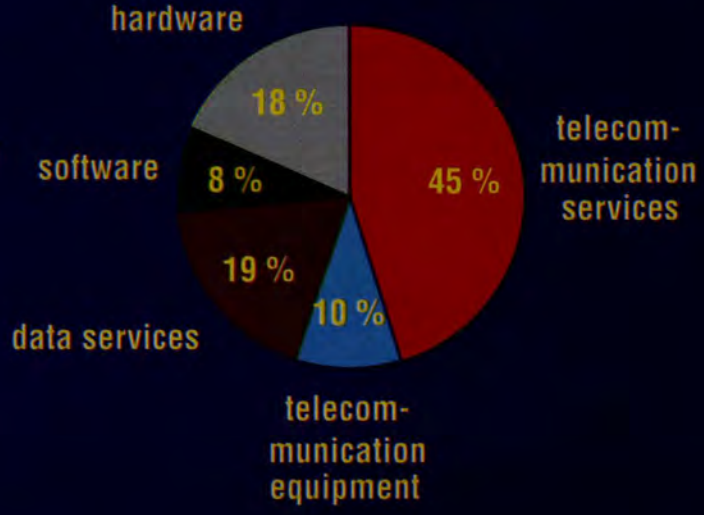
31. Data processing and telecommunication markets (1995)

World market = ECU 880 billion



European market = ECU 290 billion



Source: EITO 94.

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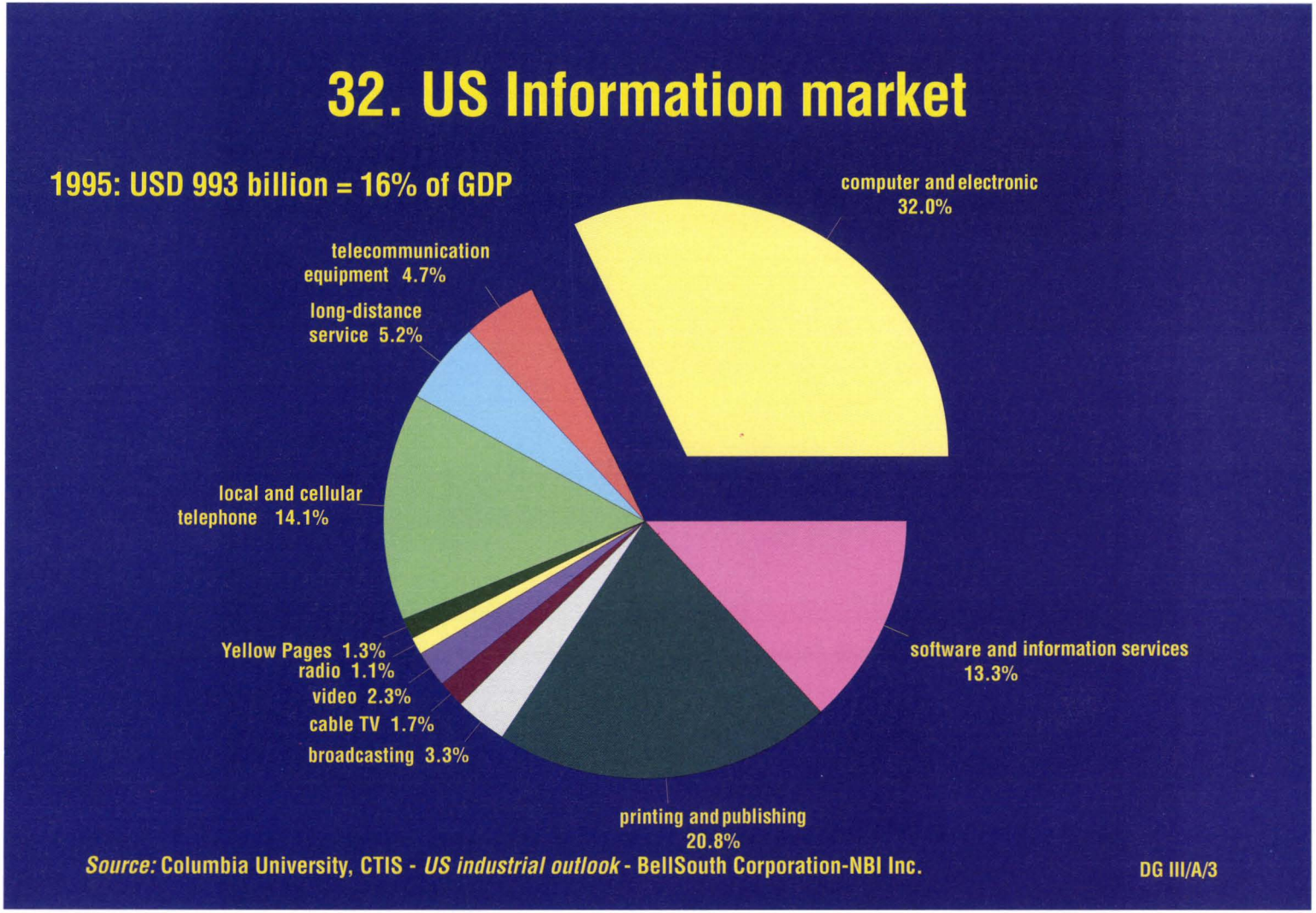
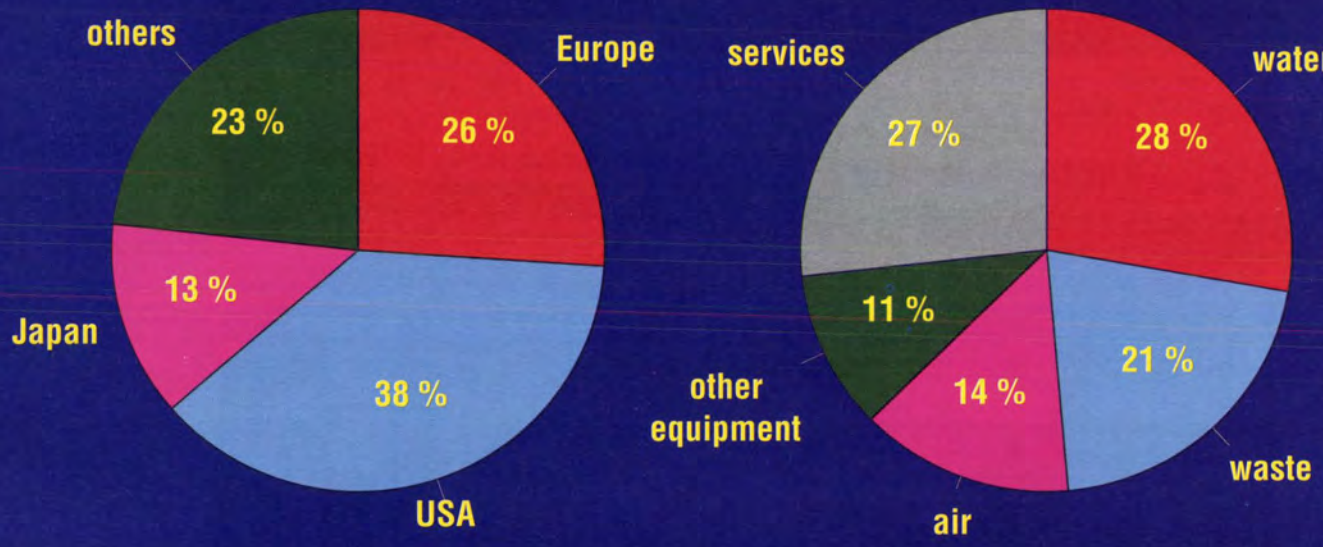
32. US Information market



33. Environment market (breakdown by region and market (2000))



Source: OECD 1992.

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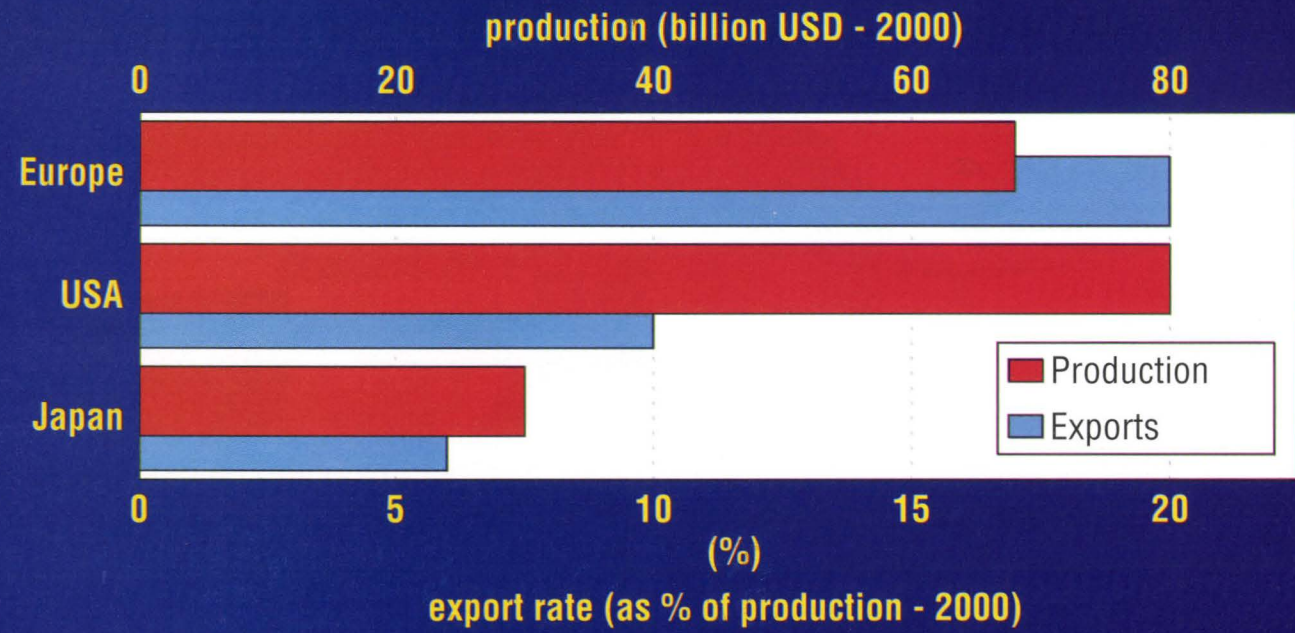
34. Environment industry



	Europe	USA	Japan
Production	68	80	30
Exports	20	10	6

Source: **OECD.**

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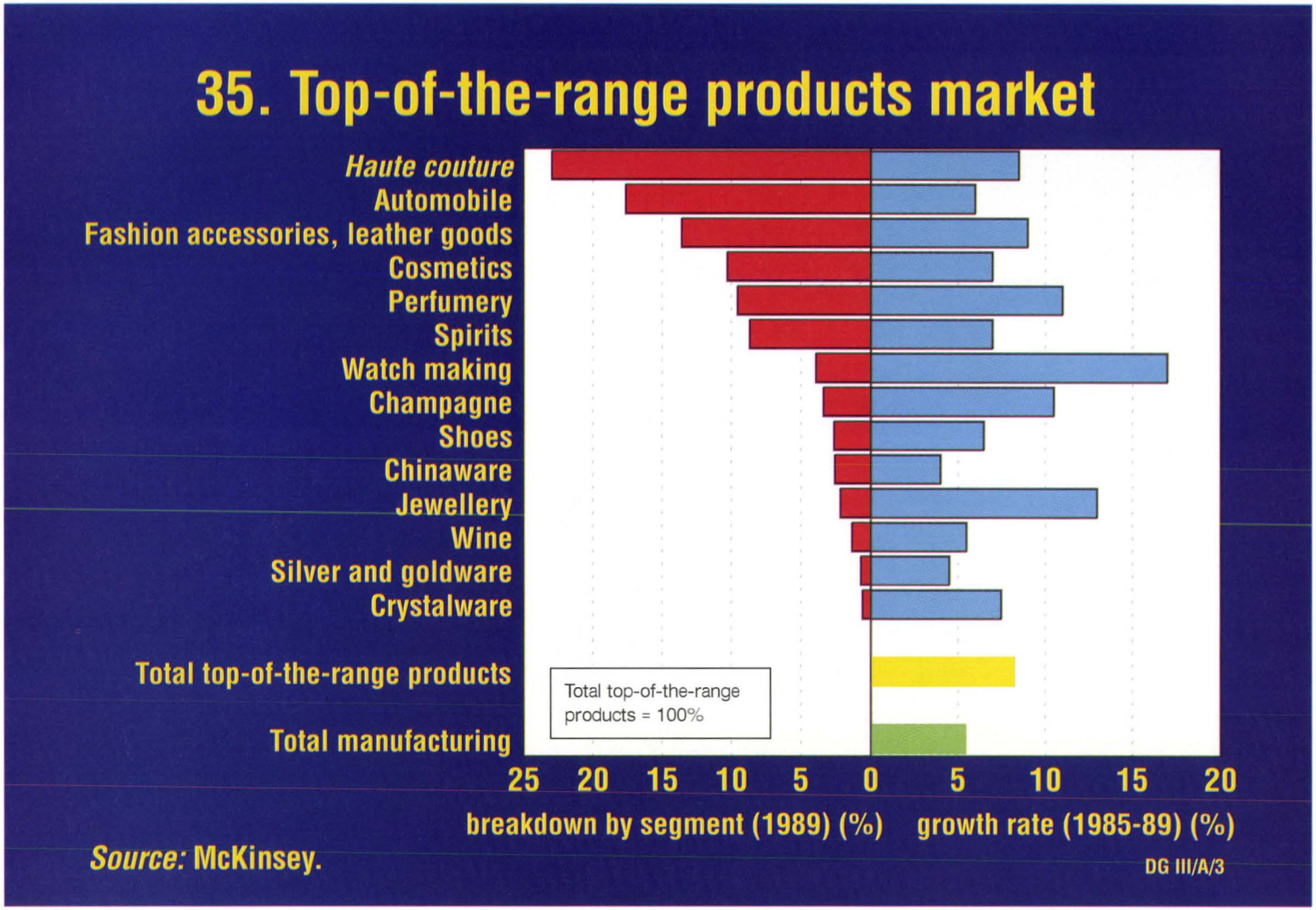
35. Top-of-the-range products market



Source: McKinsey.

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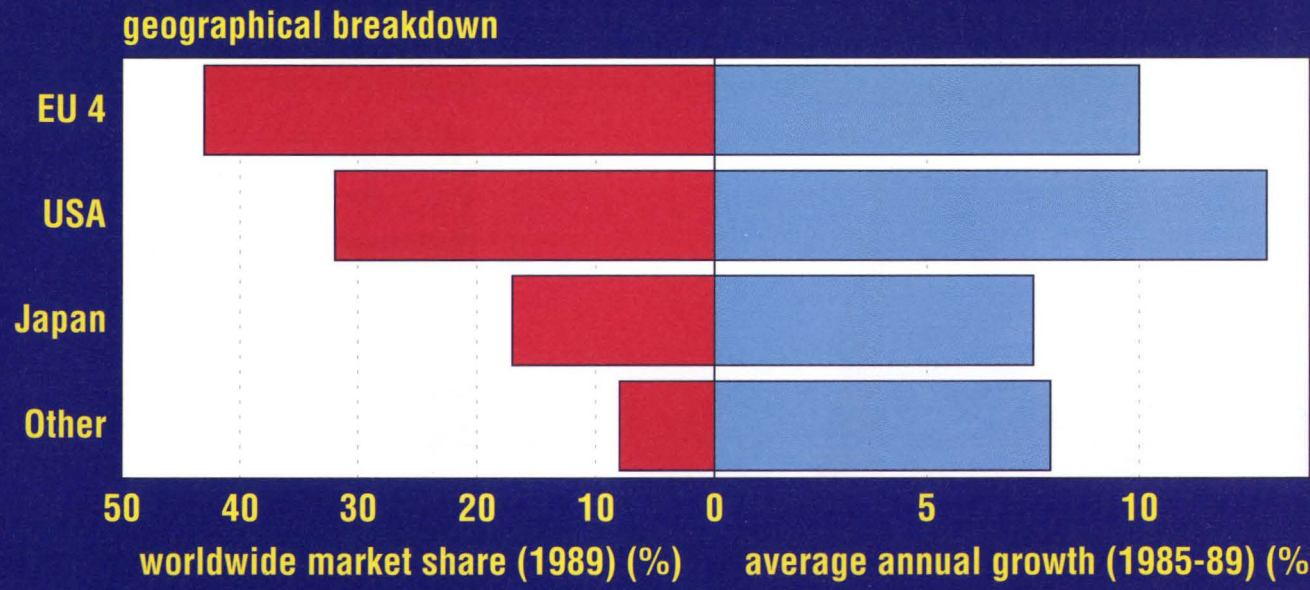
36. Top-of-the-range products market



	EU 4	USA	Japan	Other
Market share (1989) (%)	43	32	17	8
Annual growth (1985-89) (%)	10	13	7.5	7.9

Source: McKinsey.

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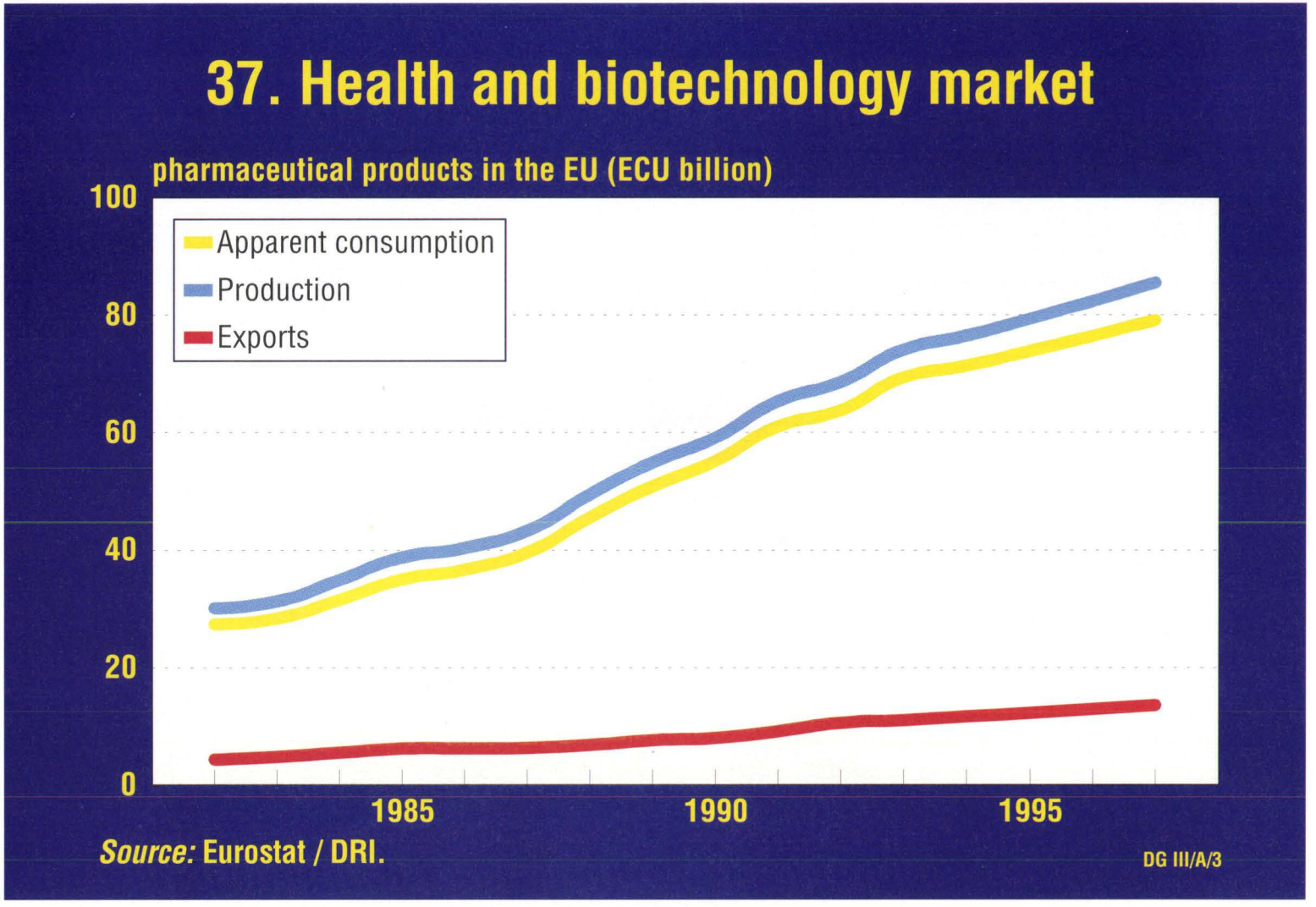
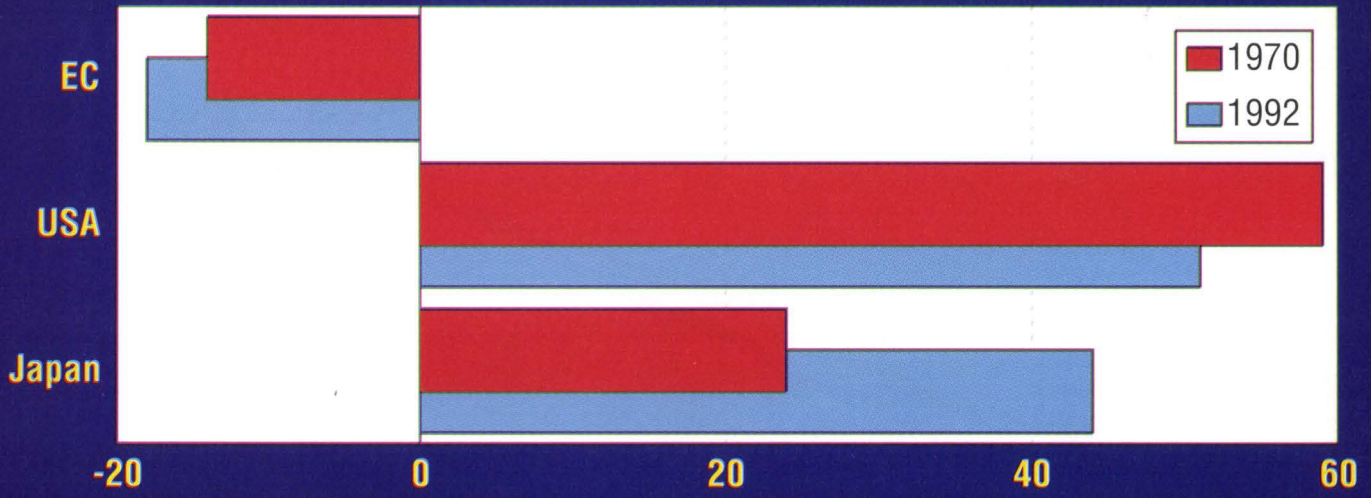
37. Health and biotechnology market



38. Specialization in high-tech industries

specialization index = relative share of high-technology exports [1]



	EC	USA	Japan
1970	-14	59	24
1992	-18	51	44

[1] The definition of high technology products is related to the level of intensity of R&D (ratio R&D expenditure/production). High-technology industries include aerospace, EDP, radio and telecommunication equipment, electrical machinery, pharmaceutical products and precision instruments.

Source: **OECD.**

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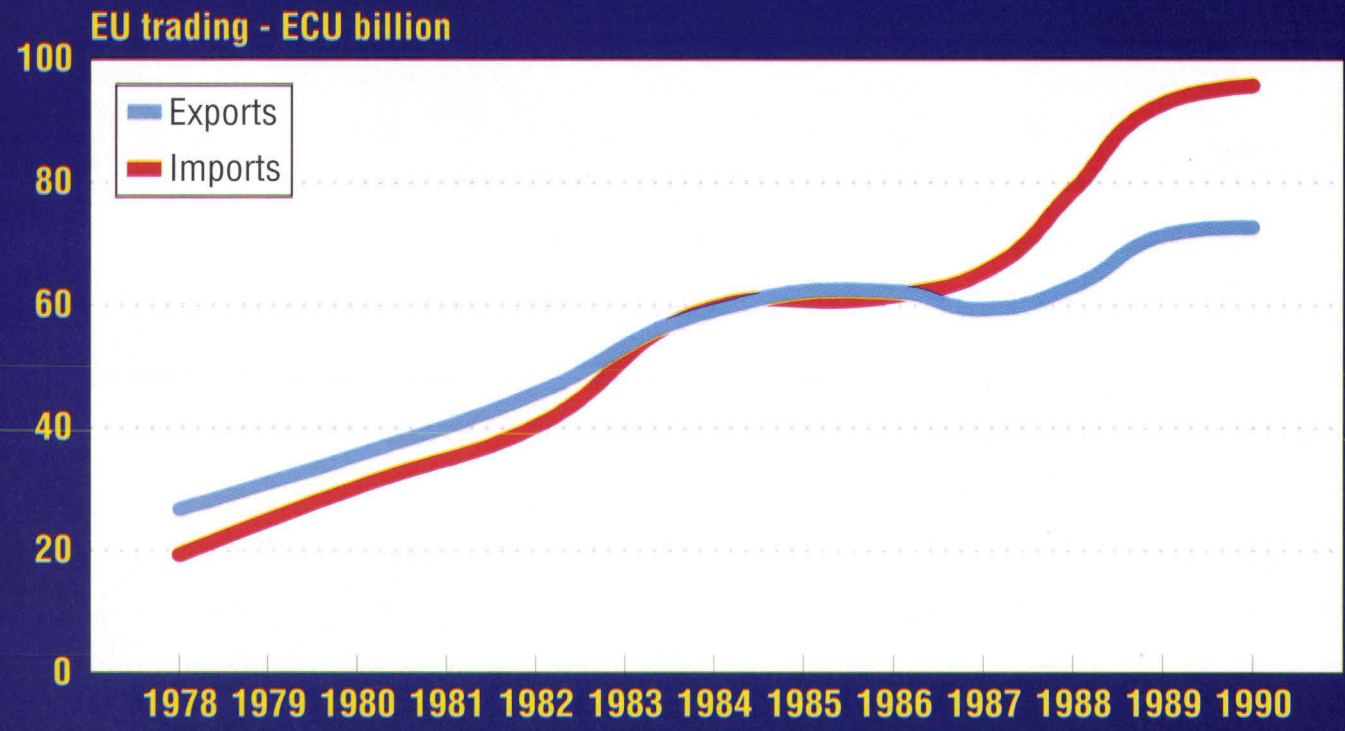
39. High-technology products market [1]



[1] *The definition of high-technology products is related to the level of intensity of R&D (ratio R&D expenditure/production).*

Source: **Eurostat.**

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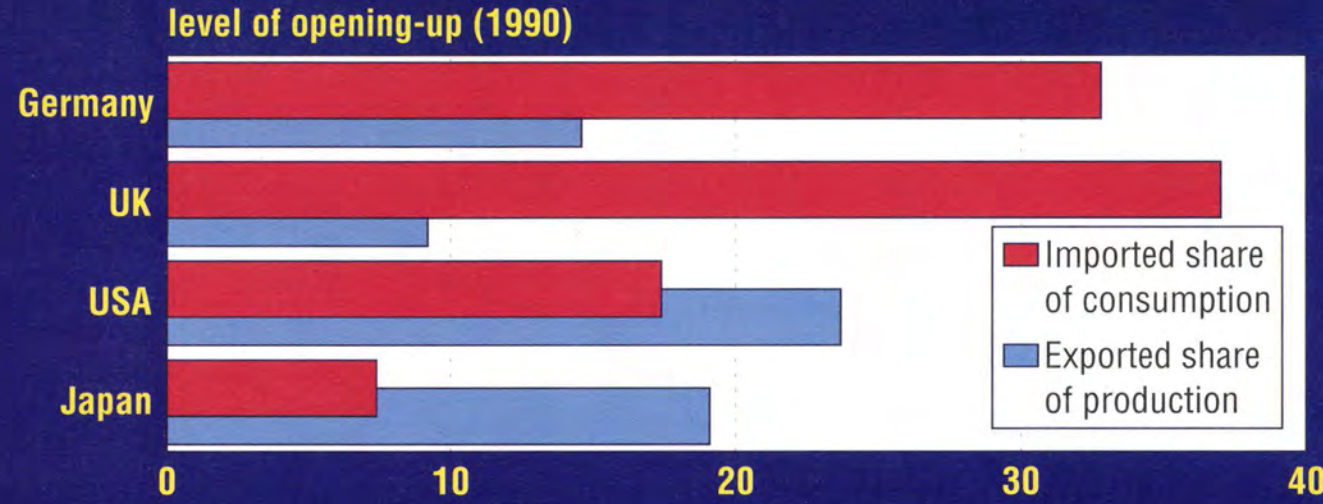
40. High technology products market



	Germany	UK	USA	Japan
Imported share of consumption	32.8	37	17.4	7.4
Exported share of production	14.6	9.2	23.7	19.1

[1] The definition of high-technology products is related to the level of intensity of R&D (ratio R&D expenditure/production). High-technology markets include aerospace, EDP, radio and telecommunication equipment, electrical machinery, pharmaceutical products and precision instruments.

Source: **OECD.**

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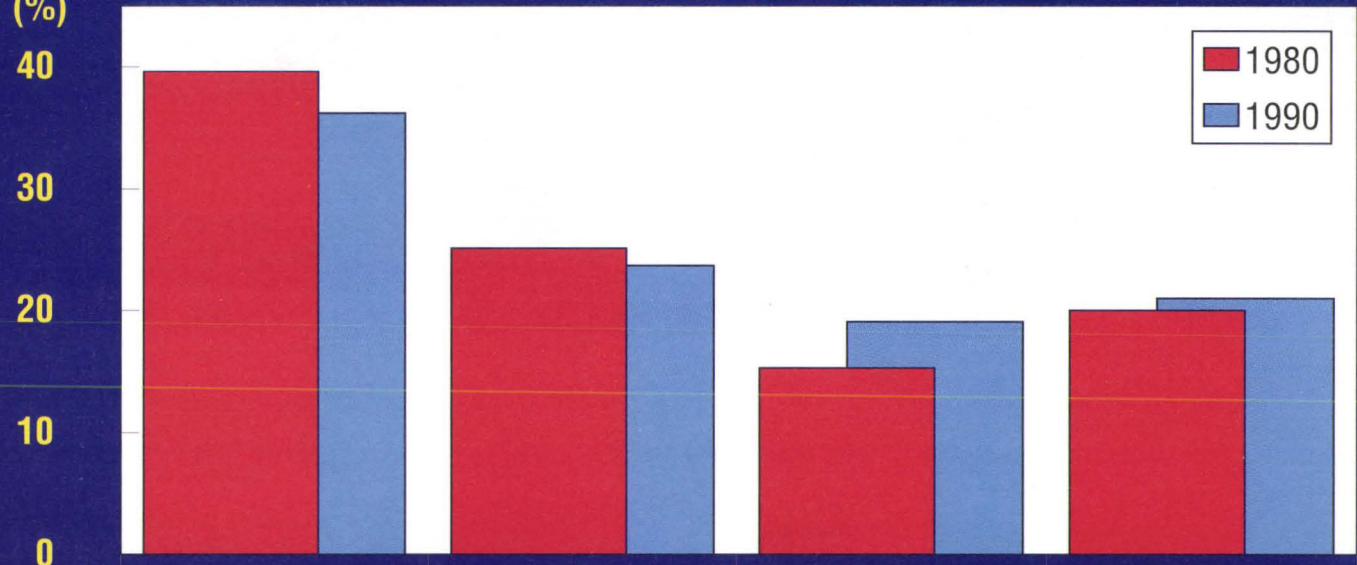
41. High-technology products market [1]

trade performance (relative share in world exports)



	EU 4	USA	Japan	Others
1980	39.6 %	25.1 %	15.3 %	20 %
1990	36.2 %	23.7 %	19.1 %	21 %

[1] The definition of high-technology products is related to the level of intensity of R&D (ratio R&D expenditure/production). High-technology markets include aerospace, EDP, radio and telecom equipment, electrical machinery, pharmaceutical products and precision instruments.

Source: **OECD.**

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