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THE COMPETITIVENESS OF EUROPEAN COMMUNITY INDUSTRY

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The Competitiveness of European Community Industry

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Summary and Conclusions

Current concern over the competitiveness of Community industry arises from a widely-held but vague general feeling that the Community is in danger of "losing the race". Several factors have combined to bring about this unease:

- the decline of a number of traditional industries which, in the past, provided the main-stay of economic prosperity. This decline is by no means exclusive to Europe but some of Europe's competitors, especially Japan, seem to have adjusted better;

- the changing structure of world trade. The emergence of newly industrialising and certain developing countries as direct competitors for a wide range of markets has intensified the pressure for change but the enduring nature of the recession has hampered the necessary switch into alternative areas. The importance of trade to the economy of the Community makes it imperative that a competitive solution be found;

- the recognition of the importance of the new technologies to "post-industrial" society and the awareness that other countries, such as the US and Japan, are further advanced than the Community in the commercial application and development of these technologies.

The purpose of this report is to carry out a preliminary appraisal of the performance of Community industry, on the basis of the main indicators, vis-à-vis two of its principal industrialised trading partners, the USA and Japan. Obviously, because the issue is such a complex one, it is not possible to give a simple or conclusive answer to the question "How competitive is Community industry"? The answer will vary from sub-sector to sub-sector and between the Member States. Neither is it possible to make direct comparisons between the Community, composed of ten Member States of very different size, levels of development and industrial infrastructures on the one hand with the size and internal coherence of the USA and Japan on the other. Despite these very real limitations certain trends can be discerned which have a bearing on competitiveness. The message which emerges most often is that, in the face of the challenges posed during the 1970's, the Community has not fared so badly to date but that unless remedial action is taken now future performance could be impaired.

Trends in international trade

The Community is the world's largest trading area. Extra-Community exports account for 15.7% of total world exports. The Community holds substantial shares of world export markets for a very wide range of products. Furthermore, total trade between the Member States is even larger than the Community's international trade.

In view of the more rapid development of industrial exports taking place in other areas of the world, it is not surprising that some of these export market shares are coming under pressure. If one were to take account of the development of local industry in third world markets, the decline in our share of total markets would probably prove to be even greater.

If the Community was participating in the development of the world economy in a balanced and beneficial manner it would be quite normal to relinquish shares of markets in which our comparative advantage or competitiveness was declining, and to make compensating gains in other markets.

But in practice we are concerned that this is not taking place sufficiently and that the Community is not doing well enough in those products where we ought to have a comparative advantage to make up for the products where we are doing less well, and in some cases quite badly. Only the Community's agro-industries, raw materials and energy products have done well in world markets.

The Community is not alone in this respect: there are some indications that the United States is experiencing similar problems with its manufacturing exports. However, the US is less dependent than is the Community on manufacturing exports, and holds a very strong position for agricultural products and unworked metals.

Consequently, the overriding concern is that the Community as a whole remains heavily committed to exporting a wide range of medium-technology industrial products where our competitiveness is threatened both on price and on innovation. These threats impinge first in those Member States and industries where the structure is weakest, and the resulting decline in output, employment and exports is clearly already taking place in several parts of the Community.

Since the Community already holds substantial market shares in so many areas, and our products do not seem to be outstandingly competitive, there are limits to the extent to which we can solve our problems of low growth and high unemployment simply by further increasing market shares: our firms are as likely to be competing with each other in third markets as with Japanese or American firms. Community industry consequently has a major interest in a recovery in the overall rate of growth of world demand which would carry the absolute level of Community exports up with it, without necessarily having to increase market shares (1).

Meanwhile, there are certain high technology, high skill product areas where Community industry has no business to be turning in such medocre results. Here we have much to learn from the Japanese, both regarding corporate strategy and regarding public policy.

Industrial specialisation

When we compare the degree of specialisation of Community exports with those of the USA and Japan, we find first that both the United States and Japan are much more specialised in certain products. This in turn tends to reflect the outstanding international success of a few major corporations (2). By contrast, the overall structure of the Community's exports is rather close to the average structure of total OECD exports, which is not surprising given the weight of Community exports in international trade, and is consistent with the broad conclusion reached above regarding export market shares.

(1) The European Community problems and prospects, Cambridge Economic Policy Review, December 1981.
(2) For example, Boeing, IBM, Sony, Toyota.

Not only are Community exports relatively unspecialised, the degree of specialisation in high technology, high skill products seems to be declining and certain Member States' exports are even specialising in product areas where they are - or will be - competing mainly with newly industrialising countries, rather than with other developed countries. This is a disturbing prospect as it raises the whole question of productivity and price competitiveness at the relatively high level of wages (by world standards) which prevail throughout the Community.

It is not very clear what can be done about this in the short term particularly as the level of industrial investment is so low, but this prospect, and the inherent dangers, should concentrate the minds of corporate planners and industrial policy makers in the Community.

Costs, prices and exchange rates

The results of our analysis of the inter-relationships between wages, productivity, prices and exchange rates as they affect competitivity are not unambiguous. Thus we may conclude tentatively:

- that countries which have been less successful at controlling their wage costs have also had more balance of payments problems;

- although hourly productivity trends are not inversely proportional to changes in unit wage costs, rapid increases in productivity help to moderate the effects of increased wage costs;

- in general the fall in the rate of growth of productivity (1) does not explain competitiveness problems during the 1970's;

- the foreign trade performance of different sectors is sensitive to increased wage costs to very different degrees: there seems to be a direct link in textiles, leather goods and clothing industries; but no identifiable link at all for the capital goods industries;

- since 1970, exchange rate fluctuations appear to have been greater than changes in unit wage costs. Their effects on competitiveness is difficult to assess because the divergence between nominal and real exchange rates.

Price competitiveness is only a part of overall competitiveness and improvements in this sphere will be neither beneficial nor durable if other factors are leaning in the opposite direction. In particular, if a budget deficit that cannot be readily financed domestically then a reduction in the "real" rate of exchange will not lead to an improvement in international trade. Rather, inflation will accelerate and trigger further damaging falls in the exchange rate, increases in the external deficit and inflation such that the "vicious circle" will only be broken by even more severe action on the budgetary and monetary side than would otherwise have been necessary.

(1) The decline in the rate of growth of productivity is much more striking in the US than in most of the Community.

Industrial structure

The evidence about industrial structure and investment draws attention to the fact that industrial structure has been adjusting slowly to the new economic situation. A few sectors such as chemicals and transport equipment have increased in relative importance whereas textiles, leather and clothing have declined quite rapidly and food, beverages and tobacco have declined more slowly. On the other hand, value added in comparatively advanced sectors such as industrial machines, office machines and electrical goods have grown rather slowly.

The trends in industrial investment suggest that the adjustment which is taking place is at least in the right direction; within the limits of a very modest level of investment in manufacturing industry the rate of investment appears to have been growing most rapidly (in most of the Member States) in those sectors where the level of technology and skills suggest that the Community ought in future be able to maintain its comparative advantage.

By comparison with our competitors, the available evidence suggests a very rapid growth in the Japanese capital stock in the past decade, bringing it up to the levels of the USA and the Community. By contrast, capital employed per employee in the USA and the Community appears to have more or less stagnated since the mid-1970's. In 1979, for example, investment in manufacturing as a percentage of GDP was almost twice as high in Japan as in the Community and the USA.

In the Community and the USA there is an immediate need for investment in productive facilities in a wide range of sectors in order to bring about modernisation and rationalisation. The generalised shift in industrialised countries to the service sector will of itself reduce the overall importance of investment in manufacturing but will also require a major investment effort, particularly in new technologies.

There are also considerable differences in manufacturing investment trends between the Member States. For example, the absolute level in France and Germany is about double that of Italy and the UK.

Energy

Concerning energy, it is important to recognise that the primary effect of the two dramatic increases in oil prices in 1973 and 1979 on industry has not been the increase in energy costs, but the deflationary effect of the un-recycled transfer to OPEC. Consequently, the primary reason for reducing energy consumption is not to reduce costs, per se, but to reduce the Community's vulnerability to further levies of this kind, the potential cost of which having now been so conclusively demonstrated.

For practical reasons it will be necessary to use the price mechanism and energy taxes to hasten the adjustment to a much lower level of energy consumption, and in the short term this will result in a competitive disadvantage to parts of industry.

However, the burden of these costs should not be exaggerated. On the one hand, it is quite possible to adjust to a less energy-intensive economy, without sacrificing growth by making best use of available technology (1). On the other hand Japan, which has an even worse energy and raw material situation, has been able to adjust rapidly in this direction following each oil price rise.

Human capital

The changing nature of employment in recent decades has increased the importance of human capital endowments as a determinant of economic growth and international competitiveness. In many respects the Community, the US and Japan have similar human capital endowments - educated work forces, rising levels of female participation, low levels of population growth, broadly similar employment structures etc. but one must look to variations in emphasis for clues as to the positive or negative contributions to competitiveness which the different populations represent.

At the moment the US and EC have labour forces of roughly comparable size and about double that of Japan. In view of the increasing technical sophstication of the production system and the spread of new technologies to all parts of the economic system there is a growing need for these labour forces to have a high level of basic education and some form of post school training. Despite the fact that the evidence is incomplete it appears that the Community could be at relative disadvantage vis-à-vis the US and Japan in terms of availability of technically skilled workers. For example there are indications of lower levels of scientists and engineers in the Community labour force than in either the US or Japan and in a number of Member States the proportion of students following science and engineering courses has fallen during the last decade. In addition the level of vocational education in the Community appears lower than that of the US and is more heavily concentrated on young people. The fact that around 40% of young school leavers pursue no further training or education is particularly worrying. In Japan there appears to be considerable emphasis on engineering skills, which is to be expected from the emphasis on streamlined production systems. Most vocational education is on the job, which tends to make it very specific.

Among the most commonly cited indicators of international labour competitiveness are wage costs and productivity. The evolution of unit wage costs 1970-1980 (in national currencies) for the manufacturing sector shows similar trends for the USA (6.2%) and Japan (6.6%) and wide variations in Member State performance (from 5.5% in Germany to 15.5% for Italy and the UK).

Trends in hourly productivity rates in volume terms for the same period show the highest increase for Japan (7.4%), a relatively bad performance by the USA (2.4%) and again widely different performances by Member States (2.7% in UK and 7.4% in Belgium). In the period 1975-80 Japan increased its productivity growth even more to 7.9% while the US fell to 1.9% and Belgium (the highest ranked EC country) decreased slightly to 6.8%. However, exchange rate changes also have an important bearing on international comparisons of this kind as can be seen from a comparison of wage costs in US dollars.

(1) Pour une Croissance Econome en Energie, Juin 1979.

Corporate structure and performance

The first response to any challenge to European competitiveness must come from the individual companies in the different sectors. The evidence available on corporate performance suggests that on average Community industry has not performed as well as its US and Japanese competitors during the 1970's. Part of the weakness lies in the relative inability of European industry to generate an operating surplus which can keep up with the rising cost of capital, with consequent adverse impact on its investment propensity and sectoral and geographic shifts of resources. This vicious circle is undermining the competitive position of EC industry and its capacity to adjust endogenously to present and foreseeable challenges.

Analysis of company accounts reveals a weaker performance in terms of sales margins, return on assets and remuneration of equity capital by Community companies than by US, and to a lesser extent, Japanese companies. For example, in 1980, the first hundred industrial groups in Europe realised an average net profit on sales of 1.4% against 2.4% of the first hundred Japanese groups and 4.8% of the first hundred US groups. The gap is also considerable in terms of net profit on own capital: 6.5% for European corporations, 14% for the Japanese, 15.6% for the Americans.

Company financial structures also vary: on average Community companies rely more on own funds than Japanese companies but less than US ones. However, US companies can rely on a stronger financial base and Japanese companies enjoy the positive effects of long-standing financial discipline and are favoured by the lending policies of Japanese financial institutions.

However, higher levels of investment expenditure would not of themselves solve current problems. The role of management is crucial. Experience has shown that important gains in productivity and production costs, financial results and market penetration can be achieved through good organisation and management. Professional salaried management has developed more slowly in the Community than in the US. From a number of studies the greater preference of the average American and Japanese manager for risk-taking emerges together with considerable concern for product quality - two basic qualities which contribute to coping efficiently with current competition. Thus historical delays and certain national characteristics may have had a negative effect on industrial efficiency in the Community and hindered the implementation of the appropriate strategies.

Industrial efficiency and competitiveness rely to a considerable extent on the internal management and planning of all aspects of the enterprise. There would appear to be room for improvement in this respect in many European Community companies. Responsibility for this improvement lies not only with company management and employees but also with the financial institutions and the public authorities. That corporate strategies play a crucial role in shaping structural change is further demonstrated by the high proportion of international trade which takes the form of inter-firm transactions.

In this context European corporations should verify whether their strategies live up to the challenge of their American and Japanese competitors; particularly as the process of internal adjustment within the firm is quicker and can benefit more readily from the necessary consensus than adjustment brought about by macro-economic measures.

Adjustment is certainly influenced by external factors which go beyond the direct control of the company but this in itself is not a justification for inaction, as the enterprise's main challenge lies in combining resources and constraints in view of economic results. Besides the invisible hand of the market and the visible hand of public policy, company organisation and strategies can play a transparent and fundamental role in regaining international competitiveness.

Priorities for further analysis

This analysis of the competitiveness of Community industry is incomplete and inconclusive. To some extent, this is in the nature of the case, for the reasons described in the Introduction.

However, the work done for the preparation of this report during the past six months has clarified the need for a more systematic approach to the analysis of industrial competitiveness within the Commission.

In the first place, the analysis of trade data needs to be put on a permanent basis and extended to constant price data; the market share analysis should be regularly updated, taking account of total world trade and of the development of local production outside the Community, particularly in newly industrialising countries. For this purpose it will be necessary to have access to the data bases in international organisations.

Secondly, there is the question of international industrial development. From the point of view of corporate strategies and industrial policies, if a problem or a threat first comes to light in the trade statistics, it is too late to do anything about it, other than in a defensive manner. The Commission should:

- monitor Japanese corporate strategies and public industrial policies;
- survey, on a regular basis the information, available from international organisations, regarding industrial development in the developing countries, beginning with the principal NIC's;
- improve the flow of information and analysis about industrial developments in the United States.

Thirdly, this report deliberately ignores the tertiary sector, not only for lack of time and resources, but also because the relevant information concerning the Community is rudimentary where it exists at all. In fact this is a very important area both for technology and for employment. The international trade aspects are also important, because parts of the teritiary sector are - or could become - significant exporters. The United States already considers the services industry as a major source of foreign exchange (1). An in-depth analysis of the services industries in the Community should be a high priority for the Commission because there is some concern as to their technological development and future competitiveness.

(1) See: The International Operations of US Service Industries, Economic Consulting Service Inc., June 1981.

Fourthly, those parts of the report dealing with wage costs, inflation and exchange rates raise more questions than they give answers. This is regrettable, but probably reflects the reality. However, since the Community has, through the European Monetary System, a responsibility for exchange rate management in the Community, it is most important that the Commission understand, as thoroughly as possible, the effect of monetary policies on the international competitiveness of exports of manufactured products.

The analysis of industrial development in the Community suffers from several lacunae, some of which will not be filled until there is a significant improvement in industrial statistics (1). This is in hand, but will take time and demands a great deal of cooperation from the National Statistical Offices. The analysis also depends on sufficient computing capacity being allocated to this kind of work.

In this context it is necessary to explain and apologise to Greece, Denmark, Ireland and Luxembourg. . Greece hardly appears in this report at all because the period covered precedes the enlargement (2).

Regarding Denmark, Ireland and Luxembourg, their industrial statistics are much less complete, in time or in coverage than are those of other Member States, which is why the Commission's computerised data base for industrial statistics was set up for the six larger Member States' data only. Luxembourg's trade data is included with Belgium.

But the principal lacuna is in the analysis of specific industrial sectors. The Commission has recently undertaken thorough analyses of a few sectors, automobiles and textiles in particular (3), and the corresponding reports are available to the European Parliament. This work is being continued in other important sectors.

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The additional analysis described above will take time. It will also require resources which are not at present available in the Commission departments concerned.

(1) In respect of their coverage, comparability, disaggregation, timeliness and availability.

(2) Community industrial and trade statistics will be extended progressively to include Greece in so far as the information is available.

(3) The European Automobile Industry COM (81) 317 Final and
The situation and prospects of the textile and clothing industries in the Community COM (81) 388 Final.

I. Introduction

This report about the competitiveness of Community industry has been prepared at the request of the European Parliament's Committe on Economic and Monetary Affairs. It follows a series of reports published by the Commission about different aspects of domestic and international economic developments, structural change and adjustment (1).

Since this report deals with industry, and in practice with manufacturing industry, an attempt has been made to present the available information in a disaggregated way so as to show what is happening in the various branches of industry. This approach has one major drawback - the welter of statistics, particularly where we present the information by Member State as well. We can but ask for the reader's understanding, for we have found no other solution.

Each reader who is particularly familiar with one or other of the Member States is likely to find Community aggregates misleading simplifications; each industrial worker or manager will inevitably feel that the data for his "sector" hides a multitude of strengths and weaknesses in individual firms. In a very real sense we are discussing an unattainable concept: in so far as the competitiveness of European industry is the result of the competitive performance of all the industrial enterprises in the Community it is not possible to describe it, let alone analyse it, in a single report. Thus, we are obliged to discuss the question in terms of approximate aggregates which are at best proxies for the real world.

A. Objectives of the Report

What we have set out to do therefore is to try and present a coherent survey of the evidence about competitiveness and the factors which affect it in the short and longer term. The information is not conclusive, and in some respects it is contradictory. The indications of a relative decline in the Community can be interpreted in different ways. Explanations for the decline in competitiveness are hardly ever equally valid for the same product or sector in each Member State, nor do the same considerations apply to international competitiveness as to competitiveness in the domestic Community market.

B. The meaning of Competitiveness

There is no single measure of competitiveness. At best it is a composite concept, because different measures (price, export share, profitability, unit costs ...) give different results.

(1) See references in Annex 1.

In this report we have endeavoured to present relevant information about the following principal quantifiable factors:

- export market shares;
- specialisation of industrial structure;
- costs and exchange rates;
- profitability and the financial structure of industry;
- industrial investment;
- the structure of the industrial labour force.

We recognise that there are many other considerations which cannot be treated quantitatively and that - for lack of space and information - these have had to be treated incidentally in the report.

A recent report of the European Management Forum (1) also tried to make international comparisons of competitiveness and used as many as 240 different criteria, many of which are unquantifiable.

Even in areas which are ostensibly quantifiable, there are a number of major statistical difficulties which weaken the significance of specific conclusions. These problems are well known but the main ones are set out in Annex 4 so that all readers are forewarned.

Finally, it must be stressed that "competitiveness" is in any case a relative concept. There is no "race from A to B" in economics, except in comparing individual firms. The question is a matter of relative positions in terms of resources and products and the change in relative positions over time. The indicators have to be interpreted with common sense:

- international economic development, especially industrialisation of the NIC's will lead to an apparent relative "decline" of the presently developed areas in terms of percentage shares;
- a declining share in low value added activities may be a consequence of increased overall competitiveness.

There are also normative considerations:

- underlying any evaluation of the relative position of European industry there is a historical or political concept of what the position "ought" to be;
- different objectives (output, employment, profits, exports) lead to different assessments.

Competitiveness is also a dynamic concept; the relative position of companies and countries in the future is not only affected by the parameters determining present levels and trends, but also by changes in the parameters themselves - investment, the training of the working people, technology and innovation, among others.

(1) Report on Industrial Competitiveness, 1981, European Management Forum, Geneva, November 1981.

II. The Evidence from Trade

This Chapter of the report is essentially a review of the evidence from international trade, exchange rate data and an international comparison of wage costs as they are relevant to assessing the competitiveness of Community industry.

In the first place we describe, briefly, the structure of international trade by the major groups of countries and principal product categories, including the structure of the Community's international and domestic trade by product and Member State.

Secondly, we examine trends in the share of international trade (1) accounted for by Community exports of various products.

Thirdly, the chapter refers to the information which the Commission has developed recently concerning the trends in specialisation and comparative advantage of the Community's trade and those of our principal international competitors.

Finally, we examine the relationship between prices, costs and exchange rates as they affect industrial competitiveness.

It is important to bear in mind in the following discussion of the structure and trends of international trade that many factors are at work in addition to the operation of market prices. It is important to understand these factors before reaching conclusions from the data. For example, a substantial proportion of OECD exports benefit from official export credit, sometimes subsidised. Secondly, some trade flows arise from major investments in processing or manufacturing plant. Experience is that in such situations a major change in competitiveness is necessary before the plant is closed or moved and the trade flow is interrupted.

Related to the previous point is the fact that a very large share of international trade is internal transactions between branches or subsidiaries of the same firm. This has recently been estimated (2) at 45% of US exports, 30% of Community exports (3) and only 17% of Japanese exports, and there are good reasons to expect that such exchanges will be to some extent cushioned from the short-term effects of market prices for products, factors and currencies.

Furthermore, an ill-defined but possibly growing share of trade takes place under barter or buy-back deals which, almost by definition, are insensitive to market forces.

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(1) On the basis of the exports or the imports of OECD countries only.
(2) Dunning, Pearce "The World's Industrial Enterprises", Gower, 1981.
(3) Including intra-EC exports.

A. Changes in World Trade

1. World trade

The volume of world trade increased between 1963 and 1973 by an average of 8.7% per year whereas between 1973 and 1981 it increased by only 3.6% per year. During these periods the average annual growth rate in world output fell from 5.7% to 3.1% (1973-1980). The world recession which began in 1973 has clearly resulted in disproportionate contraction in world trade.

Table 1 shows that there was little variation in the geographical distribution of world trade between 1963 and 1973 except for the growth of Japanese exports. The industrialised countries increased their share of imports and exports from 67% to 71% mainly at the expense of the State-trading countries. Developing countries' share of exports and imports declined slowly.

Table 1 : World Trade by geographical area

	Exports				Imports			
	1963	1968	1973	1980	1963	1968	1973	1980
Total world trade (billion $)	155	238	574	1973	155	238	574	1973
	percentages				percentages			
Total (a)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1. Industrial countries (b) of which :	67,3	70,3	70.8	63,5	66,9	69,5	71,0	67,3
European Community (9 countries)	33,8	34,6	36,6	33,3	34,7	33,7	35,7	34,6
(of which : intra-EEC trade)	(15,2)	(16,4)	(19,3)	(17,6)	(15,2)	(16,4)	(19,3)	(17,6)
Rest of Europe	7,7	8,0	8,4	7,7	10,6	10,5	11,2	10,2
USA	13,4	14,6	11,9	10,6	11,0	14,0	12,1	12,1
Japan	3,4	5,3	6,4	6,6	3,7	4,5	6,0	6,2
2. Less-developed countries of which, countries in :	20,6	18,4	19,2	27,5	20,5	18,7	17,6	23,2
Africa	4,3	4,0	3,6	4,6	4,0	3,5	3,1	4,1
America	7,3	5,8	5,1	5,4	6,3	6,1	5,4	6,3
Asia	8,9	8,3	10,3	17,4	9,8	8,9	8,9	12,6
(oil producing developing countries)	(5,9)	(5,8)	(7,3)	(15,0)	(2,9)	(3,1)	(3,5)	(6,5)
3. Countries with state trade of which :	12,1	11,3	10,0	9,0	11,5	10,7	9,8	8,5
USSR		4,5	3,6	3,9		4,0	3,6	3,5
4. Unspecified	0,0	0,0	0,0	0,0	1,1	1,1	1,6	0,9

Source : GATT "International Trade"
(a) Including intra-Community trade
(b) Including Australia, New Zealand and South Africa

The most striking development since 1973 has undoubtedly been the large increase in exports by oil producing developing countries of 7.7 percentage points to 15% as a result of the sharp rise in prices of petroleum. Meanwhile their imports rose by only 3 points and those of developing countries as a whole by 5.5 points to 23%. Since the relative shares of State-trading countries have only declined slightly since 1973, the pattern in the industrialised countries has been directly determined by the greater role played by the developing countries. In 1980, the industrialised countries' share of world exports was only 64% compared with 71% in 1973 but their share of world imports was 67%. The gap between their relative shares of exports and imports highlights the seriousness of the imbalances faced by the industrialised countries in the turbulent period since 1973.

Table 2 shows the structure of world trade by the principal product groups. First, one must note that apart from the very rapid growth in the importance of energy products between 1973 and 1980, the overall structure of world trade has been rather stable. Previously, between 1963-73, trade in engineering products expanded more rapidly than total world trade, but this is no longer the case.

During 1963-1973 the relative share of capital goods moved from 25% to 33%.

The increase in the price of petroleum and other raw materials since 1973 has interrupted this trend. Between 1973 and 1980, the share of total exports of manufactured products from OECD countries showed only a slight rise with moderate increases in the share of intermediate products - probably on account of higher price rises than for capital goods - but these have not been as high as the increases for petroleum products.

The main factor affecting the structure of world trade since 1973 has therefore been the doubling of the share accounted for by fuels, which increased from 11% to 24% of world exports in seven years.

Table 2 : World Trade by Commodity Groups

Product Group	1963	1968	1973	1980
Total World Exports (billion US $)	154	239	574	1973
Total Exports	100,0	100,0	percentages 100,0	100,0
1. Primary products	42,2	35,4	37,7	43,3
of which :				
fuels	10,2	9,6	11,1	23,7
food and beverages	19,5	15,7	15,0	11,2
raw materials	12,5	10,1	11,6	8,4
2. Manufactured products	55,9	63,0	60,5	55,2
of which :				
iron and steel	4,8	4,8	5,0	3,9
chemicals	6,1	7,1	7,3	7,7
engineering products	25,1	29,1	32,7	30,0
of which :				
(machinery for specialised industries)			9,1	8,0
(office and telecommunications equipment)			3,0	3,0
(road motor vehicles)	(4,7)	(6,6)	7,1	6,4
(other machinery and transport equipment)			10,8	10,0
(domestic equipment)			2,6	2,4
textiles and clothing	6,0	5,9	6,3	4,8
other manufactured products	14,0	16,1	9,3	8,9
3. Not allocated	1,8	1,6	1,8	1,5

Note : Base : exports, f.o.b.
Including intra-EEC trade

Source : GATT : "International Trade"

The European Community accounts for one-third of total world trade (1980), as reported by GATT. Rather less than half of Community trade is extra-Community trade. In 1980 intra-Community trade was 251 billion ECU and extra-Community trade was 221 billion ECU.

Although all Community trade is classified in international statistics as international trade, intra-EC trade and extra-EC trade are different in important respects, and should be treated separetely.

Tables 3 and 4 set out the size and structure of the Community's international trade in manufactured products.

2. Extra-Community Trade

The Community's trade with the rest of the world is spread across many world markets, and includes a very wide range of products. However, most of these exports fall into a few industry classifications. Of total extra-EC exports 68% is accounted for by six sectors (metals, chemicals, mechanical and electrical engineering, motor vehicles, agro-industries).

Table 3 gives the detailed structure of Community extra-EC manufactured exports by industry and Member State of origin in 1980.

TABLE 3

EXTRA-COMMUNITY EXPORTS OF MANUFACTURED PRODUCTS BY MEMBER STATE IN 1980 ... % OF EC-9 TOTAL

NACE CLIO Code	INDUSTRY	E.E.C.-9	BELGIUM-LUX.	DENMARK	GERMANY	FRANCE	IRELAND	ITALY	NETHERLANDS	UNITED KINGDOM
					Bilion ECU					
	Total extra-EEC exports	221,1	12,9	6,1	71,6	39,2	1,5	28,7	14,0	47,1
	of which:									
2-4	Manufacturing	193,6	10,5	5,2	67,4	35,0	1,3	26,1	10,6	37,5
					Percentages					
2-4	Manufacturing	100,00	5,41	2,68	34,80	18,10	0,69	13,46	5,47	19,38
21	Metalliferous ores	0,15	0,01	0,00	0,06	0,00	0,01	0,01	0,05	0,01
22	Prel. process.of metals	8,95	1,11	0,09	3,05	1,79	0,00	0,89	0,47	1,54
23	Extr. of other minerals	1,13	0,01	0,00	0,05	0,03	0,01	0,08	0,04	0,92
24	Non-metal. mineral prod.	3,30	0,08	0,05	0,58	0,42	0,02	0,64	0,04	0,37
25	Chemical industry	12,27	0,79	0,25	4,46	2,28	0,12	1,17	1,12	2,08
26	Man-made fibres industry	0,58	0,01	0,00	0,30	0,07	0,00	0,12	0,00	0,07
31	Metal articles	4,88	0,15	0,12	1,70	0,87	0,01	1,06	0,17	0,81
32	Mechanical engineering	19,08	0,56	0,49	7,98	2,76	0,03	2,82	0,57	3,86
33	Office & data proc. mach.	1,45	0,04	0,02	0,44	0,28	0,04	0,20	0,08	0,36
34	Electrical engineering	9,83	0,32	0,29	3,92	1,83	0,05	1,09	0,53	1,80
35	Motor vehicles & parts	10,76	0,29	0,04	5,48	2,05	0,00	1,09	0,11	1,70
36	Other means of transport	3,18	0,11	0,07	0,48	0,95	0,01	0,37	0,42	0,77
37	Instrument engineering	1,94	0,03	0,05	0,83	0,33	0,02	0,18	0,09	0,42
41/42	Food,drink & tobacco	7,41	0,38	0,63	1,19	1,94	0,25	0,54	1,23	1,25
43	Textile industry	3,56	0,27	0,12	1,09	0,51	0,02	0,71	0,19	0,63
44	Leather & leather goods	0,43	0,01	0,01	0,10	0,08	0,00	0,17	0,01	0,06
45	Footwear & clothing	2,32	0,04	0,09	0,54	0,40	0,02	0,86	0,04	0,31
46	Timber & wooden furniture	1,20	0,03	0,12	0,39	0,15	0,00	0,37	0,02	0,12
47	Paper & paper products	1,86	0,06	0,05	0,67	0,37	0,01	0,18	0,09	0,44
48	Rubber & plastics	2,71	0,14	0,11	0,83	0,58	0,02	0,38	0,09	0,55
49	Other manufacturing ind.	4,09	0,98	0,06	0,66	0,38	0,04	0,56	0,10	1,30

Source : EUROSTAT

In addition to the principal exporting industries and Member States mentioned above, there are significant amounts of exports coming from the metals sector in Belgium, from the chemicals and agro-industries in the Netherlands, from metal manufacturers in Germany and Italy, aircraft and railway equipment in France, textiles in Germany and from clothing and footwear industry in Italy.

In relation to the size of their economies one may also draw attention to the importance of extra-EC exports of food products for Ireland and of food products and mechanical engineering for Denmark.

Thus, although the structure of the Community's international exports is constantly changing, this picture of the situation in 1980 at least gives an indication of the relative importance of world markets for Community industries. Clearly in the discussion which follows of competitive performance in different markets and sectors, a weak performance is of greater significance for income and employment in the Community the greater the amount of exports which are thus exposed. At the same time, the implicit requirement for structural adjustment will be the larger.

We shall see that to some extent the Community is internationally competitive in those products which we export a lot of (which is not unexpected) but this is by no means the case in all important products and in each Member State. Steel and automobiles are evident examples.

3. Intra-Community Trade

Most international organisations (1) treat intra-Community trade, that is the exports and imports which take place between the Community Member States, as an integral part of international trade.

This is not satisfactory from the point of view of this report because in our assessment of international competitiveness we are looking primarily at our performance vis-à-vis Japan and the US and it is rather misleading to dilute the international trade data with intra-Community trade (2).

Furthermore, intra-Community trade is subject to very different economic influences than extra-Community trade. The complementarity and comparative advantages between industries in different Member States are not the same as those which prevail internationally. For all their imperfections, the domestic market policies established by the Treaties have had an effect.

However, this distinction between intra- and extra-Community trade does have limitations: the economies of the Member States are not yet so integrated that they can be treated as a single European economy, as one would treat the American or Japanese economies (3).

Intra-Community trade was in 1980 more important than extra-Community trade, for all products and for manufactured products.

(1) UN, GATT, OECD

(2) Any more than international trade statistics contain the trade between, say, Florida and California, or between Hokkaido and Kyushu.

(3) Which are of course also conventional simplifications given the significant regional disparities and differences in factor endowment and performance of different parts of the Japanese and American economies.

Intra-Community trade is understandably more important for the original Member States whose industries have had more time to adapt to the unified domestic market, and for the smaller Member States, particularly Belgium and the Netherlands.

Table 4 presents the industrial composition of intra-Community trade by country of origin in 1980. Compared with the structure of extra-Community trade, the following points emerge:

- German and French industry's strengths in the Community market appear in the same sectors as in international trade, with the exception of "other means of transport" for France;
- the Community market is much more important than is the international market for the Italian textile, footwear and clothing industries;
- the importance of the Community market is increasing for British industry, and it is already more important than international sales in five sectors: footwear and clothing, office and data processing machinery, timber and wooden furniture, man-made fibres and metalliferous ores;
- there are several industries for which the Community market is much more important than extra-Community markets. These are food, drink and tobacco; textiles; rubber and plastics; footwear and clothing; paper and paper products; office and data processing machinery; timber and wooden furniture; metalliferous ores. As one might expect these include some products with relatively high transport costs, and some products for which the Community may be losing its international comparative advantage and for which the Common Market provides some protection;
- comparing Member States' share of manufacturing industry's exports it is apparent that Belgium-Luxembourg, the Netherlands and Ireland have much larger exports to the Community market compared to their extra-Community exports. Whilst there may be strong historical and geographical reasons to explain this difference, it should be borne in mind that exports include warehouse exports, which tends to overstate total exports in countries which have large sea ports.

Table 4: INTRA-COMMUNITY EXPORTS OF MANUFACTURED PRODUCTS BY MEMBER STATE IN 1980 ... % OF EC-9 TOTAL

NACE CLIO Code	INDUSTRY	E.E.C.-9	BELGIUM-LUX.	DENMARK	GERMANY	FRANCE	IRELAND	ITALY	NETHERLANDS	UNITED KINGDOM
					Billion ECU					
	Total intra-EEC exports	250,6	33,2	6,1	66,6	40,8	4,5	26,7	38,0	34,7
	of which: Manufacturing	203,0	27,5	5,0	60,0	34,3	4,2	24,0	23,9	23,9
					Percentages					
2-4	Manufacturing	100,00	13,55	2,47	29,57	16,90	2,09	11,84	11,79	11,78
21	Metalliferous ores	0,23	0,03	0,00	0,03	0,04	0,03	0,00	0,07	0,02
22	Prel. process.of metals	10,60	2,73	0,09	2,94	2,07	0,03	0,71	1,10	0,93
23	Extr. of other minerals	0,69	0,06	0,01	0,11	0,08	0,01	0,03	0,08	0,31
24	Non-metal. mineral prod.	2,59	0,41	0,04	0,67	0,40	0,03	0,60	0,22	0,21
25	Chemical industry	12,95	1,74	0,11	3,57	2,39	0,24	0,67	2,60	1,63
26	Man-made fibres industry	0,72	0,06	0,00	0,30	0,11	0,03	0,11	0,02	0,08
31	Metal articles	3,83	0,37	0,10	1,29	0,60	0,06	0,60	0,41	0,40
32	Mechanical engineering	10,11	0,66	0,30	4,10	1,37	0,10	1,39	0,72	1,47
33	Office & data proc. mach.	2,25	0,07	0,01	0,65	0,37	0,15	0,26	0,17	0,54
34	Electrical engineering	7,78	0,77	0,17	2,92	1,24	0,14	0,95	0,59	1,00
35	Motor vehicles & parts	11,72	1,98	0,05	4,46	2,62	0,05	1,04	0,45	1,07
36	Other means of transport	2,07	0,11	0,08	0,92	0,25	0,01	0,21	0,18	0,31
37	Instrument engineering	1,63	0,07	0,04	0,62	0,20	0,04	0,12	0,23	0,30
41/42	Food,drink & tobacco	11,21	1,26	1,05	2,00	1,84	0,71	0,56	2,76	1,01
43	Textile industry	5,86	0,96	0,07	1,12	0,97	0,14	1,41	0,62	0,58
44	Leather & leather goods	0,54	0,03	0,00	0,07	0,08	0,01	0,23	0,05	0,06
45	Footwear & clothing	3,63	0,38	0,03	0,58	0,54	0,06	1,42	0,27	0,35
46	Timber & wooden furniture	2,09	0,36	0,12	0,55	0,26	0,02	0,48	0,17	0,12
47	Paper & paper products	3,09	0,44	0,05	0,93	0,52	0,03	0,31	0,50	0,31
48	Rubber & plastics	3,74	0,48	0,07	1,11	0,76	0,08	0,44	0,38	0,41
49	Other manufacturing ind.	2,65	0,57	0,05	0,61	0,17	0,09	0,29	0,20	0,66

Source: EUROSTAT

B. International Market Shares

This part of the report examines the export performance of Community industry vis-à-vis its major international competitors.

The approach adopted has been to examine the trends in the Community's share in international trade for the products of the sectors from two points of view:

- the Community's share of OECD exports of manufactures to the world (this should indicate how Community exports are performing against those of other developed countries, in particular the USA and Japan);

- the Community's share as a supplier of exports of OECD imports of manufactures from the world (this should indicate how the Community is performing against both developed and developing countries on the OECD market, which in 1980 accounted for 62% (1) of world imports.

All analysis of changes in market shares based on trade data alone suffers from a major shortcoming, that is that it can take no account of changes in trade which arise from the development of local production in other countries. To do so, however, would require detailed and up-to-date production and consumption data country-by-country on a worldwide basis, so as to base the analysis on each country's share of the total market for a product group, and not just that part of the market which manifests itself through the international trade statistics. Nor can the competitiveness of European industry in the domestic Community market be assessed on the basis of cross-border transactions alone. The total domestic market, including national production and consumption, should be taken into account. However, the statistical base to do this in a comparative and up-to-date way is still substantially lacking.

This problem is partially resolved in the developing country and OPEC data shown in Tables 6 and 7 for market shares for relatively sophisticated industrial products in areas where local production is still quite low.

Thus, OECD exports of, for example, TV, radio and Hi-Fi equipment to Africa represent virtually the total market, and a declining Community share is a direct and unambiguous indication of declining competitiveness

1. Shares of OECD exports to the world (2)

An analysis of OECD export shares provides a measure of whether a country has been able to maintain or improve its relative share of the industrialised world's exports or whether, on the contrary, its share has fallen.

Table 5 shows the changes in the share the Community, the USA and Japan hold in total exports from OECD countries to the world in twenty-five product groups.

(1) Including intra-Community trade.
(2) Not including intra-Community trade.

TABLE 5

CHANGES IN SHARES OF OECD EXPORTS 1973-80

	OECD Exports(1) in 1980 Billion US $	SHARES OF OECD EXPORTS(1) IN 1980			CHANGES 1973-80		
		JAPAN	USA	EEC(1)	JAPAN	USA	EEC(1)
		per cent			percentage points difference		
Total products	852	15.3	25.1	37.2	2.25	0.09	1.82
Food, beverages, tobacco	75	2.3	42.8	33.3	-0.6	-1.1	7.6
Agricultural products	27	0.7	55.8	9.4	-0.1	6.5	-0.8
Mineral fuels	41	1.2	19.4	47.5	0.3	-1.4	11.2
Metals unworked	18	4.1	33.1	13.1	2.5	13.1	2.6
Other raw materials	22	1.0	16.3	40.0	-0.5	0.9	5.7
Manufactured products	668	19.0	22.3	38.6	2.6	0.8	-0.4
of which:							
Non-met. min. products	31	13.0	18.2	44.4	0.9	2.9	-2.1
Iron and steel	46	34.2	7.5	38.0	2.2	-0.4	-3.6
Metal products	22	15.7	16.1	44.5	-0.0	-0.9	2.8
Basic chemicals	45	9.0	28.8	44.4	-0.9	3.3	-1.8
Chemical products	24	4.8	25.1	47.5	0.5	2.2	-1.2
Agricultural machinery	9	10.3	34.8	39.7	3.4	-2.7	-0.5
Electrical machinery	40	22.3	23.0	40.1	7.7	-3.8	-2.0
Power gen. machinery	20	17.1	27.5	40.9	3.8	-0.1	4.4
Other machinery	90	13.3	23.9	45.4	4.2	0.2	-4.0
Office and telecom. equipment	42	34.6	27.2	25.7	2.1	2.6	-1.4
Optical, clock, photo	31	24.4	26.6	30.8	7.5	0.2	-3.6
Road vehicles	89	32.5	16.4	32.7	14.8	-5.0	-4.7
Other transport equipment	37	14.6	43.2	33.8	-9.5	11.8	9.0
Textiles	24	22.0	15.2	39.9	-1.2	4.2	-3.2
Clothing	9	3.7	12.1	48.1	-7.0	4.5	3.7
Leather, shoes	8	4.9	9.7	51.3	-1.8	3.3	-0.0
Paper	32	3.5	19.0	16.3	0.5	2.9	0.9
Wood furniture	9	3.3	12.7	41.3	-2.8	-1.3	11.8
Plastic, rubber	31	15.1	20.7	47.5	-0.9	-0.4	0.2
Other manuf. products	30	14.7	29.4	45.1	-1.4	-3.8	6.1

(1) Not including intra-Community trade

Source: Calculations by Commission Staff on the basis of OECD trade data

A look at the shares for 1980 over the whole range of products (agricultural and manufactured products, energy and other raw materials) shows that the Community is without doubt the largest exporter in the OECD since its extra-Community exports amount to nearly 37% of the OECD total, the United States taking only 25% and Japan 15%. Moreover, although Japan has increased its relative share by 2.3 points since 1973, the Community has also fared well by increasing its own, already very high, level by 1.8 points while the United States' share has remained virtually unchanged.

Taking manufactured products alone, Japan's position appears to be relatively strong (19.0%) even though the United States (22.3%) and the Community (38.6%) continue to predominate. Although at first sight this performance may seem encouraging, there are grounds for concern if one looks at the gains and losses in shares: while Japan has increased its own share by 2.6 points since 1973 and the United States its share by 0.8 points, the EEC has seen its share cut by 0.4 points.

Increased competition in world trade since 1973 - generated in part by the emergence of new competitors - could however be expected to affect first those countries which initially held the largest shares. Taking manufactured products as a whole, the Japanese advance does not appear to have been made primarily at the expense of the Community or the United States. Japan is also subject to greater incentives to export manufactured products successfully since it exports neither raw materials nor agro-industrial products.

The United States' predominant position cannot be challenged in agricultural products and unworked metals; they have substantially increased their already large share of these markets since 1973. In the face of such competition, the Community has to play a secondary role, except perhaps for the food industries. On the other hand, there is virtually no Japanese presence in this product category.

Since 1973, the US share of OECD exports of agricultural products increased from 49% to 56%, compared with the Community's modest 9.4% and Japan's 0.7% - both declining.

By contrast, the Community predominates for the whole range of industrial intermediate products. Its share of each of these products is significantly larger than its two competitors'. There is little indication at present that this strong position is threatened in spite of the considerable losses it has sustained in the steel sector. The American shares tend to be about half of the Community shares except in chemicals where the difference is less marked, but still significant.

Japan's share is strong in the steel sector, and, if the present trend continues, it will soon be larger than the Community's share. Japan's share of exports of metal products is approximately the same as the United States', both far smaller than the Community's share, whilst Japan's share of chemicals and non-metallic mineral products exports does not bear comparison with the Community's or the United States'.

In the capital goods sector, the shares appear more evenly distributed.

Taking all machinery exports together, including electrical machinery, the Community is well ahead of its two competitors with shares greater than 40%; this lead is particularly marked for industrial machinery. Although the US share for agricultural machinery has reached 35% (a small sector), its share for capital goods, as a whole, places it firmly in second place although still far behind the Community. Japan takes the third place for these products with shares of between 10% and 22%. Since 1973, however, these shares have been increasing, moving up 7.7 percentage points for electrical machinery while the Community and US shares have fallen.

The Community holds 25.7% of OECD exports for office and telecommunications equipment, but this share is falling. Here the United States and especially Japan are the market leaders, accounting for 27.2% and 34.6% respectively of OECD exports, the USA having gained ground since 1973 over Japan with a faster rate of increase. As regards the precision engineering industries, the three competitors are all similarly placed. Although the Community is currently in the lead it is obvious that if the trends between 1973 and 1980 continue (+ 7.5 points for Japan, -3.6 points for the EEC, no change for the USA), this advantage will soon disappear.

The outstanding Japanese performance in the world trade in motor vhicles has caused the greatest upheaval since 1973. Japan has now caught up with the Community as the world's biggest exporter of motor vehicles. It has almost doubled its share of OECD exports in seven years, pushing it up to almost 33% in 1980 largely at the expense of the Community and the United States which lost 4.7 and 5.0 percentage points respectively of OECD exports.

As far as other transport equipment (1) is concerned, however, the United States has remained unchallenged. Not only do the United States hold the largest share (43%) but they have also recorded considerable gains since 1973 (+ 11.8 points). The Community is in second place with 33.8% of total OECD exports in 1980, an increase of 9.0% since 1973. Japan, however, is not only some way behind (14.6%) but has also suffered substantial losses since 1973 (-9.5 points).

The Community holds a relatively strong position in OECD exports for consumer goods. Japan has only a small share with the exception of textiles and rubber and plastic products. However, since the data only covers OECD exports, in those sectors where developing country exports are already significant, particularly consumer goods such as textiles, leather and footwear, the export shares only reflect the relative positions of the developed countries with each other in that part of the market which they supply.

In short, were it not for the good performance of the agro-industry and raw materials exports, the overall performance of the Community's exports would have been much worse. For manufactured products as a whole, the Community lost ground relative to Japanese and United States exports.

Given that the product categories shown in Table 5 are rather aggregated, and the data does not show in which world markets the Community's share was changing, we have analysed the developments for a number of products in the principal world markets.

(1) This is a hybrid category. The overall movements are probably influenced primarily by the aircraft industry, but the data includes shipbuilding and railway rolling stock.

Community exports of 27 products or product groups were compared to total OECD exports of the same products. In both cases intra-Community exports were removed from total exports. The Community's share of OECD exports was examined over the period 1968 to 1980 both in total and in selected major geographical zones. In value terms, these 27 products accounted for 35% of total extra-Community exports.

The principal results of this analysis appear in Tables 6 and 7. The five products or product groups which accounted for a significant part of OECD exports and for which the Community increased or maintained its share of OECD exports are shown in Table 6. The five for which the Community suffered its greatest losses in its share of OECD exports are shown in Table 7.

Table 6 COMMUNITY EXPORTS TO SPECIFIED MARKETS-PRODUCTS WHERE THE COMMUNITY DID WELL OR HELD ITS OWN

PRODUCT GROUP	YEAR	OECD EXPORTS TO WORLD Mio US$ (1)	EEC EXPORTS TO WORLD %of OECD (1)	E.E.C. EXPORTS AS A PERCENTAGE OF O.E.C.D. EXPORTS TO :- U.S.A	JAPAN	E.F.T.A	DEVELOPING COUNTRIES OF AMERICA	AFRICA	ASIA	O.P.E.C
	1968	5255	31,0	25,9	40,4	76,4	26,8	83,6	51,1	56,7
	1973	12052	33,1	23,7	33,0	74,7	32,4	83,8	54,4	63,4
MOTOR VEHICLE BODIES,	1975	17271	35,9	25,4	35,4	70,7	29,5	82,7	53,8	64,5
ENGINES AND PARTS	1979	31690	35,5	33,0	36,8	76,4	24,3	82,5	44,0	50,7
	1980	34504	38,7	35,6	32,2	75,3	25,4	82,8	46,9	57,1
	1968	3285	17,6	37,2	5,1	17,0	22,9	46,8	41,6	41,0
	1973	5692	17,7	43,4	3,7	29,6	28,6	29,6	33,0	53,7
AIRCRAFT	1975	8122	19,2	55,5	6,5	18,1	16,2	55,2	28,0	34,5
	1979	15291	29,5	50,1	5,7	19,8	28,5	62,9	25,1	37,4
	1980	21105	32,5	49,2	7,9	39,9	11,3	57,2	23,3	32,5
	1968	2479	42,1	22,2	17,4	69,0	32,6	76,5	46,9	58,0
	1973	5790	42,4	19,7	21,4	68,4	34,3	76,0	48,0	59,7
TELECOMMUNICATIONS	1975	9279	43,7	14,8	22,0	64,8	30,5	72,3	50,4	58,5
EQUIPMENT	1979	17720	42,0	18,2	29,1	67,7	32,1	71,6	48,9	59,3
	1980	20048	43,6	21,0	27,2	68,8	34,3	79,2	53,1	65,4
	1968	2492	41,2	58,9	41,3	78,6	37,7	69,5	40,3	50,0
	1973	5178	43,2	58,4	40,0	78,0	39,5	74,3	39,4	54,5
ORGANIC CHEMICALS	1975	8481	42,5	61,2	43,9	77,6	34,7	71,6	30,6	49,4
	1979	17817	44,4	55,7	36,5	84,8	34,5	74,8	36,5	47,0
	1980	19325	43,3	54,9	30,3	84,3	32,8	72,4	36,1	47,7
	1968	1873	46,0	59,4	25,3	77,0	41,2	85,5	35,2	55,5
PLASTIC MATERIALS;	1973	4677	50,7	58,2	38,6	79,7	44,1	86,7	33,7	57,4
REGENERATED CELLULOSE;	1975	6185	50,7	56,8	29,2	78,2	38,8	88,1	33,7	53,2
RESINS	1979	14187	49,2	58,7	29,4	79,3	35,2	83,0	37,3	56,3
	1980	16453	48,1	57,0	27,8	78,0	29,3	81,5	37,7	55,4

NOTE : PRODUCTS : SITC REV.1 : 7115+7326+7327+7328;734;7222+72491+72499;512;581
OECD : not including Yugoslavia;Turkey (1980 only)
OPEC : not including Gabon
(1) : not including intra-EEC trade

Source : United Nations & Commission departments

Table 7 COMMUNITY EXPORTS TO SPECIFIED MARKETS-PRODUCTS WHERE THE COMMUNITY DID BADLY

PRODUCT GROUP	YEAR	OECD EXPORTS TO WORLD Mio US$ (1)	EEC EXPORTS TO WORLD %of OECD (1)	E.E.C. EXPORTS AS A PERCENTAGE OF O.E.C.D. EXPORTS TO :- U.S.A	JAPAN	E.F.T.A	DEVELOPING COUNTRIES OF AMERICA	AFRICA	ASIA	O.P.E.C
	1968	6591	44,1	42,3	18,7	76,7	41,5	73,6	39,2	61,2
	1973	16652	41,2	42,5	17,4	71,9	28,1	69,8	25,7	44,2
IRON AND STEEL	1975	30016	41,1	31,9	19,2	67,7	34,5	64,8	24,6	35,2
	1979	42838	39,0	33,2	16,0	71,7	30,6	64,6	29,2	41,1
	1980	45702	36,4	27,8	15,6	70,7	27,9	61,6	25,7	39,8
	1968	5697	48,0	45,1	52,7	90,0	33,7	88,9	55,5	45,2
	1973	13583	42,8	39,4	50,9	81,9	38,6	85,0	53,2	51,8
PASSENGER MOTOR CARS	1975	17571	37,9	32,6	51,1	80,9	28,7	78,4	46,1	45,3
	1979	35266	34,1	26,9	66,4	81,3	39,4	79,2	29,0	32,9
	1980	39697	31,1	25,0	78,7	76,3	33,8	76,6	24,9	35,7
	1968	1763	22,4	8,0	21,2	58,1	11,6	44,6	22,9	22,5
	1973	4818	17,7	7,3	36,9	53,6	6,0	37,2	11,4	18,3
TV,RADIO,HI-FI	1975	5622	22,1	8,3	27,6	48,2	6,3	30,1	10,9	13,0
EQUIPMENT	1979	11002	17,2	7,8	24,8	54,7	5,3	22,4	12,4	12,2
	1980	14332	13,4	5,8	21,8	49,1	6,6	22,1	7,8	9,0
	1968	1154	56,3	64,4	47,2	83,7	57,7	85,8	53,3	72,5
	1973	2392	54,5	52,4	39,7	82,4	50,4	88,0	48,2	71,6
MACHINE TOOLS	1975	3881	56,7	52,6	46,0	76,7	57,4	81,9	60,7	74,1
FOR WORKING METALS	1979	6445	47,5	37,4	48,8	76,0	45,8	80,2	42,4	55,5
	1980	7460	48,0	38,1	45,1	73,4	52,9	82,5	43,8	63,8
THERMIONIC VALVES AND	1968	654	40,6	38,4	3,7	48,1	8,3	82,1	15,4	36,0
TUBES;	1973	2271	31,4	32,4	9,4	62,2	11,6	74,2	9,2	41,4
TRANSISTORS;	1975	2891	31,4	37,9	12,2	67,0	7,3	63,8	8,5	44,2
ELECTRONIC	1979	5305	29,6	32,0	19,5	64,5	10,6	79,8	16,8	54,5
MICRO-CIRCUITS	1980	6679	27,2	29,0	23,6	59,4	10,5	72,1	17,0	47,6

NOTE : PRODUCTS : SITC REV.1 : 67;7321;7241+7242+72492+8911;7151;7293
OECD : not including Yugoslavia;Turkey (1980 only)
OPEC : not including Gabon
(1) : not including intra-EEC trade

Source : United Nations & Commission departments

2. Shares taken by major suppliers of OECD imports from the world

The OECD countries accounted for approximately 62% of world imports of manufactured products in 1980. Taken as a whole they form a highly competitive market. The trends in the shares taken by the major sources of supply (i.e. exporters) of OECD imports (1) from the world can, therefore, provide an important indicator of how the Community is performing against not just the developed but also the developing countries. These trends were analysed for a representative cross-section of 18 product groups for the period 1968-80 (2).

(1) Excluding intra-Community trade;
not including New Zealand, Yugoslavia and Turkey.
(2) The product groups are defined in Annex 5.

The principal points which emerge from this data are that the Community has a growing market share in only three of the eighteen product groups: (motor vehicle bodies, engines and parts: 24% of OECD imports in 1980; paper and paperboard: 7%; and pulp and wastepaper: 2%).

On the other hand, the Community has a declining market share in ten of the eighteen product groups: (passenger motor cars: 27%; lorries and trucks: 17%; organic chemicals: 34%; plastic materials, regenerated cellulose and resins: 40%; manufactured fertilisers: 11%; iron and steel: 27%; clothing and accessories: 13%; made-up articles in textile material: 11%; ships and boats: 21%; machine tools for working metals: 29%).

The Community's important position in world trade is confirmed in the fact that it has the largest market share in six of the eighteen product groups: (organic chemicals: 34%; plastic materials, generated cellulose and resins: 40%; iron and steel: 27%; machine tools for working metals: 29%; pharmaceuticals: 38%; synthetic fibres: 37%). However, the Community's share of the first four of these markets is declining.

The USA had a growing market share in only three of the eighteen product groups: (manufactured fertilisers: 22%; clothing and accessories: 3%; pulp and wastepaper: 18%).

Japan had a market share of more than 20% in only four of the eighteen product groups: (passenger motorcars: 42% and growing; lorries and truckes: 27% and growing; ships and boats: 24% fluctuating/ declining; machine tools for working metals: 21% and growing).

Japan had a market share of 5% or less in ten of the eighteen product groups.

The developing countries had the largest market share in four of the eighteen product groups: (inorganic chemicals: 25%; clothing and accessories: 48%; woven cotton fabrics: 31%; made-up articles of textile material: 33%).

This analysis of both OECD export and import data also shows that there are in many cases significant fluctuations in shares and that these can and do change direction, both upwards and downwards, over a relatively short time scale. Nevertheless, the findings are sufficiently consistent across a broad range of sectors and over a reasonably long time scale to confirm that:

- the Community's performance varies considerably between sectors and markets;

- the Community does not manifest dynamic market leadership in any sector;

- the relatively small number and the nature of the sectors in which the Community's shares are growing and the volatility of its shares in most of the other sectors is a cause for some concern;

- the US would appear to be equally vulnerable in the majority of sectors;

- whilst Japan has a strong position in some of the sectors it has a negligible or relatively small share in the majority of markets in question.

Both the United States and the Community export a wide range of products covering all sectors. Although this provides no guarantee of success against foreign competition - as recent trends have shown - it does provide a solid base from which to develop international markets in the future. Japan, on the other hand, which has made remarkable gains in terms of increased market shares, has staked its performance on a very limited number of sectors, namely steel, office and telecommunications equipment, the precision engineering industry and motor cars.

The intrinsic risks of the Japanese strategy of concentrating on a narrow product range have evidently been more than offset by the resources - both financial and managerial - which they have devoted to success in these chosen areas.

C. Industrial Specialisation

An alternative approach to assessing changes in competitiveness is to measure changes in each country's and the Community's degree of trade specialisation in each product group (1). The computerised data base which has been used for this purpose includes intra-Community trade in total OECD exports, contrary to the preceding discussion of market share data.

1. Specialisation in international trade

Tables 8 and 9 show the relative weight of exports and imports respectively, in relation to the relative weight of the product as a whole in total OECD trade. Thus in the case of Community trade in road vehicles in 1980: the weight of exports of vehicles in total Community exports was only 84% of the weight of total OECD exports of vehicles in total OECD trade. This low degree of specialisation in exporting vehicles is declining. On the other hand, on the same basis the degree of dependence on imports is lower, at 51%, but is rising. By sharp contrast, Japanese specialisation in vehicle exports is rising rapidly and dependence on imports is not rising at all.

(1) This approach was first developed in the report "Changes in industrial structure in the European economies since the oil crisis 1973-78" - European Economy Special Issue, 1979.

The most striking feature of this data is the narrow range of the specialisation indices for Community exports. In 1980 the maximum was 1.23 (chemicals) and the minimum was 0.56 (paper). Fifteen product groups fell within the range 0.80-1.20. This just means that the structure of Community exports of manufactured products is quite close to the average structure of OECD exports. The position has evolved little since 1963, if anything the range has narrowed.

By contrast, the range of specialisation indices in the US and Japan is much wider and seems to be increasing.

The Community has no export product to compare with US specialisation in aircraft (2.03 in 1980) and Japanese specialisation in office and telecommunications equipment (1.96).

On the other hand, for the indices of import dependence there is less difference in the wider range observed for the Community, the USA and Japan. The last having the widest range, with a maximum for imports of chemicals (2.03) and a minimum for road vehicles (0.18).

The Community's specialisation in intermediate products has hardly changed since 1963 with the exception of chemicals where the index has increased. Only for steel products is the index less than 1.00. The Community's specialisation in machinery is above the OECD average, a decline in electrical machinery being offset by an increase in industrial machines.

By contrast, specialisation in equipment has been deteriorating, particularly for office and telecommunications equipment and road vehicles. As for consumer goods, we note low and generally declining specialisation indices in the Community.

The situation of the United States is rather different for although stability of the specialisation index is the major characteristic, the levels of this index are very different to those of the Community. For chemicals the level and change of the index is similar to that for the Community, but that for the other base products is much lower and falling sharply. For machinery the levels are also similar, while for the high technology group (except for vehicles) they are far higher.

The extreme case with rapid changes in index is Japan. Here between 1963 and 1973 a traditional less developed export structure was revolutionised. Slight falls in general in basic products were countered by considerable increases in machinery. Very rapid increases in the index for the higher technology sectors were contrasted to enormous falls in the index for the low technology groups. These trends were reinforced during 1973-1979. In terms of levels the differences with the Community are particularly marked for high technology products and vehicles on the higher side and the low technology products on the other whereas the specialisation remains weak for machinery exports, but not for electrical machines. In terms of the index of dependence, this pattern is exactly reversed with rising and high levels of import dependence for low technology products and falling and low levels for several machinery branches, vehicles and office and telecommunications equipment.

This comparison suggests that the pattern of industrial specialisation in the Community has only partially moved in the direction of adjustment to changes in world demand and world supply. In certain sectors the Japanese specialisation index has reached levels far in excess of those in either the Community or the USA. The United States had in 1963 a good specialisation profile for an advanced industrialised country, and largely retained this profile though to 1979 having high specialisation indices in important technology intensive sectors. Their main weakness is that the index of dependence has risen sharply in some technology intensive areas and has fallen sharply for textiles, clothing and other low technology products.

Table 8: Index of Specialisation

	Community (1)			U.S.A.			JAPAN		
	1973	1973	1980	1963	1973	1980	1963	1973	1980
Iron and Steel	0.99	1.01	0.96	0.42	0.35	0.33	1.72	1.85	1.75
Metal products	1.08	0.99	1.11	0.84	0.74	0.70	1.06	0.89	0.80
Basic chemicals	0.99	1.12	1.08	1.05	1.13	1.22	0.60	1.57	0.44
Chemical products	1.21	1.25	1.23	1.14	1.07	1.14	0.38	0.26	0.25
Agricultural machinery	0.80	1.03	1.10	1.83	1.74	1.69	0.07	0.42	0.58
Electr. machinery	1.16	1.06	1.06	1.03	1.24	1.07	0.75	0.88	1.20
Power generating mach.	1.15	1.03	1.15	1.20	1.43	1.35	0.52	0.89	0.98
Other machinery	1.07	1.12	1.27	1.24	1.16	1.17	0.39	0.57	0.75
Office, Telecom. equipment	0.95	0.74	0.71	1.31	1.23	1.32	1.55	2.12	1.96
Opt., clock, photo	0.78	0.91	0.84	1.11	1.30	1.27	0.95	1.09	1.36
Road vehicles	1.31	0.96	0.84	1.00	1.00	0.73	0.47	1.08	1.59
Other transport equipment	0.78	0.77	1.04	1.43	1.79	2.33	1.32	1.78	0.91
Textiles	0.94	0.95	0.87	0.43	0.44	0.58	2.47	1.22	0.98
Clothing	0.99	0.79	0.83	0.27	0.25	0.37	2.05	0.45	0.13
Shoes	1.05	1.16	1.06	0.38	0.27	0.35	1.22	0.36	0.21
Paper	0.51	0.55	0.56	0.80	0.79	0.76	0.35	0.25	0.24
Wood, furniture	0.65	0.62	0.84	0.45	0.54	0.45	1 64	0.30	0.14
Plastic, rubber	0.98	1.01	1.03	1.11	0.82	0.79	0.90	0.81	0.67
Other manuf. goods	0.86	1.08	1.22	1.82	1.68	1.39	1.07	1.06	0.81
Total manufactures	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Source: Commission Services on basis of OECD trade data.
(1) Extra-EC trade.

Table 9: Index of Dependence

	Community (1)			U.S.A.			JAPAN		
	1963	1973	1980	1963	1973	1980	1963	1973	1980
Iron and Steel	0.77	0.89	0.79	1.00	0.95	1.06	0.64	0.33	0.58
Metal products	0.71	0.84	0.87	1.05	0.91	0.84	0.42	0.48	0.58
Basic chemicals	1.12	1.13	1.00	0.77	0.62	0.64	1.93	1.69	1.95
Chemical products	0.85	0.98	0.83	0.56	0.40	0.60	2.30	1.94	2.03
Agricultural machinery	0.30	0.48	0.42	1.10	0.97	1.08	0.30	0.53	0.56
Electr. machinery	1.00	1.07	1.01	0.49	0.85	1.07	0.77	0.95	1.10
Power generating mach.	0.82	0.67	0.69	0.40	1.31	1.10	2.04	0.68	0.53
Other machinery	0.98	0.91	0.84	0.31	0.52	0.77	1.81	1.00	0.89
Office, Telecom. equipment	1.05	1.30	1.37	1.15	1.41	1.19	2.02	0.99	0.88
Opt., clock, photo	1.24	1.37	1.27	0.89	0.78	0.86	1.67	1.45	1.50
Road vehicles	0.24	0.33	0.51	1.07	1.75	1.63	0.22	0.15	0.18
Other transport equipment	1.02	1.67	1.68	0.35	0.55	0.85	1.87	1.15	1.90
Textiles	0.87	1.07	1.20	1.13	0.56	0.39	0.29	1.80	1.32
Clothing	0.95	1.38	1.42	1.78	1.17	1.16	0.17	1.36	1.09
Shoes	1.03	1.28	1.21	1.45	1.47	1.27	0.30	0.84	1.01
Paper	1.72	1.81	1.37	2.20	1.02	0.92	0.15	0.55	0.71
Wood, furniture	1.26	1.30	1.13	1.97	1.06	0.87	0.05	2.26	0.75
Plastic, rubber	0.98	0.70	0.67	0.34	0.54	0.47	1.11	0.65	0.73
Other manuf. goods	2.10	1.32	1.43	1.75	1.76	1.52	0.35	1.38	0.34
Total manufactures	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Source: Commission Services on basis of OECD trade data
(1) Extra-EC trade.

2. Comparative advantage in high technology products

We have also compared the Community's comparative advantage in exporting a selected group of high technology products (1) with that of Japan and the USA for the same products.

This is done by calculating an index, similar to the specialisation index but which measures the relative weight of exports of the high technology products in total exports of the Community compard with the weight of the Community's total exports in world trade.

Table 10 below gives the resulting indices for the Community, USA, Japan and the Member States. The results show even more striking differences than do the specialisation indices, both between countries and over time.

The low and declining comparative advantage of the Community may be somewhat exaggerated because the data unfortunately includes intra-Community trade and, as we saw in Section II.A.2 above, intra-Community trade includes a larger proportion of low-technology products than does extra-Community trade.

Notwithstanding, these indices of comparative advantage confirm the rapid improvement in Japan's position for high technology products, as against a moderate decline in the American position and a distinct deterioration on the part of the Community.

Table 10 - Changes in comparative advantage in exports of high technology products.

	Total World Manufacturing Exports (2)		
	1963	1970	1980
Community (1)	1.02	0.94	0.88
USA	1.29	1.27	1.20
JAPAN	0.56	0.87	1.41
Belgium-Luxembourg	0.67	0.77	0.79
Denmark	0.58	0.60	0.66
Germany	1.21	1.06	0.99
France	1.00	1.06	0.93
Italy	0.84	0.83	0.63
Ireland	0.43	0.67	1.03
Netherlands	1.05	0.83	0.69
U.K.	1.05	0.92	0.94

(1) Including intra-EC trade

Source: Commission Services, DG II

(1) See Annex 6.

D. Cost, Productivity and the Exchange Rate

1. Wage costs and productivity

Considerable importance is generally attached to changes in unit wage costs - for want of details of total production costs - because of the theory that production costs determine the prices of goods, which in turn determine their competitiveness at home and abroad. Unit wage costs can be defined as the ratio of the hourly money wage paid to hourly productivity in volume terms. Analysing them provides a key to determining the extent to which costs affect competitiveness and, hence, a country's foreign trade performance. Since the significance of movements of unit wage costs varies depending on whether they are expressed in national currency or in a standard currency (i.e. the US dollar) or whether one considers manufacturing industry as a whole or its constituent branches, it makes sense to analyse the trends from each of those angles in turn.

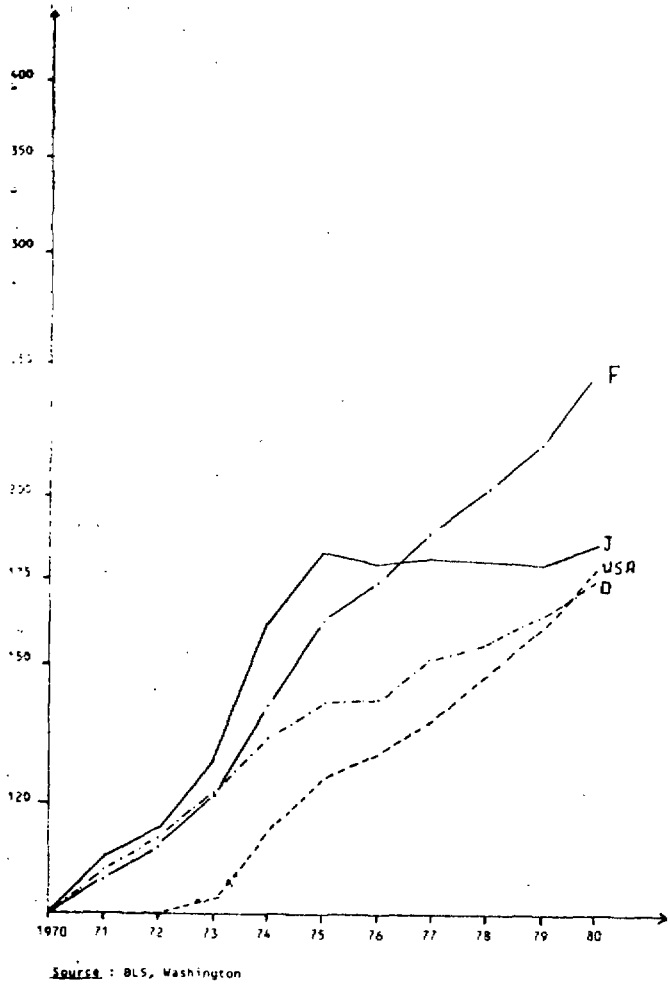
(a) Wage Costs

Taking unit wage costs in national currency first, between 1970 and 1980 there were such wide differences in the trends for manufacturing industry as a whole in those countries for which figures are available (1), that the countries split into two distinct groups. On the one hand Italy and the United Kingdom recorded average annual increases of over 15%, which means that hourly wage costs there rose by 15% more than hourly productivity in volume terms. On the other hand there were the countries where wage increases exerted much less pressure - namely, Denmark with increases of 7.9%, Belgium with 6.8%, Japan with 6.6%, Netherlands with 6.4%, Germany with 5.5%, the United States with 6.2% and France occupied the middle ground with increases of 9.9%. In the case of Belgium, the steady deterioration in the current account since 1976 appears difficult to reconcile with the encouraging wage trends in that country since 1975. However, all in all the countries which have been most successful at controlling their wage costs have also had fewer balance of payments problems.

The diverging paths taken by the individual countries in the '70s (see graphs 1a and 1b) illustrate the extent to which the base year chosen - which by implication is regarded as a year of stability - can affect the results. For instance, if 1970 is taken as the base year, the United Kingdom and Italy are in the worst position while Germany fares best, closely followed by the Benelux countries, Japan and the United States. On the other hand, if 1975 is chosen the relative position of Italy and the United Kingdom remains unchanged, but Japan emerges with by far the best performance: an average annual increase in unit wage costs of only 0.2%; followed by the Netherlands on 2.6%, Belgium on 2.9% and Germany on 4.2%. At the same time the United States slips appreciably closer to the middle ground occupied by France with an average of 7.2% as against France's 8.7%.

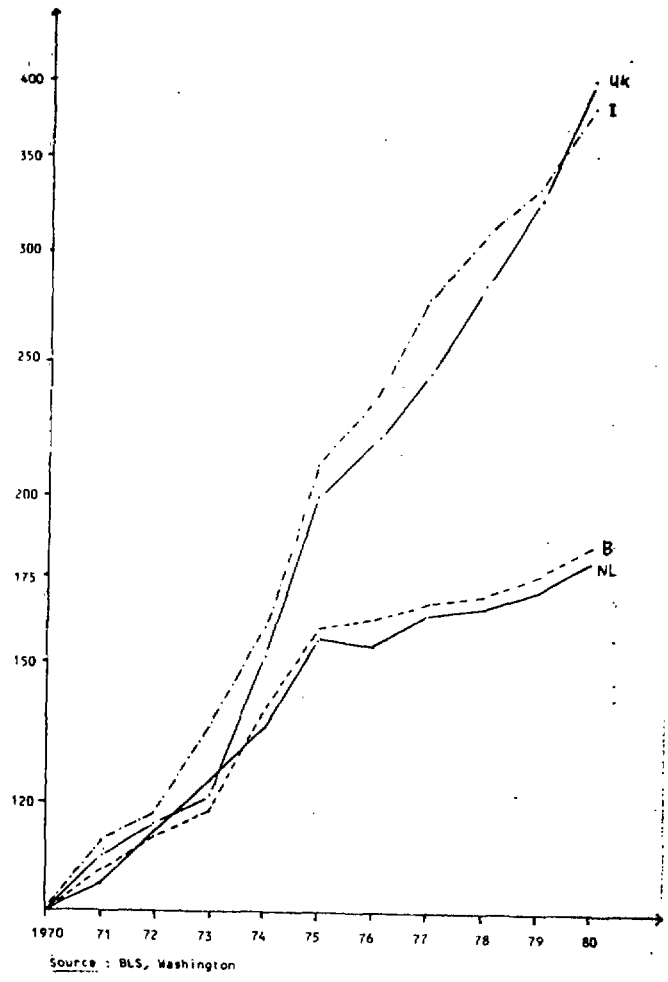
(1) USA, Japan, Belgium, Denmark, Germany, France, Italy, the Netherlands and the United Kingdom.

Graph 1a : Unit Wage Costs in national currency
1970 = 100, semi-logarithmic scale



Source : BLS, Washington

Graph 1b : Unit wage costs in national currency
1970 = 100, semi-logarithmic scale



Source : BLS, Washington

(b) Hourly Productivity

Since, by definition, the hourly productivity in volume terms in manufacturing industry plays a central part in determining unit wage costs, it is also important to consider the extent to which it too can explain the differences in wage trends from one country to another.

First, Table 11 shows that the countries with the highest growth in productivity (i.e. Belgium, the Netherlands and Japan) have also had the best results in terms of unit wage costs, whilst those where productivity increases have been slow have experienced the sharpest wage increases (e.g. the United Kingdom), except, however, in the case of the United States, which, paradoxically, combines good results as regards wage costs with a mediocre performance in terms of productivity. Germany, France and Italy do not entirely fit into this framework; the moderate increase in productivity in those countries was accompanied by below-average, average and above-average wage increases respectively. One cannot go so far as to say that productivity trends are inversely proportional to changes in unit wage costs, but rapid increases in productivity have a valuable moderating influence on unit wage costs, though the case of the United States shows that this does not necessarily happen.

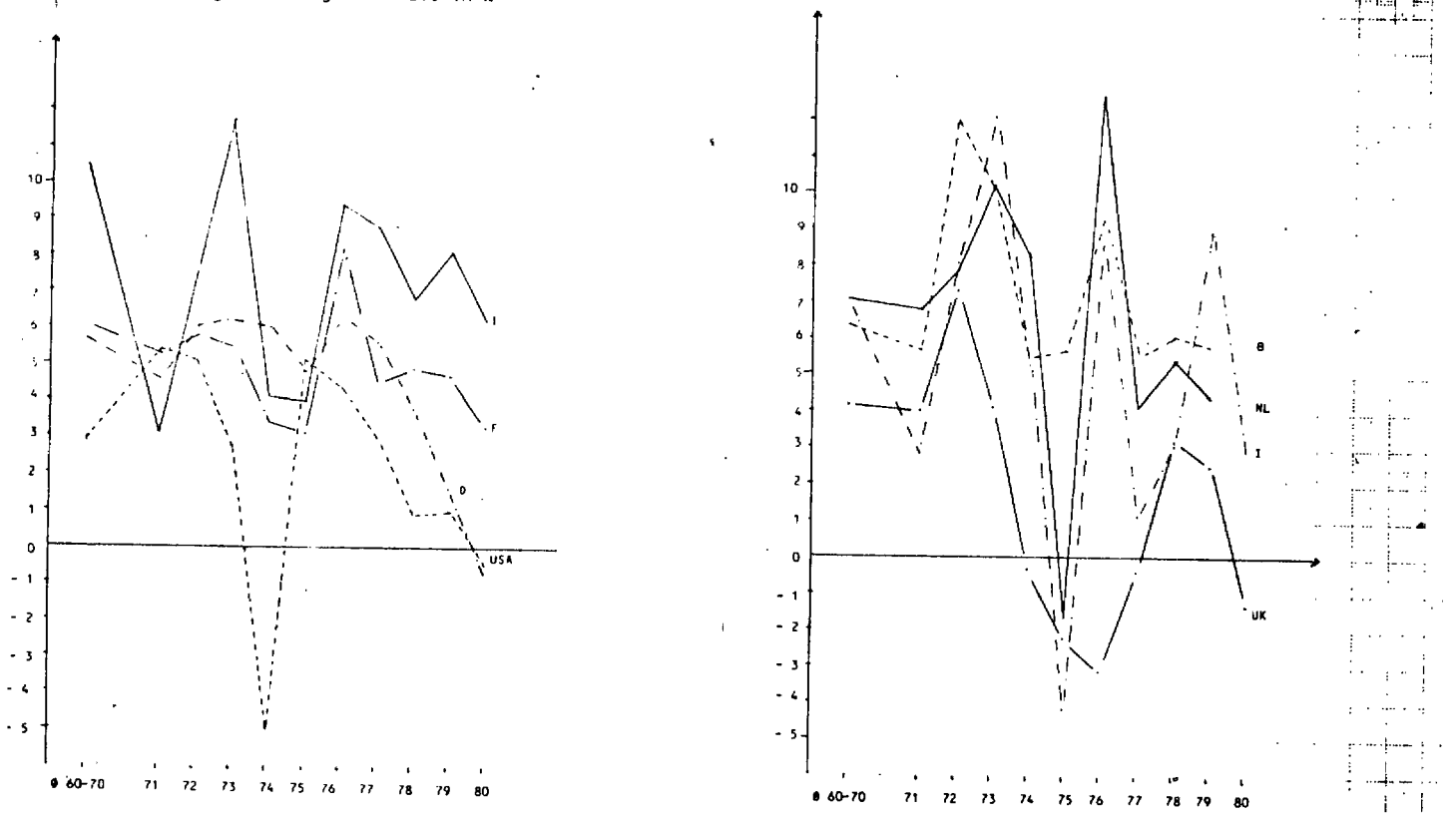
Table 11: Wage Costs and Productivity, Annual Growth Rates in % (a)

	1960-1970	1970-1980	1973-1980	1975-1980
Hourly wage cost in national currencies				
Belgium	9.8	15.0	13.0	9.4
Denmark	11.1	13.5	12.6	10.9
France	8.7	15.3	15.3	14.2
Germany	8.6	10.9	9.7	8.6
Italy	11.1	20.8	20.0	17.9
Netherlands	12.0	13.6	11.3	9.3
United Kingdom	7.1	18.0	19.0	17.2
CE 7 (b)	9.0	15.8	15.4	13.8
USA	4.5	8.8	9.3	8.9
Japan	13.5	14.5	11.0	8.1
Hourly productivity in volume				
Belgium	6.4	7.4	6.6	6.8(c)
Denmark	6.8	5.2	4.4	3.8
France	6.1	4.9	4.9	5.1
Germany	5.7	5.2	4.8	4.2
Italy	7.1	4.5	3.5	4.9
Netherlands	7.1	6.4	5.5	6.6(c)
United Kingdom	4.2	2.2	1.4	1.9
CE 7	5.8	4.5	3.8	4.2
USA	2.9	2.4	1.7	1.6
Japan	10.5	7.4	7.2	7.9
Unit wage costs in national currencies				
Belgium	3.2	6.8	6.1	2.9
Denmark	4.0	7.9	7.8	6.8
France	2.4	9.9	10.0	8.7
Germany	2.7	5.5	4.7	4.2
Italy	3.7	15.6	16.0	12.4
Netherlands	4.6	6.4	5.4	2.6
United Kingdom	2.8	15.5	17.3	15.0
CE 7	3.0	10.8	11.2	9.2
USA	1.5	6.2	7.5	7.2
Japan	2.7	6.6	3.6	0.2
Unit wage costs in US Dollars				
Belgium	3.2	12.0	10.7	7.7
Denmark	3.0	11.4	9.5	7.2
France	1.7	12.4	11.0	9.0
Germany	3.4	13.2	11.2	10.7
Italy	3.6	10.9	9.6	6.5
Netherlands	4.8	12.5	10.7	7.6
United Kingdom	1.0	12.9	15.5	16.1
CE 7	2.6	12.4	11.8	10.5
USA	1.5	6.2	7.5	7.2
Japan	2.8	11.9	8.5	5.8

(a) Calculated on the basis of logarithmic trend of index
(b) Excluding Ireland, Luxembourg and Greece
(c) 1975-1979

On comparing the average increases in unit wage costs and those in hourly productivity in volume terms over the '60s and '70s, it is clear that the more or less general explosion of unit labour costs is only slightly due to lower growth in hourly productivity and is much more directly due to increases in hourly wage costs (wages plus social-security contributions). Moreover, although the average values for each decade suggest that hourly productivity is growing slower than costs, the annual figures plotted in the graph neither prove nor disprove the theory that there is an underlying downward trend in productivity. The sharp fluctuations in the figures, which mean among other things that the mean values are calculated over a period which begins with a boom year and finishing with a slump year, suggest that the mean value for the 1970s might be too low and that the real figure is closer to the 1960s level. At any event, it does not seem that a fall in the rate of growth of productivity could have been at the root of the competitiveness problems experienced in the 1970s.

Graph 2: Hourly productivity in volume terms in manufacturing industry
Average annual growth rate in %



(c) Unit Wage Costs

The sectoral analysis of unit wage costs in 13 branches of industry in six Community countries (1) revealed that the trends in both unit costs and hourly productivity in volume terms were to a very large extent heterogeneous from one sector and from one country to another. As regards the possible link between unit wage costs in the individual sectors and foreign trade performance, the results vary considerably, depending on the category of products concerned. In the case of intermediate products, for instance, foreign trade performance seems to be linked to wage costs. Conversely, there is no evidence of any such link in the case of capital goods; naturally, this does not necessarily mean that there is in fact no such link but it nevertheless indicates that foreign trade depends equally heavily on a wide range of qualitative factors, among which the size of the home market and strength of the world market seem to play a decisive part. Finally, there is no obvious link between costs and the foreign trade performance in the food products or current consumer goods sectors either. However, the textiles, leather and clothing industry is one notable exception since the relative increase in wage costs in each country directly determines how much of its share of the world market it loses.

Conversion of the unit wage costs from the national currency into US dollars lends greater depth to the results and illustrates the important part which changes in the exchange rate play in determining the relative trends in production costs and, hence, in foreign trade.

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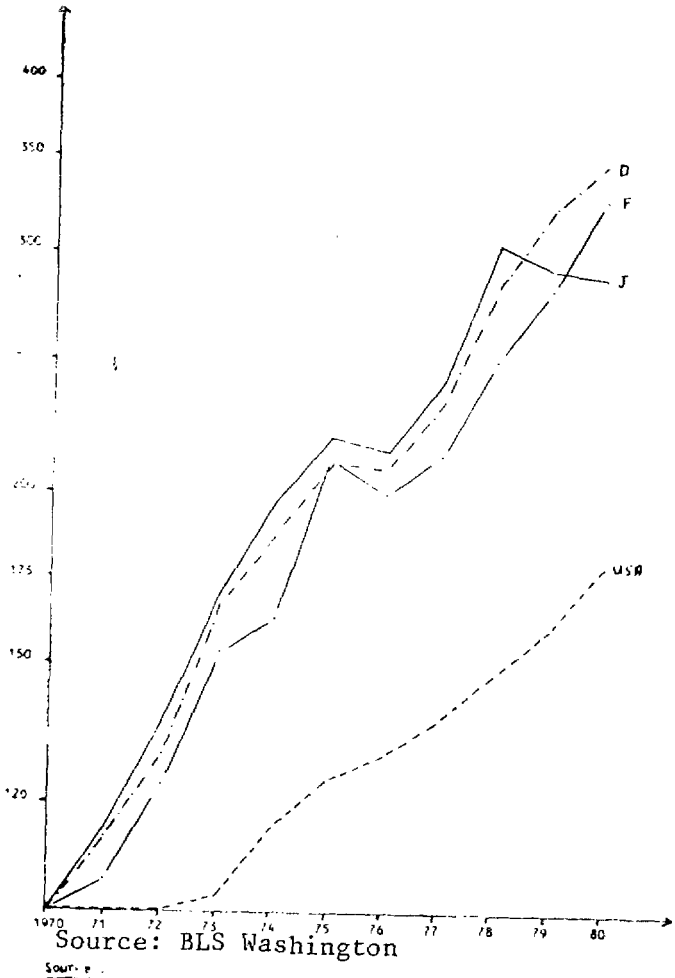
(1) Belgium, Germany, France, Italy, Netherlands and the United Kingdom.

The importance of the exchange rate emerges only after 1970; the stable exchange rates of the '60s mean that the results for that period hardly change if they are converted from the national currency to US dollars, except in the case of the United Kingdom and, to a lesser extent, France. Since then, however, the collapse of the Bretton Woods system has made way for sharp fluctuations in parities with the result that national changes in unit wage costs as such have surrendered most of their importance to fluctuations in exchange rates, which, in turn, are broadly affected by wage costs.

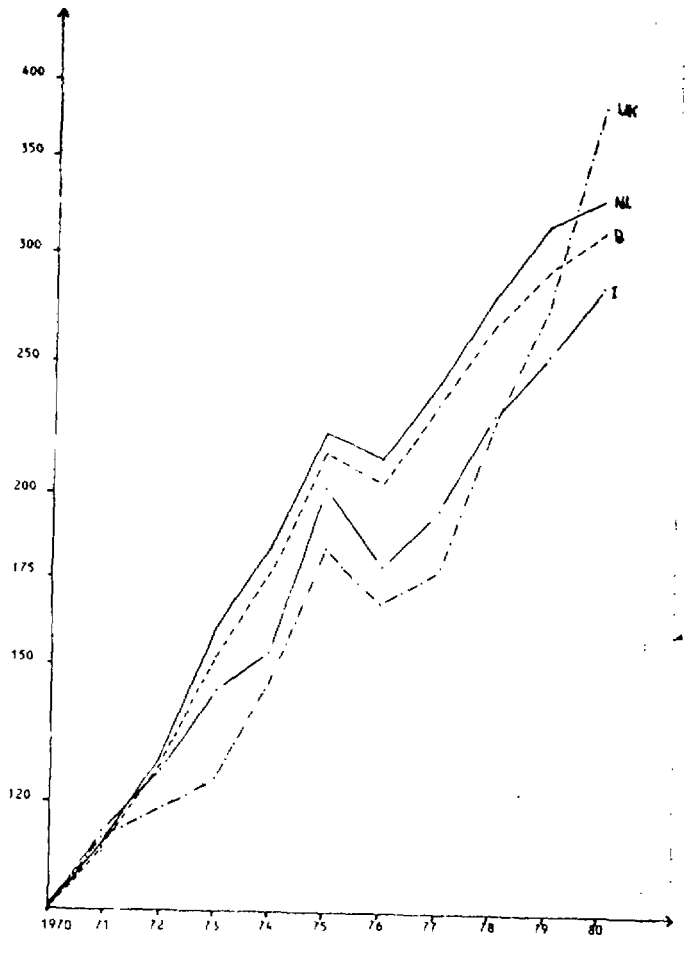
For instance, the differences between the national trends between 1970 and 1980 emerge clearly when the figures are expressed in the national currencies but are partly obscured when US dollars are used (see graph 3). The depreciation of the dollar has put the United States in an extremely advantageous position compared with all the other countries. Its average annual increase in unit wage costs stood at 6.2%, while the figure for the other countries ranged from 10.9% in Italy to 13.2% in Germany. Consequently, the country which has been most successful at containing its unit wage costs at home comes last but one if the figures are converted into US dollars, slightly above the United Kingdom where the changes in exchange parity have not sufficed to counteract the combined impact of the large wage increases and low growth in productivity caused, in particular, by the rapid appreciation of the pound since 1978. If the figures are expressed in US dollars, Japan and Italy maintain the same advantage over all the other countries except, of course, the United States.

Graph 3a: Unit Wage Costs in US Dollars
1970 = 100, semi-logarithmic scale



Source: BLS Washington

Graph 3b: Unit Wage Costs in US Dollars
1970 = 100, semi-logarithmic scale



The Benelux countries and France come between Japan and Italy at the top and Germany at the bottom. Consequently, when wage costs are expressed in US dollars, the situation no longer appears to be the same in those countries performing poorly, in this area and those which have structural balance of payments problems as it seems to be the same when they are given in national currencies.

Although one cannot draw any practical conclusions from this, it nevertheless raises a number of questions. Firstly, it serves as a reminder of the limitations of analyses such as this, in view of the fact that they are based on wage costs rather than on total production costs, that the figures are converted into the standard currency at the exchange rate for the dollar rather than at the effective exchange rate (see section II.D.2) and that virtually nothing is known about the currency actually used for payment purposes. Over and above these questions of the method employed, there is another fundamental question to be answered - namely, if firm control over production costs at home enhances the country's competitive position and, hence, its foreign trade performance, why does fluctuation in the exchange rate cancel out or even negate the resultant advantages or disadvantages? Is it because the wage cost trends for the products on which a country's foreign trade performance hinges differ from those for industry as a whole? Or is it because there is a large range of products whose competitiveness does not depend primarily on price, which would normally be determined by the costs in one way or another?

Or could it be that the competitive position of a country depends more on the size and state of health of its economy and that wage costs in national currency should be interpreted as only one indicator of health?

Whatever the answer, one can appreciate the importance of factors which are not directly linked to costs and prices, i.e. all the qualitative factors which affect a country's foreign trade. What is more, these factors seem to grow in importance as the products become more distinctive and more sophisticated, as is the case with industrial machinery, for example.

Finally, perhaps there is no immediate link between production costs and prices. If one accepts that prices on the various world markets are determined by supply and demand and by the other special features of each market (i.e. demand patterns, taxation and so forth), it seems feasible that firms and industries from certain countries might achieve good results regardless (to some extent) of their costs. Nevertheless even this path leads back to the central importance of costs. Although they might not have a direct influence on foreign trade performance, in conjunction with prices they affect the profitability of production and, by extension, the potential for investment and for increasing productivity and, ultimately, the industry's chances of survival and of competing on world markets in the long term.

2. Competitiveness and the "Real" Exchange Rate

Since the end of the era of fixed exchange rates in 1972 both exchange rates and price and cost inflation differentials have diverged sharply. Some Community countries have become associated with relatively low rates of inflation accompanied by rising exchange rates - normally Germany, the Netherlands and Belgium/ Luxembourg - whilst others have experienced relatively high inflation rates and falling exchange rates - namely the UK, Italy and Ireland. The net effect of these diverse movements on international cost and price competitiveness has, as a consequence, been difficult to assess. A number of technical approaches have been developed to allow us to measure the extent to which movements in the exchange rates of a currency have been offset by (opposite) movements in its relative domestic cost and price levels (as against its principal competitors). These measures are often referred to as indicators of the "real" exchange rate of a currency, or of the cost and price competitiveness of a country.

The "real" exchange rate is of course purely conceptual; one cannot, for example, hold "real" (in this sense) D-Marks. There are also considerable technical difficulties in their compilation and interpretation. For compilation one needs, ideally, a cost and price indicator of tradeable goods and services; such indicators do not exist and therefore we use proxies such as the wholesale prices of manufactured goods to reflect price competitiveness, or unit labour costs in manufacturing to reflect cost competitiveness. The availability, quality, timeliness and coverage of these proxies vary from country to country and over time. Interpretation of the results is restricted because these indicators of "real" exchange rates can only show us the magnitude and direction of changes; they tell us nothing about the levels of the "real" exchange rate in itself. Conclusions about the appropriateness of the level - and indeed the changes themselves - are the product of judgment.

Nevertheless, certain useful conclusions can be drawn from an examination of the data on price competitiveness (1), based on the wholesale prices of manufactures, between 1970 and 1980 as detailed in the table below:

Table 12: Changes in "real" exchange rates between 1970 and 1980

Indicators of	D	F	UK	I	NL	B/L	DK	IRL	USA	J
					percent					
Relative prices multiplied by	-54	+5	+77	+98	-28	-41	-2	+29	+10	-21
Effective exchange rate	+65	-2	-35	-96	+32	+24	+2	-39	-26	+32
equals										
"Real" exchange rate	+ 7	+3	+31	+ 1	+ 3	-14	+1	- 8	-16	+ 7

Note: a (+) plus sign means that the "real" exchange rate has risen;
a (-) negative sign means that the "real" exchange rate has fallen.

Source: Commission Services, DG II

(1) It has become a convention to use wholesale prices of manufacturing as the basis for a "quick" estimate of the "real" exchange rate; however, other cost and price indicators can be used, and tend to tell the same story.

In every case the effective exchange rate has moved in the opposite direction to relative prices thereby confirming the view that the "real" exchange rate is more stable in the longer term than the effective (or nominal) exchange rate; thus the exchange rate moves to offset inflation differentials in the longer term.

However, it is clear that these offsetting movements have been incomplete not only over the longer term, but even more so during shorter periods.

(a) The secular movements

We have already seen from Table 12 that, inter alia, "real" exchange rate movements have tended to be restrained by nominal or effective exchange rate movements at least when measured over a number of years. The problem is that any one period could be unrepresentative of the general development of a "real" exchange rate. It is therefore useful to put the period chosen into a longer-term context where underlying economic forces have had time to "average-out" the cyclical movements. For this purpose the period chosen is the decade of the 1970's (1).

Table 13 below shows the indicator of the "real" exchange rates as compared to the average of the 1970's for the Member States (excluding Greece), the USA and Japan.

Table 13 : "Real" Rates of Exchange

1970-1979 = 100

	D	F	UK	I	NL	B/L	DK	IRL	USA	J
1970	92	102	100	103	94	102	82	104	114	92
1980	99	105	131	104	97	90	93	97	96	98
1981	90	100	131	99	93	82	89	94	111	103
1981 Q4	91	99	124	98	96	81	92	98	112	100

Note: a rise in the index means an increase in the "real" rate of exchange and vice versa.

Source: Commission Services, DG II.

(1) Although this is an arbitrary period it includes almost completely the two currency and current external balance cycles of the D-Mark and the Yen whilst balancing two years (1970 and 1971) of an "overvalued" with two years (1978 and 1979) of an "undervalued" US dollar. In addition the Community as a whole was in broad current external equilibrium (with a current balance of +0.1% of GDP) over that period.

For the Community as a whole there have been substantial gains in price competitiveness between 1980 and 1981, and by the fourth quarter of 1981 - the latest date for which data is available - these gains had been retained. Over the same period both the USA, in particular, and Japan had lost price competitiveness.

In the longer term context it appears that Germany, the Netherlands, Belgium/Luxembourg, Denmark and Ireland (1) are substantially more price competitive than in the 1970's whilst both the UK and the USA have lost out considerably on this front. For France, Italy and Japan little has changed.

(b) The cyclical movements

There have been two distinct cycles in Community and world exchange rates in the 1970's, with both the D-Mark and the Yen tending to rise strongly up to before the first and second oil price hikes and then experiencing sharp falls. These movements have been particularly strong against the US dollar. In general the movements of the D-Mark have tended to take the continental European currencies with it and as a consequence of all this "real" exchange rates in the Community - as measured on a quarterly basis - have tended to fluctuate in a wide band frequently exceeding 20% in total during the period 1970 to 1980 or 1981. In addition these movements have happened rather rapidly and usually after periods of relative stability, such that the "real" exchange rate may move by, say, 5% per quarter over 1 year or so.

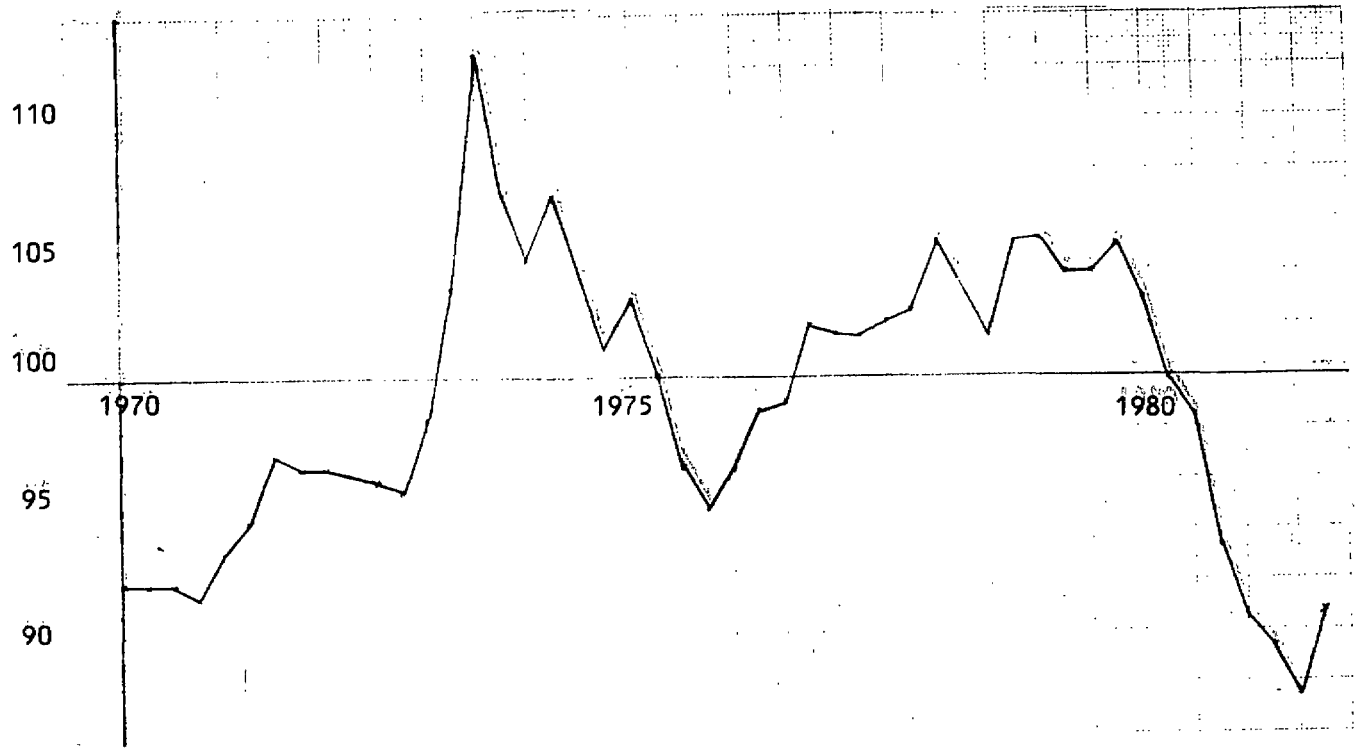
To illustrate the above remarks it is useful to examine the developments since 1970 of the "real" D-Mark - the second most widely held and traded currency after the US dollar.

The "real" exchange rate of the D-Mark has been subjected to considerable swings during the period from 1970 onwards (see Graph 4). On the basis of quarterly data the "real" rate has seen rises of 17.5% in 4 quarters - or more than 4% per quarter - in the period from the third quarter of 1972 to the third quarter of 1973 - just before the first oil price hike - to be followed by a total fall of 15.5% in the 9 quarters to the fourth quarter of 1975 - or about 1.5% per quarter. The real rate then drifted up moderately at a rate of about 1% per quarter to remain at a rate within 5% of its average value in the 1970's from the fourth quarter of 1978 to the fourth quarter of 1979; thereafter it started its sharp fall of 14% - or more than 2.5% a quarter - in the 5 quarters to early 1981. The real rate in 1981 was some 10% below the average of the 1970's and a little lower than in 1970 itself.

By and large the "real" D-Mark has moved within a range of (+) plus 13% and (-) minus 13% - a total range of 26% of its average value in the 1970's.

(1) This result has to be interpreted with great care since Ireland has undoubtedly gained against the UK but lost against its continental competitors.

GRAPH 4: THE REAL DEUTSCH-MARK 1970-1979 = 100



Source: Commission Services: DG II.

The German experience of a strongly fluctuating "real" exchange rate has been far from unique, as can be seen from the table below which gives the maximum band within which the quarterly estimates of the "real" exchange rate indicators have fluctuated. By and large European currencies have tended to vary within a total band of about 20% - with the exception of the "real" pound sterling which, due to its recent rise, has moved about within a band of more than 50%. The relative instability of the real dollar and yen - at least in comparism with the non-sterling European currencies - is to be noted.

Table 14: The range of the "real" exchange rate as compared to the average of 1970-1979.

1970-1981 percentages

	D	F	UK	I	NL	B/L	DK	IRL	USA	J
Quarterly maximum	+13	+ 7	+39	+10	+ 8	+ 4	+ 8	+ 6	+20	+23
Quarterly minimum	-13	-12	-15	- 8	- 8	-18	-15	-11	-12	-15
Total range	26	19	54	18	16	22	23	17	32	38

Source: Commission Services, DG II.

The implications for trade and competitiveness of such fluctuating real exchange rates are difficult to measure as these more violent movements have occurred simultaneously with new shocks to the world economy, namely the first and second oil price hikes, divergent and accelerating rates of inflation and a world wide rise in unemployment. Nevertheless it must be said that by and large the direction of these "real" exchange rate movements has been consistent with underlying economic factors, particularly the external current balances.

However, it is sometimes held that the equilibrating influence of real exchange rate changes has been thwarted as economic agents have seen that "real" rate changes have not been sustained in even the medium term (say, up to 5 years) and have been unwilling to base investment decisions on cost and price signals which may turn against them just at the crucial moment. Such considerations are particularly important for international competitiveness with large scale projects that take many years from conception to completion.

(c) Short-term movements

Short-term variations in nominal (or effective) exchange rates have increased strongly in the past decade as the world wide system of fixed but adjustable exchange rates gave way to floating rate regimes and the emergence of ad hoc and geographical exchange rate arrangements. The table below details the average change in (effective) exchange rates between end of months for the three year periods 1967-1969, 1970-1972, 1973-1975, 1975-1978 and for the latest period available 1979-1980. Full calculations for 1981 are not yet available.

Table 15: Mean effective exchange rate changes - up or down - between end of months

Percentages

	1967-69	1970-72	1973-75	1976-78	1979-80
			percent		
USA	0.30	0.49	2.35	1.98	2.36
D	0.58	0.60	2.23	1.88	1.86
F	0.59	0.55	2.16	1.70	1.64
UK	0.67	0.60	0.97	2.51	2.46
I	0.33	0.44	1.90	2.29	1.63
NL	0.33	0.54	1.98	1.75	1.61
B/L	0.32	0.45	1.80	1.71	1.61
JAPAN	0.30	0.57	2.01	2.24	3.29
SWEDEN	0.30	0.44	1.77	1.81	1.53
SWITZERLAND	0.40	0.63	2.42	2.48	2.09
CANADA	0.35	0.69	2.08	2.32	2.07
Unweighted Average	0.42	0.56	2.06	2.06	2.02

Source: Commission Services, DG II.

It is clear that short-term variability of exchange rates have increased dramatically since the final collapse of the Bretton Woods system in 1972; before then the typical change in exchange rates between end of months was about 0.5% and somewhat less for the US dollar which remains the main point of reference and in which the largest volumes of currency transactions are conducted. Since 1972 currency variability has quadrupled to 2% per month on average (and indeed in the first month of 1981 exceeded 4% per month). As the US dollar has become both absolutely and relatively (to the average and the continental European currencies) more unstable over time it has increased instability in the parities of the rest of the world's currencies.

It is interesting to note that the variability of the EMS currencies since the beginning of the exchange rate arrangements in Spring 1979 has by and large been reduced both absolutely and relative to the average, the US dollar and the Japanese yen.

Of course, when inflation rates proceed at different rates from one country to another one would expect exchange rate variability to reflect the normal pattern of the exchange rate falling to offset higher inflation rates and vice versa. It could be argued that the increased variability of nominal (or effective) exchange rates as in the table reflects these offsetting price movements and that real exchange rates (on a monthly basis) are stable, both in absolute terms and over time. Evidence does not, however, bear this out; indeed the contrary is the case with inflation differentials being reinforced by exchange rate changes on balance.

Table 16 details the same information as above but with exchange rate changes adjusted for inflation rate differentials.

Table 16: Mean real exchange rate changes - up or down - between end of months

	1967-69	1970-72	1973-75	1976-78	1979-80
			Percentages		
D	1.09	0.77	2.46	1.96	2.12
F	1.27	0.90	2.10	2.76	2.87
I	0.80	0.67	2.16	2.23	1.87
NL	0.96	0.95	2.26	2.00	2.02
B/L	0.81	0.76	2.01	1.86	1.81
USA	0.77	0.75	2.66	2.12	2.64
JAPAN	0.81	0.83	2.35	2.27	3.23
SWEDEN	0.74	0.72	1.94	2.06	1.73
CANADA	0.82	0.80	2.42	2.38	2.29
Unweighted Average	0.96	0.82	2.29	2.24	2.25

Source: Commission Services, DG II.

III. The Evidence from Industry

As we have seen from the previous chapter, the Community is the largest trading area in the world accounting for 19% of world exports and 20% of world imports in 1980, even after domestic inter-State trade has been excluded. Furthermore, the share of world trade in manufactured products is even higher, 26,5% in 1980 compared with 16% for the USA and 14% for Japan. In 1980 84% of the Community's exports were manufactured products. Which is why this report focusses on the structure and performance of manufacturing industry. This point of view is inevitably incomplete in so far as agricultural exports are a significant element in the Community's trade, and because the development of tertiary or services activities is becoming an increasingly important fact in the development of the domestic economy. However, for the time being, and indeed for the foreseeable future, the international competitive position of the Community's economy will depend overwhelmingly on the performance of manufacturing industry.

In this part of the report, we examine the structure of manufacturing industry in the Community, the resources used in industry, particularly capital and labour, from a quantitative, and where possible, a qualitative point of view.

This assessment is inevitably not exhaustive because the competitiveness of a firm is very much affected by the technology incorporated in its capital equipment, by the education and training of its employees and by its management and financial structure. There is no simple way of measuring and relating the effects of these different factors (1).

A. The Structure of Industry in the Community

In the first place it is useful to have an overall picture of the size and structure of industry in the Community, and the relative importance of the principal sectors in each Member State. Manufacturing industry accounts for about 30% of GDP in the Community; this share has been rather stable since 1970. The largest sectors in 1979 were, the agricultural industries (food, beverages and tobacco) which accounted for 14% of value added in manufacturing, and chemicals, metal products, industrial machines, electrical goods and transport equipment, accounting for 9-10% each.

The shares of the different sectors in total value added in manufacturing industry have changed slowly during the 1970's. A few sectors such as chemicals and transport equipment have increased in relative importance, whereas textiles, leather and clothing have declined quite rapidly and food, beverages and tobacco declined more slowly.

Value added in comparatively advanced sectors such as industrial machines, office machines and electrical goods have grown rather more slowly, than one might have been expected, considering the above-average rate of growth of investment in these sectors.

(1) See Research on Productivity Growth and Productivity Difference, R.R. Nelson, Journal of Economic Literature, September 1981, for a review of recent literature on this subject.

Table 17: Manufacturing industry in the Community by sector and Member States in 1979

(Percentages)

	Community (a)	B	D	F	I	NL	UK
Value added in manufactured products	100 % (b)	3.77	38.23	22.96	14.82	4.20	16.01
of which :							
Metallic minerals	5.66	0.31	2.04	1.23	0.90	0.18	1.00
Non-metallic minerals	5.79	0.23	2.19	1.27	1.03	0.23	0.82
Chemicals	9.48	0.41	3.74	2.11	1.20	0.63	1.39
Metal products	9.25	0.32	3.96	2.57	1.09	0.36	0.95
Industrial machines	9.77	0.32	4.59	1.66	1.08	0.33	1.77
Office machines	2.98	0.01	1.49	0.59	0.23	0.06	0.60
Electrical goods	9.08	0.33	4.18	1.69	0.99	0.49	1.40
Transport equipment	9.91	0.33	3.18	3.28	0.99	0.24	1.89
Food, beverages and tobacco	14.12	0.60	4.75	3.65	1.90	0.73	2.49
Textiles, leather goods, clothing	8.73	0.33	2.20	1.89	2.73	0.18	1.41
Paper and paper products	6.24	0.20	2.37	1.21	0.88	0.44	1.13
Rubber and plastic products	3.72	0.11	1.66	0.77	0.58	0.10	0.50
Other manufactured products	5.28	0.25	1.89	1.04	1.21	0.24	0.65

(a) Not including Denmark, Ireland and Greece
(b) 100 % = 493.5 billion ECU
(338 billion ECU, 1975 prices)

Note : Data in national currencies converted to ECU at current exchange rates before calculation of percentage

Source : EUROSTAT + DG II

Table 17 shows the structure of industry in the Member States in 1979. The most striking feature is the wide distribution of activities among the Member States. Individual sectors in individual Member States are by-and-large quite small in relation to the overall position.

At the given level of disaggregation, no individual sector in any one Member State accounts for more than 5% of value added in manufacturing in the Community. On the other hand six sectors in Germany account for more than 2.5% of value added in manufacturing; three in France and only one in Italy. A very large proportion of total manufacturing activity is in Germany (38%), followed by France (23%), the United Kingdom (16%) and by Italy (15%).

B. Resources and the Factors of Production

1. Investment in Manufacturing Industry

Total gross investment in the Community economy is of the order of 20% of GDP. However, investment in manufacturing industry is only about 3% of GDP. Thus it is a small, if crucial component of domestic product. The indications are that it is stagnating in the Community compared with continued growth in Japan.

The real measure of the capital used in industry is the stock of capital. This is determined not only by the rate of investment, but by the cumulative results of past investment. However, the measures of capital stock are at best very approximate because its amortisation (1) has to be estimated and because definitions differ between countries (2).

Table 18 compares investment in manufacturing in the Community with Japan and the United States for the years 1970, 1975 and 1979. In recent years the relative positions have been similar, although Japan's leading position was even more striking during the 1960's.

Table 18: Investment in Manufacturing
(1975 prices and exchange rates)

	Community			Japan			USA		
	1970	1975	1979	1970	1975	1979	1970	1975	1979
Total investment									
- billion ECU	229	236	263	111	131	170	202	201	255
- percent of GDP	24%	22%	21%	35%	32%	33%	18%	16%	17%
Manufacturing investment									
- percent of GDP	5.2%	3.8%	3.0%	9.6%	6.1%	5.2%	2.8%	2.1%	2.6%
- percent of total investment	23%	18%	15%	27%	19%	16%	13%	13%	14%
- billion ECU (approx.)	53	42	39	30	25	27	26	26	36

Sources: US National Accounts EBA-Aggregates
Japan - Economic Planning Agency
EUROSTAT.

This data shows up the higher level of manufacturing investment in Japan in relation to the size of their economy, with the result that the stock of capital in Japanese manufacturing industry has rapidly caught up with the Community and the United States.

(1) i.e. the rate at which existing capital is being used up or scrapped.
(2) The widespread, but by no means uniform practice of leasing factories and equipment affects the comparability of investment and capital stock data in manufacturing industry.

Table 19: Manufacturing Investment in the Community (b)
Volume Index, 1975 = 100

	Billion ECU 1975	70	75	76	77	78	79	80
F.R. Germany	13.33	146	100	106	108	108	119	127
France	10.06	103	100	108	102	100	..	..
Italy	6.72	110	100	97	98	91	100	..
Netherlands(a)	2.20	113	100	90	104	108	105	..
Belgium	2.21	99	100	88	73	71	72	..
Luxembourg	0.13	117	100	80	106	..	..	..
U.K.	6.09	116	100	95	100	107	111	100
Ireland	0.38	74	100	99	102	136	..	..

(a) Netherlands: including energy and construction
(b) Denmark: not available

Source: Eurostat

In recent years, manufacturing investment has not been a buoyant element in the Community economy. Table 19 shows the well-known substantial differences between the Member States, and unimpressive trends with the exception of the Federal Republic and - on a different scale - Ireland. Among the larger Member States, the absolute level of manufacturing investment in France and Germany is about twice as high as it is in Italy and the U.K.

The low and, in several Member States, the stagnant or declining level of manufacturing investment is not just a reflection of the recession since 1975. There has also been a shift in all major industrialised areas, including the Community, towards service activities, and the level of investment in certain established capital intensive industries has been declining (steel, chemicals, refining etc.), whereas the technological improvements of micro-electronics applications, for example, permit substantial productivity improvements in certain activities with relatively little investment.

Three sectors account for 40% of all manufacturing investment in the Community (1): Chemical products, Transport equipment and Food, beverages and tobacco. Among the Member States, in 1978, the Federal Republic accounted for about 35% of manufacturing investment and France, Italy and the United Kingdom together for about 52%.

Table 20 shows the distribution of manufacturing investment by Member State and sector in 1978.

(1) Not including Luxembourg, Ireland, Denmark and Greece, for which the data is not available on this basis.

TABLE 20 MANUFACTURING INVESTMENTS BY MEMBER STATE AND BRANCH (1978)

percent of total manufacturing investments[a]

(current prices, current exchange rates)

Sector	TOTAL[a] EUR/6	Member States D	F	I	N	B	UK
Manufacturing Investments	100%	38.64	22.66	13.34	6.15	3.68	15.53
Metallic minerals	7.78	2.02	2.13	1.68	0.18	0.20	1.58
Non-metallic minerals	7.14	3.08	1.63	0.99	0.45	0.35	0.66
Chemical products	14.75	4.81	2.56	2.06	1.52	0.72	3.09
Metal products	6.48	2.91	1.56	0.78	0.34	0.16	0.75
Agricul. and industr. machines	7.89	3.59	1.41	1.00	0.25	0.24	1.41
Office machines	3.64	1.58	1.52	0.22	0.09	0.00	0.23
Electrical goods	7.85	3.41	1.67	0.96	0.55	0.19	1.06
Transport equipment	12.33	4.94	3.25	1.88	0.28	0.22	1.75
Food, beverages, tobacco	13.43	4.76	3.03	1.20	1.45	0.72	2.28
Textile, clothing, leather	4.76	1.55	0.90	1.09	0.18	0.23	0.82
Paper, Printing products	5.94	2.32	1.29	0.57	0.47	0.30	0.99
Rubber, Plastic products	3.17	1.53	0.73	0.49	0.11	0.13	0.18
Other manufactur. products	4.83	2.16	0.97	0.43	0.28	0.23	0.76

(a) Not including Denmark, Ireland and Greece Note: 100% = 53.79 billions ECU
(a) NACE R25

Source: EUROSTAT 81 National Accounts by Branch

For the same sectors and countries the trends in manufacturing investment are presented in Table 21 in the form of average annual rates of change.

The changes in the rate of investment by sector are of interest because they are a direct indication of changes in industrial structure which may not yet be apparent in the structure of value added and exports. The data has to be treated with caution because small and fluctuating changes do not necessarily reveal a definite trend. That is why in Table 21 the rates of change which are not significant have been put in brackets. Notwithstanding these uncertainties, certain definite trends do emerge, particularly for the Community as a whole.

TABLE 21

TRENDS IN EC MANUFACTURING INVESTMENTS BY BRANCHES

Average annual changes for the period 1970 - 1979

	D	F	I	NL	B	L	UK	EC (a)
Ferrous & non-ferrous ores & metals, other than radio-active	-4.4	(-2.6)	-5.8	-10.8	-8.4	(+1.7)	(-2.7)	-3.65
Non-metallic minerals and mineral products	(-2.5)	2.5	(-0.2)	4.0	(0.4)	+34.7	(-1.5)	-1.95
Chemical products	(0.5)	(-1.1)	(-2.5)	-3.4	(0.8)	(-3.6)	(1.0)	(0.44)
Metal products, except machinery & transport equipment	(0.8)	-4.4	3.4	(	(0.2)	-15.1	(0.2)	(-0.58)
Agricultural and industrial machinery	(0.5)	5.7	3.6	(1.6	(5.0)	(	2.1	1.92
Office & data processing machines, precision & optical instruments	2.1	4.9	(3.6)	(	(2)	((0)	(1.0)	3.27
Electrical goods	2.7	5.4	7.3	(1.5)	(0.7)	+24	1.7	3.21
Transport equipment	2.6	4.6	(1.6)	(-1.5)	3.6	-19.8	(2.5)	2.43
Food, beverages, tobacco	(0.7)	(0.1)	2.3	5.3	6.2	(-0.8)	(0.6)	1.48
Textile & clothing, leather and footwear	-3.7	-6.6	2.5	-3.5	-6.4	-15	-6.6	-4.1
Paper & printing products	(1.5)	(0.5)	2.0	5.2	(4.8)	+37	(1.0)	(0.77)
Rubber & plastic products	(-1.2)	-5.7	-4.2	5.9	3.6	-20.4	-9.8	-3.3
Other manufacturing products	(-0.9)	(-0.6)	3.1	5.5	(-0.6)	(+1.8)	(0.5)	(0)

Note: The brackets indicate that the correlation coefficient in the linear regression is low.

(a) Greece and Denmark excluded

Source: Commission Services, DG III, based on National Accounts by Branches EUROSTAT 1981

Thus it appears that considerable adjustment has in fact been taking place in the relative importance of the branches, in terms of investment effort. In several cases the structural adjustments implied by such changes are quite salient, particularly the decline in investment in textiles and clothing and rubber and plastics industries. On the other hand, investment has definitely been rising rapidly in office equipment and electrical goods. It is also likely that investment in metal industries has been declining and investment in transport equipment has been rising at about the rates indicated in Table 21.

In this context the overall movements in the rate of investment make sense in terms of what we know about the general direction of structural change in Community industry. There are, however, striking differences in particular sectors in individual Member States, such as the dramatic decline in investment in the metals industries in the Netherlands, the modest UK performance in office and electrical goods an growing investment in textiles and clothing in Italy.

Over time, the effect of very different rates of investment result in different capital stock in the manufacturing industries of different countries, illustrated in Table 22.

Table 22: Manufacturing Capital Stock in the Community, USA, Japan at constant 1970 prices and exchange rates

(buildings and equipment)

	Capital Stock in Manufacturing		Average rate of increase		Capital Stock per employee(b)	
	1970	1975	1965-70	1970-75	1970	1975
	(billion ECU)		(percent per year)		(thousand ECU)	
Belgium	15.5	20.8	6.5	6.1	13	20
Germany	121.6	159.5	6.5	5.6	13	19
France	75.8	100.2	5.2	5.7	15	18
Italy	55.6	71.1	3.9	5.0	12	15
Netherlands	19.5	25.5	7.8	5.5	17	25
U.K.	71.4	83.4	4.2	3.2	9	11
Community(a)	359.1	460.4	5.4	5.1	12	16
USA	323.8	375.0	4.2	3.0	17	21
Japan	103.5	171.1	14.0	10.6	9	15

Sources: Commission Services, DG III based on:
- Deutsches Institut für Wirtschaftsforschung, Berlin
  Evaluation of Gross Fixed Capital Stock, Nov. 79
- US Department of Commerce - Survey of Current Business, Feb. 81
- Economic Planning Agency Tokyo
  Private Corporate Capital Stock, March 81.

(a) Data not available for Luxembourg, Denmark, Ireland and Greece.
(b) Order of magnitude, rounded to nearest thousand ECU per person employed.

The calculation of the level of capital stock is at best very approximate because of the assumptions which have to be made about amortisation rates, and some differences which arise purely from different economic structures (1). On the other hand, the comparison of the rate of growth of capital stock is probably a more reliable indicator. The estimates of capital stock per employed person are also of interest as an indication of the capital intensity of manufacturing industry.

The most striking indication from this data is the very rapid growth in the capital stock in Japan. This, combined with the high rate of return to assets employed in Japanese industry, combine in providing the basis for the substantial growth in Japanese productivity and output.

(1) For example, a small country with a large steel or refining industry will tend to have a high capital stock per employee.

On the other hand, the data suggest that capital employed per employee in American industry has been stagnating since the mid-1970's, and that an analagous situation prevails in most of the Member States.

The low level and slow increase in the United Kingdom is particularly preoccupying for a substantially industrialised country.

This information is available for USA and Japan up to 1979, but 1975 is the most recent year for which the data is available for all the large Member States. The partial data available for more recent years suggests that the rate of growth of manufacturing capital stock slowed down considerably after 1975 in the Community and in Japan.

An indicator of the efficiency with which the capital stock is being used is the partial measure of productivity of capital, defined as the ratio of value added to the amount of capital stock employed. The results of calculations related to this indicator are summarised below.

Table 23: Capital Productivity of the Manufacturing Industry

(Value Added/Gross Capital Stock - 1975 Prices

	1965	1970	1975	1976	1977	1978	1979
Germany	60.2	56.9	45.7	47.0	:	:	:
France	40.4	45.9	43.1	44.3	44.3	43.8	:
Italy	36.3	46.5	40.5	:	:	:	:
Netherlands	40.3	37.9	32.0	33.0	33.2	:	:
Belgium	37.7	37.6	34.0	35.5	:	:	:
UK	45.7	42.5	37.2	37.7	37.1	36.7	:
Community(a)	46.9	48.1	41.4	:	:	:	:
USA	84.4	76.2	69.9	74.1	76.4	77.0	76.0
JAPAN	54.6	61.6	47.5	51.5	52.8	54.7	56.9

(a) Not including Denmark, Ireland, Luxembourg and Greece

Source: See Table 22.

2. International Investment Flows

The level and characteristics of investment are affected by the size and direction of international investment flows. However, there is no direct and simple relationship between international investment and competitiveness. Although there is obviously some link between the international location decisions of multinational companies and their expectations as to the competitiveness of their new investments, many other factors come into play such as the location of existing plant, governments' incentive policies and the socio-economic climate in the country concerned. Suffice therefore to illustrate in Table 24

the relative importance of international investment flows and from the Community, Japan and the USA. In economic terms such flows mean an increase or decrease in financial resources available domestically, and can lead to an intensification of competition on domestic and international markets.

Table 24: International Investment Flows as a % of GDP

	1970	1975	1979	1980
Inward direct investment				
EC-9	.58	.48	.45 (1)	-
US	.15	.17	.33	.42
Japan	.05	.04	.03	.03
Outward direct investment				
EC-9	.54	.55	.66 (1)	-
US	.74	.94	1.05	.72
Japan	.17	.35	.27	-.12

(1) 1978

Sources: Community Services, DG II

Assessing the role of international investment is further complicated by the fact that the data for the Community does not distinguish adequately the level of international investment in manufacturing industry, nor does it separate domestic flows between Member States from international flows.

3. Technology and Innovation

Changes in the quantity of factors of production and their relative proportions employed in the economy will determine the growth and productivity of the economic system in the short run, but from the point of view of the competitiveness of modern industrial economies, changes in the quality of the factors of production are more important in the medium term.

Thus it is the level of knowledge applied in the economy both through technology embodied in equipment, and through the individual and collective skills of working people, which is becoming increasingly determinant.

Improvements in the level of industrial technology manifest themselves in three main ways: firstly, in the introduction of new products or improvements in existing products; secondly, improvements in the production process; and thirdly, improvements in the human organisation of the production process. The overall process of introducing these changes in a commercially successful way has to come to be known as innovation (1).

This crucial process of innovation is very complex in a mature industrial society. The Commission has recently undertaken a thorough analysis of the relationship between innovation and public policies with a view to providing the basis for encouraging - and removing obstacles - to innovation in the future (2).

There is little evidence that the shortcomings of Community industry's comparative advantage for high technology products (3) result from a deficiency in fundamental research. Although Europe has lost its lead in this area to the US since World War II, total R and D expenditure in the Community is still twice as high as in Japan, even though this expenditure fell as a proportion of GDP during the 1970s. A considerable amount of R and D in the US and the Community is spent on space and defence so that its effects on commercial life are haphazard. If one considers only economically-oriented R and D in terms of share of GDP, the approximate figures are 1.7% in the US and EC and 2% in Japan. Contrary to trends in the US and EC, the Japanese share is rising.

Table 25: Government financed R and D in the Community as % of GDP

	D	F	I	NL	B	UK	IRL	DK	EC
1970	0.96	1.23	0.46	0.93	0.77	1.24	0.34	0.55	0.98
1975	1.23	1.17	0.36	0.96	0.73	1.27	0.44	0.58	1.04
1980	1.14	1.13	0.47	0.97	0.62	1.11	0.49	0.45	0.98

Source: EUROSTAT

Examination of these trends shows that a high level of R and D expenditure on its own does not necessarily lead to a faster growth of welfare in a country nor greater performance on world markets. The explanation would appear to lie in a more complex mosaic of economic and social factors, including production and quality control, marketing and design.

(1) See also "Innovation et politiques économiques" in "Reflets et Perspectives de la vie économique", 1981, for a discussion of the relationship between innovation and industrial development.
(2) Innovation - Development of action, DG XIII - SEC(81)1859, 24.11.81.
(3) See section II.B. on Industrial Specialisation, above.

4. Energy as a factor of production

The central importance of energy for the economic health of the Community is not in doubt, and the Commission has argued that policies (1) to accelerate the process of adjustment to high oil prices, and to reduce dependence on imported oil, are an essential condition for economic recovery. At this point, however, policy makers encounter a dilemma.

On the one hand, there is mounting recognition that the price mechanism is an essential component of policies for structural change. On the other hand, policy proposals that seek to accelerate structural change via the price mechanism, for example by increasing taxes on oil, encounter vigorous objections from industry that Government is seeking to exacerbate its crisis of competitiveness by deliberately placing it at a disadvantage in relation to industry elsewhere.

This part of the report therefore focusses on the impact of the energy situation on the competitive performance of industry. Energy is viewed here as a factor of production, and the questions which arise are: how important a contribution does energy make to overall costs? What will be the cost of energy to industry in Europe compared to competitor countries? How great is the scope for substitution of labour and capital for energy?

(a) The contribution of energy to overall costs

There has been a marked variation in the price increases experienced in different energy sectors. Table 26 gives an indication of the real increase in prices in the four main energy sectors for four Member States.

Table 26: 1980 Index of real increase in prices 1973 = 100

	Germany	France	Italy	UK
Coal	(200)	(200)	(200)	(200)
Oil	288	385	338	238
Gas	159-222	209-290	295-311	136-179
Electricity	113	123	158	110

Source: "Energy Pricing - Policy and Transparency" COM(81)539

These figures, which are representative of those for other Member States, suggest in broad terms that in the period 1970-1980 prices of industrial oil have risen by a factor of three or four, those for coal and gas have doubled, while electricity prices have risen only slightly in real terms.

(1) "Energy and Economic Policy" (COM(81)583) and in "The Development of an Energy Strategy for the Community" (COM(81)540).

In 1970, energy costs accounted for more than 10% of total direct and indirect costs in only six sectors of which one (transport services) is subject to international competition in a strictly limited sense. In the other five sectors, oil products account for a significant share of total costs, but in none of them is oil dominant.

Table 27: Energy intensive industries

	Estimated energy content of total cost 1980
Paper	15.05
Building materials	23.07
Chemicals	15.02
Steel	22.43
Non-ferrous metals	16.50

Source: Commission Services, DG XVII, based on 1970 input-output coefficients.

Energy costs have risen to over 10% of total costs in the course of the 1970's in eight sectors of which one, water supply, is not subject to international competition, and another (construction) is subject to competition only in a limited sense.

Table 28: Moderate energy - consuming sectors

	Estimated energy content of total cost 1980 %
Textiles	12.22
Rubber and plastics	12.73
Construction	11.07
Minerals	12.54
Engineering	11.78
Automobiles	10.59
Other transport construction	11.11

Source: See Table 27.

The general conclusion is that even in energy-intensive sectors, energy represents a relatively modest proportion of total costs; any disadvantages suffered through high and rising energy costs in Europe are in general no greater than companies should be able to absorb through increases in productivity.

However, there are individual processes within sectors that are immensely energy-intensive and where energy costs are of critical importance to the cost of the process as a whole. Particular mention should be made of aluminium smelting where electricity accounts for between half and three-quarters of direct costs; the same is true of certain bulk chemicals, especially alkalis; in the construction sector certain ceramic materials are very energy-intensive, and cement manufacture involves an energy content of around 50% of total direct costs.

(b) Energy prices

Changes in energy prices are of equal importance to their absolute level in any analysis of the impact of energy on the competitive position of the economy. Unfortunately, here too it is impossible to draw any meaningful comparism between the situation in the individual industrialised countries for want of harmonised statistics covering them all.

Table 29 below lists the 1980 indices for the nominal energy prices and for the actual prices for all three consumer sectors, i.e. industry, transport and the domestic sector (1973 = 100). The OECD indices for Japan and the United States have also been added. However, they cannot be compared directly with those for the Community.

Table 29: Energy price indices in 1980

	Current prices			Constant 1973 prices		
	Industry	Transport	Domestic sector	Industry	Transport	Domestic sector
D	187	161	186	135	117	135
F	303	282	271	142	138	132
I	639	375	433	210	123	140
NL	290	194	266	178	119	163
B	248	214	206	149	129	123
UK	374	330	268	127	112	96

Source: EUROSTAT

Very broadly speaking, the real after-tax prices for energy have moved as follows:

(i) in every country, the prices of the energy products for individual consumption have risen faster than the prices to the other sectors;

(ii) in most cases, the prices of the products for consumption by domestic households, or by the residential and tertiary sector, have seen average increases;

(iii) in many countries, the increase in energy prices to the transport sector has been relatively modest because of the special tax concessions for motor fuel;

(iv) Finally, although there have been appreciable increases in the real prices after tax, the average annual increase remained between 6% and 7% between 1973 and 1980, which is still not enough to impose any great constraints on most sectors of industry, where energy still accounts for less than 7% of the production costs.

OECD data on energy prices shows comparable trends for the USA and Japan up to 1980 when the series was discontinued because it contained serious methodological floors. Throughout the 1980's oil and gas prices in Canada and the USA were controlled at levels well below those prevailing elsewhere. But oil prices in the US were decontrolled in 1981 and have moved sharply up to world levels. Gas prices are to be decontrolled in 1985. Canada is the only OECD country which now holds both oil and gas prices below world levels.

Japan and the Newly Industrialising Countries are (with the exception of Indonesia) generally rather more dependent on imported oil than the Community. Energy prices in Japan are in general comparable to those prevailing in the Community.

(c) Energy and competitiveness

On the strength of the above analysis one would not expect energy to have exercised an important influence on the Community's market share, except in the energy intensive sectors. In these sectors one would expect to observe a relatively strong performance on the part of the United States and a relatively weak one on the part of Japan.

The changes in market shares shown in Table 5 (page 10) suggests that in most energy intensive sectors (1), cheap oil may have given US industry an advantage in the short-term. However, iron and steel presents a striking contrast. Two further qualifications need to be made in this context:

(i) The energy factor is evidently far from decisive, since Japan increased its market share in each energy-intensive sector.

In particular, it is characteristic of most energy-intensive products that they are bulky and costly to transport - often more so than energy. It is striking that industries which are very dependent on coal, especially steel and cement, have shown no tendency so far to relocate close to the American, Australian and South African coalfields.

(ii) In so far as evidence does exist that low energy prices have enabled the United States to expand or retain its market share in energy-intensive markets, this has not necessarily assisted the competitive position of the United States in the long term. The US advantage in oil prices has now been largely eliminated, and in gas prices is likely to come to an end in the medium term. The US long-run advantage in coal seems to have been less significant than the short-run advantage in oil and gas. It is therefore probable that the American artificial advantage in oil and gas prices has had the effect of discouraging specialisation in sectors where the US has genuine long-run comparative advantage.

The general issue of adaptation to higher energy prices is a complex one. There are marked variations in the level of energy efficiency between individual countries, and there is no simple relationship between investment, growth and energy efficiency. Energy consumption per unit of GDP tends to rise sharply while a country is going through the process of industrialisation, but to fall in wealthy countries when they begin to specialise in high technology services. The scope for energy saving, even in energy-intensive industries is very large; the optimum savings can usually be achieved only by a radical change in process, often using a different fuel. It follows that, other things being equal, countries with high levels of investment in manufacturing industry and a rapid turnover of the capital stock will best adapt to changes in energy prices (2).

(1) The following five sectors account for the bulk of energy used in manufacturing industry: Non-metallic mineral products, unworked metals, iron and steel, basic chemicals, paper.

(2) These issues are explored in more detail in the Commission's Communication to the Council "Investment in the Rational Use of Energy", COM(82)24.

The preliminary conclusion is, however, that despite the Community's unfavourable energy situation, energy costs will not for most sectors be a major factor in the performance of manufacturing industry over the next ten to twenty years.

One important qualification must however be made with respect to the chemical industry. OPEC countries have adopted an industrial strategy based on their access to cheap hydrocarbons, and it is estimated that they have under construction plant for the manufacture of basic chemicals equal to 15-20% of the installed capacity of the industry within the Community. There can be no doubt that the OPEC countries will succeed in selling their products in our markets, both by reducing the producer rent taken on oil and gas, and by linking the supply of crude to political obligations to accept their product, in spite of the fact that the economics of location remote from markets in consuming countries may not be particularly favourable.

5. The influence of human capital on competitiveness

The changing pattern of employment in recent decades, and in particular the shift towards the service sector, has increased the importance of human capital as a determinant of competitiveness in developed countries. In these countries the growth of the economy is limited as much by the rate of development of human as of physical capital (a good example is the current shortage of people able to develop computer software). The growing sophistication and technical composition of the production process has increased the demand for skilled labour at all levels, and automation of many repetitive tasks is likely to further reduce the demand for unskilled labour in the future. In addition, the speed of technical change and the rapid internationalisation of new products and processes, both by making certain skills redundant and by creating a constant demand for new skills, has made the existence and quality of a comprehensive vocational education system an important input to the industrial system.

However, any assessment of human capital must include a number of variables which are not readily quantifiable. Apart from directly relevant effects, such as on productivity levels, the composition of the labour force has a less well defined impact on competitiveness through social attitudes to work, acceptance of change etc. which are important to competitiveness in the longer term.

In many respects the Community, Japan and the US have similar human capital endowments - an educated work force, rising levels of female participation, low levels of population growth, broadly similar employment structures etc. However, a closer look reveals differences in trends and orientation which will in the longer term influence competitiveness levels.

(a) Population

The demographic situation of each of the three groups under consideration will evolve differently in the medium-term. The total population of all three groups will increase up to 1990 with the smallest increase being in the Community (EC 1%, Japan 6%, US 10%). The populations of Japan and the Community are ageing more rapidly than that of the US. By 1990 it is expected that 43% of the EC and Japanese populations will be aged 15-44 whereas in the US the figure is projected as 46% and the projections for those aged over 65 are EC 15%, US 12%, Japan 11%.

(b) Education

As a result of both population trends and of the tight labour market situation, demand for education in general and vocational education and further training in particular increased during the 1970's.

The USA has a relatively high proportion of the population in the educational system while Japanese and European levels are considerably lower and more directly comparable. In most countries there has been a rapid increase in the number of third level students and a steady increase in the number of first and second level pupils.

There are considerable differences in emphasis in the higher education systems of the countries in question with the highest proportion of students following courses in medical sciences in the Community, social science in Japan while in the US there is a wider spread across the range of studies. Enrolment of 19-24 year olds in third level education averaged 24% in the Community, 32.5% in Japan and rose to 56% in the USA.

Table 30: The proportion of students taking subject of direct relevance to industry

	Community	JAPAN	USA
		(1976 - percent)	
Commerce, Business administration	5.6	-	11.0
Natural science	8.1	1.8	5.2
Maths, computer science	1.6	0.6	1.5
Engineering	10.9	17.8	3.7

Source: UNESCO YEARBOOK

From Table 30 it can be seen that the position varies widely, there is an orientation towards business studies in the US, towards engineering Japan and in the Community a less marked trend in favour of engineering and the natural sciences.

Trends in female education were comparable in all three groups with the vast majority of women studying the humanities or teacher training. In the Community, women make up around 42% of the third level students ranging from 34% in the Netherlands to 46.9% in France. In Japan female participation is only 20.4% while in the US it is 47.9%.

(c) Vocational Training

In both the Community and USA the vocational training system is a mixture of off-the-job programmes run by state and local authorities and private company training whereas in Japan most vocational training is done in the company, on the job.

In the Community in 1978, 24% of 16-17 and 41% of 17-18 year olds left school and pursued no further education or training. In both the US and the Community unemployment is highest among the unskilled/semi-skilled as these are the jobs most likely to come under pressure from automation, imports and from low-cost countries. However, the majority are undergoing full-time education or training and some (15% of 16-17 and 18% of 17-18 year olds) are involved in part-time training.

In the Community, the level of vocational training within the school system is quite low. The level of further training is very low indeed in all Member States, indicating that there is little recourse to formal ongoing training or retraining once a person enters the labour force full-time. In all only between 2.5-10% take courses to improve training already acquired or to receive new training. The apparently low level of further training is especially worrying in view of the current speed and extent of technological change because it implies the likely outdating of skills and an undesirable degree of rigidity. However, the official statistics do not take account of in-company training of older workers which may be significant in some companies and in some sectors.

In 1978 over 17 million Americans (the labour force numbers 102 m) were engaged on federally aided vocational programmes, 3.3 m in office occupations and 3.4 m in trade and industrial training. As in the Community the main training effort is concentrated on the under 25's but, unlike the Community, almost 40% of those enrolled on vocational courses in 1976 were over 35 indicating a greater degree of retraining and updating of skills.

(d) The Labour Force

The civilian working population is of roughly similar size in the Community (109 m in 1979) and in the USA (102 m in 1979) and almost double that of Japan (56 m in 1979). Structural changes in the labour force result from changes in the total population of working age (15-65) and participation rates within the relevant age groups. The active population is forecast to rise in most Member States until at least 1990 and is expected to stabilise thereafter. A similar situation is forecast for the USA and Japan, but the active population of the US will grow at a faster rate over the period, overtaking that of the EC around the turn of the century.

Throughout most of the 1980's the labour market will be under heavy pressure to provide jobs both for large numbers of young people entering the labour market for the first time (the consequence of high birth rates in the 1960's) and increasing numbers of women seeking employment.

(e) Labour Force Specialisation

The proportion of professional, technical and related workers is roughly similar in the USA and the Community but significantly lower in Japan. By contrast, the share of administrative and managerial staff in the USA at 10.2% is considerably higher than in either Japan (4.1%) or the Community (D 3.1%, F 3.2%) even allowing for the different time periods used. Another difference lies in the number of sales workers, highest in Japan (12.6%) and lowest in the USA (6.1%). Over a 15-20 year period all countries showed similar developments - an increase in the number of technical, professional and clerical workers, a decline in agriculture and production workers. In most countries the number of administrative, managerial and sales workers increased only slightly while in France and the US the share of sales workers actually declined. Thus the shift to the white collar service sector has occurred in all these countries bringing with it a requirement for higher levels of training and education.

The occupational structure of Japan shows considerable differences from that of the Community and the USA - the evolution is in the same direction but is taking place later. In particular the high number of agricultural and sales workers is out of step with the pattern in other developed countries and reflects the fact that the attention paid to industrial development has not been equally extended to other sectors of the economy.

It is also interesting to focus more narrowly on a particular skill category, e.g. on the number of scientists and engineers in the labour force, professions which are currently receiving much attention in view of the important role of R and D and technical know-how in our present day society.

Table 31:Scientists and Engineers per 10.000 in the Labour Force 1965-1977

	1965	1968	1972	1975	1977
France	21.0	26.4	28.1	29.3	29.9(a)
Germany	22.6	25.9	35.7	39.4	40.5
UK	21.4	17.2	27.8	30.6	NA
Japan	24.6	31.1	38.1	47.9	49.9
USA	64.1	66.9	58.3	56.4	57.4

(a) 1976

Source: US National Science Board, Science Indicators 1978.

The US remains the clear leader although the gap between it and the other countries has narrowed significantly since 1965 and within the US the situation has fluctuated around a declining trend from the high point of 1968. Japan has doubled its share of engineers and scientists per 10.000 of the labour force in twelve years, as one would expect from the emphasis on engineering in third level education. Of the three EC countries mentioned Germany has made most progress, starting from a position roughly similar to France and the UK in 1965 but growing at a much faster rate. However, the gap between the Community and its other industrialised competitors remains considerable and unless there is a marked change in the preferences of third level students the Community is likely to continue at a disadvantage in terms of high technology and its application.

(f) Labour Force Productivity

The link between investment, technology and human capital and the overall productivity of the labour force cannot be established directly. Table 11 (page 22) summarised the rate of growth of hourly productivity in real terms since 1960 in the Community and in the US and Japan.

The data - which is discussed in greater detail in Chapter II.D.1 - confirms the sustained growth in Japanese productivity, low and declining productivity growth in the USA and the wide range of situations in the Community.

Concerning manufacturing industry, a recent OECD study (1) found that one of the main reasons for the decline in US productivity was the inadequate rhythm of investment which also had some influence by the closing of the technological gap with the US and by inter-sectoral transfers. By contrast, the rigidity of the labour market and varying managerial capabilities are put forward to explain the declining growth of productivity in the UK.

Table 32 shows the evolution of apparent labour productivity in manufacturing industry, since 1975. The increase in the Japanese rate is particularly striking. Productivity increases in a number of Community countries outstripped those of the USA during the decade.

Table 32: Apparent Labour Productivity (a) in Manufacturing Industry

	1965	1970	1975 (1975=100)	1978	1979
USA	86.0	89.1	100	110.3	111.1
JAPAN	40.9	73.3	100	140.1	149.5
BELGIUM	55.7	78.8	100	124.3	132.5
DENMARK	-	79.0	100	-	-
FRANCE	-	84.4	100	117.6	123.7
GERMANY	68.5	86.8	100	112.8	117.8
ITALY	-	94.3	100	117.9	-
NETHERLANDS	-	76.0	100	120.4	-
UK	75.2	88.1	100	107.4	-

(a) Value-added in manufacturing at constant prices
N° of persons employed.

Source: OECD

(1) OECD CPE.WP2 (79)8, and DSTI/IND/81.40.

C. Sectoral Performance

The performance of a number of industrial sectors has been examined with a view to identifying some of the key factors which may have accounted for their comparative strengths and weaknesses. The sectors concerned are motor vehicles, chemicals, pharmaceuticals, iron and steel, clothing, pulp, paper and board, aerospace, shipbuilding and machine tools.

This analysis attempts to relate the observed experience in individual sectors to the broader factors described in the preceding sections of this report.

These sectors make up a representative cross-section of EC industry. They include sectors which are characterised, amongst other features:

- by high, medium and low-technology;
- small and medium-sized enterprises, giant multinationals;
- growth or decline;
- capital-intensity or labour-intensity;
- considerable export-potential or limited export-potential.

The examination of their performance suggests that amongst the many factors which have influenced their competitive performance the following would appear to be of particular importance:

- Degree of specialisation

  The relative success of the EC aerospace and the paper/paperboard sectors would appear to stem from a concentration on specialised products, e.g. airbus and civil helicopters in the former case; special grades of papers in the latter case. The poor performance of the steel sector may be partially due to its relative lack of specialisation.

- Commitment to research and development (R and D)

  The aerospace, the chemical and, in particular, the pharmaceutical sectors have committed significant resources to R and D. On the other hand, R and D has had a very limited impact in shipbuilding, clothing and machine tools.

- Capacity utilisation

  Under-utilisation of capacity has had adverse effects on the profitability of enterprises operating in a number of sectors. Synthetic fibres, steel and shipbuilding have been affected particularly badly in recent years. In addition to the direct financial consequences for the enterprises it has also severely limited their possibilities for investing in R and D and in new capital equipment.

- Product range, design and quality

The clothing sector, which is characterised by low-skilled labour-intensive production, has been able to compete successfully in fashion products which require a high degree of design creativity. Although the EC motor vehicles sector has a good range of products in terms of both type and quality a rationalisation of the product range would almost certainly result in greater economies of scale. Unlike its Japanese counterpart, which concentrates on relatively long production runs for standardised products, the EC machine-tool sector tends to produce to the specific designs of the consumer - a larger output of a more standard range of product should contribute to a more competitive performance.

- Intra-Community cooperation

An increasing degree of intra-Community cooperation between enterprises exists in some sectors, e.g. aerospace and motor cars. In others little or none exists, e.g. shipbuilding. It may be no coincidence that some of the sectors which have performed better than average and which require high output levels to survive have cooperated at Community or European level to produce trans-European products, e.g. Airbus, "European" or "World" cars.

- Sectoral structures

The optimum size of an enterprise will vary from sector to sector and within a sector depending on many factors, including, amongst others, the scale of the markets in which it is operating, the production technology, the role of R and D. A number of the sectors examined, e.g. aerospace and clothing, are characterised by many enterprises which are probably too small or otherwise ill-equipped to invest on a sufficient scale (in production, marketing, R and D) to be able to exploit the opportunities offered by markets which have shifted from a national to a continental or, even, world dimension (and, equally important, to be able to defend their existing markets against competitors who are operating on the appropriate scale).

Sectors which have traditionally operated on a relatively large scale at the national level and which have also in a number of cases operated at the multinational level, e.g. the motor vehicles sector, have recognised the need to reorganise production on the basis of multi-plant specialisation if they are to compete successfully. This is clearly demonstrated by the growth of the EC's share in the OECD's imports of motor vehicle bodies, engines and parts.

- Intra-Community barriers to trade

  Obstacles to the free movement of their products appear to be a factor reducing the ability of the pharmaceutical and the electrical and mechanical engineering sectors to exploit fully possible production economies of scale.

  Given the restricted size of the domestic markets of EC enterprises, the difficulty for non-national enterprises of obtaining public purchasing contracts in other countries has had a similar effect within the aerospace sector.

- Exchange rate fluctuations

  Both the aerospace and the shipbuilding sectors appear to be particularly susceptible to exchange rate fluctuations of the US dollar. In the case of shipbuilding the relative exchange rates between EC currencies and the US dollar and the Japanese Yen are of critical importance.

Whilst, as can be seen from the above, all sectors possess some strengths and, usually, many more weaknesses, the mix varies from sector to sector. The more successful sectors would appear to have certain common characteristics, e.g. market, rather than production, oriented products; an appropriate degree of specialisation; structures adapted to the scale of the markets in which the enterpise is operating. Given the base provided by the sizeable output of most of the EC sectors examined, the scope for considerable improvements in competitiveness exists.

D. Corporate Structure and Performance

1. The importance of the firm

The macro-economic approach developed in the previous chapter gives a picture of the competitiveness of European industry, in which efficient resource allocation and management, together with natural endowments, play a central role. A second way of looking at the question is therefore to see what we know about how resources are used within the firms themselves.

Since investment and productivity appear to be the focal point of weakness in the supply side of our economies, there is a need to enlarge the analysis in the micro-economic direction, focussing on the behaviour of the basic unit in industry, the manufacturing enterprise.

Economic performance, financial structures and corporate management of manufacturing enterprises must be taken into account in any evaluation of competitiveness, as the company is both the point at which production-oriented resources are combined and the subject of competition at world level.

2. A Micro-economic approach

In order to appreciate efficiency in resource allocation and management we have brought together the evidence provided by different sources such as national statistics, company accounts and business organisations.

- National accounts cover the manufacturing sector as a whole and are broken down by sector: in principle they are the most comprehensive source allowing international comparisons of economic results of manufacturing activities as represented by operating surpluses, notably when they are harmonised.

- Company accounts give different kinds of information; profits usually include not only the operating surplus but also gains from stock appreciation.

  Company accounts and their indications on profits and financial structures are not subject to general systematic aggregation on a harmonised basis: this is one only for limited samples (especially when international comparison is involved) usually covering the larger corporations. Different accounting methods and tax conventions also bias some of the data and this is difficult to correct at the present stage of work in this field. It remains nevertheless true that these differences are in principle due to national realities which reflect and influence respective competitive performances, as this information is increasingly supplied by specialised sources and is apparently used by the business community.

- Information about company organisation and structure is based on business management concepts which are usually qualitiative and descriptive. Although the appraisal of this factor is on a different basis from the previous ones, it is based on widely applied methods, which provide useful insights into the ways in which companies function.

  Emphasis has been placed on large enterprises because of data availability and because they are on the front line of international competition. Although smaller companies play an important role, bigger companies are vital:

  - the performance of big companies determines to a great extent the overall competitiveness of the European economy. In particular, they account for a large proportion of international trade in manufactures, much of which takes the form of intra-firm transactions;

  - because the complex and turbulent market environment requires organisations which can act as stabilisers and can internalise structural change;

  - our main competitors have already made their choice in this direction. Unless it is able to adapt its own strategies, European industry will be forced to adjust to those of other large enterprises.

Problems of coverage, comparability and exclusions limit our conclusions at this stage to:

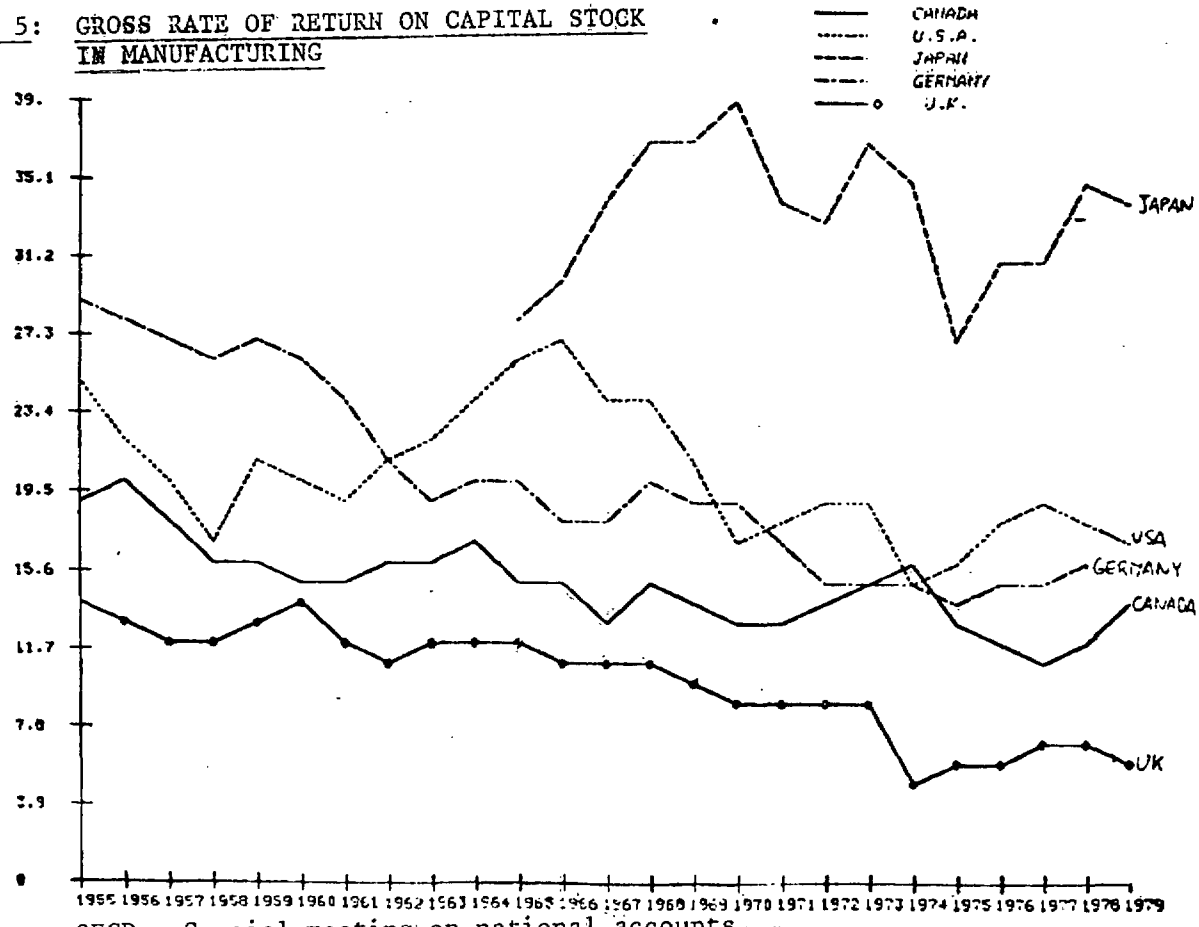
- drawing attention to this field of micro-economic analysis, which does not seem to have been sufficiently developed and debated in the Community, but which could be relevant in terms of industrial adjustment; and
- suggesting a number of questions which are in line with, and provide consistent interpretation of, other indications that the competitiveness of European industry is declining.

3. Economic performance of the manufacturing sector

For the purposes of this analysis, performance is measured by the operating surplus, which is the surplus arising from productive activities once inputs of materials and labour have been paid for, and before paying direct taxes and financial charges. When related to the stock of fixed assets employed in production, irrespective of their financing, it gives the concept of return on productive capital.

Return on capital in manufacturing has been declining in Germany and the UK since 1955, according to OECD data (1), while the downward trend was less pronounced in the US and Japan, both of which recorder better results.

GRAPH 5: GROSS RATE OF RETURN ON CAPITAL STOCK IN MANUFACTURING



Source: OECD - Special meeting on national accounts Paris, 9-12 June 1981, Room document N° 1.

(1) OECD data based on national accounts. Rates of return based on gross measures have the principal advantage of by-passing the whole problem of calculating capital consumption for both profits and capital stock. Moreover, it turns out that gross and net OECD data are quite in line. Capital stock is calculated by cumulation of investment following the perpetual inventory method.

A study currently being undertaken in the Commission analyses the ratio of net operating profit on the aggregate working plus fixed capital employed in manufacturing industry. Preliminary results provide evidence of declining rates of return from 1960 to 1979 in the four large member countries.

Further evidence is provided by performance appreciation based on the share of operating profit in value added. Where comparison is possible, profit shares decreased in Community countries less than the rate of profit on capital employed declined. The US experience was similar but the opposite was recorded in Japan, where rates of return on capital were maintained through improved capital productivity, even with decreasing shares of value added going to profits.

Performance appreciation based on micro-economic notion of operating surplus therefore highlights certain weaknesses in the economic efficiency of manufacturing operations:

- within the Community, when compared with other economic activities and between member countries;

- vis à vis international competition, when compared with our main industrial competitors, notably Japan.

Where data is available, the indications are that the problem for EC industry lies more in its capacity to generate a surplus rather than in its allocation.

Along the same lines, a recent analysis undertaken for the Commission (1) based, amongst other indicators, on profit shares, concluded that an essential point often neglected, besides the need for tight control of production costs, is the increase in value added generated either in volume or in price, by moving to higher value-added products.

The persistence of such a weakness in the capacity to generate a surplus well beyond the short-term cyclical fluctuations, combined with the recent rising cost of capital is likely to:

- have negative effects on the investment propensity of Community industry and to induce sectoral and geographic shifts of resources;

- lead to a vicious circle which undermines the competitive position of EC industry and its capacity to adjust endogenously to present and foreseeable challenges.

Indeed, weak levels and trends of operating profit in manufacturing have since 1973 been accompanied by a deterioration of other major economic indicators such as value added, gross capital formation and employment.

(1) "Compétitivités sectorielles et performances dans l'industrie européenne", B. de Closset, Mars 1981.

4. Company accounts and financial structures

If the economic performance of resources engaged in manufacturing activities in the EC has not been satisfactory, neither has that of the main actor in manufacturing, the industrial firm.

Company accounts, though their major shortcomings in periods of rapid inflation are well known, are nevertheless the most common reference to evaluate company performance. The evidence fits with the results of national accounts: significant samples of larger corporations show that the sales margins, return on assets and remuneration of equity capital are weaker for Community companies. In 1980, the first hundred industrial groups in Europe realised an average net profit on sales of 1,4% against 2,4% of the first hundred Japanese groups and 4,8% of the first hundred US groups. The gap is also considerable in terms of net profit on own capital: 6,5% for European corporations, 14% for the Japanese, 15,6% for the Americans (1).

If oil companies are excluded from the sample, European corporations recorded an aggregated loss of 0,1% on own capital while US and Japanese corporations reached respectively a 11,5% and a 13,8% profit.

There are quite different results among the Member States. The major Italian corporations suffered the largest losses, while German companies fared best from this point of view.

Similar divergences become apparent in other samples of major corporations, which highlight the better performances of US companies.

Table 33: Net profit on sales of 392 manufacturing enterprises (a)

	1970	1973	1977	Number of companies in 1977 sample
Germany	2,44	1,95	1,77	31
France	4,49	2,59	1,83	23
Italy	4,45	0,33	-5,51	7
UK	4,37	6,21	3,91	40
Netherlands	3,90	4,8	3,60	3
Belgium	3,97	3,58	0,32	3
Japan (b)	4,15	4,1	1,76	103
USA	4,87	5,93	4,77	182

(a) NET post-tax profit on gross sales of 392 major enterprises, including oil companies and major retailers.
(b) Japanese sample has a higher proportion of smaller enterprises.
Source: MITI Management analysis of world corporations - Tokyo - Fiscal years 1973-1979.

(1) Le Nouvel Economiste "Spécial 5000" - N° hors série, décembre 1981.

Company financial structures vary considerably between member countries, but there are some common features: On average, EC industrial companies rely more on their own funds than Japanese firms but much less than American ones, while their liquidity seems to be less able to assure the shock-absorber function with the constancy of Japanese firms, especially in the case of bigger corporations.

It is quite clear that in the presence of weak economic performance, unbalanced financial structures, especially in terms of external borrowing, run the risk of amplifying problems for EC industry. On the other hand, US industry can rely on stronger financial bases and Japanese firms enjoy the positive effects of a long-standing financial discipline, certainly favoured by the prevailing lending policies of their financial institutions.

5. Market and industry structures

Market and industry structures have been subjected to profound changes resulting from the double pressure of demand changes and industrial adaptation.

Even in terms of structures, some indicators point to unsatisfactory evidence for EC industry:

- as regards direct investment, the increase of outward flows from EC countries since the mid-60's surpassed that of inward flows. Beyond the positive aspects of the increasing outward orientation of EC investment, these trends could also mean a decreasing interest both of foreign and domestic investors in the EC;
- multinationality of production of EC corporations is weaker than that of the Americans and is much lower if intra-Community production is excluded;
- the recently recorded increase in intra-firm cooperation in the Community was due to national operations, while international operations stayed constant.

Table 34: National and international operations in the Community, by industry, 1977-79

Year	Metal industries				Energy	Chemicals	Textiles	Other manufacturing	Food Industry	Services			Total
	Total	of which: Machinery and mechanical parts	of which: Electrical Engineering	of which: Metal goods (1)						Total	of which: Banking and insurance	of which: Holding companies	
	Number of operations												
1977	634	--	--	--	52	203	101	379	179	772	243	55	2 320
1978	733	--	--	--	56	176	109	380	194	656	182	58	2 304
1979	881	232	163	160	88	217	146	629	225	741	234	44	2 927
	As percentage of total												
1977	27	--	--	--	2	9	5	16	8	33	11	2	100
1978	32	--	--	--	2	8	5	17	8	28	8	3	100
1979	30	8	6	6	3	7	5	22	8	25	8	2	100

(1) Excluding machinery and transport equipment

Source: EC Commission - 1980 Competition Report

As the internationalisation of production for EC companies seems to be accompanied by higher return on sales, delays in this field run the risk of being costly in terms of corporate performance.

The larger size of the firm seems to go together with sales growth of Community companies, but not with the rates of return to sales, which are higher for smaller companies. The increase in the size of Community companies recorded from 1962 to 1977 could then have led to decreasing overall returns on sales of Community industry.

Companies of vastly different size and organisation evidently operate very successfully in the same market and it is in order to approach this question from an agnostic point of view. Large firms benefit from economies of scale, privileged access to resources, and specialisation at the plant level and among senior management. On the other hand, they may also suffer from inertia, costly overheads, problems of communications and motivation and from other quasi-bureaucratic phenomenae.

Small firms benefit from flexibility, the low threshold of rapid growth, good communications within the firms, and the possibility of product specialisation to fit specific niches in the market. On the other hand they suffer from inadequate resources, insufficient information about the economy and the market (when management is not specialised), low R and D and consequently weak technological innovation.

The dilemma of the large firm is that it has the knowledge and finance to innovate but may not have the organisational abilities to do so. The dilemma of the small firm is that it has the flexibility and motivation to innovate; it may not have the resources and the knowledge.

In the past, many large firms have tried to overcome their inherent disadvantages through decentralisation and by creating autonomous "profit centres" in their subsidiaries. This approach is now meeting an opposing trend towards international rationalisation of multinational activities which may reduce subsidiaries' autonomy. This process may be a vehicle for medium-term gains but may result in less flexible structures in the longer term. On the other hand, many small firms have overcome their shortcomings, often with significant help from the public authorities, chambers of commerce or the banks. Thus the predominance of small companies in some parts of the Community is regarded as an advantage.

IV. Company Organisation and Management

In the company the primary responsibility for performance lies with the management, whose function is to combine productive resources with a view to an economic result.

While most of the attention is taken by availability and cost of productive factors, a major risk lies in the neglect of the basic fact that it is business organisation which determines the actual employment, cost and performances of these factors.

There are plenty of examples to show that investment expenditure is not sufficient in itself: it can even be damaging, if it is not chosen, implemented and managed properly.

When analysing manufacturing competitiveness, having moved from the macro to the micro dimension, it is then necessary to take into consideration not only the hardware such as equipment and machinery but also the software represented by corporate management. Indeed, several authors have attributed the leading role in bringing about economic growth to business organisation (1). They believe that the organisational response is not only the basis for daily operations but also the strategic element in coping with fundamental changes in the process of production and markets in modern business, rather than entrepreneurial talents, capital markets or public policies.

Experience proves that important gains, not only in productivity and production costs, but also in market identification, commercial dynamism, financial results and technical innovation can be achieved through organisational and management techniques. One example will suffice: the US Federal Trade Commission has recently estimated that a 50% increase of annual inventory turnover (which has proved to be possible with the adoption of sophisticated inventory control such as the Material Requirement Planning - MRP) from the average level of 7 in 1980 would increase operating income for the typical US manufacturer by about 11% (2). Beyond the organisation, implementation and control of specific phases of the process, the most difficult task is that of harmonising and finalising the entire process - from the research to the commercial phase - with given objectives.

It is certain that organisation, management and strategies are not natural endowments. They can be learned, applied, improved, sold and bought like any other software. This has already happened when, for example, the Japanese went to the US to study American management techniques, and happens even more so today, now that Japanese companies are selling their specific organisational methods back to other industrialised countries.

(1) See A.H. COLE "The Entrepreneur: Introductory Remarks" American Economic Review, May 1968; T. COCHRAN "The Business Revolution" American Historical Review, Dec. 1975;

(2) See C. BERNAN "A Big Pay-off from Inventory Control", Fortune, July 1981.

An evaluation of the Community situation as regards industrial management must first take into account its development.

The function of professional salaried management has developed in the Community much more slowly than in the US for several reasons:

- higher direct involvement of owners in company management: This may create an ambiguous relationship between the actual operational responsibility in the company and the privilege of ownership and probably contributes to the adversary relationships which exist in parts of European industry.

- the national fragmentation of European markets. Professional management has first developed and best performed to deal with mass production and mass distribution problems on very large homogeneous markets. The higher degree of fragmentation and segmentation of European markets has reduced both the interest in adopting new mass production techniques and the incentive to integrate production with large purchasing and marketing organisations;

- different types of institutional arrangements for the firm's property. National differences such as the industry-wide holding in the UK, the cartel in Germany, the industrial financial holding in France, the industrial holding state-ownership in Italy have brought about specific basic modes of operations which did not stimulate transnational inter-changeability of management.

This historical delay is still evident in recent times: by 1970, for example, the divisional structure in which a general office is responsible for measuring performance, planning and allocating resources, and coordinating and controlling the operating units was adopted by 54 of the 100 largest companies in France, by 50 in Germany and by 57 in the UK, compared with 80 in the US (1).

The internationalisation of markets now brings different institutional and organisational structures into direct confrontation.

Among managers, different cultural values and social norms, not to mention economic and political systems, produce different behaviour and goals.

An extensive investigation (over 100.000 cases) has highlighted similarities and differences in many aspects of management style and methods across national boundaries (2).

(1) A.D. CHANDLER JR and H. DAEMS "Managerial Hierarchies" Harvard University Press - Cambridge MASS. 1980.

(2) B.M. BASS - P.C. BURGER "Assessment of Managers - An International Comparison" - The Free Press, New York, 1979.

There is evidence of national characterisation in the greater preference of American and Japanese management for risk-taking together with considerable concern for product quality, two basic assets which contribute to coping efficiently with current competition.

Historical delays and national characteristics have therefore marked efficiency of EC industrial management and imposed constraints on the implementation of appropriate strategic policies.

On the world scene, three approaches seem to be the most effective:

- overall cost leadership
- product differentiation
- market or product focus.

Failure to develop a strategy in at least one of these directions leads to a "stuck-in-the-middle" position which almost guarantees marginalisation.

In this perspective, the need for dynamism and innovation concerns not only product and process, but even more so organisation and management styles. It has, for example, been found that the managerial, structural and operating requirements for innovation and cost-cutting can be mutually antithetical (1). If the applied performance measures are those appropriate to a strategy of cost minimisation, when strategies stress either innovation or quality, manufacturing management linked to productivity and costs is likely to adopt a cost minimisation attitude, therefore drawing the firm away from its stated purpose.

This shows once again that industrial efficiency and competitiveness rely to a great extent on the way in which people and resources are organised within the firm.

The orientation of industrial management appears to differ from one firm to another depending on the priority attached to their responsiveness to market signals and to technical constraints and opportunities of the productive process. Although it is not possible to generalise from this point of view, it does seem that the major Japanese corporations have succeeded in integrating the best of both approaches. They tend to have the most comprehensive strategies, encompassing a world market orientation as well as successful organisation of production including the optimum application of high technologies.

Community companies need to be able to reconcile their own strategies and management methods to the long-term needs of the market and to the necessary flexibility and innovativeness in the productive process, because experience shows that there is a clear link between adaptability and prosperity, even survival.

(1) See amongst others, M.E. PORTER "Competitive Strategy", Free Press - New York 1980.

ANNEX 1

References to Commission Publications

1) Report of the Competitiveness of the European Economic Community (Original title: "Rapport sur la compétitivité de la Communauté économique européenne"), November 1971, by a Commission working group headed by Mr. Pierre Uri.

2) Sector change in the European Economies, from 1960 to the recession. January 1978. Report drawn up by a group of independent experts under Mr. R. Maldague.

3) The economic implications of demographic change in the EC 1975-1995. (June 1978). Report presented by a study group on medium-term economic prospects, headed by Mr. A. Kervyn de Lettenhove.

4) Change in the industrial structure of the European Economies since the oil crisis 1973-78. (Europe - its capacity to change in question). Report of a group headed by Mr. R. Maldague.

5) Structural change in the Community: Outlook for the 1980's. December 1979. Working paper of the Commission.

6) The 5th medium-term economic policy programme; the main medium-term issues: an analysis; published in European Economy, N° 9 July 1981.

7) COM (81) 639 - A Community strategy to develop Europe's industry.

8) COM (81) 540 - The Development of an energy strategy for the Community.

9) COM (81) 583 - Energy and Economic Policy.

10) COM (81) 317 - The European Automobile Industry

11) COM (81) 388 - Commission Communication to the Council on the situation and prospects of the textile and clothing industries in the Community

12) COM (81) 539 - Energy Pricing, "Policy and Transparency"

13) COM (82) 24 - Investment in the rational use of energy.

ANNEX 2

List of Internal Staff Working Papers

	Title	DG
1)	Analyse des parts du marché	II
2)	Interventions publiques et compétitivité	II
3)	Evolution globale des coûts salariaux unitaires Evolution sectorielle des coûts salariaux unitaires	II
4)	La compétitivité: performances de prix et taux de change	II
5)	Competitiveness and the real exchange rate	II
6)	Investment, capital stock and competitiveness	III
7)	Industrial specialisation and competitiveness	II
8)	International direct investment and competitiveness	II
9)	Technological innovation in European industry	II
10)	Energy as a factor of production in manufacturing industry	XVII
11)	Labour and human capital - A comparison of the situation in the European Community, USA and Japan	III
12)	Sectoral performance	III
13)	Economic performance, financial structures and corporate management in European industry	III

ANNEX 3

Reference to the literature

	Title	Author	Date
1)	Industrial Policy in Western Europe	European Trade Union Institute	Nov. 1981
2)	The Competitiveness of European Countries compared to the USA and Japan	UNICE	15 Feb. 1982
3)	Research on Productivity Growth and Productivity Difference: dead ends and new departures	Richard R. Nelson (Journal of Economic Literature)	Sept. 1981
4)	Structural Adjustment Policies in Developing Countries	World Bank (Staff Working Paper 464)	July 1981
5)	Multinational Corporations and National Capital in Italy	Nicola Acocella (from Lo Spettatore Internazionale)	
6)	The Service Sector of the U.S. Economy	E. Ginzberg and G.J. Vojta (Scientific American)	March 1981
7)	Behaviour of Development Groups and Small Firms in the Theory of Oligopolistic Dynamic Equilibrium - Profits, Data, Production Capacities and Entry Problems	Rivista di Politica Economica	1969
8)	Price Behaviour in the light of Balance of Payments Theories	I.B. Kravis and R.E. Lipsely (Journal of International Economics)	Dec. 1977
9)	Report of Industrial Competitiveness	European Management Forum, Geneva	
10)	Evaluation du stock brut de capital fixe industriel dans les Etats membres de la Communauté sur la base des définitions, de délimitations et des méthodes uniformes	Deutsches Institut für Wirtschafsforschung (Berlin)	Nov. 1979
11)	Les performances comparées de l'économie en France, en RFA et au Royaume-Uni	INSEE (les collections de l'INSEE) N° 69	Nov. 1979
12)	Fixed Capital Stock in the United States: Revised Estimates	U.S. Dept. of Commerce (Survey of Current Business)	Feb. 1981

	Title	Author	Date
13)	Private Corporate Capital Stock 1965-79	Economic Planning Agency, Japan	March 1981
14)	Profits and Rates of Return	T.P. Hill (OECD) Paris	1979
15)	"Special 5000"	Le Nouvel Economiste N° hors série	Dec. 1981
16)	The entrepreneur - Introductory Remarks	A.H. Cole (American Economic Review)	May 1968
17)	The Business Revolution	T. Cochran (American Historical Review)	Dec. 1975
18)	Essays of the Theory of Risk Planning	K.J. Arrow (Chicago)	1971
19)	A big pay-off from inventory control	C. Bernan (Fortune)	July 1981
20)	Managerial Hierarchies	A.H. Chandler Jr. and H. Deans (Harvard University Press, Cambridge Mass.)	1980
21)	Assessment of managers - An International Comparison	B.M. Bass and P.C.Burger (The Free Press, New York)	1979
22)	Competitive Strategy	M.E.Porter (Free Press, New York)	1980
23)	Vocational Training in Japan	S. Umetani (Institut für Asienkunde, Hamburg)	1980
24)	Japanese Labour Market in 1990	JERC	1978
25)	Youth Employment and Vocational Training	European Centre for the Development of Vocational Training	1980
26)	The International Operations of U.S. Service Industries	Economic Consulting Service Industry	June 1981
27)	The World's industrial enterprises	Dunning, Pearce (Gower)	1981
28)	Competitivités sectorielles et performances dans l'industrie européenne	B. de Closset	March 1981
29)	Japanese Direct Foreign Investment	S. Sekiguchi (Allenheld, Osmun Co)	1979
30)	The European Community - Problems and Prospects	Cambridge Economic Policy Review	Dec. 1981

	Title	Author	Date
31)	Report of the President on US Competitiveness	Office of Foreign Economic Research U.S. Department of Labor	Sept. 1980
32)	A Constant Market Share Analysis of U.S. Export Growth: 1962-1977	H-P. Bowen and J. Pelzman	1980
33)	The Meaning and Significance of U.S. Price Competitiveness	R.F. Mikesell	-
34)	Industrial Prospects and Policies in the Developed Countries	Bela Balassa	April 1981

ANNEX 4

Methodological and Statistical Problems

This note refers to the principal problems encountered in using and interpreting statistics of the kind which are used extensively in this report.

Aggregation problems: the aggregate data for a group of countries (as in the Community) or a group of firms (as in a "sector") masks the disparities within the group.

Index number problems: the best way to illustrate trends is often to use an index number. But if the composition of the variable changes (as in an export price index), then the validity of the index is vitiated.

Exchange rate changes and inflation affect international comparisons. Data which is corrected to constant prices and exchange rates do not necessarily reflect differences in purchasing power.

Sampling problems: some of the data used in the report is based on statistical samples. In this case the results may be much less significant for small samples (for example a few companies in one country) than they are for the sample as a whole.

Furthermore some of the industrial data excludes small firms, and this to different degrees in different countries.

Accounting conventions: Comparing corporate data is bedevilled by different statistical and accounting conventions concerning the classification of companies' assets, their profitability and the amortisation of their investments.

Differences in definition give rise to particular difficulties in relation to the definition of "sectors" or product groups. It is important to appreciate this because so much industrial information is classified by "sectors",which at first sight appear to be unique and common-sense concepts.

The concept of an industrial sector is useful in so far as sub-groups of industrial activities can be expected to perform in many respects in a similar way. In practice, it is very difficult to delineate the boundaries of individual sectors. The definition of the "same" sector often varies between different countries and especially in this context between Community countries and third countries. The Community also has an internationally unique definition of the iron and steel industry (ECSC) which extends to some Community statistics.

The analysis of the performance of industrial sectors depends to a considerable degree on the availability of a sufficient range of accurate and comparable statistical data. However, both the quantity and quality of the statistical data which is available is often inadequate. The main weaknesses of official industrial statistics concern:

- the limited availability of disaggregated harmonised data at the international level. Disaggregated and detailed statistics often exist on national level, but then not harmonised and not comparable between countries.

- the different bases on which statistical data is produced (for example, some data is product based, e.g. prices and international trade; some data is establishment or enterprise based, e.g. employment and investment). The conversion from production value on nomenclature to another can be done but only on a rather aggregated level.

- the considerable time-lag which usually exists between reference year and the publication of much of the structural data.

Taken overall, these statistical difficulties mean that the quantitative information tends to suggest greater homogeneity and stability than is in reality the case. In the Community we know that there are vast differences in industrial performance in the same sector in different Member States. These differences do not always appear from the statistical data. On the other hand, analysis which tries to take account of them tends to become either impressionistic or extraordinarily detailed.

ANNEX 5

Definitions of product groups used to examine shares of OECD[1] imports

(Chapter II A 2)

SITC Rev. 1	Product group
251	Pulp and waste papers
2662	Synthetic fibres
512	Organic chemicals
513	Inorganic chemicals
541	Pharmaceutical products
561	Manufactured fertilizers
581	Plastic materials, regenerated cellulose and resins
641	Paper and paperboard
652	Woven cotton fabrics
656	Made-up articles of textile material
67	Iron and steel
7114	Aircraft engines
7115+7326+7327+7328	Motor vehicle bodies, engines and parts
7151	Machine tools for working metals
7321	Passenger motor cars
7323	Lorries and trucks
735	Ships and boats
8411+8412+8413+8414	Clothing and accessories

(1) OECD countries not including Yugoslavia, New Zealand and, for 1980 only, Turkey.

ANNEX 6

Classification of selected high technology sectors: Standard International Trade Classification (SITC) Revision 2 for 1980 Revision 1 for 1963 and 1970 data

SITC 2 CODE 1980	Description of Product Sectors	SITC 1 CODE 1963/70
523	Other inorganic chemicals; organic and inorganic compounds of precious metals	514
524	Radio-active and associated materials	515
541	Medicinal and pharmaceutical products	541
741	Engines and motors non electric (reaction, gas turbine, turbo-propellers)	-
716	Rotating electric plant	-
718-7	Nuclear reactors	711-7
736	Machine tools for working metal	-
752	Automatic data processing machines incl. peripherals	-
761	Television receivers	-
763	Gramophones and other sound recorders	891.11
764	Telecommunications equipment	-
771	Electric power machinery other than 716 above	-
773	Equipment for distributing electricity	723
774	Electric medical apparatus incl. radiology	726
775	Household electric equipment	-
776	Valves, tubes, diodes, transistors, microcircuits	729.3
781	Passenger motor-cars	732.1
782.1	Motor vehicles for transport of goods	732.3
791.1	Electric rail locomotives	731.2
792	Aircraft and equipment parts	734 899.99
871.0	Optical instruments and apparatus	861.3
872.0	Medical instruments and appliances	861.7
874	Measuring, checking, analysing, controlling instruments	729.52 861.9
881.1	Photographic cameras (other than cine)	861.4
881.2	Cinematographic cameras, projectors, incl. sound records	861.5
882.2	Photographic film and paper	862.4
884.1	Lenses, prisms and other optical elements	861.1
885	Watches and clocks	864

This list provides the most comprehensive coverage of high technology products possible, within the limits of SITC revision 2.