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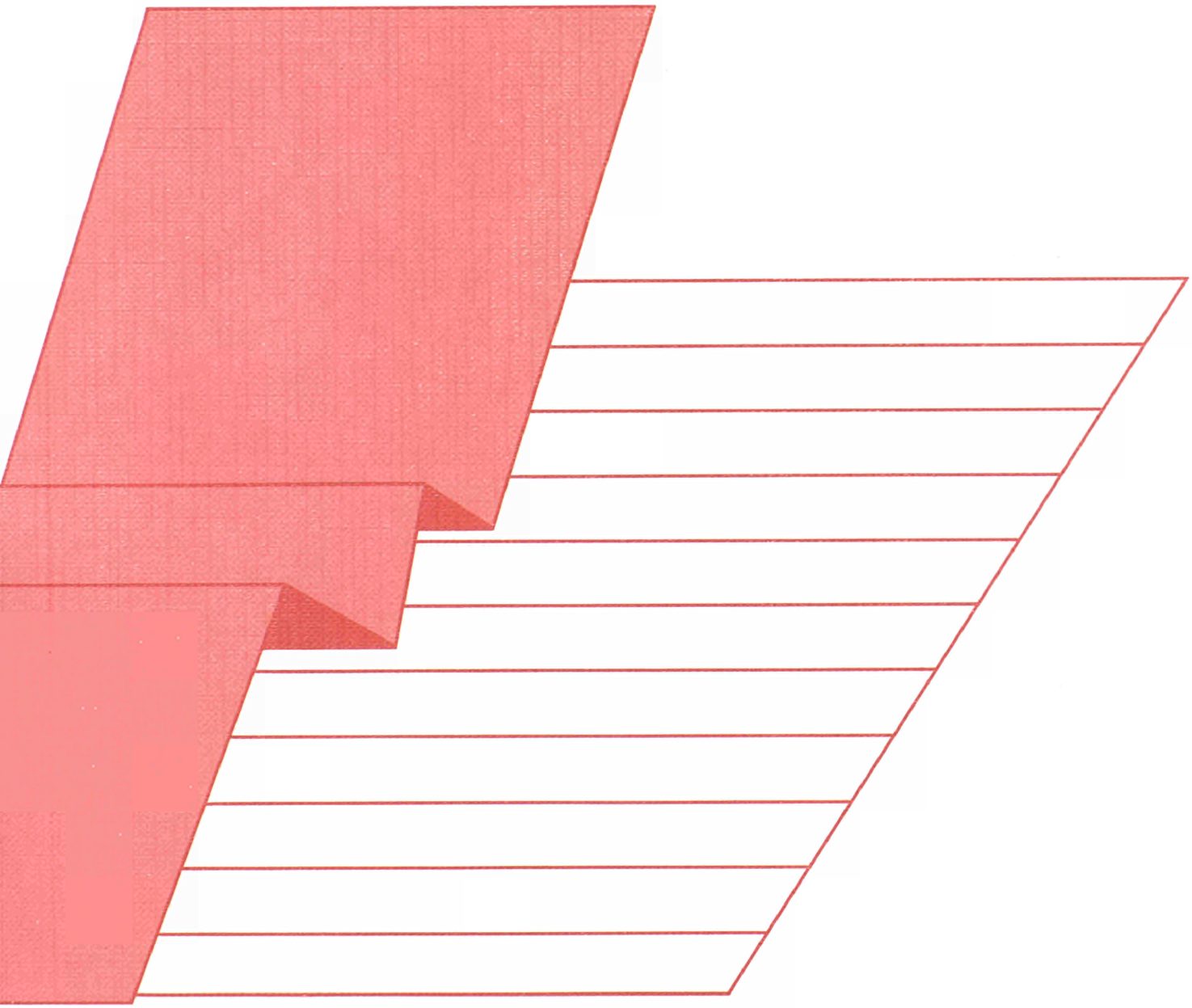
STATISTICAL ANALYSIS OF EC TRADE IN INTERMEDIATE PRODUCTS



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Y. Franchet
Directeur général

STATISTICAL ANALYSIS OF EC TRADE IN INTERMEDIATE PRODUCTS

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Paris, March 1996

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Luxembourg: Office for Official Publications of the European Communities, 1997

ISBN 92-827-7456-2

Printed in Spain

Printed on white chlorine-free paper

CONTENTS

Synopsis

The reorganisation of production on a world basis and no longer on a national one has resulted in a globalisation of the world economy. Chapter 1 of this report stresses that firms are supplying the world market on the basis of a new link between products and production processes. Supply policies sometimes make use of remote suppliers; a small number of standard subassemblies produced on a large scale may be combined into a great variety of finished products; finally, components, and even subassemblies, are made in production units in a variety of countries and then traded internationally before being assembled; this is particularly the case of intra-firm trade. Overall, finished goods have a large international trade content even before they are themselves possibly exported or imported.

This reality has brought about a revision of international trade theory, the chief outcome of which is the existence of a specific gain for trade in intermediate goods: vertical specialisation (in segments of processes) rather than horizontal (in processes as a whole) increases the benefits of international integration. This reality has also encouraged the development of empirical works such as this very report. Two distinct methodologies can be used to identify trade in intermediate products, the one using international trade statistics, the other the input-output tables (IOT).

Using the first of these methods in Chapter 2, we aggregated a very detailed nomenclature (5000 products) on the basis of assumed use: primary products, processed products, parts and finished products. Flows are then classified into two "envelopes": first, "intermediate" products comprising the first three categories and, second, finished products intended for final use for consumption or investment.

Chapter 2 seeks to use this method to compare the relative performance of four declaring zones in 1992: the EC, EFTA, the United States and Japan. Here, the European Community and the European Free Trade Association are considered as economic entities and their intra-zone flows are excluded from the analysis. Non-declaring partners have been grouped in such a way as to reveal any vertical division of labour between or within the three large geographical regions: the Eurafrican region organised around the EC, the American region and Asia-Oceania, whose economic poles are the United States and Japan respectively.

The weight of trade in intermediate products is considerable; it accounts for more than half the trade between the zones in question in 1992. There is a degree of similarity between the breakdowns by productive stage of the overall balances of the European Community and Japan: the deficits are upstream of the production process (primary and processed products), whilst the surpluses tend to be downstream (parts and final goods). For EFTA it is the other way round. Likewise, the United States is very much in deficit in finished products.

So far as the positions by market are concerned, that is the measurement of competitiveness between zones on a given market, Japan seems to be a special case: in those industries where it is strongly placed, this country remains the most competitive at every stage involved. Although the other three zones show the highest surpluses in some industries, they do not occupy first place at every stage: they dominate only those whose weight is preponderant within the industry in question.

The specialisation by the four zones shows that the EC's and EFTA's involvement in international trade is regional in the first instance. The Community's overall specialisation is shaped by the nature of its relationship with the Eurafrican region: very much at a disadvantage in primary products, the EC has comparative advantages that increase with the value-added content of the goods traded. This specialisation profile changes completely with the other two regions. At its strong points, the Community generally has comparative advantages at every stage. Outside its special relationship with EFTA, it makes a vertical division of work only when in a position of overall disadvantage. Textiles, one of the EC's weak points, are a typical case: although at a great disadvantage vis-a-vis the Mediterranean countries downstream, the Community enjoys a relatively strong position compared with them in processed products.

The Community is EFTA's largest trading partner by far, and the weight of this relationship on a regional scale is such as to condition the Association's overall specialisation profile, with strong points upstream (primary and processed) and weak ones downstream. The vertical division of tasks between the two units is particularly marked in the case of cars.

All partners taken together, the comparative advantages of the United States are concentrated in the middle of the production process, in processed products and especially in parts. However, this overall specialisation profile covers situations that differ greatly according to the three geographical regions, and the advantage of reasoning by stage of production is manifest: the comparative disadvantages in final goods, America's main point of weakness, are derived essentially from the Asia-Oceania region. Like the EC, the United States organises a vertical division of tasks at international level only for those industries in which it is at an overall disadvantage. Textiles are again an example in relations with the NICs (newly industrialising countries) and the large countries of Asia, but the most representative is without doubt the division of labour between the United States and the other two members of NAFTA in private cars.

Japan, which is highly disadvantaged upstream (primary and processed) and advantaged downstream (parts and finished products), keeps the same configuration of comparative advantages by stage vis-à-vis all of its partners. In each of the three regions in question, the most dynamic and the most industrialised zones make a consistent positive contribution to the region's trade balance. Japan's specialisation therefore leaves little room for a logic of division of labour with its partners. At its weak points, Japan is most often at a disadvantage at all stages and vis-à-vis all of its partners.

In its final section, Chapter 2 shows the importance of "intra-industry trade" for the four declaring zones, and in particular for the countries of the European Community. This observation is valid to varying degrees for all stages, for both intermediate products and final goods.

The first part of Chapter 3, the last chapter devoted specifically to the EC, completes this approach: it analyses "intra-industry " trade, making a distinction between horizontal and vertical differentiation (reflecting a difference in quality). It breaks international trade down into different types on the basis of two criteria - the amount of "overlap " of bilateral trade at a fine level and the "similarity" of the unit values:

- two-way trade in similar products (intra-industry trade in products differentiated horizontally) ;
- two-way trade in products differentiated vertically ;
- one-way (inter-industry trade).

Unlinked trade represents two thirds of trade with partners outside the Community, but only one third within the EC. This means that even at this detailed level of analysis, the counterpart of unlinked flows - "crossed trade" - still does not disappear. On the contrary, an analysis covering several years shows that unlinked trade is declining in favour of the other two types of trade. This is a specialisation that operates *within* products as defined in the nomenclatures, with a 45% share of vertical differentiation and 20% of horizontal differentiation. In intra-Community relations, this phenomenon therefore seems to be a structural trait, reflecting a very fine specialisation associated with the specificity and diversity of demand from "users", that is consumers in the case of consumer goods and producers for intermediate and capital goods.

A question frequently raised in discussions on the experience of regional integration in Europe concerns the integration scenario for the less advanced countries of the European Community: do we find *inter*-industry specialisation - with even greater complementarity between those countries and the richer ones - or *intra*-industry specialisation favouring a convergence of economic structures? Generally speaking, in their bilateral relations the countries of the "hard core" engage in much more crossed trade between themselves, whilst the "South of Europe" is more involved in unlinked trade. Similarity in levels of development between trading partners seems to favour crossed trade, especially trade in products of different quality. Geographical proximity also plays an important part, however, especially when we look at neighbours such as Spain and Portugal or Ireland and the United Kingdom, for example, which have a considerable amount of crossed trade. In the case of France and Germany or the BLEU and the Netherlands, the principal form of integration is more difficult to interpret, given the possible interpenetrations of geographical proximity and per capita income.

Finally, the importance of crossed trade in vertically differentiated products brings us back to the question of the quality segments in which trade takes place. Despite there being specific national circumstances for a particular industry, the *import* structures for each range are very similar among the member countries of the EC, suggesting that modes of consumption at this overall level are very much "harmonised" in Europe. The situation is quite different for *exports*: in the "North", in Germany in particular, top-of-the-range products account for more than half of exports.

In the "South", on the other hand, most of the exports of Greece, Portugal and Spain are bottom and middle-of-the-range products.

The final part of Chapter 3 uses the Input-Output Tables, the second of the methods mentioned at the beginning of this synopsis, to look at the coherence of regional productive systems: are most intermediate imports made in connection with intra- or extra-regional trade? In the case of the European Community over the period 1959-1991, it appears that the vertical division of labour developed greatly in Europe, but primarily on a regional basis.

Chapter 1 : Regionalisation and Trade in Intermediate Goods

The globalisation of the world economy is seeing production processes reorganised on a regional or even a world basis rather than a national one; firms are seeing their relationship with their country of origin growing increasingly tenuous as they supply a world market, widening their choices of location; flows of foreign direct investment, international subcontracting agreements and strategic alliances are allowing production units to become increasingly specialised. The importance of returns to scale, which requires reducing the number of production units, and the need to standardise processes upstream while differentiating downstream to meet consumers' demand for variety, combine to make necessary *new ways of structuring products and production processes*. The components of the final products, or even of subassemblies, are made in production units located in different countries and are then traded internationally before being assembled; a limited number of subassemblies produced on a large scale can be combined into a great variety of finished products. In all, the finished products already have a high "international trade" content before themselves possibly being exported or imported.

This phenomenon has justified a rewriting of international trade theory, seeking to take account of trade in "work in progress". At the same time, a revival of empirical work seeing trade in "unfinished" products as a specific subject of study has highlighted the quantitative importance of this type of trade. This report forms part of this second field of investigation.

Particular attention will be paid to the "regional" dimension of trade in these "middle products", referred to here as "intermediate goods".

We shall begin, therefore, with a **definition**. *The term 'intermediate good' will be used for any manufactured good that is reintroduced into the production cycle and disappears during that cycle.* Broadly speaking, this stage includes both raw materials and basic manufactured products or finished intermediate goods (components, parts, sections, segments, modules, etc.). For present purposes, we shall take a narrower definition that excludes primary products. Finally, there should be no confusion with capital goods, which do not disappear in the production cycle (cf. box 1).

This definition has *de facto* an operational content: since intermediate goods are defined by the fact that the production processes are interrupted by international trade, we need to propose empirical methods that will be consistent with that definition. Ideally, three approaches to the problem can be considered:

- *survey*: we can use individual data from firms concerning international trade internalised or conducted as subcontracting, combining data from surveys (destination and nature of products) with individual customs records. The precise identification of products and their destination (resale unchanged, processing, etc.) at a microeconomic level, the possibility of combining them with databases providing explanatory variables (value added, profitability, innovation, etc.) make it an ideal investigation tool. Unfortunately, there are few such databases in Europe and they are very incomplete[1]. The other, more or less complete, databases on intra-firm trade are mainly American or Japanese, and the individual firm data is not easy to get hold of.

- *input-output*: a symmetrical solution would be to work on large industries (tracing groupings of fractions of enterprises rather than of enterprises)[2] identifying the inter-industrial relations between those industries. A measurable fraction of these relations passes through international trade, and in the case of the European Community either between member countries or with third countries. We then trace the intermediate goods by the (intermediate) *intended use*[3] of the goods traded. This method has the advantage of reliable principles of calculation and relatively well fed databases, but it also has the drawbacks that the industries are insufficiently disaggregated and there is a considerable delay before the figures are published.

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1 The Internationalisation Survey carried out by the *Service d'Etudes des Stratégies et des Statistiques Industrielles* (Strategic Studies and Industrial Statistics Service) - SESSI - in France is a model of the type, but it deals only with France in 1993 and will not be repeated on a regular basis.

2 The criterion is in fact the product, not the principal activity; no work is done on sectors.

3 Utilisation.

- *ad hoc aggregation of customs data*: this means adopting a halfway house strategy, using highly disaggregated trade flows (6-digit classification or some 5,000 products) and making a *technical identification* of the nature of those products. One particular electronic product will be a component, another a finished product, etc. Then, defining four categories - primary, processed, part, finished product - in ascending order of value added, the flows traced will be classified into two "envelopes": first, finished products intended for final use, consumption or investment, and, second, other "unfinished" products, called "intermediate" products[4].

Box 1
Some errors of interpretation to be avoided

1 - Production nomenclatures often adopt a definition of intermediate goods that is incompatible with our approach. Thus, in the case of France, the Nomenclature of Activities and Products (NAP, in force until 1992) has, at level 15, a heading "intermediate goods"; this does not cover our much broader definition based on the criterion of *intended use* or *technical* nature of the products. For the record, item U04 of NAP15 combined the production of ferrous ores and metals, the first-stage processing of steel, the production of non-ferrous ores, metals and semi-manufactures, the production of building materials and various minerals, the glass industry, basic chemicals and artificial and synthetic fibres, the paper and board industry and the rubber and plastics processing industries. The importing of electronic components by the electronics industry is not, therefore, trade in "intermediate goods" within the meaning of NAP15. On the other hand, the *intended use* approach sees it as including the imported intermediate consumption of the electronics industry, and the *technical* nature of the products approach sees it as including the importation of an "unfinished" product, both cases leading to the diagnosis of an "intermediate" import.

2 - In the German Input-Output Table, Germany's exports to France are shown as a final use for that country. However, they are not necessarily "finished" products, far from it: a not inconsiderable portion of those exports will be reintroduced into production processes in France and will, from the French point of view, be "intermediate products". According to the logic of "intended use", "intermediate goods" ought therefore to be seen from the point of view of the importers, not of the exporters.

3 - Capital goods[5] are reintroduced into the production process by the purchaser and more particularly by the importer so far as we are concerned. However, they are not intermediate goods, since they do not disappear in the production process. In accordance with our definition, they will therefore be classified as final goods.

The second track of empirical research is, despite its failings, useful for taking a long term view of trade in intermediate goods, in this case over the period of European integration, so as to trace the basic trends, the structural elements. This can however be only one stage, so we shall give it only a small place in our discussion of this input-output method.

The heart of this report lies elsewhere: in the original exploitation of Eurostat's external trade database. We "classify" the basic flows, observed at the finest level of the nomenclature, according to the technical nature of the products. This method, which had never been used on such a scale before, allows us both to trace the trade in intermediate goods of the large regional blocks and to make a more particular study of the European case. To make our findings easier to read, the level of aggregation chosen to present them is itself relatively aggregated, 14 industries, but - as will be reiterated further on - always starting from disaggregated data.

Combining these two approaches allows us to take account of the new ways in which Europe is becoming involved in an international division of labour that is strongly characterised by the twin movements of globalisation and regionalisation of the world economy.

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4 Primary products are often traded on the basis of unavailability: energy, ores, etc. One might then wish to exclude them from intermediate goods in econometric work. See for example Fontagné-Freudenberg-Péridy-Ünal Kesenci [1995].

5 "Capital goods".

1.1. Determinants of trade in intermediate goods

The conventional approach of international trade theory, of looking for the factors determining trade in goods intended for final consumption, cannot explain the empirical evidence of major flows in intermediate goods.

There has been a lot of work demonstrating this shortcoming. For example, Aw and Roberts [1985] showed that imports from the NICs were a production factor complementary to the American factors, starting from an appraisal of functions of production; Lassudrie-Duchêne, Berthélemy and Bonnefoy [1986] establish that, structurally, "productive" imports represent two thirds of French imports, using INSEE's AVATAR model. UNIDO [1985], for its part, notes that cases where a country has a comparative advantage for all stages in a production process are extremely rare: most often, *export performance rests on intermediate imports*.

These empirical observations show that there is a need to "refine" our understanding of the comparative advantages underlying international trade[6]: a country may, for a given industry, have an advantage, then a disadvantage, then an advantage again, as we move from upstream to downstream in the same production process. There is then a *reversal of the (revealed) comparative advantages* along the production spectrum, and the comparative advantages are *vertical* in nature (cf. box 2). By contrast, *horizontal* comparative advantages will be defined by the existence of an advantage for each successive stage in the same process.

6 If we accept the idea that trade structures are determined by countries' comparative advantages, a point of view that could be enriched by other analyses where products are differentiated; we shall come back to this.

Box 2
What is a "reversal of comparative advantage"?

In general, production operations can be considered to be split by international trade in intermediate goods when the conditions of comparative advantage reverse along the production process; we then speak of a "vertical" comparative advantage. Consider, for example, a world with two countries, A and B, producing two finished goods 1 and 2, each involving an upstream process M and a downstream process V, i.e. M1, V1, M2, V2.

When country A has an advantage for M1 and V1 and B for M2 and V2, in A's case international trade will consist of exporting the finished product 1 and importing the other finished product from B (case 1 in the table below). We then speak of a *horizontal* advantage because it covers the entire spectrum of production.

If, on the other hand, A has an advantage for the upstream segments of the two goods (M1 and M2), because they are very capital-intensive, for example, and a disadvantage for the labour-intensive downstream segments, A will export two intermediate goods and import two finished goods (case 2). There is then a *vertical* comparative advantage[7].

	Comparative advantage		Stage of production: Upstream (M)	Downstream (V)
Case 1	Horizontal	Product 1	+	+
		Product 2	-	-
Case 2	Vertical	Product 1	+	-
		Product 2	+	-

Note: Comparative advantages (+) or disadvantages (-) of country A in relation to country B.

In an empirical multi-product/multi-stage/multi-country approach, many configurations of comparative advantage can be observed, corresponding to the two standard structures of comparative advantage just mentioned. Thus, the same country may have *horizontal* comparative advantages/disadvantages for some products and *vertical* ones for others.

The determinants of international trade in intermediate goods must be sought both in the conditions that permit the splitting of production processes and in the choices of location made by firms and the logics of macro-economic specialisation.

The conditions permitting this are related to technical early considerations; in short, firms are now designing products and processes interdependently, so that certain "subassemblies" can be produced independently and then assembled close to the markets. Monographs on these issues abound: the strategy developed by Ford-Europe for the launch of the Ford Fiesta and pursued since is often cited as an illustration of this logic.

The factors determining the location of firms and the macro-economic advantages are similar to those for finished products when viewed at the level of the process segment, or the intermediate good, rather than at the level of the finished product: it is a matter of the technology or factor content of the activities concerned. Thus, once technical conditions allow them to be separated from the rest of the process, segments that are labour-intensive will tend to be located in low-wage economies, subject to the constraints of transport costs between production units corresponding to the different stages. Likewise, innovative segments will tend to be located in economies with a strong R&D activity, etc.

7 Note that exporting finished products (as B does here) does not in itself guarantee a horizontal comparative advantage. This suggests that a country's apparent performance in international trade (B is apparently specialised in 1 and 2) diverges from its effective performance once intermediate goods are traded internationally.

1.1.1. Specific gain from trade in intermediate goods

This awareness of the importance of intermediate goods in empirical work was preceded by a number of theoretical advances[8]. Thus, back in the fifties, trade policy analysis developed the principle of effective protection: a tariff upstream of the process "deprotects" the value added by the industry concerned. The importance of inter-industrial relations and the vertical structure of customs tariffs have to be taken into account in assessing the impact of trade policies. Finally, it is well known that granting tariff concessions while reducing protection for the upstream processes amounts to the same as strengthening the protective nature of the trade policy of the country granting the concessions.

So far as the analysis of the determinants of trade is concerned, the methodological difficulties involved in taking account of the interruption of production processes by trade have been raised by McKenzie [1954], but it was Vanek [1963] who made the problem a subject for study in its own right. Various representations of production processes were then used in the literature, seeking to account for the possibility of splitting production processes by international trade in intermediate goods (cf. box 3).

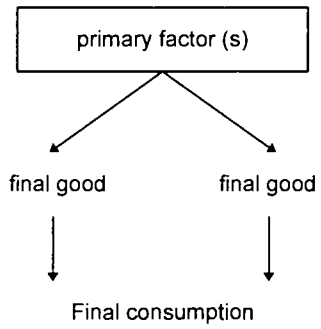
In a Leontief-style circular logic, part of the output of each good is used as intermediate consumption by one or more other industries: every good is at one and the same time both input and output. The primary factors[9] are internationally immobile, unlike manufactured inputs. In a simple model with two countries, two factors and two goods, the main results of traditional models can then be reproduced.[10]

8 For a detailed presentation, cf. Fontagné [1991-b].

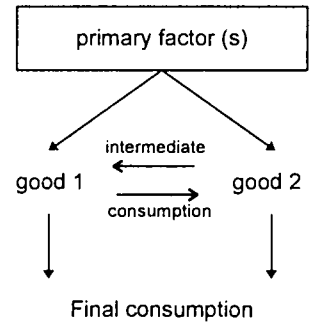
9 Unlike "manufactured" production factors, i.e. intermediate goods.

10 It is therefore relatively unimportant, in this context, whether we argue in terms of apparent or effective comparative advantage: the effective capital intensities of the goods are ranked like the apparent intensities. The big theorems (Heckscher-Ohlin, Lerner-Samuelson, Stolper-Samuelson) remain valid.

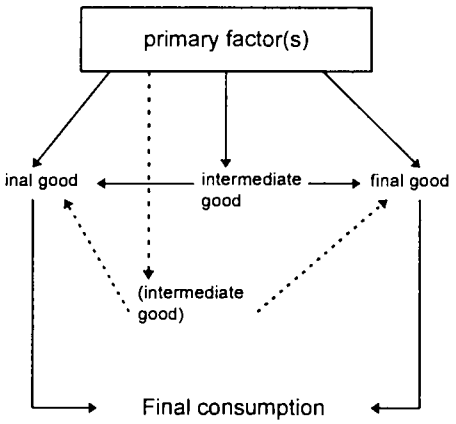
Box 3
Representations of the production process in international trade models



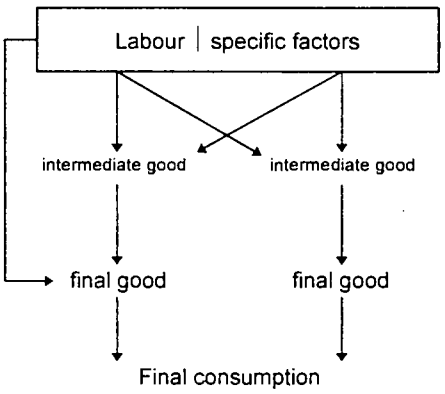
in conventional models of international trade
RICARDO, HECKSCHER-OHLIN...
Trade does not interrupt the production process.



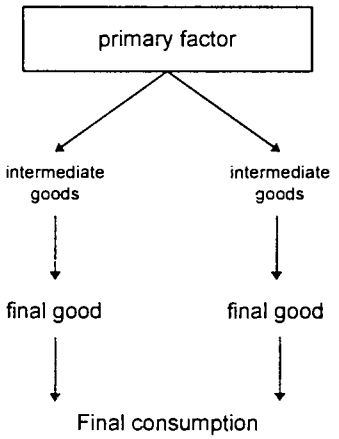
in "circular" models
VANEK, BATRA-PATTANAIK, CASAS, DER...
Every good is both an input and an output: whether final or intermediate goods are traded is unimportant.



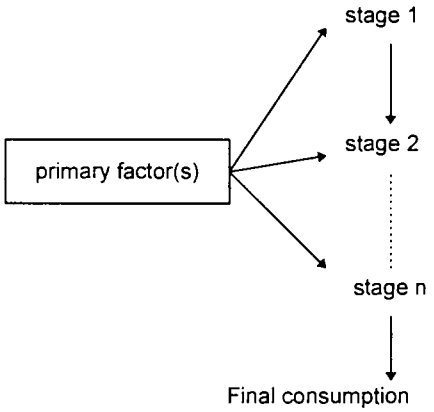
in models with "pure" intermediate goods
BATRA-CASAS, KIM. Intermediate goods, which may be traded, but need not, must be produced before producing final goods.



in sequential models
1. SANYAL-JONES. Trade is only in intermediate goods. Final goods are assembled close to the places of consumption.



in sequential models
2. LASSUDRIE DUCHÊNE-BERTHELEMY-BONNEFOY, FONTAGNE. Analysis is made of the distinction between trade in final goods or in intermediate goods. Where there is a vertical comparative advantage, trade in intermediate goods is the source of the increase in the gain from trade as compared to a situation where only final goods are traded. We speak of a specific gain from trade in intermediate goods.



in sequential models
3. SANYAL, DIXIT-GROSSMAN. The process, referred to as a continium, is split at just one "point" and each country specialises in that fraction of the process for which it has a comparative advantage (vertical, therefore). A specific splitting up gain appears and trade is in middle products.

Source: after Fontagné (1991)

A second theoretical option, on the other hand, involves giving precedence to the *sequential* dimension of the production process[11]: intermediate goods are required to produce final goods, but the latter cannot act as inputs: some goods are therefore *pure* intermediate goods. Because this solution comes close to the reality of a production sequence, it is logically the next stage in considering the specific nature of trade in intermediate goods[12].

The seminal paper by Sanyal and Jones [1982], putting the emphasis on the international division of labour splitting the processes of production, therefore makes a methodological break: intermediate goods are "Middle Products" and trade in these goods derives primarily from an interruption of the production process. The two authors give a refined version of this new context: only intermediate goods are now traded, final goods being assembled in each country to satisfy domestic demand alone.

This sequential logic is found in models where the production process is organised as a *continuum* of segments: assuming there is a monotonic relationship between the stage in the production process and the degree of comparative advantage, trade is then conducted in goods *along the same production process*, countries specialising according to one's *vertical* comparative advantage. Similarly, but using a discrete set of segments, the Ricardian model of Lassudrie-Duchêne [1985] shows that a vertical comparative advantage generates trade in intermediate goods, whilst trade in final goods is explained by a horizontal comparative advantage (see box 2).

All this work brought us steadily closer to what is today considered a standard result: the refinement of the operation of the comparative advantage afforded by trade in intermediate goods and therefore by the splitting of production processes by international trade, is the source of a specific gain.

If the structure of the comparative advantages is vertical, this can be illustrated by a larger output under constraint of resources or symmetrically by a reduction in the cost, in terms of resources, of obtaining a given output. *This gain is then the result of international differences in the efficiency of resource allocation appearing between segments of production processes rather than between industries.* Overall, when based on comparative advantages[13], trade in intermediate goods is the source of a specialisation gain of the same kind as that produced by moving from autarky to free trade in final goods.

1.1.2. Variety of intermediate goods and growth

All the findings referred to above bear the stamp of a rewriting of *conventional* theories of international trade: trade flows are determined by comparative advantage, international trade is based on country specialisation, and this implies a fundamental reallocation of resources from industry to industry. As we know, however, conventional international trade theory has been called into question in favour of taking account of growing yields, the imperfection of competition and two-way trade in similar products.

What of the status of intermediate goods in this "new international trade theory"? The central difficulty here is the necessary postulate of differentiation of intermediate goods, which comes up against the empirical evidence of standardisation of upstream processes by firms; differentiation is pushed downstream so as not to jeopardise economies of scale. However, at the level of the economy, differentiation of intermediate goods is a source of efficiency given the differentiation of the needs of producers using these inputs. More variety upstream will increase efficiency in the use of resources, like the gain in variety obtained by final consumers.

Krugman and Venables [1993], for example, propose a stylised version of this reasoning in an economic geography model: an aggregate of differentiated intermediate goods is combined with a composite factor ("labour") within firms'

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11 The second theoretical option, adopted by Ruffin [1969], Casas [1972], Batra and Casas [1973] and Kim [1988] brings the theory closer to the reality of a discontinuous process. Sanyal and Jones [1982], Lassudrie-Duchêne [1985] and Lassudrie-Duchêne, Berthélémy, Bonnefoy [1986] followed the same route: a primary factor, or a generic factor plus a specific factor, are used both to produce pure intermediate goods and to assemble them at the final stage. The same principle, extended to n segments, is found in Dixit and Grossman [1982], Sanyal [1983] and Marjit [1987].

12 However, like Batra and Casas [1973], we are then up against a problem of dimensionality. This problem is connected with counting the relative number of goods and primary factors in the model. Adding intermediate goods here creates an "excess" of goods, which presents a problem for determining trade structures from the differences in systems of relative autarky prices of the countries' autarky.

13 On *vertical* comparative advantages and not on trade policy hindrances.

production function. The aggregate of intermediate goods is obtained by aggregating the different varieties produced by the different producers in monopolistic competition. The quantity of composite intermediate good required to manufacture a unit of finished products declines in scale because of the existence of a fixed cost in production. The growth in the number of varieties then increases the efficiency of the productive combination. There are therefore variety gains for *producers*, too.

Finally, intermediate goods may also play an important role in endogenous growth models.

Without going into the formal details of all these approaches here, the following lesson may be drawn from this theoretical rewriting: just as consumers gain from being offered greater variety, their individual needs for difference, quality and diversity being better met, international trade will afford producers a greater variety of specifications for the goods they reintroduce into their production processes. This improves the efficiency of their productive combination and may be likened to an innovation. At macro-economic level, this innovation dynamics is at the origin of a growth gain, whilst at micro-economic level the competitive positions of benefiting firms are strengthened.

1.2. Trade in intermediate goods and regionalisation

The discussions above have outlined a virtuous circle in which the vertical division of labour between countries, be it on the basis of the large conventional determinants associated with location or on that of growing yields and variety, creates a specific gain as compared to what would be obtained from trade in finished goods alone. This specific gain in turn boosts growth and therefore trade and therefore specialisation...

We should not therefore be surprised that trade in intermediate goods occupies a prominent place in international trade and has accompanied the dynamic growth associated with European integration. However, this virtuous circle may find itself in conflict with a different logic: that of globalisation, transcending regionalisation strategies and dislocating European supply in some sectors that are key sectors for growth. Regional integration is then confronted with the problem of the vertical complementarity of comparative advantages.

1.2.1. Vertical complementarity of comparative advantages and regional integration

The multilateralisation of the world economy, of which the completion of the latest round of GATT negotiations and the setting up of the WTO are obvious signs of progress, must not cause us to forget that economies are at the same time merging into large economic areas: Japan is shaping its immediate economic environment; the United States, Canada and Mexico were careful to take account of trade in intermediate goods when setting up NAFTA, hence strict rules of origin that are potentially highly discriminatory against third countries ...

Hand in hand with the multilateralisation efforts and despite some initial thought given to the need for free trade *between* regional areas, trade tensions repeatedly arise in sensitive sectors: the motor industry, agriculture, fishing, services, etc. Thus, the organisation of rational free trade between regions ("managed trade") contrasts with the desire for complete intra-regional free trade.

If each region has within it a diversity of comparative advantages and technological competences enabling the different segments of the productive spectrum to be "covered" regionally, regionalism and multilateralism will not be opposed to one another. The diversity of national situations and the expansion Southwards seem to confirm that this analysis is well-founded in the case of Europe. Unfortunately, in some particular cases to be mentioned in this report, things are different. The Region is then a vast market within which products circulate freely, but it lacks the vertical complementarities of supply.

1.2.2. Intermediate goods and limits to regionalisation

The process of European integration has opened up a vast area to the circulation of goods intended for final consumption by households and administrations and to investment by enterprises. Consumers have been offered a greater variety of goods, while major economies of scale have been achieved. At the same time, investors have been able to obtain capital goods of a specification closer to their needs. More recently, the abolition of non-tariff barriers to trade has increased the pressure of competition on the European market, proof of greater efficiency in the allocation of resources.

More fundamentally, however, economic integration has encouraged the linking of productive operations within the European Community, leading to the development of trade in intermediate goods, components, parts, or work in progress, between production units in different member countries. This *splitting up of production processes* within the EC has, moreover, been going on for a long time, micro-economic strategies having preceded the political choice to complete the Internal Market.

Nevertheless, being now faced with the globalisation of the world economy, will firms operating in the countries of the Community now use the single market simply as an area for circulating final goods, or will they succeed in strengthening the vertical complementarity of the various member countries' supply structures?

This question must not be approached simply by considering the specialisation of countries in final products: the theoretical and empirical progress made in trade in intermediate goods make obsolete any argument of the kind "France ought to abandon telephone and concentrate on the food industry". Production processes are largely fragmented, in the food industry as well as in manufacturing; we shall thus find a marked vertical division of labour in dairy produce, especially in Italy. The problem is therefore much more whether France has an advantage, upstream, in aircraft assembly or Germany in synthetic fibres.

Analysis of European trade in intermediate goods will therefore enable us to tackle head on the question of the cohesion of European production structures. We shall have to assess whether the international division of labour in which Europe is engaged is based on a *regional* complementarity of comparative advantages and technological competences. On a more trivial level, will the strengthening of intra-Community competition resulting from the completion of the single market lead to the development of cooperation between European manufacturers on the basis of a regional complementarity of competences or to a systematic quest for partners from third countries?

Being at the heart of the confrontation between two logics for the structuring of the world economy, globalisation and regionalisation, trade in intermediate goods therefore justifies a specific study based on a specific definition. This is the approach adopted here.

1.3. Problems of the empirical evaluation of intra/extra-regional trade in intermediate goods

1.3.1. Apparent and effective balances

International trade in intermediate goods is the source of a distortion between countries' apparent and effective performance. The *effective* export performance of a industry may be hampered by the cost of high imports of components[14]. Our approach to country specialisation should therefore take account of this element of complexity.

In non-technical terms, the idea of *effective specialisation* takes us back to the national value added contained in a given country's exports and to the identification of the foreign value added contained in its imports[15] (cf. Box 4).

Ideally, productive imports should be deducted from exports, direct or indirect, and the "prior export content" should be deducted from final imports.

In practice, although the first of these two calculations can be made by using an input-output structure identifying the origin of the intermediate goods used in production, as a rule the second cannot be.

This approach therefore contains a systematic "pessimistic" bias: by design, the effective specialisation shows a *lower* performance than the apparent one. However, the advantage of the operation is above all that it compares the effective specialisation's *with each other*. In Europe, the industries where this distinction is particularly important are ores, chemicals, data processing and textiles and clothing. The countries more particularly affected by this distinction are Canada in North America and Belgium, the Netherlands and Ireland in Europe.

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14 Especially when working at a fine level of the product nomenclature.

15 For a detailed presentation see Fontagné (1991-a).

Box 4
Effective and apparent specialisations

Take the example of a cover rate. The *apparent* rate is defined as:

(exports of the industry/imports of the industry)

Account must, however, be taken of the intermediate imports contained in exports and of the exports of intermediate goods contained in imports, giving the following effective rate:

(exports - imports contained in exports) / (imports - exports contained in imports)

By way of illustration, this latter ratio would relate French car exports net of components imported to produce them to French car imports net of exports of French components contained in imported foreign cars.

In practice, the input-output calculation does both better and worse than this reasoning:

- better because we can subtract from our exports not only the imports of car components needed to produce the vehicles exported, but also the import content of all the productive combination, that is also the imports resulting from the activity of the other industries supplying domestic intermediate consumption articles to the car industry. For example, the French car industry uses French windscreens whose production in turn gives rise to imports.

- less well because it is impossible to value the exports contained in our imports. This therefore produces a "pessimistic" bias: the effective specialisation, so defined, is by nature less than the apparent specialisation.

- less well also because the high level of product aggregation at which the calculations are made means that imports of the industry's products are deducted twice: once in apparent imports and once in the import content of effective exports. To eliminate this bias we use the ratio of effective specialisation to apparent specialisation.

Finally, the coefficient of the vertical division of labour used here is calculated as the ratio of the apparent cover rate to the effective cover rate.

The use made of intermediate imports is not independent of the size of the economies concerned, and it may be useful to work on relative coefficients, the vertical division of labour in each industry to the indicator obtained for all the industry of the country in question: we shall then speak of *relative* vertical division.

In order to avoid both the drawbacks of the traditional approach and the "pessimistic bias", the reason for which we have just described, it may be worth "tracing" the chain of trade balances along each production process, from upstream to downstream. It may be refined by using one or other position indicator of revealed comparative advantage... But the principle is still to track products by stage of processing, industry by industry, and to see how each country's foreign trade reflects the image of competitive positions along the "chain of value added[16]".

This is precisely the aim of the method discussed starting in Chapter 3. The reaggregation of goods and the tracking of "reversals in revealed comparative advantage" will allow us to show in more detail, at the level of regional blocks and then at European level, the present logics of the vertical international division of labour.

16 To borrow Porter's expression.

1.3.2. Specific nature of the international splitting up of production processes

Whereas intermediate imports may consist of importing steel to make cars, the international splitting up of production processes is defined as the trade in goods belonging to the same industry but *located at different stages* on the production spectrum.

The international splitting up of production processes therefore proceeds from a specific logic of vertical division of labour *within* industries. Car parts are imported to make cars, dairy produce is imported to make dairy produce.

The theoretical literature[17] gives us a vision of this phenomenon based either on production processes with complementary segments or on continuums of production segments linking the production operations in linear fashion, from upstream to downstream.

In any given case, production operations are split by international trade when the conditions of comparative advantage or more generally of competitiveness are "turned around". One country will be competitive upstream in the process but not in assembly work, and will gain from splitting the production process so that assembly can be carried out abroad. This is, incidentally, the first justification for the preferential tariff clauses generally granted to outward processing traffic in Europe and the United States.

The advantage of looking at this specific aspect of international trade in intermediate goods is that, in the absence of systematic micro-economic surveys, the statistical evidence of the micro-economic strategies brought about by globalisation lies precisely in the indicators of the international splitting up of production processes.

1.3.3. Intra-industry versus inter-industry trade

The revelation of two-way trade in similar products was certainly the decisive empirical advance of the sixties in relation to international trade. It may in fact be seen as the start of the rewriting of international trade theory. On the other hand, such empirical work on intra-industry trade (IIT) has often been undertaken with the minimum of methodological precautions, resulting in well-known controversies.

For example, *the confusion between intra-industry and splitting up of processes is a common methodological error.* The *vertical* specialisation of economies may produce a two-way trade in products of the same industry, called intra-industry in the literature, at quite an aggregated level in the nomenclatures.

Importing fuselages in order to export aircraft cannot be considered an exchange of variety or quality; we shall therefore avoid making such an assimilation and continue in such cases to speak of the splitting up of the production process. Rather, we shall seek to work on levels of nomenclature that are fine enough for the term intra-industry to mean only two-way trade in similar products: a car and its engine are not "similar".

On the other hand, two-way trade in components or parts, traced at the finest possible level, and if possible by quality, is indeed intra-industry trade. This is where the conditions can be shown for upstream variety gains for producers, gains whose advantage we have stressed in implementing a virtuous circle of splitting up, trade and growth.

These things will have to be traced by adopting a methodology that is free of the usual aggregation biases (cf. box 5). In order to solve these various problems, we shall use a method which (1) minimises the geographical aggregation bias by considering only bilateral flows, (2) minimises sectoral aggregation bias by working with highly disaggregated nomenclatures, (3) incorporates price differences in order to account for any horizontal or vertical differentiation in the event of two-way trade, and, finally, (4) a method which defines two-way trade differently, taking account of the totality of intra-industry trade. On no account, however, must it be possible for a two-way bilateral trade in final products for intermediate goods to be recorded as intra-industry.

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17 See Sanyal and Jones (1982), Sanyal (1983), Lassudrie-Duchêne (1985), Fontagné (1991-b).

Box 5
Intra-industry trade and reversal of comparative advantages: the case of the motor industry

The phenomenon, identified above, of the reversal of comparative advantages along the spectrum of production, presents a problem when it is revealed on the basis of countries' *multilateral* trade relations[18]. The American motor industry provides a good example of this problem. There, too, we therefore have to work on the basis of bilateral trade relations.

A comparative advantage for the United States upstream, coupled with a disadvantage downstream, appears in the United States' multilateral trade relations (cf. first line of the table below). On a bilateral basis, however, this observation disappears vis-à-vis Japan and the EEC (overall disadvantage for the United States) and the Middle East (overall advantage). The reversal of comparative advantage is observed only vis-à-vis Mexico and Canada, because of the presence of subsidiaries of American multinationals that have organised a vertical division of labour on a regional basis.

Comparative advantages of the United States for the motor industry in 1992

	Intermediate	Final	Total
World	**1.3**	**-5.9**	**-4.7**
of which:			
Middle East	0.1	0.5	0.5
Orient	0.5	-0.5	0.0
EEC4	-0.1	-0.6	-0.6
Japan	-0.6	-3.8	-4.4
Canada	1.1	-1.9	-0.8

Note : This is the CEPII indicator of contribution to the balance (see section 2.4).

18 As in the case of the UNIDO work [1985].

Chapter 2 : The trade in intermediate products of the EC, EFTA, the United States and Japan in 1992

2.1. Methodological introduction

Chapter 1 described the impact of international trade in intermediate goods on the logics of globalization and regionalization of the world economy. It was stressed that a specific gain appeared where international trade in intermediate goods was based on vertical comparative advantages. The vertical division of labour to which this logic leads can take the form of an international splitting up of production processes by firms. The conditions of competitiveness are then profoundly changed: the "comparative advantages" revealed by trade may be reversed not only according to the partners to the trade, as has been known for a long time, but also - and this point will receive particular attention here - according to the stages in the same production process. Intermediate imports make up for the lack of competitiveness at a given stage in the production processes and lead to imports and exports within the same large industries, intermediate goods and final products being in the end traded according to a logic transcending the traditional approaches to international specialisation.

2.1.1. What empirical tool?

This renewed logic of the international division of tasks implies the use of new tools of empirical investigation.

The international linking of production operations, from which trade in intermediate goods proceeds, suggests a "natural" tool: the input-output structures. We then only have to consider that some inter-industrial relations cross the borders of a country or of a region like the European Community (see 3.2). This approach based on the intended use of the products traded allows us to shake ourselves free of the problems of nomenclature: it is the *intermediate* use of an ECU of imports that guarantees that that ECU of trade is in intermediate goods, even though the large industry in question in fact includes both intermediate goods and final goods. Being geared rather to the analysis of the coherence of production systems and the logics of regional integration in the long term, this first approach is inadequate if we want to make an in-depth study of competitive positions or of the intra-industry or inter-industry nature of trade in intermediate goods.

As the nomenclatures of international trade are not built on the theoretical presuppositions mentioned here, we cannot, however, replace the Input-Output approach by trade statistics used "in the unaltered state". Quite the contrary, trade structures have to be reconstructed on the basis of a logic of reaggregation of elementary customs flows consistent with our concern to identify the vertical division of tasks at international level. This chapter and the first part of Chapter 3 will be devoted to this approach based on the nature of the goods traded.

What interests us is the technical nature of the products and not the destination of their trade. The basic idea is that an ECU of "car parts" traded proceeds from an exchange of intermediate goods and is evidence of a vertical division of labour.

Of course, as this example clearly shows, this approach may be countered by the argument that a distinction should be made between parts for assembly, which definitely reflect an international vertical division of labour, and spares. Spares may be imported for the purpose of repairs carried out by tradesmen, which will be an imported intermediate consumption, but not an international division of labour in the motor industry. The imported parts may also be used by private individuals fitting them themselves, in which case they will be "final" goods. Clearly, on the 5,000 product scale used in our calculations, this kind of consideration can be mentioned only as an illustration. Here, any "intermediate" good traded is an intermediate good within the meaning of the theoretical analysis discussed in Chapter 1.

Empirical tracking of intermediate goods

Product traded : ignition plugs	International trade statistics chapter 2 and section 3.1	IOT section 3.2
1st use: factory	**intermediate import**	**intermediate import motor industry**
2nd use: repairer	**intermediate import**	intermediate import repair industry
2nd use: private individual	**intermediate import**	final import

Note: in bold, empirical diagnosis of vertical division of labour in the motor industry

Having noted these methodological reservations, we shall now go into the detail of the flow reconstruction method used here.

2.1.2. Operational definition of intermediate products

The aggregation key by stage of the product nomenclature used here is based on a modification of BEC (classification by broad economic categories of the United Nations). In order to conform to BEC we have reaggregated the Eurostat (Harmonised System) 6 figures into 4 stages: primary products, processed products, parts and final products (box 6). The 2-figure NACE was also used to produce an aggregation into 14 large industries (Table 1).

The leather, luggage and footwear industry (item 19 of NACE Rev. 1), included here in the "textile" industry, illustrates this approach: out of 68 articles, 45 are final products; the remaining 23 are 21 "processed", one "primary" and one "parts". We are therefore working here with 22 "intermediate goods".

Table 1
Breakdown of the 5000 Eurostat-HS items by stages and industries

NACE rev 1 / BEC		Primary	Processed	Parts	Final	Industry total
	Agriculture	***136***	***5***		***126***	***267***
01	*Agriculture, hunting*	*111*	*1*		*84*	*196*
02	*Forestry, logging*	*22*	*2*		*6*	*30*
05	*Fish and other fishing products*	*3*	*2*		*36*	*41*
	Mining and quarrying	***102***	***5***		***1***	***108***
10	*Coal, lignite and peat*	*5*	*2*			*7*
11	*Crude petroleum and natural gas*	*3*	*1*			*4*
12	*Uranium and thorium ores*	*2*				*2*
13	*Metal ores*	*21*				*21*
14	*Other mining and quarrying*	*71*	*2*		*1*	*74*
	Agri-food industries (AFI)	***44***	***126***		***306***	***476***
15	*Food products and beverages*	*43*	*126*		*300*	*469*
16	*Tobacco products*	*1*			*6*	*7*
	Textiles	***23***	***431***	***9***	***385***	***848***
17	*Textiles*	*21*	*402*	*8*	*105*	*536*
18	*Wearing apparel and furs*	*1*	*8*		*235*	*244*
19	*Leather and leather products*	*1*	*21*	*1*	*45*	*68*
	Wood & Paper	***18***	***159***	***1***	***40***	***218***
20	*Wood products, cork, articles of straw*	*14*	*42*		*10*	*66*
21	*Pulp, paper and paper products*	*4*	*109*		*12*	*125*
22	*Printed matter or recorded media*		*8*	*1*	*18*	*27*
	Coke making & Refining	***1***	***18***		***1***	***20***
23	*Coke, refined petroleum products and nuclear fuel*	*1*	*18*		*1*	*20*
	Chemicals	***8***	***1027***	***18***	***93***	***1146***
24	*Chemical products and man-made fibres*	*6*	*808*		*55*	*869*
25	*Rubber and plastic products*	*2*	*76*	*16*	*25*	*119*
26	*Other non-metallic mineral products*		*143*	*2*	*13*	*158*
	Metals	***24***	***484***	***29***	***84***	***621***
27	*Basic metals*	*24*	*382*		*1*	*407*
28	*Fabricated metal products*		*102*	*29*	*83*	*214*
	Mechanical engineering		***12***	***104***	***400***	***516***
29	*Machinery and equipment*		*12*	*104*	*400*	*516*
	Data processing			***6***	***28***	***34***
30	*Office machinery and computers*			*6*	*28*	*34*
	Electrical & Electronic		***65***	***107***	***247***	***419***
31	*Electrical machinery and apparatus*		*28*	*45*	*54*	*127*
32	*Radio, television and communication equipment and apparatus*			*39*	*49*	*88*
33	*Medical, precision and optical instrument, watches and clocks*		*37*	*23*	*144*	*204*
	Cars and heavy goods vehicles			***26***	***29***	***55***
34	*Motor vehicles, trailers and semi-trailers*			*26*	*29*	*55*
	Other transport equipment		***1***	***30***	***51***	***82***
35	*Other transport equipment*		*1*	*30*	*51*	*82*
	Others	***3***	***44***	***6***	***136***	***189***
36	*Furniture; other manufactures goods n.e.c.*	*3*	*44*	*6*	*136*	*189*
	Stage total	***359***	***2377***	***336***	***1927***	***4999***

Note: 33 items of products that could not be classified according to the Nace, Rev. 1, nomenclature were excluded from the study. 22 are final goods, 10 processed products and just one primary products.

Box 6
The three stages of intermediate products according to the BEC

Developed by the United Nations, BEC is a nomenclature derived from the SITC, Rev. 3 (Standard International Trade Classification). It reclassifies the SITC headings on the basis of the principal use of the products. More precisely, it converts foreign trade data into categories of final or intermediate use, such as capital goods, intermediate goods and consumer goods, following the usage in the System of National Accounts[19]. The BEC breakdown of intermediate products into the three stages is as follows:

Primary commodities

111 Food and beverages, primary, mainly for industry
21 Industrial supplies, not elsewhere specified, primary
31 Fuels and lubricants, primary

Processed commodities

121 Food and beverages, processed, mainly for industry
22 Industrial supplies, not elsewhere specified, processed
322 Fuels and lubricants, other than motor spirit, processed

Parts

42 Parts and accessories of capital goods, except transport equipment
53 Parts and accessories of transport equipment

"In general, commodities have been classified as "primary" if they are characteristically products of primary sectors of the economy, ie. farming, forestry, fishing, hunting and the extractive industries. In addition, commodities which characteristically are products of other sectors, such as manufacturing are also classified as primary if nearly all the value of the product is contributed by one of the primary sectors of the economy. For example, cotton undergoes physical transformation when ginned, but as almost all the valued of ginned cotton derives from the agricultural sector, it is classified in the BEC as a primary commodity, not as a product of the textile industry..."[20]. Therefore, if only a very small part of the value of an intermediate product is ascribable to manufacturing industry, it is classed among primary products.

In this connection, all other intermediate products are deemed to have undergone processing. However, processed products that are parts or accessories of capital goods are classed separately in the parts stage.

19 See United Nations, 1990.

20 Ibid. p. 7.

2.2. Configuration of inter-zone trade according to stages of production

This chapter is concerned solely with trade **between** the zones resulting from the geographical divisions adopted, leaving aside intra-zone flows. Its main purpose is to compare the EC's relative external performances. The data used are taken from a Eurostat database made available to us specifically for this study[21] (see box 7). This base was constructed from the declarations for four zones: the EC (with details of the Member States), EFTA (with details of the member countries), the United States and Japan. For each of these declaring zones, the base contains all bilateral flows according to the Eurostat geonomenclature[22]. However, the partner countries have been combined in such a way as to reveal any international splitting ups of production processes within or between the large geographical regions, phenomena that are of great importance when dealing with trade in intermediate goods[23]. The geographical division (see annex) thus highlights three large regions of the world:

The biggest, the Eurafrican region, encompasses the European Community of the 12, **EFTA** and their sphere of influence[24]. This first region's limits are set in the "north" by the **former Soviet Union** and the former planned economy countries of Europe, which are combined in the **other Europe** area. To the "south" are three other zones: the countries covered by Mediterranean association agreements with the EC (**Mediterranean countries**), the **ACP countries** that have signed the Lomé agreements, and the countries of the **Middle East**, the vast majority of them oil-producing.

The American region covers only one continent. The **United States** and its two preferred partners, **Canada** and **Mexico**, appear separately, while all the other American countries, not belonging to NAFTA, are combined in a zone **other America**.

In the last region, Asia-Oceania, only **Japan** is looked at individually. The **NICs of Asia** include not only the four dragons, but all the high-growth countries of the region. However, China is not part of them, since it appears alongside India and Indonesia in the **large countries of Asia**. The remaining countries of the region are all in the zone **other Asia-Oceania**.

This geographical division also contains a **rest of the world** area, the main component of which is South Africa.

21 Our thanks are due to the SOEC departments that undertook this large amount of statistical and computing work.

22 Excluding the ACP countries which appear only in the European Community's declarations.

23 See 1.2.

24 The division therefore represents these two economic groupings in their old forms, i.e. before the accession of Austria, Sweden and Finland to the European Community in 1995.

Box 7
Appraisal of total trade in the "reference zone"

The Eurostat database used in this study is constructed from the export and import declarations of the member countries of the European Community and EFTA, the United States and Japan. In order to measure the relative weight of intermediate goods in the total trade of this "reference zone" in section 2.2 and to calculate the position indicator in section 2.3, we have "harmonised" the two declarations for the same flows and constructed a market matrix from which the flows between non-declaring partner countries are absent:

		M															
		EC	EFTA	United States	Japan	Other Europe	ex USSR	Medit countries	ACP countries	Middle East	Canada	Mexico	NICs of Asia	Large countries of Asia	Other Asia-Oceania	Rest of World	Total X
X	EC																
	EFTA																
	United States																
	Japan																
	Other Europe																
	ex USSR																
	Mediterranean countries																
	ACP countries																
	Middle East																
	Canada																
	Mexico																
	NICs of Asia																
	Large countries of Asia																
	Other Asia-Oceania																
	Rest of World																
	Total M																Z

Export declaration

Import declaration

"Harmonised" declarations

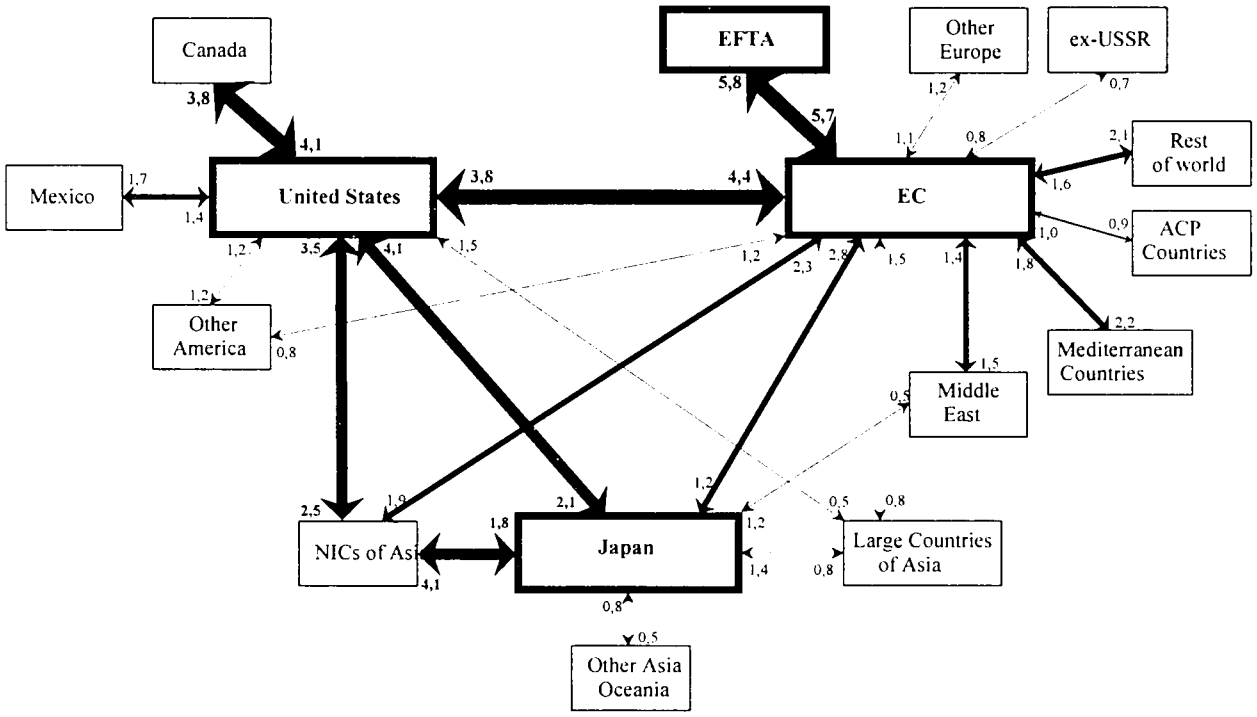
Z = (Total X + Total M) / 2

Note: The ACP countries appear only in the European Community's returns.

Harmonisation of declarations is necessary if we are to have an overall picture of the trade of the four declaring zones. The base in fact naturally contains two declarations for any given flow between declaring zones/countries: one by the exporter and one by the importer. It sometimes happens that these two figures differ by more than the difference between the FOB and CIF prices. In order to have a single figure for each flow, we decided to take the arithmetic mean of the two declarations. For trade between declaring countries/zones and their non-declaring partners, the declarations were left unchanged. The total exports of the reference zone are by design identical to the total imports (their arithmetic mean). Although rudimentary, our "harmonisation" of flows should not, however, give rise to any major problem, since the countries in question are, after all, among the most reliable declaring countries in international statistics.

Figure 1 illustrates the main trade flows between the zones, all products taken together, for 1992 (EC and EFTA intra-zone trade is excluded). Only mutual flows totalling more than 1.2% of all inter-zone trade are represented. The trade link between EFTA and the EC is the largest of all (11.5%). The European Free Trade Association has however no significant trade elsewhere, which clearly distinguishes it from the other three declaring zones. The EC/United States/Japan triangle is in fact one of the most important networks in 1992: mutual flows amount to 8.2% between the European Community and the United States, 6.2% between the United States and Japan, and 4.0% between Japan and the EC.

Figure 1
Networks of international trade, all products taken together, 1992
(as % of inter-zone trade of the four declaring zones)



Source: Eurostat, authors' calculation

These three declaring zones not only have significant levels of trade among themselves, but they also occupy a central position in their respective regions. Thus, the European Community is the only declaring zone to have significant trade with the Eurafrican zone[25]. Within this region, apart from EFTA, the EC's biggest partners are the Mediterranean countries (4.0%), the "rest of the world", including South Africa (3.7%) and the countries of the Middle East (2.9%). On the American continent, the United States is in a similar position to the European Community: the other countries of the American zone trade almost exclusively with the United States[26]. Trade between the United States and Canada is naturally one of the most important bilateral relationships in 1992 (7.9%).

Japan's position within the Asia-Oceania region is not comparable to that of the EC or the United States in their own regions. It is true that the NICs on the one hand and the large and other countries of Asia on the other trade a lot with this Asiatic pole, but these relationships are not exclusive: the bilateral flows between Japan and the NICs (5.9%) and between the United States and the NICs (6.0%) are equally important. The same goes for mutual trade between the NICs and the European Community (4.2%), which is equal to that between Japan and the EC. Moreover, the trade conducted by the large countries of Asia with Japan is no more important than their trade with

25 Apart from the countries of the Middle East, which trade significantly with Japan.

26 Apart from the significant bilateral flow Other America/EC.

these other two declaring zones. The international integration of the partner zones of the Asia-Oceania region therefore extends beyond that region's limits.

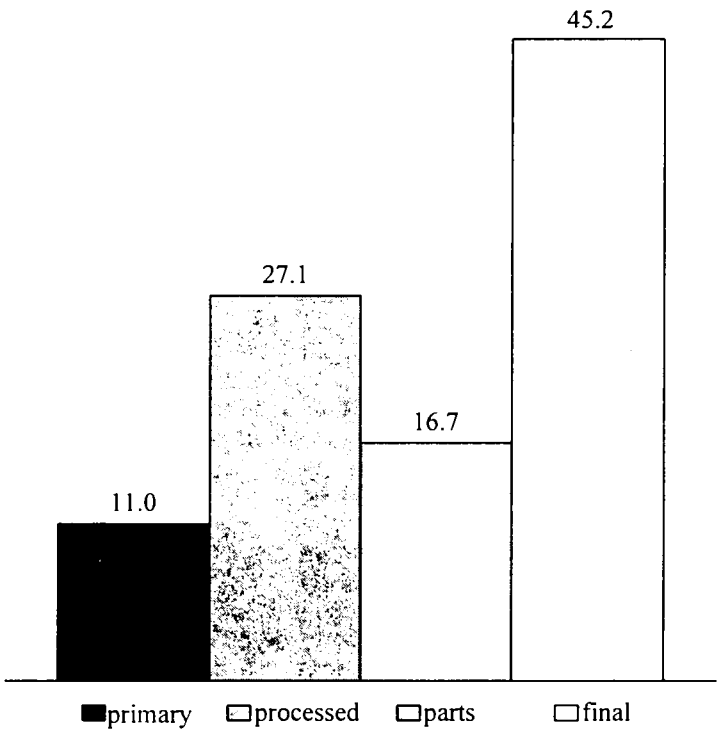
2.2.1. Sectoral structure of trade

The sectoral split of Chapter 2 and section 3.1 reflects the special attention paid to intermediate products. In fact, within the four stages of processing covering nearly 5,000 Eurostat items (Harmonised System, 6 figures), three concern intermediate goods (Figure 2):

- primary products (11.0% of inter-zone trade in 1992[27]);
- processed products whose weight is the highest in trade between zones (27.1%);
- and the stage of parts, which covers parts, spares or accessories of capital goods (16.7%).

In 1992, the total of intermediate goods represents more than one half of trade in the reference zone (54.8%). All other products, consumer goods, capital goods and "mixed" products[28] are classified in the stage of final goods.

Figure 2
Breakdown by stage of trade between zones in 1992
(as % of inter-zone trade of the four declaring zones)



Source: Eurostat, authors' calculation.

27 The matrix used is the same as that shown in box 7.

28 Depending on their use, these goods may be either consumer goods or else intermediate goods (sugar) or capital goods (computers).

Table 2 shows the breakdown of trade between zones into 14 industries. The electrical/electronic, chemicals, mechanical engineering and private car industries have the greatest relative weights: they amount to 46% of inter-zone trade in 1992.

Trade in final goods constitutes a high proportion of trade in most industries, although the proportion is distinctly higher in the agri-food industries, textiles and miscellaneous industries. Overall, 45% of inter-zone trade consists of final goods[29]. If we take only the intermediate stages, the industries mining and quarrying and agriculture may be said to be primary products industries. The chemical, metal products and wood/paper industries consist primarily of processed products. Finally, virtually all parts are to be found in the mechanical engineering, data processing, electrical/electronic and motor industry industries and in other transport equipment.

Table 2
Breakdown by stage and by industry of trade between zones in 1992

(as % of total inter-zone trade of the 4 declaring zones)

	primary	processed	parts	final	total industry
Agriculture	2.7	0.0	-	1.2	4.0
Mining and quarrying	7.4	0.8	-	0.0	8.3
Wood & Paper	0.2	3.4	1.1	0.9	4.4
Coking & Refining	0.0	2.5	-	0.0	2.5
Chemicals	**0.0**	**8.9**	**0.5**	**2.4**	**11.8**
Metals	0.3	6.2	0.4	0.5	7.5
Mechanical engineering	**-**	**0.1**	**3.3**	**6.9**	**10.4**
Data processing	-	-	1.7	3.2	4.8
Electrical & Electronic	**-**	**1.1**	**5.7**	**7.1**	**13.9**
Cars & HGVs	**-**	**-**	**3.3**	**6.7**	**10.0**
Other transport equipment	-	0.0	1.8	3.4	5.3
Agri-food industries (AFI)	0.3	1.1	-	4.3	5.7
Textiles	0.1	1.9	0.1	5.8	7.9
Miscellaneous	0.0	0.9	0.0	2.6	3.6
Stage total	11.0	27.1	16.7	45.2	100.0

Source: Eurostat, authors' calculations.

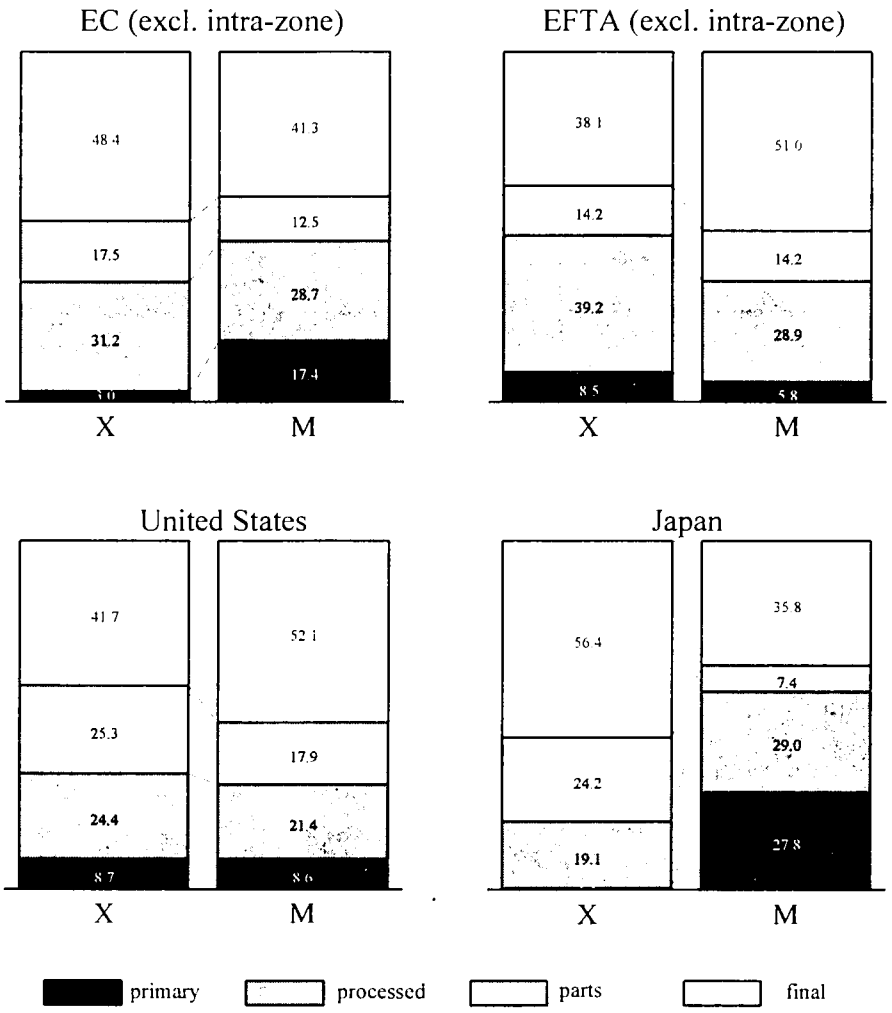
Note: For the relative weights of the 30 sub-industries see Annex.

2.2.2. Sectoral structure of the four zones' trade and their trade balances

The structure, by stage of production, of the trade of the 4 zones reveals the weight of intermediate goods in international trade (Figure 3). On the other hand, except in the case of Japanese exports, final goods never account for much more than one half of flows. Japan reproduces the specialisation pattern observed for the EC, taking it to the extreme: it imports raw materials and intermediate goods, processes them and exports primarily final goods. There is therefore a degree of similarity between the breakdown by stage of production of the overall balances of the European Community and Japan: the deficits are upstream of the production process (primary and processed products), whilst the surpluses are downstream (parts and final goods). For EFTA, the reverse is the case: here, the balances are positive upstream for all intermediate goods, while the final goods stage is the only negative point downstream. In the case of the United States, the only surplus is at the stage of parts. The overall deficit comes primarily from finished products, a phenomenon closely linked to the structural surplus that Japan and the NICs of Asia have with that country.

29 This figure is much higher than that generally advanced by input-output studies using similar methods to those in section 3.2 of this report. This difference is explained both by the different methodology and by the existence of "mixed products" (i.e. intermediate or final depending on the users) that are here de facto included in final goods; the reaggregation key supplied to us in fact related to primary or processed goods and parts. The remainder was by default classified among "final products", including "mixed products". To make a very rough check of this effect, the proportion of mixed goods may be calculated in the CHELEM nomenclature of CEPII. Although this nomenclature is not directly comparable to that used in this report, it appears that 13% of world trade and 15% of trade by the EEC of 15 consists of "mixed goods". In all, this gives an upward bias to the weight of final goods.

Figure 3
Structure by stage of the foreign trade
of the EEC, EFTA, the United States and Japan in 1992
(as % of the inter-zone trade of the four declaring zones)



Source: Eurostat, authors' calculation.

Table 3 shows, in billion ECU, the exports, imports and trade balances of the four declaring zones in 1992, again excluding intra-zone trade. If we take the average of exports and imports, the value of the European Community's all-products trade is the highest (nearly 450 billion ECU), and the United States takes second place (353 billion), followed by Japan (213 billion) and EFTA (145 billion). The United States and the EC are deficit zones overall (-51 and -48 billion respectively). On the other hand, Japan has an overall surplus of 85 billion ECU.

Table 3
Exports, imports (not intra-zone) and balance of the 4 declarants by stage, 1992, in billion ECU

	Exports					Imports					Trade Balance				
	Primary	Processed	Parts	Final	Total	Primary	Processed	Parts	Final	Total	Primary	Processed	Parts	Final	Total
EC	**12.8**	**132.2**	**74.1**	**205.1**	**424.3**	**82.2**	**135.7**	**59.2**	**195.2**	**472.2**	**-69.4**	**-3.5**	**14.9**	**10.0**	**-48.0**
Germany	2.7	46.6	26.0	70.3	145.6	20.8	35.8	18.1	62.9	137.7	-18.1	10.8	7.9	7.3	7.9
France	1.8	15.9	12.7	37.4	67.9	10.7	15.5	8.8	27.9	62.9	-8.9	0.4	4.0	9.5	5.0
Denmark	1.0	3.1	1.4	8.4	13.9	1.2	3.9	1.0	5.2	11.3	-0.2	-0.8	0.4	3.2	2.6
Italy	0.5	17.6	9.2	29.9	57.2	12.9	20.0	4.6	17.9	55.4	-12.3	-2.4	4.5	12.0	1.7
Ireland	0.2	1.6	0.9	2.7	5.5	0.5	1.4	1.3	1.6	4.8	-0.3	0.3	-0.4	1.1	0.7
Portugal	0.2	1.1	0.2	2.2	3.7	1.9	1.4	0.6	2.0	6.0	-1.8	-0.3	-0.4	0.2	-2.3
Greece	0.3	1.0	0.1	1.2	2.6	1.7	1.6	0.4	2.7	6.4	-1.4	-0.6	-0.4	-1.5	-3.8
BLEU	0.5	12.8	2.0	6.6	21.9	3.3	12.5	3.5	10.1	29.4	-2.8	0.2	-1.4	-3.6	-7.5
Spain	0.4	6.0	1.9	9.2	17.5	7.9	6.5	2.4	11.4	28.1	-7.5	-0.4	-0.5	-2.2	-10.7
UK	3.8	18.1	16.7	26.7	65.3	9.8	24.9	13.8	35.2	83.7	-6.0	-6.8	2.9	-8.5	-18.4
Netherlands	1.5	8.3	3.1	10.7	23.5	11.5	12.1	4.7	18.3	46.6	-10.0	-3.8	-1.6	-7.6	-23.0
EFTA	**12.6**	**58.5**	**21.2**	**56.8**	**149.2**	**8.1**	**40.5**	**20.0**	**71.5**	**140.1**	**4.5**	**18.0**	**1.2**	**-14.7**	**9.1**
Norway	10.6	5.4	0.7	4.0	20.7	0.6	3.9	2.1	7.8	14.3	9.9	1.5	-1.3	-3.7	6.4
Sweden	0.8	14.1	7.2	14.1	36.1	2.1	7.4	5.5	14.9	29.9	-1.4	6.7	1.7	-0.8	6.2
Finland	0.3	9.8	1.0	4.2	15.3	1.9	3.4	1.8	5.2	12.3	-1.6	6.4	-0.8	-1.0	3.0
Switzerland	0.5	17.7	6.5	22.6	47.4	1.5	15.3	4.8	23.9	45.5	-1.1	2.5	1.7	-1.3	1.8
Iceland	0.0	0.2	0.0	0.9	1.1	0.0	0.3	0.1	0.5	0.9	-0.0	-0.1	-0.1	0.4	0.2
Austria	0.5	11.3	5.8	11.0	28.5	1.9	10.3	5.7	19.2	37.1	-1.4	1.0	0.1	-8.2	-8.6
USA	**28.4**	**79.8**	**82.8**	**136.5**	**327.4**	**32.3**	**80.9**	**67.8**	**197.0**	**378.0**	**-3.9**	**-1.1**	**15.0**	**-60.6**	**-50.6**
Japan	**0.6**	**48.9**	**61.9**	**144.2**	**255.7**	**47.4**	**49.4**	**12.6**	**61.0**	**170.3**	**-46.8**	**-0.4**	**49.3**	**83.2**	**85.4**

Source: Eurostat, authors' calculation.

This chapter is concerned only with the non-intra-zone trade of the four declarants. However, for information purposes we gave considered it worth presenting the breakdown of the West European countries' trade balance with the EC and the rest of the world in Table 4[30]. This shows that some of the members of the Community have balances that differ greatly depending on the geographical breakdown. For example, Belgo-Luxembourg and the Netherlands together have a large deficit outside the Community but a significant surplus with the Twelve.

30 The shaded parts of Table 3 and Table 4 are identical. In Table 4, the partner "rest of the world" corresponds to all partners outside the EC.

Table 4
Breakdown of the trade balance of the Western European countries with the EC and the rest of the world, 1992, in billion ECU

	European Community					Rest of the World					World				
	Primary	Processed	Parts	Final	Total	Primary	Processed	Parts	Final	Total	Primary	Processed	Parts	Final	Total
EC	**-0.0**	**0.0**	**0.0**	**0.0**	**-0.0**	**-69.4**	**-3.5**	**14.9**	**10.0**	**-48.0**	**-69.4**	**-3.5**	**14.9**	**10.0**	**-48.0**
Germany	-2.6	4.3	9.8	-0.0	11.5	-18.1	10.8	7.9	7.3	7.9	-20.7	15.1	17.7	7.3	19.4
France	4.4	-6.9	1.0	-8.0	-9.5	-8.9	0.4	4.0	9.5	5.0	-4.5	-6.5	5.0	1.5	-4.5
Denmark	0.6	-1.5	-0.3	3.3	2.1	-0.2	-0.8	0.4	3.2	2.6	0.4	-2.3	0.1	6.5	4.6
Italy	-5.0	-0.3	1.1	2.3	-1.8	-12.3	-2.4	4.5	12.0	1.7	-17.3	-2.7	5.7	14.3	-0.1
Ireland	0.4	0.3	0.3	3.4	4.4	-0.3	0.3	-0.4	1.1	0.7	0.1	0.6	-0.1	4.5	5.1
Portugal	-0.5	-2.2	-1.4	-1.7	-5.8	-1.8	-0.3	-0.4	0.2	-2.3	-2.3	-2.5	-1.8	-1.6	-8.2
Greece	0.3	-2.2	-1.0	-3.4	-6.3	-1.4	-0.6	-0.4	-1.5	-3.8	-1.1	-2.8	-1.3	-4.9	-10.1
BLEU	-3.5	6.6	-3.3	5.8	5.6	-2.8	0.2	-1.4	-3.6	-7.5	-6.3	6.8	-4.7	2.3	-2.0
Spain	-1.1	-4.1	-3.8	-2.0	-10.9	-7.5	-0.4	-0.5	-2.2	-10.7	-8.6	-4.5	-4.4	-4.2	-21.6
UK	3.2	-1.8	-1.4	-7.8	-7.8	-6.0	-6.8	2.9	-8.5	-18.4	-2.9	-8.6	1.5	-16.3	-26.2
Netherlands	3.8	7.8	-1.1	8.1	18.6	-10.0	-3.8	-1.6	-7.6	-23.0	-6.2	4.0	-2.8	0.5	-4.5
EFTA	**7.0**	**10.3**	**-1.3**	**-16.8**	**-0.7**	**-2.5**	**7.7**	**2.5**	**2.1**	**9.8**	**4.5**	**18.0**	**1.2**	**-14.7**	**9.1**
Norway	8.7	1.6	-1.0	-2.2	7.1	2.2	-0.6	-0.7	-2.4	-1.5	10.9	1.0	-1.6	-4.7	5.6
Sweden	-0.4	4.8	0.2	-2.2	2.4	-1.5	2.3	1.8	2.0	4.7	-1.9	7.1	2.0	-0.2	7.1
Finland	-0.5	4.8	-0.7	-0.7	2.9	-1.4	2.3	-0.2	-0.2	0.5	-1.9	7.1	-0.9	-0.8	3.4
Switzerland	-0.5	-0.9	0.3	-5.0	-6.1	-0.7	2.9	1.5	3.9	7.7	-1.2	2.0	1.8	-1.1	1.5
Iceland	0.0	-0.0	-0.1	0.3	0.2	-0.0	-0.1	-0.0	-0.1	-0.3	-0.0	-0.2	-0.1	0.3	-0.0
Austria	-0.2	0.1	-0.0	-7.0	-7.2	-1.2	0.9	0.1	-1.2	-1.4	-1.4	1.0	0.1	-8.2	-8.5

Source: Eurostat, authors' calculation.

2.2.3. Networks of international trade by stage of production

The four charts below illustrate the main bilateral flows between the four declarants and their fifteen partners by stage of production in 1992. Reading them enables us to trace the regional or global direction of trade for the various stages of production. Flows are shown with the same denominator, inter-zone trade in all products taken together, and only mutual flows totalling more than 0.4% of that trade appear.

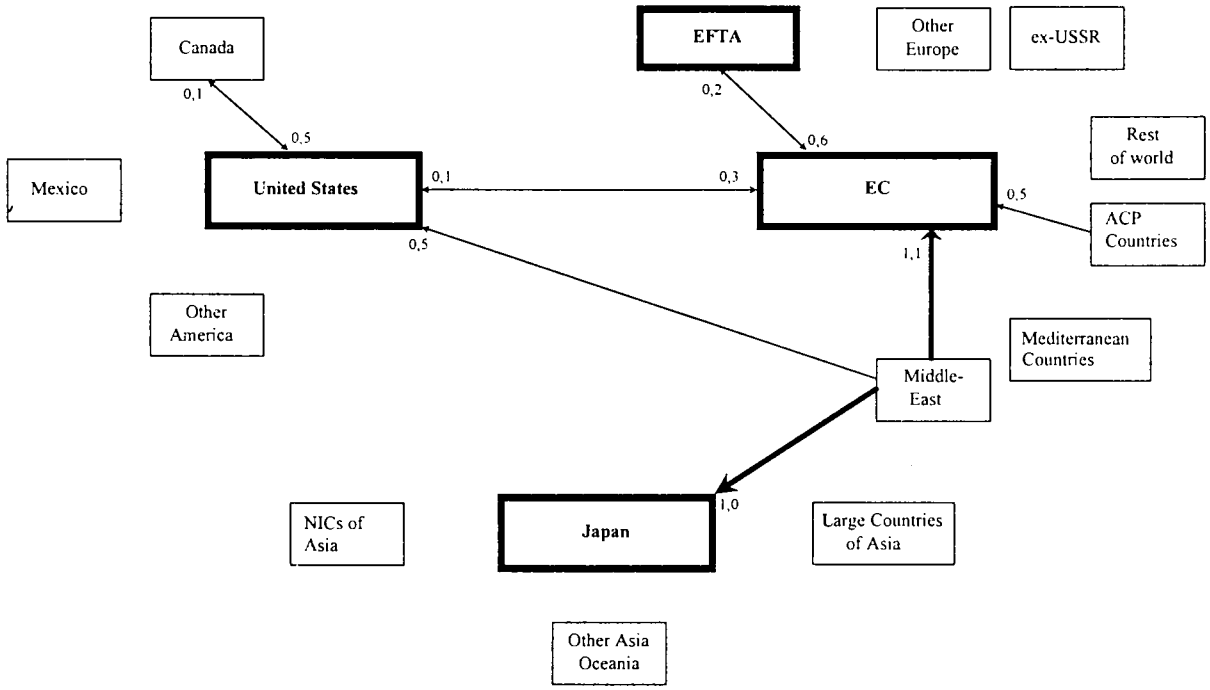
The configuration of flows does not vary according to stage of production among the three poles of the world economy, the United States, Japan and the European Community. The United States has a very slight surplus vis-à-vis the EC at every stage in 1992. The two areas exchange almost as many final goods (3.7% of inter-zone trade) as intermediate goods (4.4% if the three stages are added together). Japan's mutual trade with the other declarants is not so great, but the country has large surpluses with the European and American poles in parts and final goods.

As stressed in the introduction to this chapter, Japan's exports are relatively diversified geographically. Note again, however, that it has a very large surplus with the most dynamic countries of Asia-Oceania: even at the stage of processed products, where its mutual trade with the other zones is relatively balanced, Japan in fact sells to the NICs of Asia much more than it buys from them. The latter countries are engaged in a division of tasks with the poles of the other two regions, especially with the United States, selling them massive amounts of final goods in return for the processed products they import.

The United States and the European Community have developed a high level of regional complementarity. On the American continent, the United States imports a lot of primary and processed products from Canada, which buys a lot of parts from it in return. Similarly in Europe, the EFTA countries sell to the Community mostly goods of the two upstream stages, importing from it many parts and finished products.

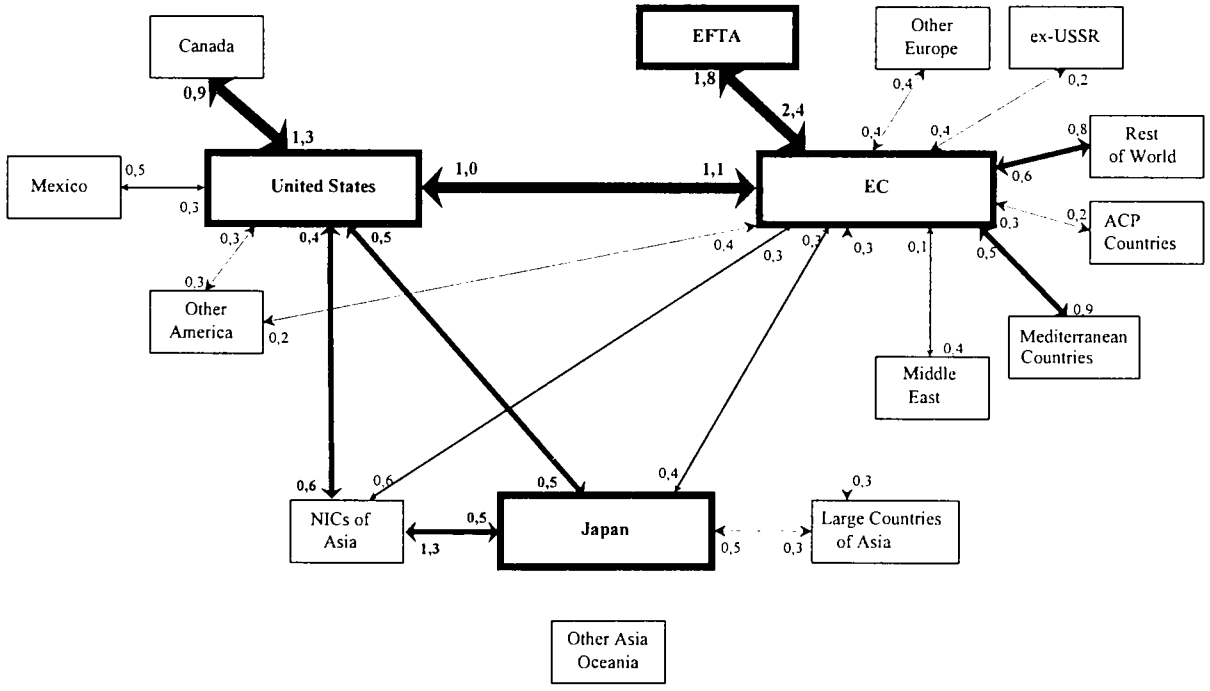
The other bilateral flows of the United States with the rest of the American continent are not very significant. By contrast, the Eurafrican zone holds a special place in the trade of the European Community. Here, bilateral flows are part of a traditional logic between a highly industrialised area and the developing countries under its economic influence: very much in deficit in its trade in primary products with the other partners of the Eurafrican region, the EC is making growing surpluses at all the other stages from upstream to downstream.

Figure 4
Networks of international trade in 1992: primary products
(as % of inter-zone trade in all products of the four declaring zones)



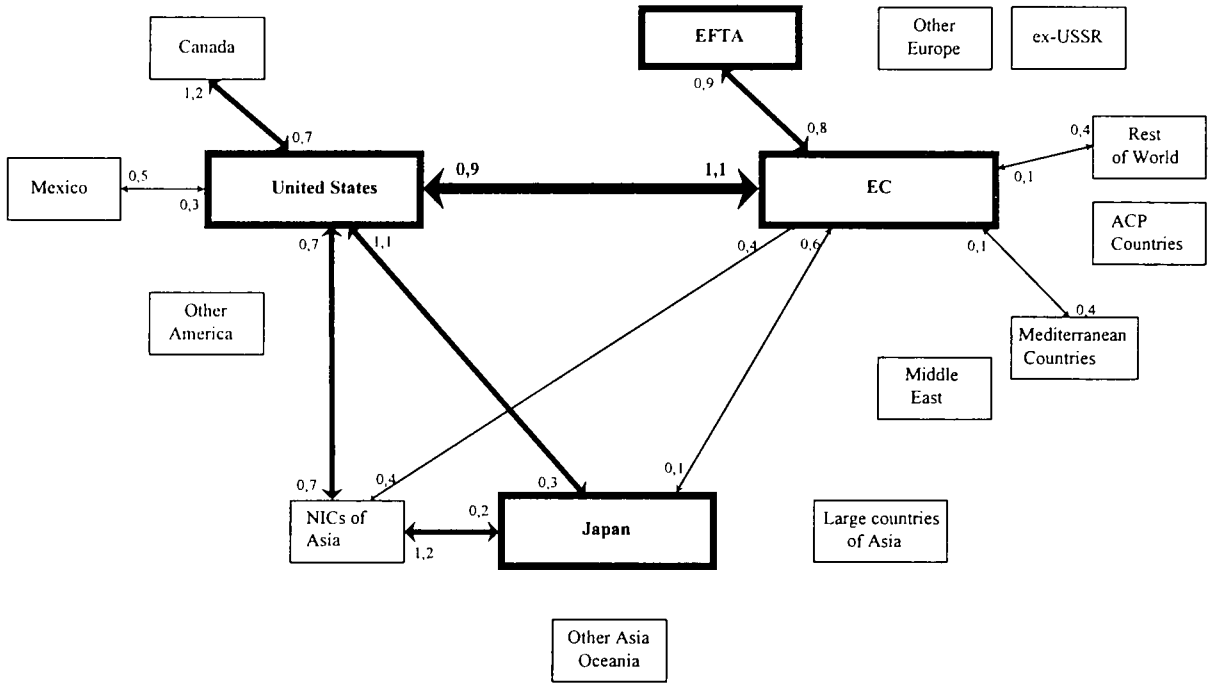
Source: Eurostat, authors' calculations.

Figure 5
Networks of international trade in 1992: processed products
(as % of inter-zone trade in all products of the four declaring zones)



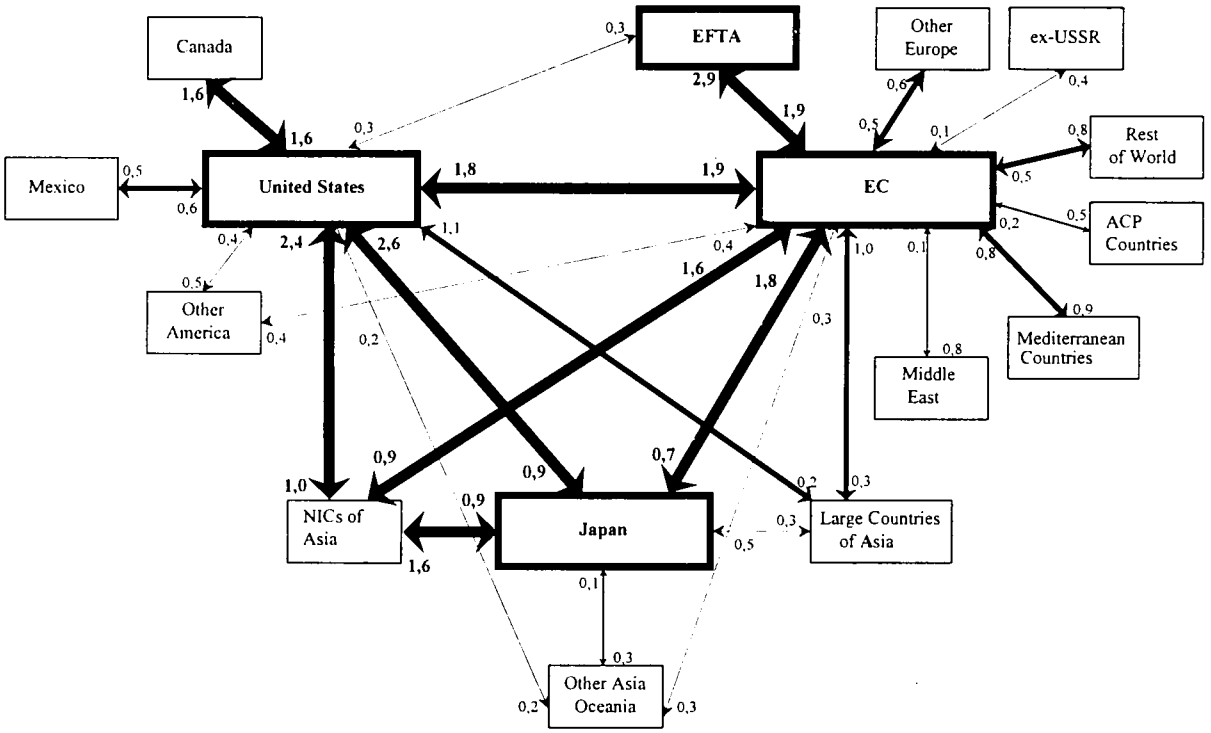
Source: Eurostat, authors' calculations.

Figure 6
Networks of international trade in 1992: parts
(as % of inter-zone trade in all products of the four declaring zones)



Source: Eurostat, authors' calculations.

Figure 7
Networks of international trade in 1992: final products
(as % of inter-zone trade in all products of the four declaring zones)



Source: Eurostat, authors' calculations.

2.3. Market position: state of competition

The strategies developed by world scale enterprises to keep costs to a minimum, be closer to the market or be in a better position to detect changes in demand all favour the globalization of the world economy. The part played by national areas is less visible but just as important. It extends beyond the mere availability of production factors, being revealed in the operation of the forms of training that explain the level of qualification of the workforce or of research, but also in the organisation of a fabric of networks such as the production, banking and political systems, etc., the cohesion and efficiency of which affect the enterprises' performance[31]. The market position indicator that relates a zone's trade balance in a given product to world trade in the same product reflects the final result of the actions of enterprises and nations for our geographical division[32].

Table 5 gives an example of how this is calculated: the position of EFTA on the market in primary products in 1992. At that time, the Association had a surplus amounting to 2.3% of inter-zone trade in primary products. The breakdown of EFTA's balance as between member countries is instructive. The surplus is due to just one State, Norway: apart from Iceland, which is more or less in balance, the other members all show a deficit.

Table 5
Example calculation: EFTA's market position in primary products in 1992

	Exports (a)	Imports (b)	Share of exports	Share of imports	Relative balance
	(in billion ECU)		(d : 100 * a / c)	(e : 100 * b / c)	(d - e)
EFTA	**12.64**	**8.12**	**6.52**	**4.19**	**2.33**
Iceland	0.01	0.02	0.01	0.01	0.00
Norway	10.55	0.61	5.45	0.31	5.13
Sweden	0.77	2.12	0.40	1.09	-0.70
Finland	0.34	1.93	0.18	0.99	-0.82
Switzerland	0.48	1.55	0.25	0.80	-0.55
Austria	0.49	1.90	0.25	0.98	-0.73
Total inter-zone trade in primary products (c)	193.79	193.79	100.00	100.00	0.00

Source: Eurostat, authors' calculations.

Note: As the inter-zone trade of the four declaring areas has been "harmonised", total exports are identical to total imports.

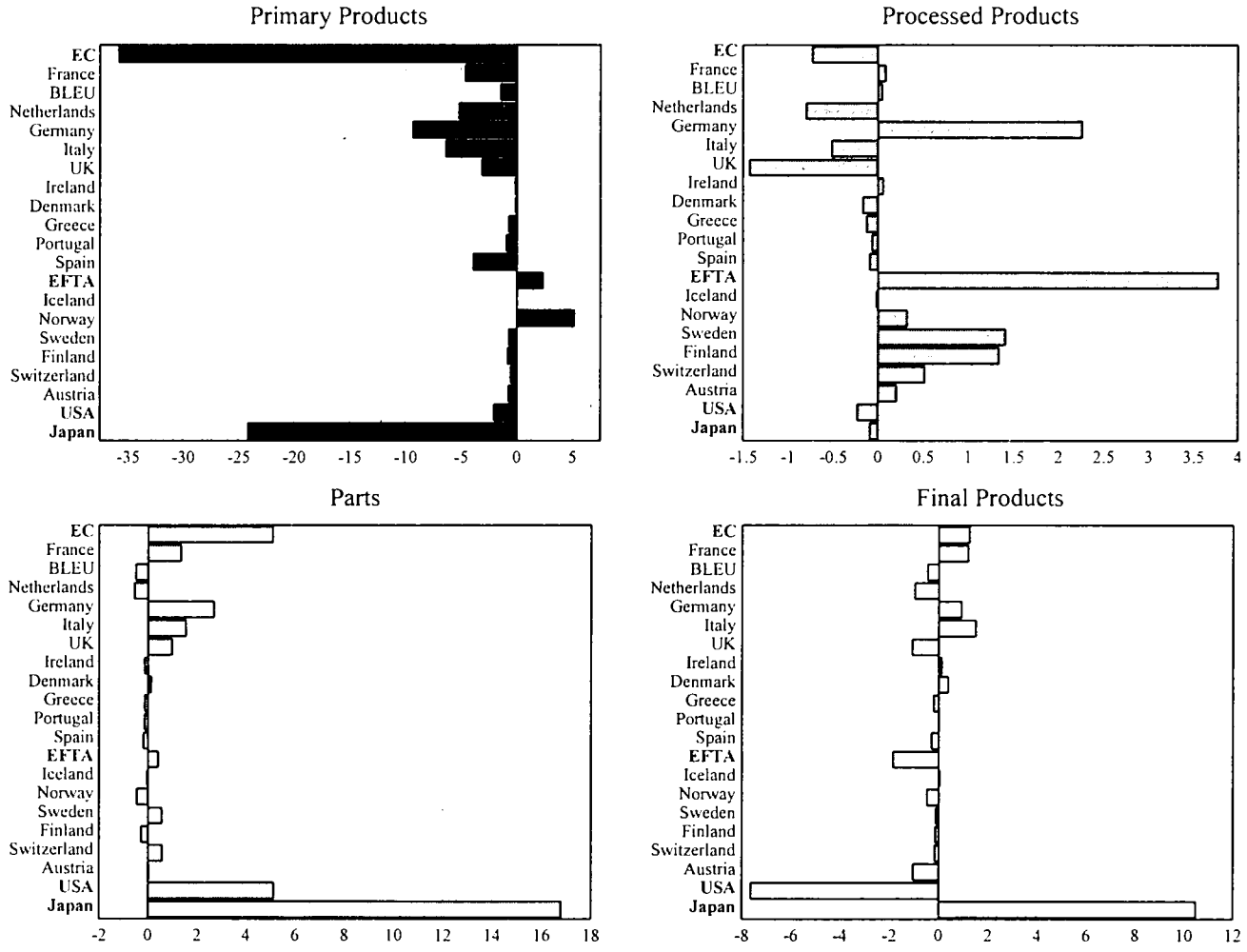
Figure 8 shows the market positions of the declaring countries and zones for products of the four stages in 1992. For each declarant, the sign of the indicator is by design the same as that of the trade balance[33]. The purpose is therefore to show the size of the surpluses or deficits and hence how competitors relate to one another in a given market.

31 See A. Brender, 1988.

32 "For an economy and a given product, this indicator depends both on macro-economic factors (growth, inflation, exchange rates), on the structural characteristics of the production and consumption of the product (relative prices or other aspects of competitiveness), on the distortions that may be introduced by the public authorities (aid to exports and/or import protection) and on the weight of that economy in the world". See G. Lafay et alii, 1989, p.94.

33 Shown in Table 3 above.

Figure 8
Market positions of declaring countries and zones for products of the 4 stages in 1992 (as % of inter-zone trade for the stage in question)



Source: Eurostat, authors' calculation.

The only declaring zone with a surplus in primary products is EFTA, but its surplus is small, unlike the deficits of the Community and Japan. The market is dominated by raw materials producers from the non-declaring partner zones. On the other hand, the Association's competitiveness in processed products, where almost all the members are in surplus, is undeniable. The other fact worthy of note is Germany's performance in a European Community that shows a deficit over all. The four declaring zones are all competitive for parts, Japan in particular. Finally, in the case of final goods we find the expected symmetry of the two large balances, the American deficit and the Japanese surplus.

These findings are instructive, but they are still too highly aggregated at sector level. In the remainder of this section, the relative positions in the four stages are estimated for each of the 14 industries. These have been arranged into five groups according to the relative performances of the declaring zones. If all stages are taken together, the European Community heads the table in the chemical, mechanical engineering and food industry industries in 1992. EFTA and the United States are each the most competitive in two industries: wood & paper and mining & quarrying for the European zone; other transport equipment and agriculture for the American zone. Japan predominates in a larger number of industries: data processing, electrical & electronic, cars & HGVs and metal products.

2.3.1. European Community

In 1992, the Community holds first place among the declaring zones in three industries: chemicals, mechanical engineering and the agri-food industries. In each case, its performance concerns only some stages of production, namely those which have the most weight within their respective industries.

Taking all stages together, it is in the **chemicals** industry that the Community's predominance is the most evident (+14%, Table 6). Here, the other three declaring zones show a surplus, but are far behind the European Community: its main competitors, Japan (+6%) and the United States (+5%), have less than half its surplus, but are well ahead of the EFTA countries, which occupy last place (+1%). In this industry, which is one of the most important for trade between zones[34], the European Community owes its predominance to its strong position in processed and finished products. Parts, mainly rubber and plastic articles, are dominated by Japan, whilst the United States is the most competitive in primary products.

Table 6
Market positions in 1992: chemicals

All stages			Primary			Processed			Parts			Final		
EC		**13.7**	**USA**		**10.6**	**EC**		**12.3**	**Japan**		**21.2**	**EC**		**20.1**
of which	Germany	7.6	**EFTA**		**4.7**	*of which*	Germany	8.6	**EC**		**5.8**	*of which*	France	6.6
	France	2.4	*of which*	Finland	3.2		UK	1.4	*of which*	France	4.9		Germany	5.7
	UK	1.8		Switzerland	1.3		Italy	1.2		Spain	2.3		UK	3.7
	Italy	1.0		Norway	0.8		France	1.1		Italy	0.9		Denmark	1.9
	Denmark	0.7	**Japan**		**-0.3**	**USA**		**8.6**		Netherlands	-1.0		Ireland	1.0
Japan		**6.2**	**EC**		**-4.7**	**Japan**		**6.3**	**EFTA**		**-7.2**		BLEU	0.9
USA		**5.3**	*of which*	UK	3.0	**EFTA**		**1.1**	*of which*	Austria	-0.6	**Japan**		**3.1**
EFTA		**1.0**		Netherlands	1.1	*of which*	Switzerland	2.3		Norway	-1.0	**EFTA**		**2.1**
of which	Switzerland	2.5		France	1.0		Austria	-0.7		Switzerland	-2.4	*of which*	Switzerland	4.2
	Austria	-0.8		Germany	-1.1					Sweden	-2.5		Sweden	1.2
				Ireland	-1.4				**USA**		**-9.9**		Finland	-0.8
				BLEU	-1.4								Norway	-1.0
				Italy	-4.9								Austria	-1.4
												USA		**-3.8**

Source: Eurostat, authors' calculation.

The Community's position in the **mechanical engineering** industry (+20%, Table 7) is rivalled by the Japanese surplus (+17%). The United States and EFTA lag far behind the performances of these first two zones (+5% and +4% respectively). Competition between the Community and Japan is particularly keen at the stage of finished products, mainly capital goods, where their surpluses are very similar. However, the Community is succeeding in imposing its competitiveness on the Asian zone in the intermediate stage of parts. The Japanese are ahead of the Community further upstream, in processed products, but this stage represents only just over one percent of the industry as a whole.

34 See Table 2 in 2.2.1.

Table 7
Market positions in 1992: mechanical engineering

All stages			Processed			Parts			Final		
EC		**19.7**	**Japan**		**15.4**	**EC**		**20.6**	**EC**		**19.3**
of which	Germany	10.9	**EC**		**13.9**	*of which*	Germany	9.9	*of which*	Germany	11.5
	Italy	5.6	*of which*	Germany	8.1		Italy	5.1		Italy	5.8
	UK	1.7		Italy	4.5		France	2.6		UK	1.4
	France	1.5		UK	0.8		UK	2.3		France	1.0
	Denmark	0.6		France	0.7		Denmark	0.6		Denmark	0.6
Japan		**16.5**		Spain	0.6	**Japan**		**11.0**	**Japan**		**19.1**
USA		**5.0**		BLEU	-0.6	**USA**		**9.8**	**EFTA**		**3.9**
EFTA		**3.8**	**EFTA**		**-2.0**	**EFTA**		**3.6**	*of which*	Switzerland	3.2
of which	Switzerland	3.0	*of which*	Austria	-0.6	*of which*	Switzerland	2.7		Sweden	1.3
	Sweden	1.5		Switzerland	-0.6		Sweden	1.7	**USA**		**2.8**
	Norway	-0.6	**USA**		**-4.0**		Norway	-0.9			

Source: Eurostat, authors' calculation.

In the **agri-food industries** (Table 8), the European Community is slightly ahead of the United States (+6 and +4% respectively), whereas EFTA and Japan in particular are in deficit (-1 and -20%). As we pass from upstream to downstream, the industry is divided between the European Community and the United States. Downstream, in final food products, intended mainly for consumption, Europe is much more competitive than the United States. Upstream, the latter has large surpluses in primary and processed products, unlike the other declaring zones, all of which show a deficit.

Table 8
Market positions in 1992: agri-food industries

All stages			Primary			Processed			Final		
EC		**5.7**	**USA**		**22.2**	**USA**		**11.0**	**EC**		**11.7**
of which	France	3.0	**EFTA**		**-1.6**	**EFTA**		**-3.6**	*of which*	France	4.4
	Denmark	1.5	*of which*	Austria	-1.2	*of which*	Sweden	-1.1		Netherlands	2.2
	Netherlands	1.2	**EC**		**-18.6**		Switzerland	-1.1		Denmark	2.1
	Ireland	1.0	*of which*	BLEU	-0.7		Austria	-1.1		UK	1.7
USA		**4.2**		Portugal	-0.8	**EC**		**-11.0**		Ireland	1.2
EFTA		**-1.4**		Spain	-1.1	*of which*	BLEU	0.7		Italy	0.7
of which	Iceland	0.8		France	-2.2		Germany	-0.7	**USA**		**1.2**
	Switzerland	-0.9		UK	-2.6		Portugal	-1.0	**EFTA**		**-0.9**
	Sweden	-1.2		Germany	-5.0		France	-1.1	*of which*	Iceland	0.9
Japan		**-19.7**		Italy	-5.7		Spain	-1.7		Norway	0.8
			Japan		**-21.3**		Netherlands	-2.2		Switzerland	-0.9
							UK	-5.2		Sweden	-1.2
						Japan		**-11.1**	**Japan**		**-21.9**

Source: Eurostat, authors' calculation

Turning now to the member countries of the European Community individually, Germany plays a dominant role in the chemical and mechanical engineering industries, where it accounts for more than half the surpluses[35]. The contributions of the Community's other three large countries, France, the United Kingdom and Italy, are modest compared with their German partner. However, Italy's competitiveness in the mechanical engineering industry is remarkable; it is even slightly above that of the United States. In the food industries, most of the surplus comes from France. Here, the other members in surplus are small countries: Denmark, the Netherlands and Ireland.

2.3.2. EFTA

The EFTA countries lead the competition among the other declaring zones in the industries of **wood and paper** and in the **mining and quarrying industries** (Table 9 and Table 10). The Association's competitiveness in the former (+17%) is uncontested. The United States has a surplus of only 2%, while Japan and the European Community have a big deficit (-7 and -21% respectively)[36]. EFTA's surpluses are only at the stage of processed products, which make up about 80% of trade in the industry (see Table 2 in 2.2.1.). On the other hand, at the two extremes of the production process, in primary products and final goods, the United States is in first place, while the European Community is more successful in "parts".

Table 9
Market positions in 1992: wood and paper

All stages			Primary			Processed			Parts			Final		
EFTA		**16.8**	**USA**		**37.1**	**EFTA**		**24.3**	**EC**		**30.8**	**USA**		**17.5**
of which	Sweden	7.7	**EC**		**0.0**	*of which*	Sweden	10.5	*of which*	Germany	14.5	**EC**		**9.7**
	Finland	7.6	*of which*	Germany	2.1		Finland	10.0		UK	10.5	*of which*	Germany	5.1
	Austria	1.9		Portugal	0.8		Austria	3.1		Denmark	3.0		France	1.5
	Switzerland	-0.9		UK	-1.5		Norway	0.9		Italy	1.8		Spain	1.5
USA		**2.2**		Italy	-1.5	**USA**		**-3.2**	**USA**		**17.4**		UK	1.4
Japan		**-7.0**	**EFTA**		**-3.1**	**Japan**		**-6.3**	**Japan**		**4.4**		Ireland	0.8
EC		**-20.6**	*of which*	Switzerland	-0.8	**EC**		**-29.3**	**EFTA**		**-6.9**		Italy	0.6
of which	Spain	-0.6		Sweden	-0.9	*of which*	Spain	-1.1	*of which*	Switzerland	3.1		Netherlands	-0.7
	Denmark	-0.9		Austria	-1.2		Denmark	-1.2		Finland	-0.6	**Japan**		**-2.8**
	BLEU	-1.3	**Japan**		**-47.0**		BLEU	-1.6		Austria	-4.1	**EFTA**		**-9.2**
	France	-1.8					France	-2.7		Sweden	-4.7	*of which*	Norway	-1.1
	Netherlands	-2.3					Netherlands	-2.8					Sweden	-1.5
	Italy	-3.5					Italy	-4.6					Austria	-2.4
	Germany	-4.6					UK	-7.2					Switzerland	-3.7
	UK	-5.3					Germany	-7.5						

Source: Eurostat, authors' calculation.

With the exception of Switzerland and Iceland, all the countries in the Association are in surplus in wood and paper products. However, the zone's overall performance is due essentially to two Scandinavian countries, Sweden and Finland. These two together account for over 90% of the Association's surplus in this industry.

EFTA's second pole of competition, mining and quarrying, is the favourite industry of certain non-declaring zones supplying raw materials, such as the countries of the Middle East. The Association's overall surplus there is only 5%, whereas the deficit of all the other three declaring zones exceeds 80% of the inter-zone trade of this industry of supply. The Association's performance is in the two upstream stages, primary and processed products.

Just one country, Norway, is the source of the relative competitiveness of the whole of EFTA. Norway has large surpluses in primary products, more especially on the natural gas market, as a result of exploiting North Sea deposits.

35 Only the member countries of the European Community and EFTA with a relative balance of more than +0.5% or less than -0.5% appear in the tables in this section.

36 Moreover, its declaring partners are not EFTA's main competitors in the wood & paper industry. These are non-declaring countries such as Indonesia on the wood articles market or Canada on the pulp and paper market.

Table 10
Market positions in 1992: mining and quarrying products

All stages			Primary			Processed			Final		
EFTA		**4.6**	**EFTA**		**5.0**	**EFTA**		**1.6**	**USA**		**3.1**
of which	Norway	6.9	*of which*	Norway	7.8	*of which*	Switzerland	1.8	**EFTA**		**0.0**
	Sweden	-0.6		Sweden	-0.6	**USA**		**-1.5**	**Japan**		**0.0**
	Austria	-0.6		Austria	-0.7	**EC**		**-4.1**	**EC**		**-97.2**
	Finland	-0.8		Finland	-0.9	*of which*	BLEU	4.3	*of which*	BLEU	-32.4
USA		**-13.9**	**USA**		**-15.4**		Spain	-3.2		UK	-64.5
Japan		**-26.6**	**Japan**		**-25.5**		UK	-4.9			
EC		**-40.3**	**EC**		**-44.1**	**Japan**		**-37.9**			
of which	Portugal	-0.8	*of which*	Portugal	-0.9						
	Greece	-0.9		Greece	-1.0						
	BLEU	-1.1		BLEU	-1.5						
	UK	-4.3		UK	-3.8						
	Spain	-4.4		Spain	-4.6						
	Netherlands	-5.6		Netherlands	-6.2						
	France	-6.0		France	-6.7						
	Italy	-6.3		Italy	-7.1						
	Germany	-10.3		Germany	-11.5						

Source: Eurostat, authors' calculation.

2.3.3. United States

The United States' traditionally strong position has been very much eroded in the chemicals, mechanical engineering, electrical and electronic and data processing industries. In 1992, it remains competitive in two industries with very different stages of production: other transport equipment, whose products incorporate a great deal of technical progress and which is located downstream of the production process, and agriculture, a supply industry the major part of which consists of primary products.

In 1992, the United States therefore have a 23% surplus in **other transport equipment** (Table 11) despite keen competition from the European Community (+7%) in aeronautics and space. This American surplus is obtained thanks to a high level of competitiveness in parts and finished products. Japan is close behind the Community (+6%), and EFTA is the only declaring zone to be in deficit in this industry (-2%). However, in terms of stages the countries of the Association occupy first place in processed products, but these account for only 0.2% of total trade.

Table 11
Market positions in 1992: other transport equipment

All stages			Processed			Parts			Final		
USA		**23.2**	**EFTA**		**16.1**	**USA**		**15.0**	**USA**		**27.6**
EC		**6.9**	*of which*	Norway	9.3	**EC**		**8.8**	**Japan**		**7.7**
of which	France	5.7		Sweden	6.8	*of which*	UK	10.7	**EC**		**6.0**
	UK	1.9	**EC**		**12.3**		Italy	0.6	*of which*	France	9.0
Japan		**5.7**	*of which*	Germany	10.2		BLEU	-0.7		Netherlands	0.7
EFTA		**-2.0**		France	3.1		Netherlands	-1.0		Denmark	0.7
of which	Switzerland	-0.9		UK	0.8	**Japan**		**1.8**		Germany	0.6
				Portugal	-1.2	**EFTA**		**-1.5**		Greece	-0.7
			USA		**9.3**	*of which*	Switzerland	-0.7		Italy	-0.8
			Japan		**7.5**					UK	-2.8
									EFTA		**-2.3**
									of which	Norway	-0.7
										Switzerland	-1.0

Source: Eurostat, authors' calculation

So far as **agricultural products** are concerned (Table 12), the United States' surplus is equal to one fifth of inter-zone trade. The Japanese deficit is about the same as the American surplus, and the European Community's is even greater (-24%). The negative balance of the EFTA countries is modest by comparison (-5%). Unlike the United States, most industrialised countries therefore have little presence in this industry, the weight of which in world trade is diminishing. France and the Netherlands have large surpluses in certain products (cereals for the former and non-edible agricultural products for the latter), but the sectoral division as presented here does not reveal it. The United States' other competitors on the world market in agricultural products are, on the one hand, Canada, Australia and New Zealand, developed countries with an abundance of natural resources, and, on the other hand, the developing countries of Latin America, Asia and Africa.

Table 12
Market positions in 1992: agriculture

All stages			Primary			Processed			Final		
USA		**19.0**	**USA**		**27.1**	**EFTA**		**-3.3**	**USA**		**1.5**
EFTA		**-4.9**	**EFTA**		**-3.5**	*of which*	Switzerland	-2.7	**EFTA**		**-7.8**
of which	Finland	-0.7	*of which*	Sweden	-0.8	**USA**		**-5.0**	*of which*	Norway	1.3
	Sweden	-1.3		Austria	-0.9	**EC**		**-9.9**		Finland	-1.0
	Austria	-1.4		Switzerland	-1.0	*of which*	Netherlands	-0.7		Austria	-2.4
	Switzerland	-1.8	**EC**		**-21.9**		UK	-1.0		Sweden	-2.5
Japan		**-19.7**	*of which*	Portugal	-1.2		Italy	-1.6		Switzerland	-3.7
EC		**-24.3**		BLEU	-1.3		Germany	-5.0	**Japan**		**-14.6**
of which	Portugal	-0.9		UK	-2.1	**Japan**		**-20.6**	**EC**		**-29.6**
	BLEU	-1.8		Spain	-2.9				*of which*	Netherlands	-0.7
	France	-1.9		Netherlands	-4.5					Denmark	-1.0
	Spain	-2.4		Italy	-4.9					Spain	-1.4
	Netherlands	-3.3		Germany	-5.3					Italy	-1.7
	UK	-3.7	**Japan**		**-22.1**					BLEU	-2.7
	Italy	-3.9								France	-5.7
	Germany	-6.3								UK	-7.3
										Germany	-8.6

Source: Eurostat, authors' calculation.

2.3.4. Japan

In 1992, Japan has a strong position in three industries: cars & HGVs, data processing and the electrical & electronic industries. In each case it has a large surplus, and Japan heads the list of declaring zones in all stages. Apart from the powerful internal dynamics of the Japanese economy, the country's leading position in these high-growth industries of world trade explains the size of the surpluses[37].

Japan is also in first place in metal products. However, its performance is distinctly lower in this industry, where certain Latin American countries, such as Brazil, are powerful competitors: with a modest overall surplus it is far from dominating the industry upstream or downstream.

Table 13
Market positions in 1992: cars & HGVs

All stages			Parts			Final		
Japan		**31.6**	**Japan**		**21.6**	**Japan**		**36.5**
EC		**6.7**	**EC**		**5.2**	**EC**		**7.5**
of which	Germany	6.3	*of which*	Germany	3.3	*of which*	Germany	7.8
	France	1.8		France	2.4		France	1.6
	Italy	0.9		Italy	2.1		UK	-0.7
	BLEU	-0.6		BLEU	-2.2		Netherlands	-1.0
	Netherlands	-0.8	**USA**		**2.6**	**EFTA**		**-3.7**
EFTa		**-1.9**	**EFTA**		**1.8**	*of which*	Sweden	2.0
of which	Sweden	1.7	*of which*	Austria	1.5		Norway	-0.6
	Austria	-1.0		Sweden	1.0		Austria	-2.3
	Switzerland	-2.0					Switzerland	-2.8
USA		**-16.5**				**USA**		**-25.8**

Source: Eurostat, authors' calculation

In 1992, Japan's surplus on the **private car** market is about one third of inter-zone trade (Table 13). Symmetrically, the United States shows the biggest deficit (-17%), from finished products alone. Conversely, thanks to purchases by Canadian subsidiaries of its large enterprises, the United States still has a modest positive balance in parts. The relative surplus of the European Community, which once had a much higher balance than Japan, is only 7%. Most of this comes from Germany. Like Japan, the Community's overall balance in cars & HGVs is positive both in parts and in finished products. EFTA shows an overall deficit (-2%) despite Sweden's competitiveness.

Technological innovation and very keen competition between firms mean that international trade in electronic products is characterised by a very high volume growth and a relative decline in prices. More specifically, **data processing products**[38] are another strong point in Japanese competitiveness. Here, even more than in cars & HGVs, the strategies pursued by multinational firms determine market conditions, which may result in companies' performance being separated from that of their country of origin. Nevertheless, it is the national area of Japan that is the most competitive in 1992 (+22%, Table 14). The other three areas all have negative relative balances: EFTA and the United States show a moderate deficit (each -5%), whilst the Community has a relative deficit of -19%. Generally speaking, the West European countries show a deficit in their non-intra-zone trade in both parts and finished products. America retains a slight surplus in parts.

37 See G. Lafay and J. M. Siroën, 1994, p. 11.

38 It will be recalled that these are classed in a different industry from electrical/electronics products.

Table 14
Market positions in 1992: data processing

All stages			Parts			Final		
Japan		**21.8**	**Japan**		**18.5**	**Japan**		**23.5**
EFTa		**-4.6**	**USA**		**0.5**	**EFTA**		**-4.6**
of which	Norway	-0.6	**EFTA**		**-4.6**	*of which*	Norway	-0.6
	Sweden	-1.0	*of which*	Norway	-0.7		Sweden	-0.9
	Austria	-1.0		Austria	-0.9		Austria	-1.0
	Switzerland	-1.6		Sweden	-1.2		Switzerland	-1.8
USA		**-5.0**		Switzerland	-1.2	**USA**		**-7.9**
EC		**-19.2**	**EC**		**-16.5**	**EC**		**-20.5**
of which	Italy	-0.9	*of which*	Spain	-1.0	*of which*	BLEU	-0.6
	Spain	-1.1		France	-1.5		Spain	-1.1
	France	-1.9		Netherlands	-2.6		Italy	-1.2
	UK	-3.9		UK	-4.1		France	-2.1
	Netherlands	-4.3		Germany	-5.8		UK	-3.8
	Germany	-6.2					Netherlands	-5.2
							Germany	-6.4

Source; Eurostat, authors' calculation.

The **electrical/electronics industry** is relatively varied in its composition: it contains other electronic products such as radio, television and communication equipment as well as medical, precision and optical equipment, clocks and watches and electrical machinery and apparatus. Looking at the total for these products, Japan is rivalled by none of the other three declaring zones in 1992 (Table 15).

Table 15
Market positions in 1992: electrical/electronics

All stages			Processed			Parts			Final		
Japan		**21.7**	**Japan**		**15.0**	**Japan**		**21.6**	**Japan**		**23.0**
EFTA		**1.1**	**EC**		**3.3**	**USA**		**3.2**	**EFTA**		**2.3**
of which	Switzerland	1.9	*of which*	Italy	2.1	**EC**		**0.4**	*of which*	Switzerland	3.1
USA		**-2.3**		France	1.4	*of which*	Germany	1.2	**USA**		**-6.5**
EC		**-3.1**	**EFTA**		**-1.1**		France	1.1	**EC**		**-7.0**
of which	Spain	-0.7	*of which*	Sweden	-0.9		UK	-1.1	*of which*	Germany	-0.6
	Netherlands	-0.9	**USA**		**-4.0**	**EFTA**		**0.0**		UK	-1.0
	UK	-1.0				*of which*	Switzerland	0.7		BLEU	-1.0
										Spain	-1.2
										Italy	-1.2
										Netherlands	-1.6

Source: Eurostat, authors' calculation.

Table 16
Positions in the sub-industries of electrical/electronics in 1992
(all stages together)

Electrical Machinery and apparatus			Radio, TV and communication equipment			Medical, precision and optical instruments, clocks and watches		
Japan		**16.8**	**Japan**		**29.7**	**Japan**		**12.5**
EC		**7.3**	**EFTA**		**-0.8**	**USA**		**7.5**
of which	Germany	3.7	**USA**		**-7.9**	**EFTA**		**6.0**
	France	2.7	**EC**		**-9.7**	*of which*	Switzerland	7.2
	Italy	1.2	*of which*	Germany	-2.9		Austria	-0.6
EFTA		**-0.5**		UK	-2.3	**EC**		**-2.0**
of which	Switzerland	0.9		Netherlands	-1.2	*of which*	Germany	2.1
	Norway	-0.6		Spain	-0.9		Italy	-1.2
USA		**-2.3**		Italy	-0.9		Spain	-1.1
				BLEU	-0.6		Netherlands	-1.0
							BLEU	-0.7

Source: Eurostat, authors' calculation.

If the three sub-industries of the electrical/electronics industry are considered separately, however, we find that Japan's huge surplus is mainly in radio, television and communication equipment (Table 16). In the other two sub-industries, on the other hand, Japan is faced with serious rivals: the European Community has a major surplus in electrical machinery and apparatus, as do the United States and EFTA in medical, precision and optical instruments, clocks and watches. EFTA's performance in the latter sub-industry is due entirely to Switzerland, which has since the 1980s been experiencing a renaissance in clock and watchmaking due in particular to Swatch watches.

As in the two previous industries, Japan takes the lead among the declaring zones in each of the stages making up the electrical/electronics industry. The European Community's second place in processed products is closely linked to its surplus in electrical equipment. The United States takes second place in parts as a result of its competitiveness in medical and precision instruments.

As emphasised before, Japan's performance in the **metal products industry** cannot be compared with its performances in the three previous industries (Table 17). Japan has for a long time been giving priority to the most dynamic products in international trade. The metal products industry is not one of these, comprising among other things iron and steel products. Consumption of these products in the old industrial countries is slowing down markedly as a result of technological change, whilst some of the developing countries of Latin America and Asia are now producing enough to meet the needs of their own dynamic internal markets and to export. In this unfavourable situation, Japan is continuing to export its surplus capacity. In 1992, for the industry as a whole, it has a relative surplus of 4%. It is closely followed by the EFTA countries (+3%), whereas the European Community and the United States each have a -4% deficit.

Table 17
Market positions in 1992: metal products

All stages			Primary			Processed			Parts			Final		
Japan		**4.0**	**USA**		**16.2**	**Japan**		**3.9**	**Japan**		**18.7**	**EC**		**6.6**
EFTA		**3.0**	**EFTA**		**-2.7**	**EFTA**		**3.5**	**EC**		**7.6**	*of which*	Italy	3.3
of which	Sweden	1.2	*of which*	Switzerland	1.2	*of which*	Sweden	1.3	*of which*	Germany	5.1		France	3.1
	Finland	0.6		Finland	-1.4		Finland	0.8		Italy	1.1		Germany	0.7
EC		**-3.8**		Sweden	-1.8		Norway	0.7		France	0.8		Spain	0.7
of which	France	0.8	**Japan**		**-7.4**	**EC**		**-4.9**		BLEU	0.7		Netherlands	-0.9
	Netherlands	-0.6	**EC**		**-13.5**	*of which*	France	0.7		UK	0.7	**Japan**		**3.9**
	Italy	-1.7	*of which*	Netherlands	3.7		Spain	0.6		Netherlands	-0.9	**EFTA**		**-1.0**
	UK	-2.5		UK	1.4		Netherlands	-0.8	**EFTA**		**7.2**	*of which*	Switzerland	0.7
USA		**-4.2**		Spain	-1.4		Italy	-2.1	*of which*	Sweden	4.0		Norway	-0.7
				BLEU	-2.5		UK	-3.1		Switzerland	3.2		Austria	-1.3
				Italy	-4.7	**USA**		**-5.6**		Austria	0.8	**USA**		**-6.6**
				Germany	-9.5				**USA**		**5.4**			

Source: Eurostat, authors' calculation.

2.3.5. Industries in which the 4 declaring zones are in deficit

The European Community, the United States and Japan are all in deficit in textiles, the coking and refining industries and in miscellaneous industries. As before, the performances of the non-declaring zones that are the most competitive in these industries will not be discussed.

The developing countries with an unskilled, cheap labour force often begin to be involved in international trade by specialising in **textile** products (Table 18). By contrast, the relatively high level of wages in the four declaring zones has not allowed them to specialise in any part of this industry for a long time[39]. Use of the Multifibre Arrangement does not prevent the United States from having a very negative balance in 1992 (more than one fifth of inter-zone trade in textile products). By comparison, the European Community's deficit is half the size, while Japan's and EFTA's are smaller still. These results are mainly due to trade in finished products, which accounts for most of the trade on this market; the four zones enjoy positive relative balances in intermediate goods. This is the case with the United States in such primary textile products as textile fibres and yarn, cloth and leather waste. The European Community and Japan have a comfortable relative surplus in processed products, essentially yarns and fabrics. All four zones are in surplus at the stage of parts, i.e. textile products for technical use.

Table 18
Market positions in 1992: textiles

All stages			Primary			Processed			Parts			Final		
EFTA		**-6.2**	**USA**		**7.7**	**EC**		**10.0**	**EC**		**21.9**	**EFTA**		**-8.7**
of which	Norway	-1.0	**EFTA**		**-0.7**	*of which*	Germany	6.6	*of which*	Germany	14.2	*of which*	Finland	-0.6
	Austria	-1.0	**EC**		**-6.9**		Italy	3.5		UK	4.5		Norway	-1.2
	Sweden	-1.8	*of which*	BLEU	3.9		France	1.9		France	2.1		Austria	-1.6
	Switzerland	-1.8		Netherlands	2.3		UK	-1.3		Italy	1.0		Sweden	-2.3
Japan		**-6.7**		UK	-0.8	**Japan**		**6.5**		Spain	0.9		Switzerland	-2.8
EC		**-9.7**		Spain	-1.6	**EFTA**		**0.4**		Netherlands	-0.7	**Japan**		**-11.0**
of which	Italy	3.2		Italy	-10.0	*of which*	Switzerland	0.8	**EFTA**		**12.0**	**EC**		**-16.5**
	Portugal	0.7	**Japan**		**-18.1**		Austria	0.7	*of which*	Switzerland	11.4	*of which*	Italy	3.3
	France	-1.4				**USA**		**-3.0**		Sweden	1.8		Portugal	1.1
	Netherlands	-1.6								Finland	-0.7		BLEU	-0.7
	UK	-2.9								Norway	-0.9		Netherlands	-2.3
	Germany	-6.8							**Japan**		**6.2**		France	-2.5
USA		**-21.7**							**USA**		**4.4**		UK	-3.6
													Germany	-11.4
												USA		**-28.4**

Source: Eurostat, authors' calculation.

39 Nevertheless, within the Community, Italy and Portugal have a surplus.

Miscellaneous industries is the most diverse industry of the sectoral breakdown. It includes furniture, precious stones, jewellery, objets d'art, musical instruments, sport and hunting articles, toys, umbrellas, walking sticks, cigarette lighters, matches, etc. There is therefore little point in calculating the relative balances at industry or stage of production level. Note, too, that trade in primary products and in parts of these various products is virtually negligible (less than 0.1% of total inter-zone trade in 1992). By far the majority are consumer goods, and, as in the case of final textile products, the most competitive producer countries are those with cheap labour.

The **coking and refining** industry, which also includes products of the nuclear industries, consists almost entirely of processed products. The very great competitiveness of the countries of the European Community in the other two stages must be interpreted with caution (Table 19). Inter-zone trade in primary products, which include gas hydrocarbons not elsewhere specified (but not including natural gas), and final products, consisting of fuel elements or rods for nuclear reactors, is in fact extremely small (less than 0.1% of total inter-zone trade in 1992).

Table 19
Market positions in 1992: coking and refining

All stages			Primary			Processed			Final		
EC		**-0.8**	**EC**		**92.2**	**EC**		**-1.8**	**EC**		**56.5**
of which	UK	2.8	*of which*	Germany	90.6	*of which*	UK	2.8	*of which*	France	31.5
	BLEU	1.5		BLEU	1.1		BLEU	1.5		Germany	22.8
	Germany	-0.7		France	0.8		Germany	-1.4		UK	2.0
	France	-1.9		UK	0.7		Italy	-2.0	**USA**		**6.1**
	Italy	-1.9		Italy	-0.8		France	-2.2	**Japan**		**-4.8**
EFTA		**-2.7**	**EFTA**		**1.5**	**EFTA**		**-2.5**	**EFTA**		**-32.4**
of which	Norway	1.8	*of which*	Sweden	1.9	*of which*	Norway	1.9	*of which*	Sweden	-6.9
	Finland	-0.6	**Japan**		**-0.1**		Austria	-1.0		Finland	-11.0
	Austria	-1.0	**USA**		**-4.3**		Switzerland	-3.0		Switzerland	-14.5
	Switzerland	-3.0				**USA**		**-7.8**			
USA		**-7.7**				**Japan**		**-16.3**			
Japan		**-16.1**									

Source: Eurostat, authors' calculation.

2.4. International specialisation: strengths and weaknesses

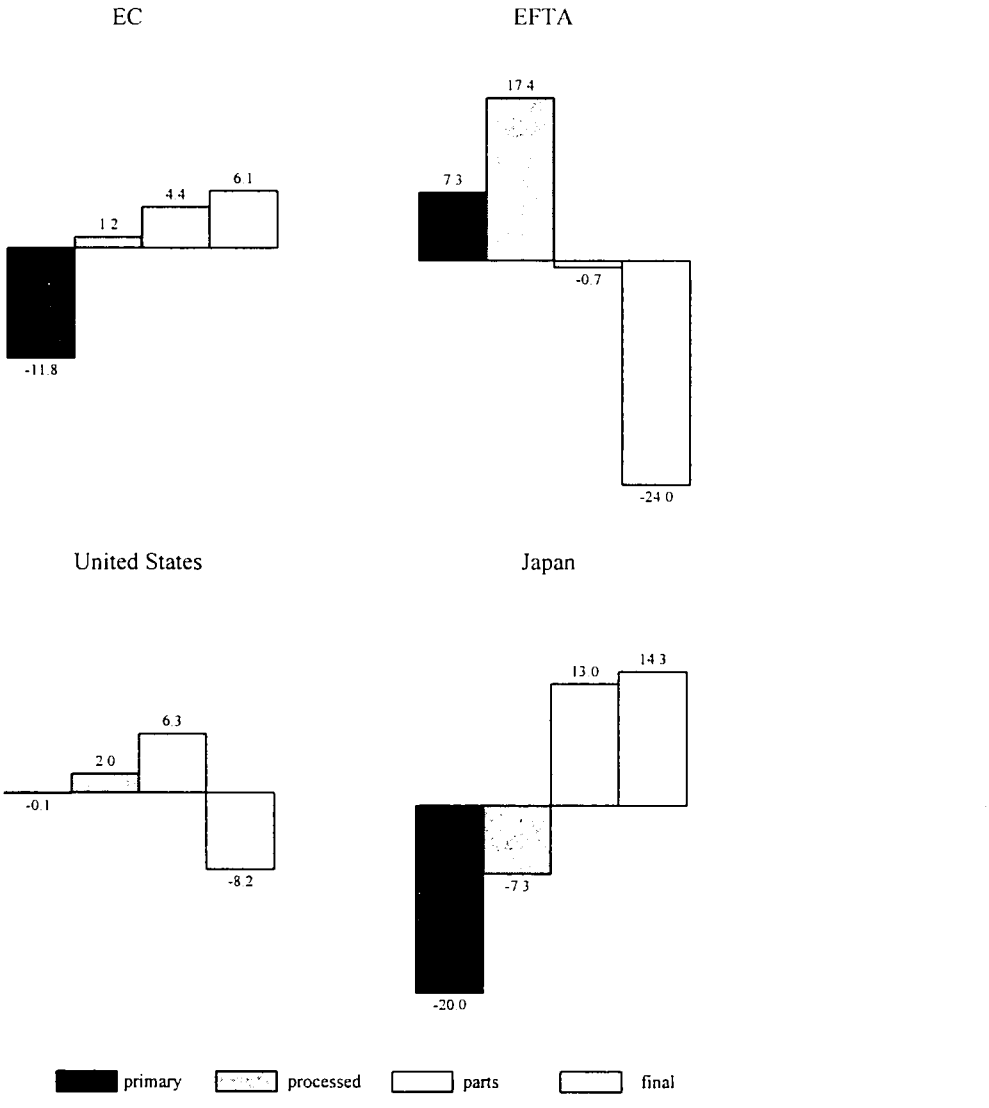
A country's or a zone's international trade specialisation is the result of the structure of its comparative advantages (strengths) and disadvantages (weaknesses). Unlike the concept of competitiveness (section 2.3), which is greatly affected by the macroeconomic cycle, in particular changes in real exchange rates, specialisation is structural in nature. The relative differences in the productivity and endowment of factors, factor inputs, economies of scale and the firms' specific advantages all go to determine the profile of advantages or disadvantages of a national territory.

Here, the respective specialisations of the four declaring zones are estimated by the balance contribution indicator developed by the CEPII. This is an indicator of "comparative advantage" revealed by international trade[40]. The trade balance is the basic tool, as it is for the indicator of market position, which assesses competitiveness. Unlike competitiveness, however, which is measured between countries (for each product), comparative advantage is measured between products (for each country). For a given territory, it is a question of comparing the various products with each other, regardless of the overall balance affecting all goods (box 8).

40 The term "comparative advantage" used here must not cause us to forget the microeconomic dimension of the problem: since the declaring countries or zones in our study are the most industrialised in the world, their comparative advantages are most often the result of the dynamism of their enterprises at microeconomic level and owe relatively little to macroeconomic endowments in terms of factors of production.

Figure 9 shows the comparative advantages by stage of the four declaring zones in 1992[41]. The by-stage specialisation profiles of EFTA and Japan are symmetrical. Unlike Japan, the countries of the Association are in fact specialised upstream of the production process; primary and processed products correspond to their strengths, whilst parts and, in particular, final goods make a negative contribution to their trade balances. The United States' strengths are concentrated in the middle of the production process, in processed products and especially in parts. Final products are their main weaknesses. The European Community's specialisation is less marked than the other three zones. In fact, all the other stages with the exception of primary products make a positive contribution to the Community's balance, in ascending order from processed products to final products.

Figure 9
Specialisation of the four declaring zones by stage in 1992
(in thousandths of the zone's GDP)



Source: Eurostat and CHELEM-PIB, authors' calculation.

41 Unlike in sections 2.2 and 2.3, we have not applied our "harmonisation" procedure to the Eurostat data when calculating the indicators presented in the following sections of this chapter and in the first section of Chapter 3.

Box 8
Indicator of comparative advantage

The concept of comparative advantage is by definition structural in nature, and the indicator that measures it must therefore avoid the influence of the macroeconomic factors that cause cyclical imbalances in the trade balance of the country concerned. This is the purpose of the CEPII balance contribution indicator (G. Lafay 1989 and 1990), which compares, in thousandths of GDP, a country's effective balance in a given product with a theoretical balance for the same product. The principle of its design is illustrated in the following table by the example of the United States in 1992. The first two columns show America's exports and imports in the fourteen industries in billion ECU. For more than one half of them the trade balance is negative and the United States shows overall a deficit of -54.8 billion ECU. In order to eliminate the economic effect of this deficit and arrive at the industries' own situation in relation to each other regardless of the overall balance, we calculate a theoretical balance that reflects neither comparative advantage nor disadvantage: by "splitting" America's overall balance among the various industries pro rata to their respective share in total trade . Take the case of the electrical/electronics industry, where imports are higher than exports and the effective balance is therefore negative (-6.9 billion). Since the relative weight of this industry is 0.16, the theoretical balance imputed to it is -8.7 billion ECU (=0.16*[-54.8]). The industry's own contribution is the difference between the two balances. The effective balance of the electrical/electronics industry is higher than its theoretical balance (-6.9-[-8.7]=1.8 billion ECU or 0.4 thousandths of America's GDP). Therefore, despite its effective deficit, this industry, which makes a positive contribution to America's overall balance, is a comparative advantage for the United States.

Example calculation: contribution of industries to the United States' trade balance in 1992

	Exports X	Imports M	Relative weight P=(X+M)/(TX+TM)	Actual balance A=X-M	Theoretical balance B=P*(TX-TM)	Contribution to balance (A-B/Y) *1000
	bill. ECU	bill. ECU		bill. ECU	bill. ECU	thou'th GDP
Agriculture	20.6	8.4	0.04	12.2	-2.3	3.2
Mining & Quarrying	5.6	26.0	0.05	-20.5	-2.5	-3.9
AFI	19.6	15.4	0.05	4.2	-2.8	1.5
Textiles	7.6	37.7	0.06	-30.0	-3.6	-5.8
Wood & Paper	15.7	14.7	0.04	1.1	-2.4	0.8
Coking & Refining	5.4	9.2	0.02	-3.8	-1.1	-0.6
Chemicals	43.0	33.8	0.11	9.2	-6.0	3.3
Metal products	17.6	23.2	0.06	-5.6	-3.2	-0.5
Mechanical engineering	36.7	27.9	0.09	8.8	-5.1	3.0
Data processing	23.7	27.8	0.07	-4.1	-4.0	-0.0
Electrical/Electronic	52.0	58.8	0.16	-6.9	-8.7	0.4
Cars	32.4	61.1	0.13	-28.7	-7.3	-4.7
Other Transport	34.8	11.9	0.07	22.8	-3.7	5.8
Miscellaneous	7.1	20.7	0.04	-13.6	-2.2	-2.5
Total (T)	321.9	376.7	1.00	-54.8	-54.8	-0.0
GDP (Y)	4.565.2 billion ECU					

Each industry's contributions are additive for a given country, the sum of all of them being zero by design. In our study, for a given declaring country or zone, the comparative advantages are calculated at the finest level of the nomenclature and vis-à-vis each of the partner zones, and then aggregated according to the split adopted. Likewise, for the two declaring zones that comprise several countries, the EC and EFTA, each member country's contribution to the common balance has been calculated in thousandths of GDP of the zone in question[42].

... / ...

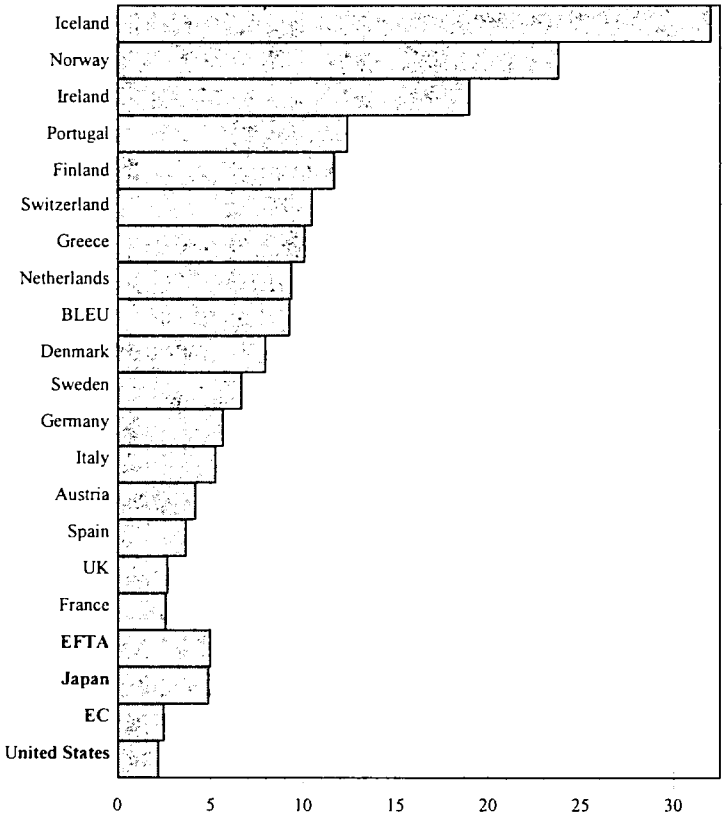
42 The GDPs of these two units correspond to the sum of the GDPs of their member countries.

Box 8 - contd.

Each industry's balance are relativised by the GDP of the country or zone concerned. The importance of this operation naturally appears when we are looking at several years (see 3.1). However, it is not without consequence for just one given year. This in fact means that the bilateral comparative advantages are not symmetrical. For example, mutual trade in the mechanical engineering industry between EFTA and the EC gives a significant comparative disadvantage for the former (-1.8 thousandths of the Association's GDP), whilst for the latter the comparative advantage is much smaller because its GDP is much higher (0.4 thousandths of Community GDP).

This standardisation is also useful for comparing intensities of specialisation between countries. This can be seen from the scale of strengths and weaknesses. Figure 9 highlights the difference in scale of the comparative advantages of the four zones. Whilst ranging from -8 to +6 for the United States, it varies from -24 to +17 for EFTA. At a more detailed sectoral level, the 30 sub-industries, the chart below shows, for each declaring country and zone, the standard deviation of the comparative advantage indicator in 1992. Within the four declaring zones, the specialisations of EFTA and Japan are much more marked (nearly 5 points) than those of the European Community and the United States (about 2.5). It is well known in economic literature that countries with a large internal market are less open to international trade. Similarly, the detail of the European countries confirms the great extent of specialisation of small countries. The four large countries of the European Community are thus logically less specialised than the others. However, the size of GDP does not explain all, for the profiles of the comparative advantages of Germany and Italy are much more pronounced than those of France and the United Kingdom.

The magnitude of specialisation of the declaring countries and zones in 1992



Source: Eurostat and CHELEM-PIB, authors' calculation.

2.4.1. European Community

The Community's specialisation profile reflects that of the four large European countries, Germany, France, Italy and the United Kingdom, which, given their weight in the Community's trade, make the biggest contributions to the balance. It should also be added that the same member countries trade the most with third countries. The Community has comparative advantages mainly in three industries - mechanical engineering, chemicals and cars & HGVs. Although these advantages are horizontal ones and therefore concern the entire production process, they exist mainly vis-à-vis the Eurafrican zone, whose weight in world trade is tending to diminish. On the other hand, the comparative disadvantages in such key industries as data processing or the electrical/electronics industry are found in bilateral relations with the most dynamic region, Asia-Oceania.

The first part of Table 20 shows the contribution made by each member country to the Community's overall balance in each stage and for all products in 1992 (grey box: comparative advantage). Following the logic of Chapter 2, intra-Community trade flows are left out of account[43]. The Community's comparative advantage at each stage corresponds to the sum of the member countries' contributions. These are classed into two groups according to the sign of their contribution, all products taken together. The first have a positive contribution (Germany, France, Italy, Denmark and Ireland), unlike the second (Netherlands, United Kingdom, Spain, Greece, Belgium/Luxembourg and Portugal). Germany and the Netherlands stand out symmetrically by the size of their contributions. It is the member countries of the first group that follow the structure by stage of the Community's specialisation: a very large comparative disadvantage in primary products (-11.8 thousandths of EC GDP) counterbalanced by comparative advantages that are growing but smaller in scope over all the rest of the production process. In fact, with the exception of the United Kingdom and the BLEU, which have comparative advantages in parts and in processed products respectively, the overall negative contribution made by the countries of the second group extends across all stages.

43 This is without consequence for the comparative advantages if the European Community is considered as an economic entity. Since we are referring to the balance, this is in fact zero for intra-zone trade, apart from the differences between FOB and CIF prices. Such is not the case for each member country's contribution to the zone's overall balance. Indeed, to take only one example, the Netherlands' contribution to the Community's overall balance, i.e. its trade with non-EC partners, is very much negative in 1992. The geographical breakdown of the Netherlands' comparative advantages shows that on the same date the country has great comparative advantages vis-à-vis its Community partners, whereas all the other partners make a negative contribution to its trade balance.

Table 20
EC specialisation by stage in 1992

Members' contributions to EC balance

in thousandths of GDP

	Primary	Processed	Parts	Final	Total
EC	**-11.8**	**1.2**	**4.4**	**6.1**	**0.0**
Germany	-3.2	2.6	2.0	2.9	4.3
France	-1.5	0.2	0.9	2.4	2.0
Italy	-2.2	-0.3	1.0	2.7	1.3
Denmark	0.0	-0.1	0.1	0.8	0.8
Ireland	-0.1	0.1	0.0	0.3	0.3
Portugal	-0.3	0.0	-0.1	0.1	-0.4
BLEU	-0.5	0.3	-0.2	-0.4	-0.7
Greece	-0.2	-0.1	-0.1	-0.3	-0.7
Spain	-1.3	0.0	-0.1	-0.3	-1.7
UK	-0.9	-1.0	1.0	-0.9	-1.8
Netherlands	-1.7	-0.5	-0.2	-1.0	-3.3

Breakdown by partner

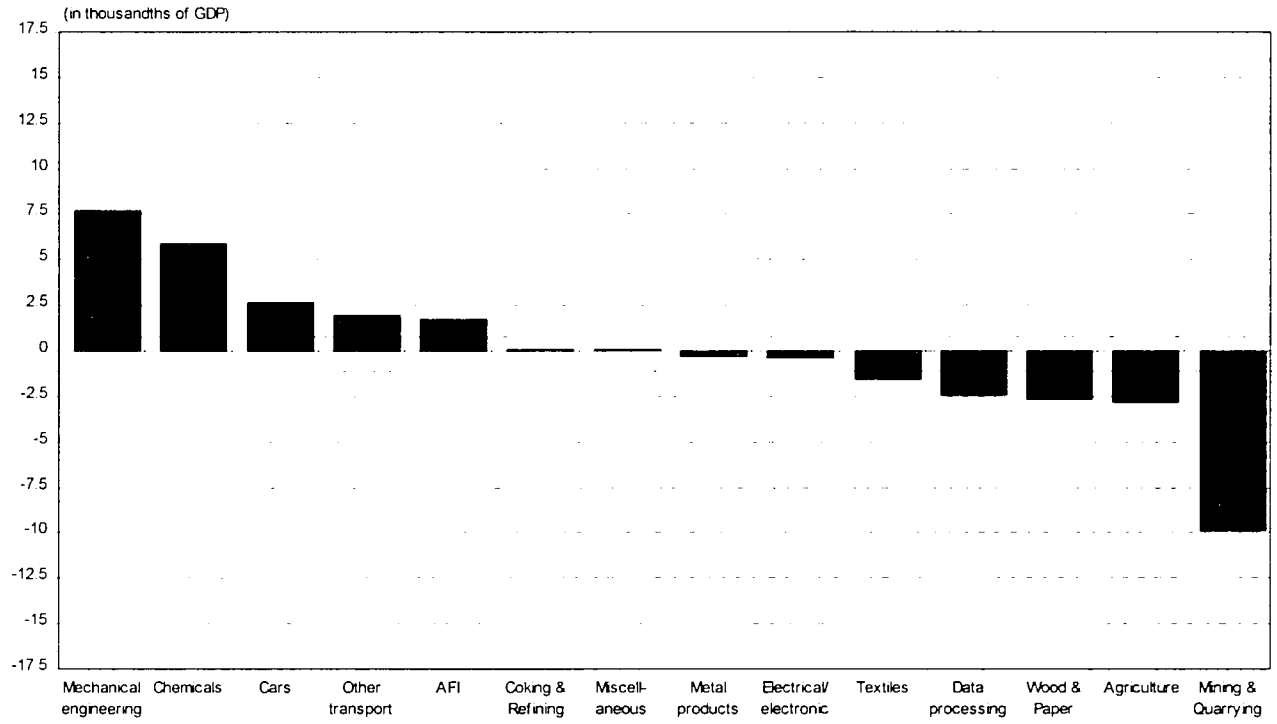
in thousandths of GDP

	Primary	Processed	Parts	Final	Total
WORLD	**-11.8**	**1.2**	**4.4**	**6.1**	**0.0**
Eurafrica	**-8.4**	**0.9**	**4.1**	**11.8**	**8.2**
Mediterranean countries	-0.9	1.6	0.9	0.7	2.3
Rest of World	-0.9	0.8	0.9	1.5	2.3
EFTA	-1.0	-1.9	0.5	4.1	1.7
Other Europe	-0.1	0.1	0.3	0.6	0.9
Middle East	-3.3	0.9	0.9	2.4	0.8
ACP	-1.5	0.1	0.4	1.2	0.1
ex USSR	-0.7	-0.7	0.2	1.3	0.1
America	**-2.4**	**-0.8**	**0.6**	**1.7**	**-0.9**
Mexico	-0.2	0.2	0.2	0.4	0.6
Canada	-0.2	-0.3	0.1	0.5	0.1
United States	-0.8	-0.2	-0.1	0.6	-0.5
Other America	-1.2	-0.5	0.4	0.2	-1.1
Asia-Oceania	**-0.8**	**1.3**	**-0.5**	**-7.3**	**-7.3**
Other Asia-Oceania	-0.5	0.3	0.3	0.1	0.2
NICs	-0.2	1.1	0.3	-1.8	-0.6
Large countries of Asia	-0.2	-0.1	0.4	-1.9	-1.8
Japan	0.1	0.0	-1.5	-3.7	-5.1

Source: Eurostat and CHELEM-PIB, authors' calculation.

The second part of Table 20 shows, again for 1992, the breakdown of the Community's comparative advantages according to the 15 partner zones. These are grouped into three regions - Eurafrica, America, Asia-Oceania - and arranged in order of the size of their all-products contributions. The Community's comparative advantages are essentially concentrated on its Eurafrican partners (+8.2 thousandths of the EC's GDP) and the disadvantages on those in Asia-Oceania (-7.3). The Community's by-stage specialisation profile corresponds to a disadvantage in primary products offset by an advantage in manufactured products of the other three stages. Only the countries of EFTA and the former USSR have comparative advantages over the Community in another stage - processed products. The American region makes a slightly negative contribution (-0.9): the EC's comparative advantages downstream of the process - more especially in final goods - are more than offset by weaknesses upstream in primary and processed products. We find the opposite situation with the zones of Asia-Oceania, if primary products (in which the EC is in deficit anyway) are excluded: the Community is at an advantage in processed products and very much at a disadvantage further downstream - especially in final goods.

Figure 10
European Community specialisation by industry in 1992



Source: Eurostat and CHELEM-PIB, authors' calculation.

The configuration by stage of the Community's specialisation therefore differs as against each of the three regions. To get a more precise idea of the division of tasks between the EC and its partners, we must add another dimension, that of industries. Figure 10 illustrates the Community's specialisation by industry in 1992. As emphasised above, the amplitude of the EC's specialisation by industry is relatively small. The 14 industries may be divided into three groups: strengths where the comparative advantage is greater than 0.5 thousandths of the EC's GDP (mechanical engineering, chemicals, cars & HGVs, other transport equipment, agri-food industries); weaknesses where the comparative advantage is less than 0.5 thousandths of GDP (mining & quarrying, agriculture, wood & paper, data processing, textiles); and the other industries, which do not show any sufficiently pronounced specialisation (coking & refining, miscellaneous, metal products, electrical/electronics).

Table 21 gives the by-stage structure of the comparative advantages for every industry making a positive contribution to the EC's balance in 1992. They are arranged in descending order of their contributions. For the first four - mechanical engineering (7.7), chemicals (5.9), cars & HGVs (2.7), other transport equipment (2.0) - the Community has comparative advantages throughout the production process. The only vertical[44] comparative advantage is in the agri-food industries, where the Community is at a disadvantage upstream (primary and processed products) and at an advantage downstream.

In none of the industries in question do any of the member countries make a significantly negative contribution to the Community's balance[45]. In the first three, the EC's comparative advantages are largely ascribable to Germany's specialisation. Italy takes second place in mechanical engineering. Only France and the United Kingdom appear alongside Germany in the chemicals industry, and only France in cars & HGVs. France, moreover, appears in every one of the Community's strong points, but its contribution is small in each case, which is consistent with the relatively diffuse nature of French specialisation in general. In other transport equipment, which among other things includes

44 See the definitions of horizontal and vertical comparative advantages in 1.1.

45 The tables combining industries with stages show, for each of the four declaring zones, only contributions by member countries or partners in excess - in absolute terms - of 0.5 thousandths of the zone's GDP in at least one column, i.e. one of the four stages or the total for the industry.

aeronautical products, Table 21 reveals that France and the United Kingdom specialise in two different stages of the same industry: finished products - Airbus assembly - for the first country and parts for the second. Finally, France is the only one of the Twelve to make a significant positive contribution in agri-food products.

Table 21
EC's comparative advantages by industry in 1992

Members' contributions to the EC balance

in thousandths of GDP

	Primary	Processed	Parts	Final	Total
Mechanical engineering	.	**0.1**	**2.6**	**5.1**	**7.7**
Germany	.	0.0	1.2	2.9	4.1
Italy	.	0.0	0.6	1.4	2.1
UK	.	0.0	0.3	0.4	0.7
France	.	0.0	0.3	0.3	0.6
Chemicals	**0.0**	**3.9**	**0.1**	**1.9**	**5.9**
Germany	0.0	2.6	0.0	0.5	3.2
France	0.0	0.3	0.0	0.6	0.9
UK	0.0	0.4	0.0	0.3	0.8
Cars	.	.	**0.8**	**1.9**	**2.7**
Germany	.	.	0.4	1.9	2.3
France	.	.	0.3	0.4	0.6
Other transport	.	**0.0**	**0.8**	**1.2**	**2.0**
France	.	.	0.0	1.1	1.1
UK	.	.	0.8	-0.1	0.6
AFI	**-0.2**	**-0.3**	.	**2.2**	**1.7**
France	0.0	0.0	.	0.7	0.6

Breakdown by partner

in thousandths of GDP

	Primary	Processed	Parts	Final	Total
Mechanical engineering	.	**0.1**	**2.6**	**5.1**	**7.7**
Mediterranean countries	.	0.0	0.4	0.8	1.2
Middle East	.	0.0	0.4	0.7	1.1
Other Europe	.	0.0	0.1	0.4	0.6
ex USSR	.	0.0	0.1	0.4	0.5
Other America	.	0.0	0.2	0.4	0.6
United States	.	0.0	0.1	0.4	0.6
NICs	.	0.0	0.4	0.7	1.1
Large countries of Asia	.	0.0	0.2	0.4	0.7
Japan	.	0.0	-0.1	-0.5	-0.6
Chemicals	**0.0**	**3.9**	**0.1**	**1.9**	**5.9**
Rest of world	0.0	1.2	0.0	0.3	1.5
Mediterranean countries	0.0	0.6	0.0	0.2	0.8
EFTA	0.0	0.3	0.1	0.3	0.7
Middle East	0.0	0.4	0.0	0.2	0.7
ACP	0.0	0.3	0.0	0.2	0.5
NICs	0.0	0.6	0.0	0.0	0.6
Cars	.	.	**0.8**	**1.9**	**2.7**
EFTA	.	.	-0.1	1.0	0.9
Mediterranean countries	.	.	0.2	0.3	0.5
United States	.	.	0.3	0.5	0.7
Japan	.	.	-0.3	-1.2	-1.5
Other transport	.	**0.0**	**0.8**	**1.2**	**2.0**
Rest of World	.	0.0	0.6	0.1	0.7
AFI	**-0.2**	**-0.3**	.	**2.2**	**1.7**
United States	0.1	-0.2	.	0.5	0.3
Other America	0.0	-0.4	.	-0.3	-0.8

Source: Eurostat and CHELEM-PIB, authors' calculation.

In the first four industries where the Community enjoys horizontal comparative advantages, its specialisation profile does not change according to partner, except in the case of Japan. With this partner it is in fact at a disadvantage in all stages of the mechanical engineering and private car industries. In most cases, the Eurafrican region is the biggest positive contributor to the Community's balance. Taking the Community as an economic entity, its comparative advantages in the four industries in question may be said to be horizontal[46]: the EC imposes its strengths on its partners at all stages without undertaking a division of tasks[47]. By contrast, the EC's specialisation vis-à-vis the United States in the agri-food industries is vertical: the United States' strengths upstream and the Community's strengths downstream make for a division of tasks between the two zones.

Table 22 gives the structure by stage of the five industries that contribute negatively to the Community's balance in 1992. These are mining and quarrying (-9.9), agriculture (-2.8), wood and paper (-2.7), data processing (-2.4) and textiles (-1.6). Although the Community is at a disadvantage at all stages of mining and quarrying, agriculture and data processing, finished products make a positive contribution to its balance in the wood and paper industry and processed products in the textile industry. With the exception of Italy, which makes a positive contribution in textiles, the main contributing member countries are all disadvantaged in the industries in question, especially Germany.

Most of the Community's disadvantage comes from mining and quarrying, for obvious reasons of unavailability, despite the exploitation of North Sea oil. The countries of the Middle East are the Community's main suppliers in this field, but it obtains supplies throughout the Eurafrican region with the exception of the zone Other Europe. Elsewhere it is at a significant disadvantage, except vis-à-vis the zone Other America. By contrast, even though the ACP countries are among the Community's main suppliers in the agriculture industry, the Community gets most of its supplies from two American zones, the United States and the countries of South America.

Finally, Europe's specialisation in data processing is poor overall: the industry is at a disadvantage throughout the production process, the United States again imposing its own specialisation on the Community, as do Japan and the NICs of Asia[48].

46 The detail at the level of the 30 sub-industries gives the same configuration.

47 This statement should no doubt be qualified in the case of cars & HGVs vis-à-vis EFTA; we shall come back to this later.

48 For the data processing industry see also 3.2.2.5.

Table 22
EC's comparative disadvantages by industry in 1992

Members' contributions to the EC balance

in thousandths of GDP

	Primary	Processed	Parts	Final	Total
Mining & Quarrying	**-9.8**	**0.0**	**.**	**-0.1**	**-9.9**
UK	-0.7	-0.1	.	-0.1	-0.9
Spain	-1.0	-0.1	.	0.0	-1.1
Netherlands	-1.4	0.0	.	0.0	-1.4
France	-1.5	0.0	.	0.0	-1.5
Italy	-1.6	0.0	.	0.0	-1.6
Germany	-2.6	0.0	.	0.0	-2.6
Agriculture	**-1.7**	**0.0**	**.**	**-1.1**	**-2.8**
Italy	-0.4	0.0	.	-0.1	-0.5
Germany	-0.4	0.0	.	-0.3	-0.8
Wood & Paper	**0.0**	**-3.1**	**0.0**	**0.3**	**-2.7**
Italy	0.0	-0.5	0.0	0.0	-0.5
Germany	0.0	-0.8	0.0	0.2	-0.6
UK	0.0	-0.8	0.0	0.0	-0.7
Data processing	**.**	**.**	**-0.5**	**-1.9**	**-2.4**
UK	.	.	-0.1	-0.4	-0.5
Netherlands	.	.	0.1	-0.5	-0.4
Germany	.	.	-0.2	-0.6	-0.8
Textiles	**0.0**	**0.9**	**0.0**	**-2.6**	**-1.6**
Italy	0.0	0.3	0.0	0.7	1.0

Breakdown by partner

in thousandths of GDP

	Primary	Processed	Parts	Final	Total
Mining & Quarrying	**-9.8**	**0.0**	**.**	**-0.1**	**-9.9**
ex USSR	-0.8	0.0	.	0.0	-0.8
Mediterranean countries	-1.0	0.2	.	0.0	-0.8
EFTA	-1.2	0.0	.	0.0	-1.2
ACP	-1.1	-0.2	.	0.0	-1.3
Rest of the world	-1.0	-0.4	.	0.1	-1.5
Middle East	-3.4	0.0	.	0.0	-3.4
Other America	-0.6	0.0	.	0.0	-0.6
Agriculture	**-1.7**	**0.0**	**.**	**-1.1**	**-2.8**
ACP	-0.5	0.0	.	-0.2	-0.6
USA	-0.5	0.0	.	-0.1	-0.6
Other America	-0.6	0.0	.	-0.4	-0.9
Wood & Paper	**0.0**	**-3.1**	**0.0**	**0.3**	**-2.7**
EFTA	0.0	-2.2	0.0	0.3	-2.0
USA	0.0	-0.4	0.0	-0.2	-0.5
Data processing	**.**	**.**	**-0.5**	**-1.9**	**-2.4**
USA	.	.	-0.3	-0.7	-1.0
NICs	.	.	-0.2	-0.9	-1.1
Japan	.	.	-0.3	-0.9	-1.1
Textiles	**0.0**	**0.9**	**0.0**	**-2.6**	**-1.6**
EFTA	0.0	0.1	0.0	1.1	1.2
Mediterranean countries	0.0	0.4	0.0	-1.2	-0.7
USA	0.0	0.1	0.0	0.4	0.5
Other Asia-Oceania	0.0	-0.1	0.0	-0.4	-0.5
NICs	0.0	0.1	0.0	-1.1	-1.0
Large countries of Asia	0.0	-0.2	0.0	-1.5	-1.8

Source: Eurostat and CHELEM-PIB, authors' calculation

Box 9
The limits of the approach in terms of reversal of comparative advantages

The changes in the sign of the indicator from one stage to the next in the wood & paper and textile industries do not always signify reversals of comparative advantage along the process. The textile industry is a good example. Taking all its partners together, the Community has comparative advantages upstream (processed products) but not downstream (final products). This specialisation profile changes from one partner to another. Vis-à-vis EFTA and the United States it has comparative advantages in the two stages at the same time, whereas the situation is completely symmetrical with the large countries of Asia and the other countries of Asia-Oceania. The Community is however engaged in a real division of tasks with a third group of partners, the Mediterranean countries and the NICs of Asia[49], which is the source of the Twelve's reversal of comparative advantages in textiles.

The change in sign in the wood and paper industry does not reflect a splitting up of the processes, but is due to the heterogeneous nature of the industry, which is made up of three sub-industries: woodworking, paper & paperboard and publishing products. The first two consist mainly of processed products, whereas the latter is made up of final goods. The Community is very much at a disadvantage in woodworking and in paper & paperboard, but publishing products make a positive contribution to its balance. Its specialisation profile, essentially shaped by the nature of its trade with EFTA, reflects this phenomenon alone and not the severing of advantages within the same production process.

This bias introduced by the results being presented at a relatively aggregated level of the sectoral split is also the source of the apparent weakness of the Community's specialisation in the metal products and electrical/electronics industries. The EC's comparative advantages in the sub-industries that compose them are shown in italics in Table 23. In the metal industry (-0.3), metal products proper make a not insignificant negative contribution to the Community's balance (-1.3), which is largely offset by its comparative advantage in the other sub-industry, metalworking (0.9).

The Community's results for electrical/electronics products show the limits of the approach in terms of reversal of comparative advantages (see also Box 9). This industry is made up of three sub-industries, one of which, electrical equipment, is a significant advantage for the European Community. Another, precision equipment, makes a distinctly smaller contribution with the same sign, the main contributor in both cases being Germany. But these strong points are completely obliterated overall by the very negative contribution of the third sub-industry, "Radio, TV, Communication", where the Community, and again Germany in particular, is very much in deficit. There is another problem of interpretation involving the partners: for all electrical/electronic products, even the sub-industry "Radio, TV, Communication", the EC is at an advantage vis-à-vis certain Eurafrican zones, including the countries of the Middle East and the Mediterranean countries. Conversely, it is in a weak position vis-à-vis the United States, the NICs and Japan, even in electrical equipment.

[49] The zone Other Europe, which does not appear in Table 22 because of its small contribution, is also in the same situation.

Table 23
Industries for which the EC has no marked specialisation in 1992

Members' contributions to the EC balance

in thousandths of GDP

	Primary	Processed	Parts	Final	Total
Coking & Refining	**0.0**	**0.0**	.	**0.0**	**0.1**
Miscellaneous	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**
Italy	0.0	0.0	0.0	0.6	0.6
Metal products	**-0.1**	**-0.5**	**0.1**	**0.2**	**-0.3**
Metal products proper	*-0.1*	*-1.1*	.	.	*-1.2*
Metalworking	.	*0.6*	*0.1*	*0.2*	*0.9*
Electrical equipment	.	**0.2**	**0.4**	**-1.0**	**-0.4**
Electrical equipment	.	*0.2*	*0.8*	*0.2*	*1.2*
Radio, TV, Communication	.	*0.0*	*-0.4*	*-1.3*	*-1.7*
Precision equipment	.	*0.0*	*0.0*	*0.1*	*0.1*

Breakdown by partner

in thousandths of GDP

	Primary	Processed	Parts	Final	Total
Coking & Refining	**0.0**	**0.0**	.	**0.0**	**0.1**
Rest of the world	0.0	0.8	.	0.0	0.8
ex USSR	0.0	-0.6	.	0.0	-0.6
Miscellaneous	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**
EFTA	0.0	0.1	0.0	0.4	0.5
Large countries of Asia	0.0	-0.1	0.0	-0.5	-0.6
Metal products	**-0.1**	**-0.5**	**0.1**	**0.2**	**-0.3**
Middle East	0.0	0.4	0.0	0.0	0.5
Mediterranean Countries	0.0	0.4	0.0	0.1	0.5
Rest of the world	0.0	-0.8	0.0	0.0	-0.8
Electrical/electronics	.	**0.2**	**0.4**	**-1.0**	**-0.4**
Middle East	.	0.1	0.2	0.3	0.6
Mediterranean Countries	.	0.0	0.2	0.2	0.5
USA	.	0.0	-0.3	-0.4	-0.8
NICs	.	0.0	0.0	-0.5	-0.5
Japan	.	0.1	-0.6	-1.4	-2.1

Source: Eurostat and CHELEM-PIB, authors' calculation.

2.4.2. EFTA

EFTA is formed of countries with very different specialisations. These strong national characteristics do not allow the Association to be analysed as an economic entity or its comparative advantages to be described as horizontal or vertical. On the other hand, an examination of the specialisations of EFTA members in 1992 is of great interest for the EC: three of them, Sweden, Austria and Finland, joined it in January 1995.

Unlike the EC, the spread of the Association's advantages and disadvantages is very wide. The small size of most of the member countries means in fact that they are very highly specialised (Table 24). The configuration of EFTA's specialisation by stage seems at first sight surprising for a group of industrialised countries. In fact, it has advantages in the upstream stages, in primary goods and especially in processed products, whilst the downstream stages, in particular final goods, make highly negative contributions to its balance. This result is sometimes explained by the very specific nature of some member countries' specialisations. The comparative advantage at the stage of primary products is thus entirely due to Norway's exports of gas and oil, all the other countries making a negative contribution. Likewise, most of the comparative advantage in processed products can be ascribed to Swedish and Finnish paper and paperboard manufacturers. Finally, although final goods are a weakness for all the member countries (except Iceland), one half of the disadvantage comes from Austria alone.

Table 24
EFTA's specialisation by stage in 1992

Members' contributions to the Association's balance

in thousandths of GDP

	Primary	Processed	Parts	Final	Total
EFTA	**7.3**	**17.4**	**-0.7**	**-24.0**	**0.0**
Norway	15.7	0.9	-2.2	-6.0	8.3
Sweden	-2.2	7.7	1.6	-2.1	5.1
Finland	-2.4	8.0	-1.6	-1.6	2.4
Iceland	0.0	-0.2	-0.2	0.5	0.1
Switzerland	-1.7	1.3	2.1	-1.8	-0.2
Austria	-2.1	-0.4	-0.5	-12.9	-15.9

Breakdown by partner

in thousandths of GDP

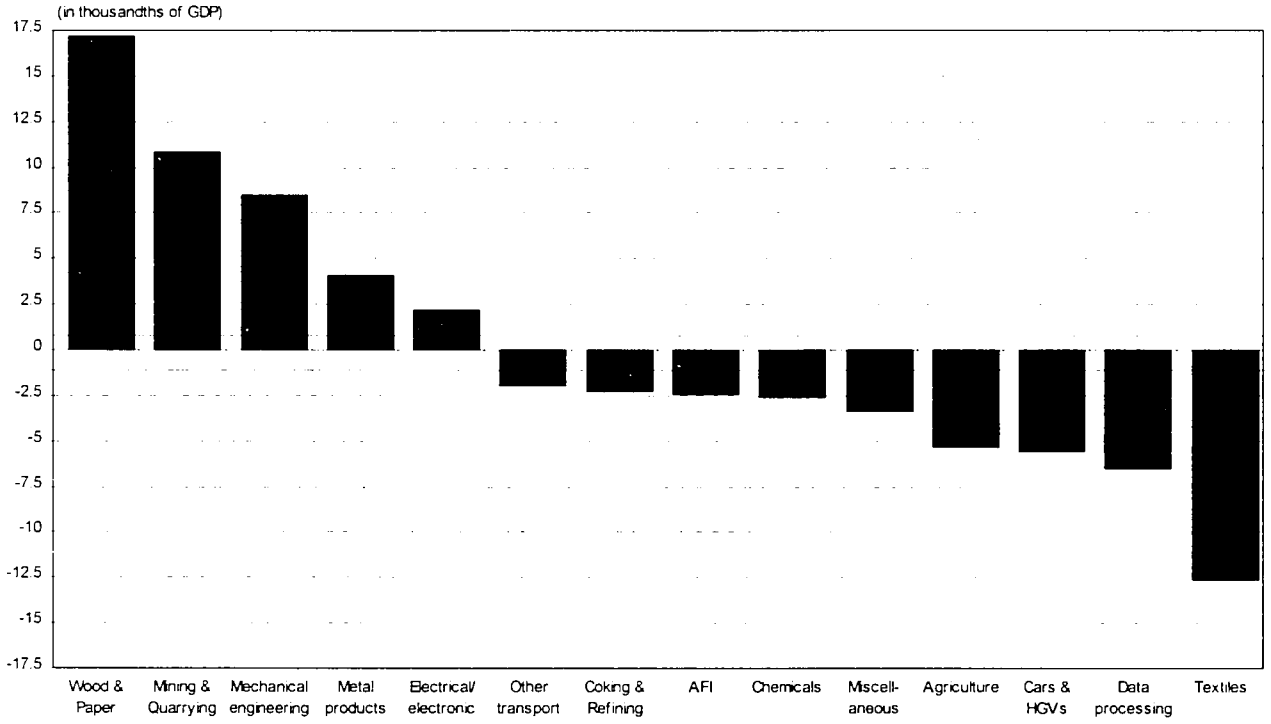
	Primary	Processed	Parts	Final	Total
WORLD	**7.3**	**17.4**	**-0.7**	**-24.0**	**0.0**
Eurafrica	**7.5**	**13.2**	**-0.1**	**-17.5**	**3.3**
Rest of the world	-0.1	3.1	1.1	2.1	6.3
Mediterranean countries	-0.3	2.0	0.5	0.5	2.8
Middle East	-1.5	0.9	0.7	2.2	2.4
Other Europe	-0.5	0.3	0.5	1.3	1.6
ex USSR	-1.3	-0.6	0.3	1.1	-0.6
EC	11.2	7.5	-3.2	-24.7	-9.2
America	**-0.2**	**1.6**	**0.0**	**0.6**	**1.7**
Canada	0.7	-0.4	0.3	0.5	1.0
Mexico	-0.1	0.2	0.3	0.4	0.8
Other America	-1.0	0.5	0.6	0.2	0.2
USA	0.2	1.3	-1.2	-0.5	-0.3
Asia-Oceania	**-0.2**	**2.7**	**-0.3**	**-7.0**	**-5.0**
Other Asia-Oceania	-0.2	0.5	0.5	0.6	1.4
NICs	0.0	1.6	0.1	-0.6	1.0
Large countries of Asia	0.0	0.2	0.7	-1.6	-0.8
Japan	0.0	0.4	-1.6	-5.4	-6.6

Source: Eurostat and CHELEM-PIB, authors' calculation

The European Community is by far EFTA's first trading partner. The weight of this relationship on a regional scale is such as to determine EFTA's overall specialisation (Table 24).

EFTA is a supplier of the Community upstream and a client downstream. All products taken together, this close partner makes a very negative contribution, mainly in final goods. On the other hand, in the other markets of the Eurafrican region, the Association is able not only to secure itself a place as a supplier of final products in return for primary products, but those partners also provide it with its biggest positive contribution.

Figure 11
EFTA's specialisation by industry in 1992



Source: Eurostat and CHELEM-PIB, authors' calculation.

The contribution of the American region is also positive. Here, EFTA adopts the same strategy as in its own region. Vis-à-vis the United States, the Association is at an overall disadvantage and is a seller upstream while being a customer downstream. It is nevertheless able to impose a symmetrical specialisation in the rest of the region, which makes it a broadly positive contribution. On the other hand, in relation to the Asia-Oceania region EFTA is at a disadvantage downstream not only vis-à-vis the Asian pole of Japan but also with the NICs and the large countries of Asia.

EFTA's specialisation by industry is shown in Figure 11. Here, the scale of comparative advantages and disadvantages is much greater than in the Community's case. Also, the criterion of 0.5 thousandths of the zone's GDP (in absolute terms) adopted for classifying the industries into strengths or weaknesses may appear relatively small by comparison with the broad amplitude of the Association's specialisation. However, it has been applied to the four declaring zones in the same way so that they can be compared.

Table 25
EFTA's comparative advantages by industry in 1992

Members' contributions to the Association's balance

in thousandths of GDP

	Primary	Processed	Parts	Final	Total
Wood & Paper	**-0.1**	**19.7**	**0.0**	**-2.3**	**17.2**
Sweden	0.0	8.7	0.0	-0.4	8.3
Finland	0.0	8.2	0.0	-0.1	8.1
Austria	0.0	2.6	0.0	-0.6	2.0
Switzerland	0.0	-0.3	0.0	-0.9	-1.2
Mining & Quarrying	**10.4**	**0.3**	**.**	**0.0**	**10.8**
Norway	16.0	0.0	.	0.0	16.0
Switzerland	-1.1	0.4	.	0.0	-0.7
Sweden	-1.3	0.0	.	0.0	-1.3
Austria	-1.3	0.0	.	0.0	-1.3
Finland	-1.9	0.0	.	0.0	-1.9
Metal products	**-0.3**	**4.0**	**0.5**	**-0.1**	**4.1**
Sweden	-0.2	1.8	0.3	0.0	1.9
Finland	-0.1	1.2	0.0	0.1	1.1
Norway	0.0	0.9	-0.1	-0.1	0.7
Austria	0.0	0.5	0.1	-0.2	0.4
Mechanical engineering	**.**	**-0.1**	**2.5**	**6.1**	**8.5**
Switzerland	.	0.0	2.2	5.5	7.7
Sweden	.	0.0	1.2	2.1	3.3
Austria	.	0.0	-0.1	-0.5	-0.7
Norway	.	0.0	-0.8	-0.9	-1.7
Electrical/Electronic	**.**	**-0.5**	**-0.7**	**3.4**	**2.2**
Switzerland	.	0.0	0.8	5.6	6.4
Sweden	.	-0.3	0.6	-0.4	-0.1
Finland	.	-0.1	-0.6	0.3	-0.3
Norway	.	-0.1	-0.6	-0.8	-1.6
Austria	.	0.0	-0.8	-1.2	-2.1
Electrical equipment	.	*-0.5*	*-0.2*	*-0.1*	*-0.8*
Radio, TV, Communication	.	.	*-0.6*	*-1.7*	*-2.3*
Precision equipment	.	*0.0*	*0.1*	*5.1*	*5.2*

Source: Eurostat and CHELEM-PIB, authors' calculation.

Table 25 shows the by-stage breakdown within the industries making a positive contribution to EFTA's balance and the member countries' contributions in each case. The five industries are arranged according to the position of the comparative advantages within the production process. The specialisation profiles in products of the wood and paper industry (17.2), mining and quarrying (10.8) and metal products (4.1) are similar to EFTA's profile for all products taken together: the advantages are concentrated upstream, either in primary products or in processed products. They come from a small number of member countries in the first two industries: Sweden, Finland and, much more modestly, Austria, for wood and paper, where Switzerland is much at a disadvantage; Norway alone for mining and quarrying products, where the rest of the zone makes a negative contribution. For the same three industries, most of the Association's comparative advantages are vis-à-vis the European Community (Table 26).

Table 26
EFTA's comparative advantages by industry in 1992

Breakdown by partner

in thousandths of GDP

	Primary	Processed	Parts	Final	Total
Wood & Paper	**-0.1**	**19.7**	**0.0**	**-2.3**	**17.2**
EC	0.1	16.6	0.0	-2.0	14.5
Mediterranean countries	0.0	0.8	0.0	0.0	0.8
Middle East	0.0	0.4	0.0	0.0	0.5
NICs	0.0	0.5	0.0	0.0	0.4
Mining & Quarrying	**10.4**	**0.3**	**.**	**0.0**	**10.8**
EC	12.4	-0.1	.	0.0	12.3
Mediterranean countries	-0.3	0.5	.	0.0	0.1
ex USSR	-1.0	0.0	.	0.0	-1.0
Middle East	-1.5	0.0	.	0.0	-1.5
Canada	0.8	0.0	.	0.0	0.8
USA	0.6	0.0	.	0.0	0.6
Metal products	**-0.3**	**4.0**	**0.5**	**-0.1**	**4.1**
EC	0.1	2.4	0.1	-0.3	2.2
Rest of the world	0.0	0.3	0.2	0.0	0.5
USA	0.0	0.8	0.0	0.1	0.9
Mechanical engineering	**.**	**-0.1**	**2.5**	**6.1**	**8.5**
Rest of the world	.	0.0	0.7	1.1	1.8
Other Europe	.	0.0	0.2	0.7	0.9
Middle East	.	0.0	0.3	0.5	0.9
Mediterranean countries	.	0.0	0.2	0.5	0.8
ex USSR	.	0.0	0.1	0.5	0.7
EC	.	-0.1	-0.9	-0.8	-1.8
USA	.	0.0	0.3	0.7	1.1
Other America	.	0.0	0.2	0.4	0.7
NICs	.	0.0	0.5	1.1	1.6
Large countries of Asia	.	0.0	0.3	0.8	1.1
Other Asia-Oceania	.	0.0	0.1	0.4	0.5
Electrical/Electronics	**.**	**-0.5**	**-0.7**	**3.4**	**2.2**
Middle East	.	0.1	0.2	0.6	0.9
Other Europe	.	0.0	0.1	0.4	0.6
EC	.	-0.7	-0.9	1.2	-0.4
Other America	.	0.0	0.2	0.3	0.5
NICs	.	0.1	-0.2	1.0	1.0
Other Asia-Oceania	.	0.0	0.2	0.3	0.5
Japan	.	-0.1	-0.8	-1.2	-2.2

Source: Eurostat and CHELEM-PIB, authors' calculation.

In the other two stages with a positive contribution, mechanical engineering (8.5) and the electrical/electronic industry (2.2), EFTA's specialisation profile is different: it is at an advantage downstream. Switzerland makes the biggest positive contribution in both cases, followed by Sweden in mechanical engineering, where the rest of the zone is at a disadvantage. The electrical/electronics industry owes its positive contribution solely to Switzerland's performance in the sub-industry "precision equipment" (see figures in italics in Table 25). This includes among other things clocks and watches, which are the source of Switzerland's strength. Finally, with the exception of Japan, the Association is at an advantage with all the other zones in electrical/electronics products.

Table 27
EFTA's comparative disadvantages by industry in 1992

Members' contributions to the Association's balance

in thousandths of GDP

		Primary	Processed	Parts	Final	Total
Textiles		**0.0**	**0.2**	**0.1**	**-13.0**	**-12.6**
	Finland	0.0	-0.2	0.0	-0.9	-1.1
	Austria	0.0	0.4	0.0	-2.3	-2.0
	Norway	0.0	-0.2	0.0	-1.9	-2.1
	Sweden	0.0	-0.2	0.0	-3.4	-3.6
	Switzerland	0.0	0.4	0.1	-4.3	-3.8
Cars & HGVs		.	.	**0.8**	**-6.5**	**-5.6**
	Sweden	.	.	0.6	3.2	3.7
	Finland	.	.	-0.5	0.2	-0.3
	Norway	.	.	-0.2	-1.0	-1.2
	Austria	.	.	1.2	-4.0	-2.8
	Switzerland	.	.	-0.3	-4.8	-5.0
Chemicals		**0.0**	**-2.3**	**-1.3**	**1.0**	**-2.6**
	Switzerland	0.0	3.7	-0.3	2.7	6.1
	Sweden	0.0	-1.5	-0.3	0.6	-1.2
	Finland	0.0	-0.6	-0.1	-0.6	-1.3
	Norway	0.0	-1.1	-0.1	-0.7	-2.0
	Austria	0.0	-2.6	-0.4	-1.0	-4.1
Data processing		.	.	**-2.1**	**-4.4**	**-6.5**
	Finland	.	.	-0.2	-0.2	-0.5
	Norway	.	.	-0.4	-0.5	-0.9
	Austria	.	.	-0.4	-0.9	-1.3
	Sweden	.	.	-0.5	-1.0	-1.5
	Switzerland	.	.	-0.5	-1.8	-2.3
Agriculture		**-2.5**	**0.0**	.	**-2.8**	**-5.3**
	Finland	-0.4	0.0	.	-0.3	-0.7
	Sweden	-0.6	0.0	.	-0.9	-1.4
	Austria	-0.6	0.0	.	-0.8	-1.4
	Switzerland	-0.7	0.0	.	-1.2	-1.9
Miscellaneous		**0.0**	**-0.6**	**0.0**	**-2.7**	**-3.4**
	Norway	0.0	0.0	0.0	-0.4	-0.5
	Sweden	0.0	-0.1	0.0	-0.5	-0.6
	Austria	0.0	-0.1	0.0	-0.7	-0.8
	Switzerland	0.0	-0.2	0.0	-0.9	-1.2
AFI		**-0.1**	**-1.2**	.	**-1.2**	**-2.4**
	Iceland	0.0	0.1	.	1.0	1.0
	Norway	0.0	-0.1	.	0.8	0.7
	Austria	-0.1	-0.3	.	-0.4	-0.8
	Switzerland	0.0	-0.4	.	-1.0	-1.3
	Sweden	0.0	-0.3	.	-1.4	-1.8
Coking & Refining		**0.0**	**-2.1**	.	**-0.1**	**-2.3**
	Norway	0.0	1.2	.	0.0	1.2
	Austria	0.0	-0.6	.	0.0	-0.6
	Switzerland	0.0	-2.0	.	-0.1	-2.0
Other transport equipment		.	**0.0**	**-0.6**	**-1.4**	**-2.0**
	Norway	.	0.0	-0.1	-0.4	-0.5
	Switzerland	.	0.0	-0.2	-0.7	-0.9

Source: Eurostat and CHELEM-PIB, authors' calculation.

Table 27 concerns the industries for which EFTA is disadvantaged and gives the contributions of each member country. They are again arranged according to their configuration by stage. With two exceptions[50], all the member countries are in a situation of disadvantage at all stages of the industries data processing (-6.5), agriculture (-5.3), miscellaneous industries (-3.4), the agri-food industries (-2.4), the coking and refining industries (-2.3) and other transport (-2.0). Within the partners, in most of these industries the biggest disadvantages are found in relation to the European Community. In data processing, however, the Association is outstripped by the United States, as it is in other transport.

Table 28
EFTA's comparative disadvantages by industry in 1992

Breakdown by partner

in thousanths of GDP

		Primary	Processed	Parts	Final	Total
Textiles		**0.0**	**0.2**	**0.1**	**-13.0**	**-12.6**
	EC	0.0	-0.1	-0.1	-8.1	-8.2
	NICs	0.0	0.0	0.0	-1.6	-1.6
	Large countries of Asia	0.0	-0.1	0.0	-2.1	-2.2
Cars & HGVs		.	.	**0.8**	**-6.5**	**-5.6**
	Rest of the world	.	.	0.0	1.1	1.1
	EC	.	.	0.4	-6.6	-6.2
	USA	.	.	0.0	0.9	0.9
	Japan	.	.	-0.3	-3.1	-3.4
Chemicals		**0.0**	**-2.3**	**-1.3**	**1.0**	**-2.6**
	Rest of the world	0.0	2.7	0.0	0.1	2.7
	Mediterranean countries	0.0	0.5	0.0	0.2	0.6
	Other Europe	0.0	0.5	0.0	0.2	0.7
	Middle East	0.0	0.2	0.0	0.3	0.5
	EC	0.0	-7.9	-1.0	-1.4	-10.4
	Other Europe	0.0	0.6	0.1	0.1	0.7
	NICs	0.0	0.3	0.0	0.3	0.5
	Other Asia-Oceania	0.0	0.3	0.0	0.3	0.5
Data processing		.	.	**-2.1**	**-4.4**	**-6.5**
	EC	.	.	-0.6	-1.4	-2.1
	NICs	.	.	-0.4	-0.8	-1.2
	Japan	.	.	-0.3	-1.0	-1.3
	USA	.	.	-0.8	-1.4	-2.3
Agriculture		**-2.5**	**0.0**	.	**-2.8**	**-5.3**
	EC	-1.0	0.0	.	-1.3	-2.2
	USA	-0.3	0.0	.	-0.2	-0.5
	Other America	-0.7	0.0	.	-0.6	-1.3
Miscellaneous		**0.0**	**-0.6**	**0.0**	**-2.7**	**-3.4**
	EC	0.0	-0.1	0.1	-2.4	-2.6
AFI		**-0.1**	**-1.2**	.	**-1.2**	**-2.4**
	EC	0.0	-1.0	.	-1.4	-2.4
	Japan	0.0	0.0	.	0.4	0.5
Coking & Refining		**0.0**	**-2.1**	.	**-0.1**	**-2.3**
	ex USSR	0.0	-0.6	.	0.0	-0.6
	EC	0.0	-1.5	.	0.1	-1.6
Other transport		.	**0.0**	**-0.6**	**-1.4**	**-2.0**
	USA	.	0.0	-0.4	-0.8	-1.2
	Japan	.	0.0	0.1	-0.7	-0.7

Source: Eurostat and CHELEM-PIB, authors' calculation.

[50] The strong points of Iceland and Norway in the agri-food industries and Norway's positive contribution in the coking and refining industries.

The by-stage configuration of EFTA's specialisation in three industries making a negative contribution - textiles, cars & HGVs and chemicals - is different: here, despite the overall negative contribution, there are still a few stages where the Association has comparative advantages. In textiles, the disadvantage comes solely from finished products, since Switzerland's and Austria's contributions put the Association at a slight advantage in processed products and parts. This slight advantage is obtained over the developing zones of the Eurafrican region, which do not appear in Table 28 because of the smallness of their contributions. Sweden enjoys comparative advantages throughout the process in cars & HGVs, while Switzerland, advantaged upstream and disadvantaged downstream, has a vertical division of labour with the Community. Processed and finished products in the chemicals industry are also very strong points for Switzerland.

2.4.3. United States

As we have seen throughout section 2.3, the United States is often outstripped by other rivals in competition among the four declaring zones in 1992. It should again be stressed that macro-economic factors have a great influence over competitiveness, and that of the United States has since the 1980s been suffering as a result of large budget and trade deficits, a low rate of savings by households and the erratic course of the dollar. Examination of this country's specialisation, however, shows that America retains strong points in some of the most important industries of international trade. The advantage of arguing by stages of production is obvious: finished products are the United States' main point of weakness; these weaknesses naturally frequently appear in relation to Asia-Oceania.

Table 29
The United States' specialisation by stage in 1992

Breakdown by Partner

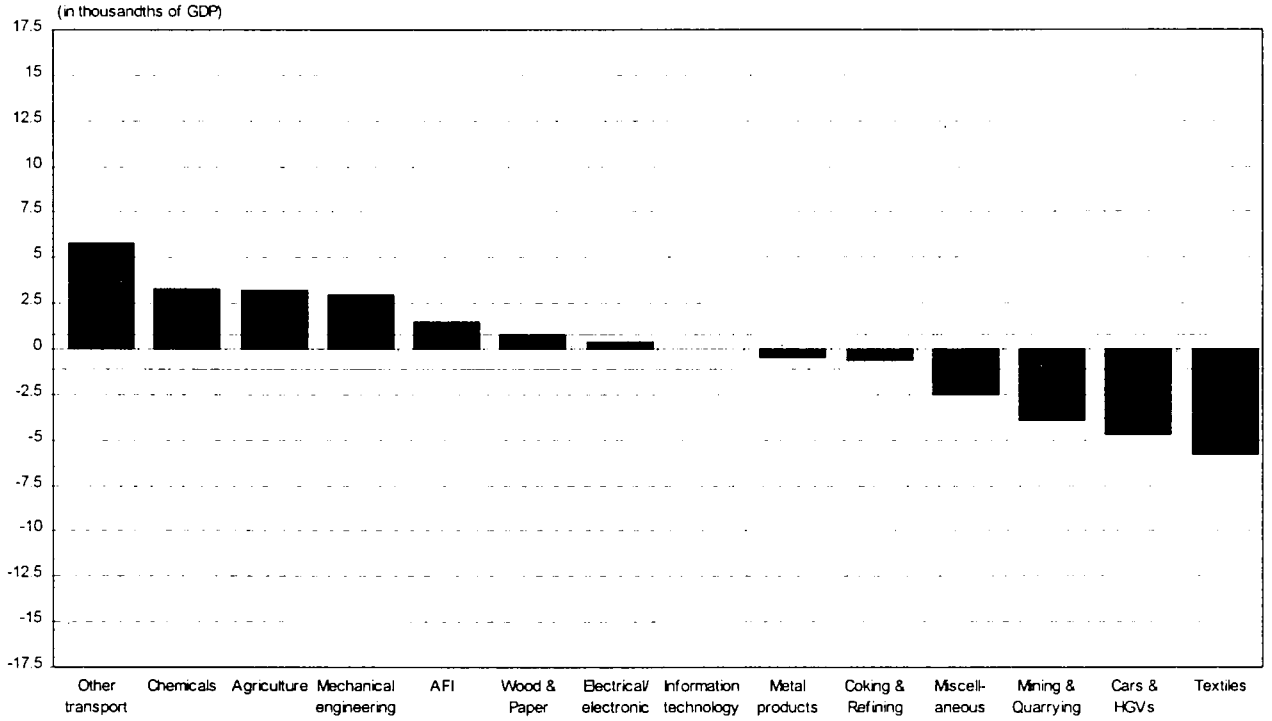
in thousandths of GDP

		Primary	Processed	Parts	Final	Total
WORLD		**-0.1**	**2.0**	**6.3**	**-8.2**	**0.0**
Eurafrica		**0.0**	**0.3**	**2.6**	**3.4**	**6.4**
	EC	0.9	0.8	1.6	1.2	4.6
	Mediterranean countries	0.3	-0.2	0.3	0.6	1.0
	ex USSR	0.3	0.0	0.0	0.2	0.5
	Middle East	-1.5	0.1	0.5	1.3	0.3
	Rest of the world	0.1	-0.1	0.1	0.1	0.2
	Other Europe	0.0	0.0	0.0	0.1	0.1
	EFTA	-0.1	-0.3	0.1	-0.1	-0.3
America		**-2.5**	**0.4**	**4.5**	**1.7**	**4.1**
	Mexico	-0.4	1.3	1.2	-0.1	2.0
	Canada	-1.1	-1.0	2.5	1.0	1.3
	Other America	-1.0	0.1	0.8	0.8	0.8
Asia-Oceania		**2.4**	**1.2**	**-0.8**	**-13.3**	**-10.5**
	Other Asia-Oceania	0.0	0.2	0.4	0.2	0.8
	NICs	1.0	1.0	0.5	-4.5	-2.0
	Large countries of Asia	0.0	-0.3	0.3	-3.1	-3.1
	Japan	1.4	0.3	-2.0	-5.9	-6.2

Source: Eurostat and CHELEM-PIB, authors' calculation.

Table 29 shows, for 1992, the United States' specialisation by stage and the geographical breakdown of its revealed comparative advantages. Taking all partners together, the strengths of the American economy are concentrated in the middle of the production process, in processed products and parts. Right upstream, in primary products, America's disadvantage is insignificant, unlike downstream, where final goods are the United States' greatest weakness, but this all-partners-together specialisation profile covers situations that differ greatly according to the three geographical regions.

Figure 12
United States' specialisation by industry in 1992



Source: Eurostat and CHELEM-PIB, authors' calculation.

With the exception of primary products, the United States has an advantage at all stages over the Eurafrican and American regions, which, in total, each make a positive contribution. On the other hand, the contribution of the Asia-Oceania region is very much negative. Here, the United States' strengths upstream are not great enough to offset its large comparative disadvantages downstream, especially in final goods.

Owing to the size of its internal market, the United States is not very specialised (Figure 12). The American economy's strengths in 1992 are other transport, chemicals, agriculture, mechanical engineering, the agri-food industries and wood & paper. Note that the comparative advantage in agriculture is of the same order as those in chemicals and mechanical engineering. Textiles are the United States' biggest weakness, followed by cars & HGVs, mining and quarrying products and miscellaneous industries.

As the geographical breakdown of its revealed comparative advantages shows (Table 30), the United States imposes its strengths in other transport on all the zones of Asia-Oceania and on the European Community, but not on its neighbouring partners in NAFTA. Apart from this, generally speaking, the significant positive contributions of the other American markets affect a limited number of industries. Their contributions are the greatest in chemicals and mechanical engineering, where all three appear. Canada is in a strong position in relation to the United States in wood and paper products, but the United States remains at an advantage overall thanks to the positive contributions of the markets of the Community and Japan. Japan seems to be the favoured destination for American exports in the industries of agriculture and the agri-food industries. The United States' bilateral comparative advantages are horizontal in each of the industries mentioned[51].

[51] Two branches experience a change in sign from one stage to another. This is however the effect not of a division of labour but of the sectoral split. In chemicals, America's disadvantage vis-à-vis the EC for final goods comes from the sub-branch "other non-metallic mineral products", where the Community has the advantage at all stages. For the same branch and the same stage, America's disadvantage in relation to the NICs of Asia is related to another sub-branch, "rubber or plastic products", where the latter are in a position of strength at all stages. Conversely, in the rest of the chemicals branch, the United States imposes its specialisation on these two partners at every stage. Also, in wood and paper products, Canada's comparative advantages over the United States are horizontal for the sub-branches "woodworking products" and "paper and paperboard", as are its disadvantages in "publishing products".

Table 30
The United States' comparative advantages by industry in 1992

Breakdown by partner

in thousandths of GDP

	Primary	Processed	Parts	Final	Total
Other transport equipment	.	**0.0**	**1.5**	**4.3**	**5.8**
EC	.	0.0	0.3	1.0	1.3
Mediterranean countries	.	0.0	0.2	0.3	0.5
Other America	.	0.0	0.1	0.4	0.5
NICs	.	0.0	0.3	0.8	1.1
Japan	.	0.0	0.2	0.4	0.6
Large countries of Asia	.	0.0	0.1	0.4	0.5
Other Asia-Oceania	.	0.0	0.1	0.4	0.5
Chemicals	**0.0**	**3.6**	**-0.1**	**-0.1**	**3.3**
EC	0.0	0.6	0.0	-0.1	0.4
Canada	0.0	0.7	0.0	0.2	0.9
Other America	0.0	0.6	0.0	0.1	0.7
Mexico	0.0	0.5	0.0	0.1	0.6
NICs	0.0	0.9	0.0	-0.2	0.7
Agriculture	**3.1**	**0.0**	.	**0.1**	**3.2**
EC	0.6	0.0	.	0.1	0.7
Japan	1.0	0.0	.	0.1	1.2
NICs	0.6	0.0	.	0.1	0.7
Mechanical engineering	.	**0.0**	**1.6**	**1.5**	**3.0**
Middle East	.	0.0	0.2	0.3	0.5
Canada	.	0.0	0.5	0.8	1.3
Other America	.	0.0	0.4	0.4	0.7
Mexico	.	0.0	0.1	0.3	0.5
NICs	.	0.0	0.3	0.3	0.6
Japan	.	0.0	-0.3	-0.7	-1.0
AFI	**0.2**	**0.6**	.	**0.7**	**1.5**
Japan	0.1	0.1	.	1.1	1.3
Wood & Paper	**0.2**	**0.1**	**0.0**	**0.6**	**0.8**
EC	0.0	0.5	0.0	0.2	0.6
Canada	0.0	-1.4	0.0	0.3	-1.1
Japan	0.1	0.3	0.0	0.0	0.5

Source: Eurostat and CHELEM-PIB, authors' calculation.

Table 31 illustrates the United States' weaknesses in 1992. America's disadvantages in the textiles and miscellaneous industries are concentrated in finished products and come from its trade relations with the NICs and the large countries of Asia. The United States' suppliers of mining and quarrying products are the countries of the Middle East, but also the whole of the American region. The most interesting case is that of cars & HGVs: vertical advantages over NAFTA and the EC; horizontal advantages over the Middle East; and horizontal disadvantages with Japan.

Table 31
The United States' comparative disadvantages by industry in 1992

Breakdown by partner

in thousandths of GDP

		Primary	Processed	Parts	Final	Total
Textiles		**0.0**	**0.1**	**0.0**	**-5.8**	**-5.8**
	Large countries of Asia	0.0	0.1	0.0	-2.0	-2.1
	NICs	0.0	0.1	0.0	-2.5	-2.6
Cars & HGVs		.	.	**1.3**	**-5.9**	**-4.7**
	Middle East	.	.	0.1	0.5	0.5
	EC	.	.	0.1	-0.6	-0.6
	Mexico	.	.	0.5	-0.5	0.0
	Canada	.	.	1.1	-1.9	-0.8
	Japan	.	.	-0.6	-3.8	-4.4
Mining & Quarrying		**-3.9**	**0.0**	.	**0.0**	**-3.9**
	Middle East	-1.6	0.0	.	0.0	-1.6
	Mexico	-0.6	0.0	.	0.0	-0.6
	Other America	-0.9	0.0	.	0.0	-0.9
	Canada	-1.1	0.0	.	0.0	-1.1
Miscellaneous		**0.0**	**-0.6**	**0.0**	**-2.0**	**-2.5**
	NICs	0.0	0.0	0.0	-0.9	-0.9
	Large countries of Asia	0.0	-0.2	0.0	-0.7	-1.0
Coking & Refining		**0.0**	**-0.6**	.	**0.0**	**-0.6**
Metal products		**0.2**	**-0.8**	**0.1**	**0.1**	**-0.5**

Source: Eurostat and CHELEM-PIB, authors' calculation.

In the electrical/electronics and data processing industries, the United States' overall specialisation is not very marked because of horizontal comparative advantages with the Community and horizontal comparative disadvantages with Japan and the NICs of Asia (Table 32).

Table 32
Industries for which the United States has no marked specialisation in 1992

Breakdown by partner

in thousandths of GDP

		Primary	Processed	Parts	Final	Total
Electrical/Electronics		.	**0.0**	**1.4**	**-1.0**	**0.4**
	EC	.	0.1	0.5	0.7	1.3
	Canada	.	0.2	0.7	0.6	1.5
	Other America	.	0.0	0.2	0.3	0.5
	NICs	.	-0.1	0.2	-1.0	-0.9
	Japan	.	-0.1	-0.9	-1.6	-2.5
Data processing		.	.	**0.6**	**-0.6**	**0.0**
	EC	.	.	0.8	0.9	1.7
	Canada	.	.	0.1	0.5	0.5
	Japan	.	.	-0.3	-1.2	-1.5
	NICs	.	.	-0.3	-1.3	-1.7

Source: Eurostat and CHELEM-PIB, authors' calculation.

2.4.4. Japan

Japan's strategy of integration into international trade by climbing by stages within the industries[52] can work only if the country in question gains access to markets vast enough to absorb its massive supply. In the 1960s, Japan, which did not have such large markets in its immediate vicinity, benefited from the opening of the American market for geopolitical reasons.

Table 33 shows for 1992 Japan's specialisation by stage and its geographical breakdown. As has been emphasised on several occasions in this report, if all products are taken together, this country is greatly disadvantaged upstream and advantaged downstream. This same configuration is found with the three regions of the split. In each region, the most dynamic and the most industrialised zones bring it a consistent positive contribution: the EC in the Eurafrican region, the United States on the American continent and the NICs in its own region.

Table 33
Japan's specialisation by stage in 1992

Breakdown by partner

in thousandths of GDP

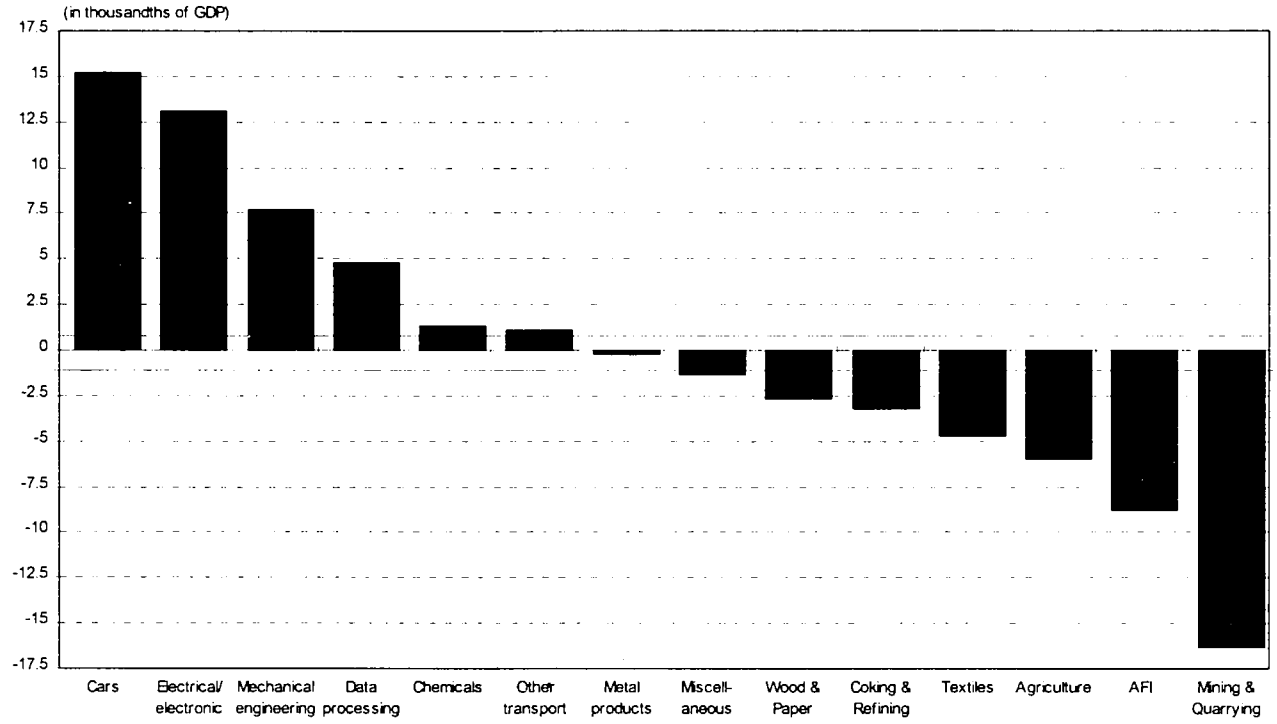
	Primary	Processed	Parts	Final	Total
WORLD	**-20.0**	**-7.3**	**13.0**	**14.3**	**0.0**
Eurafrica	**-7.9**	**-4.0**	**3.0**	**5.9**	**-3.0**
EC	-0.2	-1.3	2.2	3.2	3.9
Mediterranean countries	-0.1	-0.1	0.1	0.5	0.4
Other Europe	0.0	-0.1	0.0	0.1	0.0
EFTA	0.0	-0.6	0.1	0.3	-0.2
Rest of the world	-0.3	-0.2	0.2	0.1	-0.2
ex USSR	-0.2	-0.3	0.0	0.0	-0.6
Middle East	-7.1	-1.4	0.4	1.7	-6.3
America	**-5.4**	**-3.0**	**4.3**	**8.3**	**4.0**
USA	-3.2	-1.6	3.3	5.9	4.5
Mexico	-0.3	0.1	0.4	0.3	0.4
Other America	-0.9	-0.7	0.3	1.4	0.0
Canada	-1.0	-0.8	0.3	0.7	-0.9
Asia-Oceania	**-6.6**	**-0.3**	**5.8**	**0.1**	**-1.1**
NICs	-1.3	2.7	4.7	1.7	7.8
Other Asia-Oceania	-2.8	-1.2	0.4	0.6	-3.1
Large countries of Asia	-2.5	-1.8	0.7	-2.2	-5.8

Source: Eurostat and CHELEM-PIB, authors' calculation.

Being more global than regional, Japan's involvement in international trade nevertheless shows some peculiarities in Asia-Oceania. First, not only is the NICs' contribution to its trade balance (7.8) almost double those of the United States and the Community, but it is positive in all stages of the production process with the exception of primary products. Secondly, although very strong elsewhere, Japan's comparative advantages in finished products are weak in relation to its own region. Importing raw materials and intermediate goods from the world to which it sells final goods . Conversely, it exports mainly parts to its own region. Finally, Japan's only deficit in final products appears in its trade relations with the large countries of Asia.

[52] This involves initially relying on spontaneous advantages in labour-intensive industries, and then building new advantages in products that are increasingly advanced and therefore have a high value added.

Figure 13
Japan's comparative advantages by industry in 1992



Source: Eurostat and CHELEM-PIB, authors' calculation.

Japan's specialisation by industry is highly contrasted, as the broad scale of Figure 13 shows. Leaving aside chemicals and other transport, which make the smallest positive contribution, Japan's comparative advantages are essentially concentrated in four industries: cars & HGVs (15.2), electrical/electronic products (13.1), mechanical engineering (7.7) and data processing (4.8). For want of natural resources, the mining and quarrying and agri-food industries and agriculture are the weakest points, alongside industries abandoned by Japan because they have less growth in world trade (textiles, coking & refining, wood & paper and miscellaneous).

Table 34
Japan's comparative advantages by industry in 1992

Breakdown by partner

in thousandths of GDP

	Primary	Processed	Parts	Final	Total
Cars & HGVs	.	.	**3.8**	**11.4**	**15.2**
EC	.	.	0.3	1.2	1.6
Middle East	.	.	0.1	1.0	1.1
EFTA	.	.	0.0	0.6	0.6
USA	.	.	1.7	4.9	6.5
Canada	.	.	0.2	0.6	0.8
Other America	.	.	0.1	0.5	0.6
NICs	.	.	0.8	0.9	1.8
Other Asia-Oceania	.	.	0.1	0.8	0.9
Electrical/Electronics	.	**0.7**	**5.3**	**7.1**	**13.1**
EC	.	0.1	0.9	2.2	3.1
Middle East	.	0.0	0.1	0.3	0.5
USA	.	0.1	0.9	1.8	2.8
NICs	.	0.4	2.8	1.5	4.7
Large countries of Asia	.	0.0	0.2	0.3	0.5
Mechanical engineering	.	**0.1**	**1.5**	**6.1**	**7.7**
EC	.	0.0	0.1	0.5	0.6
Middle East	.	0.0	0.1	0.3	0.5
USA	.	0.0	0.2	1.0	1.2
NICs	.	0.0	0.7	2.7	3.4
Large countries of Asia	.	0.0	0.2	0.8	1.0
Data processing	.	.	**1.5**	**3.3**	**4.8**
EC	.	.	0.7	1.3	2.0
USA	.	.	0.6	1.5	2.1
Chemicals	**0.0**	**0.9**	**0.4**	**0.0**	**1.3**
EC	0.0	-0.6	0.1	-0.3	-0.8
USA	0.0	-0.6	0.1	0.2	-0.4
NICs	0.0	1.8	0.1	0.2	2.1
Other transport	.	**0.0**	**0.1**	**1.0**	**1.1**
Other America	.	0.0	0.0	0.8	0.8
USA	.	0.0	-0.2	-0.6	-0.7

Source: Eurostat and CHELEM-PIB, authors' calculation.

In the private car, electrical/electronics, mechanical engineering and data processing industries, its strongest points, Japan enjoys horizontal comparative advantages: all stages in these industries bring it positive contributions from all its partners (Table 34). In cars & HGVs, the United States' contribution is not far off half of the Japanese advantage. The NICs make the main contributions in electrical/electronics products and mechanical engineering, whilst Japan's comparative advantage for the data processing industry comes essentially from the United States and the EC. In the first three industries, the countries of the Middle East regularly appear alongside the most dynamic zones in the world.

Japan's comparative advantages are distinctly smaller in the chemicals and other transport industries. In both cases, even if the industries make positive contributions when all partners are taken together, the geographical breakdown reveals certain bilateral disadvantages. Thus, the EC and the United States manage to impose on Japan their own strengths in chemicals. Japan's disadvantage in relation to these two partners comes solely from the sub-industry of chemical products proper, comprising mainly processed products. On the other hand, Japanese manufacturers retain their advantages in rubber and plastics articles, this being due in particular to sales of tyres. Japan's essentially regional comparative advantage for the chemicals industry does not therefore follow the general pattern of specialisation found here. Finally, in other transport, the other industry with a smaller positive contribution, Japan is at a disadvantage compared with the United States because of these purchases of aeronautical products, but elsewhere imposes its strength in commercial vehicles, especially on the Other America zone.

In the industries making a negative contribution to its balance, Japan is generally at a disadvantage in all stages in relation to all its partner zones (Table 35): it is very clearly a case of a strong vertical (de)specialisation. Japan's greatest weakness is the mining and quarrying industries industry, in particular compared with the countries of the Middle East. This is the reason why this crude oil supplying zone appears in the tightly closed list of Japan's most important customers. Japan's other great comparative disadvantages are often towards the United States and the NICs of Asia. The American partner is in a particularly strong position in agriculture, mining and quarrying and wood and paper products. Japan nevertheless prefers to get supplies from its own region, since, with the exception of the agri-food industries, the NICs or other zones of Asia-Oceania are always among its main suppliers.

Table 35
Japan's comparative disadvantages by industry in 1992

Breakdown by partner

in thousandths of GDP

	Primary	Processed	Parts	Final	Total
Mining & Quarrying	**-13.9**	**-2.4**	**.**	**0.0**	**-16.3**
Middle East	-7.1	-0.1	.	0.0	-7.2
USA	-0.4	0.1	.	0.0	-0.5
Other America	-0.5	0.0	.	0.0	-0.6
Canada	-0.6	0.0	.	0.0	-0.6
NICs	-0.4	-0.4	.	0.0	-0.8
Other Asia-Oceania	-2.1	-0.6	.	0.0	-2.7
Large countries of Asia	-2.1	-1.1	.	0.0	-3.3
AFI	**-0.5**	**-1.0**	**.**	**-7.3**	**-8.8**
USA	-0.2	-0.2	.	-2.2	-2.5
Agriculture	**-4.6**	**0.0**	**.**	**-1.4**	**-6.0**
USA	-2.2	0.0	.	-0.3	-2.6
Other Asia-Oceania	-0.4	0.0	.	-0.1	-0.6
Large countries of Asia	-0.3	0.0	.	-0.2	-0.6
NICs	-0.7	0.0	.	-0.5	-1.2
Textiles	**-0.1**	**0.3**	**0.0**	**-4.9**	**-4.7**
EC	0.0	-0.1	0.0	-0.8	-1.0
NICs	0.0	0.3	0.0	-1.5	-1.2
Large countries of Asia	0.0	0.0	0.0	-2.2	-2.2
Coking & Refining	**0.0**	**-3.2**	**.**	**0.0**	**-3.2**
Middle East	0.0	-1.6	.	0.0	-3.2
Wood & Paper	**-0.6**	**-1.8**	**0.0**	**-0.3**	**-2.7**
Canada	0.0	-0.6	0.0	0.0	-0.7
USA	-0.2	-0.7	0.0	-0.1	-1.0
Large countries of Asia	0.0	-0.4	0.0	0.1	-0.5
Miscellaneous	**0.0**	**-0.6**	**0.0**	**-0.7**	**-1.3**
Large countries of Asia	0.0	-0.2	0.0	-0.3	-0.5
NICs	0.0	0.1	0.0	-0.5	-0.6

Source: Eurostat and CHELEM-PIB, authors' calculation.

The few reversals of comparative advantage among partners involve the NICs of Asia. Thus, despite their overall disadvantages in textiles and miscellaneous industries, the Japanese have strong points at the stage of processed products thanks to their links with this zone. As stressed earlier, miscellaneous industries are too diverse a group to draw any conclusions from this. Textiles, on the other hand, is the only case in this study where Japan is involved in a vertical division of labour. The division of labour between the two zones concerns solely the sub-industry of textile products proper, where Japan is at an advantage upstream in processed products, yarns and fabrics, whilst the NICs draw their advantages from finished textile products.

Table 36
Industries in which Japan has no marked specialisation in 1992

Breakdown by partner

in thousandths of GDP

	Primary	Processed	Parts	Final	Total
Metal products	**-0.2**	**-0.3**	**0.3**	**0.0**	**-0.2**
Other America	0.0	-0.5	0.0	0.0	-0.5
NICs	0.0	1.1	0.1	0.0	1.2
Other Asia-Oceania	0.0	-0.5	0.0	0.0	-0.5

Source: Eurostat and CHELEM-PIB, authors' calculation.

The NICs are also a special case in the only industry where Japan shows no marked specialisation, that of metal products (Table 36). Japan's disengagement from this industry goes back two decades. In 1992, it is at a disadvantage in relation to its main competitors, the zones Other America and Other Asia-Oceania, but still retains strong points in relation to the NICs of Asia.

2.5. Two-way trade in intermediate products

In the previous sections of this chapter, the indicators for competitiveness and specialisation have been calculated from the trade balance; that is the unbalanced part of trade. Conversely, the balanced part will be the subject of this section.

According to conventional theories, international trade in a given product ought to take place between different countries (different in their relative endowment with production factors or technological expertise) on an one-way basis; either exports (where there is a comparative advantage) or imports (comparative disadvantage). The existence of simultaneous flows of exports and imports of the same product is a priori incompatible with this reasoning.

This is, however, precisely the phenomenon that economists have been finding since the 1960s: simultaneous exports and imports within the same industry between countries with similar levels of development[53] are a prominent feature of contemporary international trade. The study of this so-called "intra-industry" trade may be regarded as the starting point for the rewriting of international trade theory[54].

[53] See for example Verdoorn [1960], Balassa [1965], and, in the 1970s, Grubel and Lloyd [1975]. The terminology used to describe this phenomenon is diverse and we find such terms as "intra-industry trade" (Balassa, Grubel and Lloyd), "two-way trade" (Gray), "overlap trade" (Finger), "horizontal trade" (Kojima), "cross-hauling" (Brander), "échange intra-branche" (Lassudrie-Duchêne and Mucchielli) and "commerce croisé de produits similaires" (Abd-El-Rahman).

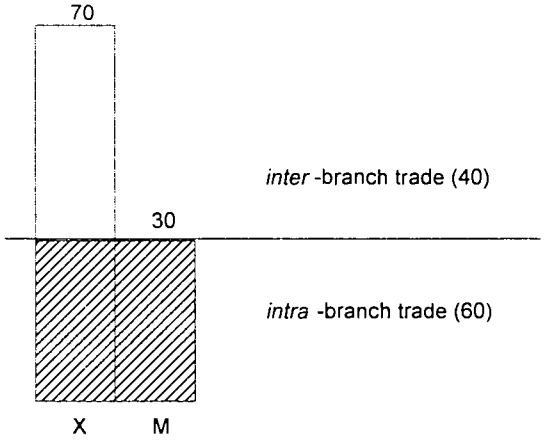
[54] The most fruitful approach is the application of industrial economics to international trade theories, in particular by Krugman and Helpman.

Box 10
The Grubel and Lloyd indicator

The Grubel and Lloyd (GL) indicator relates the part of trade where exports and imports are balanced with trade as a whole for a given level of aggregation (e.g. for a industry j):

$$GL_j = \frac{X_j + M_j - |X_j - M_j|}{X_j + M_j} = 1 - \frac{|X_j - M_j|}{X_j + M_j}$$

Suppose the majority flow is equal to 70 (here, exports) and the minority flow 30. The GL indicating the extent of overlap between the two flows (30+30) in total trade (100) is 60% in this example. The overlapping part (60) is considered intra-industry trade and the balance (40) as inter-industry.



Intra-industry measurements often suffer from a strong aggregation bias, both sectoral and geographical. Sectoral bias is caused by the insufficient disaggregation of the nomenclatures used: the more detailed the nomenclature, the more the trade becomes inter-industry. Geographical bias is simply the result of calculations often being made on the basis of each country's trade with the rest of the world: a reversal of the balance for the same product, depending on the trading partners, corresponding to the total of several inter-industry flows for the same item of the product nomenclature, will reveal a "multilateral intra-industry", i.e. a pure artefact.

That is why the calculations are generally made here at elementary level (product-country-partner) and aggregated only afterwards. For example, the average GL of intra-EC trade for the industry j is obtained by aggregation of the declaring countries k, the partner countries k' and the products p forming part of the industry j:

$$GL_{CE,CE,j} = 1 - \frac{\sum_{k \in CE} \sum_{k' \in CE} \sum_{p \in j} |X_{kk'p} - M_{kk'p}|}{\sum_{k \in CE} \sum_{k' \in CE} \sum_{p \in j} (X_{kk'p} + M_{kk'p})}$$

For the EC and EFTA zones, the calculations are made from individual data and then aggregated. For the other partner zones consisting of several countries, on the other hand, ("Other Europe", for example), since the geographical aggregation of the data has been carried out beforehand, there is a potential risk of overestimating intra-product trade.

Note here that the elementary flows between "declaring" countries (members of the EC and EFTA, the United States, Japan) are declared twice, by the exporter (fob) and by the importer (cif), producing non-symmetrical results.

The "intra-industry" trade of the declaring countries/zones is here calculated by the Grubel and Lloyd indicator (GL), which shows the two-way trade in a product between two partners (the balanced part of the trade) as a proportion of the total bilateral trade in the same product (see Box 10)[55].

[55] A more sophisticated alternative method is used for the member countries of the Community in 3.1. This requires information on quantities in order to calculate unit values, which we do not have for the other declaring zones.

2.5.1. Importance of intra-product trade: two possible readings

Table 37 illustrates for 1992 the two-way trade, all products together, between the member countries of the EC, EFTA, the United States and Japan. Despite the very detailed level of geographical and sectoral breakdown - 19 declaring countries, 31 partner countries/zones and 4999 products - the GL indicates a high figure: intra-product bilateral trade represents about one third of total trade. The importance of the intra-product trade of the countries of the European Community (33%) and its remarkably low level in Japanese trade (15.6%) are phenomena that are well known in economic literature. Japan's very marked specialisation, but also the absence of any economically comparable neighbouring country, may explain this situation[56]. The member countries of EFTA (26%) and the United States (28%) are in an intermediate position.

Table 37
The Grubel and Lloyd indicator of the 4 zones in 1992, all products together

	EC	EFTA	USA	Japan	Average
Intra-zone	40.7	28.9	---	---	---
Inter-zone	21.5	25.4	28.2	15.6	22.9
Total	33.0	25.9	28.2	15.6	29.5

Source: Eurostat, authors' calculation.

The high figure for the European Community owes a lot to relations within that zone. Thus, the total GL of 33% consists of both an intra-Community GL of around 40% and an extra-zone GL of 22%. Bilateral intra-product trade is therefore nearly twice as high among the member countries of the EC as with third countries[57]. Note that this phenomenon of the preponderance of intra-product trade within the zone is much greater for the EC than for EFTA.

Comparing the "total" GL between "zones" therefore presents a problem if the zones consist of several countries. Once intra-zone trade has been excluded from the split, the United States has a Grubel and Lloyd higher than that of the EC. Thus, the results change significantly depending on the viewpoint taken. Unlike in the earlier sections of Chapter 2, we have decided to present the results here for all the trade of the declaring countries, that is including the intra-zone flows of the EC and EFTA.

2.5.2. Intra-product trade in parts

Table 38 shows the Grubel and Lloyd indicator for the four declaring zones and the average by stage of processing in 1992. Most intra-product trade is concentrated in the downstream stages of the production process and especially in parts. Whatever the logic adopted, for each zone the intra-product trade is always the greatest for parts and the least for primary products. The other two stages show values very close to the average.

[56] In gravitational models, geographical proximity and economic proximity variables generally stand out very significantly.

[57] Despite a potential GL overestimation bias with the other zones (see Box 10).

Table 38
The Grubel and Lloyd indicator for the 4 zones by stage of processing in 1992 (including intra-zone trade)

		Primary	Processed	Parts	Final	Total
Total	EC	7.7	**29.9**	**49.5**	**33.7**	**33.0**
	EFTA	4.0	25.3	**38.8**	25.9	25.9
	United States	4.9	24.2	**52.7**	23.4	28.2
	Japan	0.8	16.7	27.8	14.1	15.6
	Average of 19 countries	5.7	27.3	**46.7**	28.8	**29.5**

Source: Eurostat, authors' calculation.

Note: For the EC and EFTA the figures show values aggregated from the individual results of the member countries. The figures in bold correspond to GLs that are above the all-stages average (grey box).

Just as the theoretical explanations of intra-product trade in consumer goods are based mainly on demand for variety, it is logical to assume that a producer looks for a set of particular specifications for his inputs (intermediate goods) in order to meet the demand for differences that he perceives. The efficiency of the productive combination is enhanced as a result. The preponderance of intermediate goods in two-way trade should not therefore surprise us.

At industry level, intra-product trade involves first of all those for which parts are particularly important: other transport, data processing, electrical/electronics, cars & HGVs, mechanical engineering and chemicals (Table 39)[58].

Table 39
The Grubel and Lloyd indicator by industry and stage of processing in 1992

	primary	processed	parts	final	Total
Other transport	.	5.8	**51.3**	**40.6**	**44.2**
Data processing	.	.	**54.7**	**34.2**	**41.5**
Electrical/electronics	.	**36.3**	**46.8**	**32.6**	**38.5**
Cars & HGVs	.	.	**44.2**	**32.6**	**36.0**
Mechanical engineering	.	**39.4**	**44.2**	**28.3**	**33.7**
Chemicals	**31.9**	28.4	**47.3**	**38.7**	**31.3**
Miscellaneous	16.2	**37.5**	**34.5**	28.7	**30.6**
Metal products	20.7	28.6	**35.1**	**34.1**	29.0
Coking & Refining	1.2	28.9	.	21.5	28.7
Wood & Paper	13.2	21.8	**51.1**	**41.1**	25.9
Textiles	14.7	25.8	**38.3**	20.2	21.9
AFI	13.0	15.8	.	16.0	15.9
Agriculture	7.8	18.2	.	7.9	7.9
Mining & Quarrying	2.4	14.8	.	0.7	3.7
Total	5.7	27.3	**46.7**	28.8	**29.5**

Source: Eurostat, authors' calculation.

Note: This is the average GL for the 19 declaring countries, *including intra-zone trade*. The figures that are higher than the all-stages average (29.5) are in bold.

[58] Note that processing traffic in some cases (especially aeronautical maintenance) entails an overvaluation of the intra-product trade. This type of customs regime in fact involves a bilateral crossed flow of goods that may belong to the same branch and have high values even though the value added abroad is small. This will occur for repair and maintenance activities in particular. This difficulty could be resolved by taking more precise account of the different statistical systems (see Annex).

2.5.3. Panorama of declaring countries by stages and industries

Taking all products together, it is the European countries that are most involved in intra-product trade (Table 40): five founder countries of the EC - France, Germany , BLEU, Netherlands - and the United Kingdom and the two Alpine countries of EFTA occupy the highest positions. The predominance of the European countries is confirmed at each stage. However, the United States is one of the front runners in parts.

Table 40
Countries whose "GLs" are the highest by stage of processing, 1992

	Primary	Processed	Parts	Final	Total
>50%			Netherlands UK France USA		
>40%			Germany Italy Ireland	France	
>30%		Switzerland France BLEU Germany Netherlands Austria		BLEU Germany UK Netherlands Austria	France Germany BLEU UK Switzerland Netherlands Austria
>20%	Denmark			Switzerland	
>10	Ireland BLEU Netherlands				
<10%	Germany Switzerland Austria France UK				

Source: Eurostat, authors' calculation.

Note: Each column shows only those countries whose intra-product trade is higher than the average for the 19 declarants at the stage concerned.

Table 41 is concerned only with intermediate goods (processed products and parts). It is constructed on the basis of a selection of intra-product trade by descending order of declaring countries and by industry. Only observations higher than the all-countries average of the industries are shown. The national situations differ greatly and are very specific to each sector. Two cases stand out: the first position taken by Spain in cars & HGVs, and the size of the United States' intra-product trade in electrical/electronics products. Small countries are often in a leading position in industries where intra-product trade is particularly small.

Table 41
Intra-product trade in intermediate products by industry, 1992

	Other transport equip.	Data processing	Electrical/ electronics	Cars & HGVs	Mech. eng.	Chemicals	Misc.	Metal products	Coking & Refining	Wood & Paper	Textiles	AFI	Agriculture	Mining & Quarrying
>50	France Sweden UK USA Italy	Italy UK Netherlands BLEU France Ireland Germany	USA	Spain USA France Italy UK	Netherlands Austria Germany UK France		Switzerland		Denmark				Ireland	Switzerland
>40			Netherlands UK France Switzerland Germany	Netherlands Germany Austria	Switzerland BLEU		France BLEU USA		Spain Italy Greece				Netherlands	
>30						France BLEU Netherlands Germany Switzerland UK		Switzerland Germany France Austria Netherlands BLEU Denmark	Portugal France UK	BLEU Netherlands France Switzerland Germany	Netherlands Austria BLEU France Switzerland Germany		BLEU	Portugal
>20									USA BLEU	Ireland Austria	Sweden	BLEU Germany Netherlands France	UK Denmark Switzerland USA	Finland France
>10												UK Switzerland		USA BLEU Germany

Source: Eurostat, authors' calculation.

Note: Each column shows only those countries whose intra-product trade is higher than the average for the 19 declarants in the industry concerned.

2.5.4. Bilateral intra-product trade

Table 42 shows for 1992 the two-way trade in intermediate products[59] of the four declaring zones with their partners. Figures above the average for the zone in question appear in bold. For each of the four declarants, "proximity" phenomena, be they geographical or economic (similar supply and demand structures), give rise to particularly high levels of two-way trade.

The EC remains the favourite place for the intra-product trade of the member countries of the Community, followed by the United States. The two-way trade in intermediate products of the Twelve is less with EFTA, but nonetheless significant, as is that with two other zones of the Eurafrican region, "Other Europe" and "Mediterranean countries". For the EFTA countries, the European Community shows the highest GL, even higher than that for intra-EFTA trade. The biggest partners in terms of their share of the United States' intra-product trade are the member countries of NAFTA and the NICs of Asia. Japan's two-way trade involves primarily the United States and the NICs of Asia.

However, the "proximity" factor does not explain everything. For example, the partner "NICs of Asia" takes an important part in the intra-product trade of all the declaring zones.

[59] Processed products and parts.

Table 42
Grubel and Lloyd of the zones in 1992, intermediate products

declarants / *partners*	EC	EFTA	USA	Japan
EC	**43.1**	**33.4**	36.6	20.0
EFTA	31.8	**31.6**	24.1	12.7
Other Europe	27.3	22.8	13.7	1.9
ex USSR	3.0	9.0	2.7	0.5
Mediterranean countries	24.0	12.5	22.7	2.1
ACP countries	4.3	.	.	.
Middle East	11.8	8.6	1.5	0.2
United States	**40.4**	28.0	.	**34.2**
Canada	14.3	8.4	**49.1**	6.5
Mexico	7.1	5.9	**41.4**	2.9
Other America	10.3	9.9	21.8	2.0
Japan	21.0	13.3	34.8	.
NICs of Asia	27.0	21.4	**46.2**	**26.1**
Large countries of Asia	10.9	6.0	16.0	10.4
Other Asia-Pacific	10.2	4.3	13.0	5.6
Rest of the world	17.1	0.2	2.8	0.8
Total (including intra-zone)	**36.2**	**29.2**	**37.9**	**21.5**

Source: Eurostat, authors' calculation.

Note. The figures in bold are higher than the average of the declaring zone concerned (grey boxes). The ACP countries do not appear in the Eurostat base in the returns of the non-EC declaring zones.

Figure 43 gives the same kind of information as the previous table for the declaring countries. These (in columns) are arranged according to their GL for intermediate products as are the partners. France is the only country whose all-partners GL is higher than 40%. It is followed by Switzerland, Germany, the Netherlands, the United States and the United Kingdom, all of which have figures greater than 35%. At the other extreme we find Norway, Portugal, Finland, Greece and Iceland.

The pairs France/Germany and Netherlands/BLEU - neighbouring countries that form the "hard core" of the European Community - show a very high GL. Similarly, we find the same phenomenon for the Scandinavian countries of EFTA, for which the biggest partner is always another Scandinavian country. Finally, Austria's only two-way trade is with two neighbours, Germany and Switzerland.

Although a long way from each other, France and the United States have a remarkable bilateral two-way trade in intermediate goods: its source is trade in aeronautical products.

Table 43
The bilateral GL for intermediate products in 1992

	Total GL of declaring country																		
	>40	>35					>30					>20			>10				<10
	Fra.	Switz.	Germ.	Neth.	USA	UK	Aus.	BLEU	Italy	Spain	Ire.	Denm.	Swed.	Japan	Nor.	Port.	Fin.	Greece	Iceland
Bilateral GL																			
>50	Germ. USA	UK Germany Ireland	France Switz.	BLEU UK	France	Germ. France	Germ. Switz.												
>40	UK Spain Italy Switz. Neth.	Austria BLEU	Austria UK Neth. BLEU Italy USA	Germ. France	Canada NICs UK Mexico	Neth. USA Spain Italy		Neth. France Germ. UK	UK Germ. France	France Germ.	USA Switz. UK	Sweden							
>30		France	Denm. Spain	Denm.	Germ.	Ireland			Spain Med. c. USA	UK Italy		Germ. UK USA Neth.	Finland Denmark USA Norway	USA	Sweden		Swed.	Med. c.	
>20													Germ. France UK Switz.	Germ. NICs Italy	Denm. UK	Spain France Neth. UK			
>10																Germ.	Denm. USSR Nor. Germ.	ex USSR France UK Germ. O. Europe	
<10																			Denm. USA Norway Spain UK Germ.

Source: Eurostat, authors' calculation.

Finally, note that the Grubel & Lloyd used here does not distinguish between the horizontal dimension of product differentiation and the vertical dimension. However, demand for quality creates a large proportion of intra-product trade. But this type of analysis requires information on unit values, which our base does not contain for the non-EC countries. The final chapter will therefore enable us to distinguish the two types of differentiation in the case of the countries of the European Community.

Chapter 3 : Specific Analysis of the European Community

3.1. International trade statistics approach (1988-1992)

Chapter 2 highlighted the importance of intermediate products in international trade. In its final section, the Grubel and Lloyd indicator showed the importance of intra-industry trade, especially for the countries of the European Community. This observation is to differing degrees valid for all stages, for both intermediate products and final goods. However, the approach used does not allow a distinction to be made between the horizontal dimension of product differentiation and the vertical dimension. Demand for quality is nevertheless the source of a large amount of the intra-product trade.

This chapter proposes an alternative method to conventional measurements of the "Grubel and Lloyd" type and introduces the price dimension (unit values). The basic idea is to get a better picture of the phenomenon of "intra-industry trade" at product level, taking in both horizontal differentiation (trade in varieties) and vertical differentiation (trade in qualities), thereby giving the phenomenon a definition that is closer to the observed reality and to economic theory. This method uses two criteria - the extent of the "overlapping" of bilateral trade at a detailed level and the "similarity" of unit values - to break down total trade into different types of trade:

- two-way trade in similar products;
- two-way trade in vertically differentiated products;
- one-way trade.

Two thirds of the trade with non-Community partners is one-way trade, but only one third of that within the EC. This means that even at this detailed level of analysis the counterpart of the one-way flows - the "two-way trade" - still does not disappear. On the contrary, an analysis covering several years shows that one-way trade is declining in favour of the other two types of trade. According to our methodology, this is a process of specialisation *within* products as defined in the nomenclatures, with a 45% share in vertical differentiation and 20% in horizontal differentiation. This phenomenon therefore seems to be a structural trait in intra-Community relations, reflecting a very fine specialisation associated with the specificity and diversity of demand on the part of "users" -consumers in the case of consumer goods and producers in the case of intermediate and capital goods.

A question frequently raised in discussions of the experience of regional integration in Europe concerns the integration scenario for the least advanced countries of the European Community: do we find an *inter*-industry specialisation - with even greater complementarity between those countries and the richer ones - or an *intra*-industry specialisation favouring a convergence of economic structures? Generally speaking, in bilateral relations the countries of the "hard core" engage in much more two-way trade between themselves, whereas the "South of Europe" is engaged more in one-way trade. At this level of analysis, similarity between the trading partners' levels of development seems to favour two-way trade, especially in the form of trade in products of different quality. Geographic proximity also plays an important part, however, especially when looking for example at such pairs as Spain and Portugal or Ireland and the United Kingdom, which have a significant amount of two-way trade. For the pairs France and Germany or the BLEU and the Netherlands, the principal mode of integration is more difficult to interpret, given the possible interpenetration of geographic and economic proximity.

The importance of two-way trade in vertically differentiated products brings us back to the question of the quality segments in which the trade takes place. The analytical grid classifies trade according to ranges in relation to a European norm at the finest possible level. If the unit value of the "elementary flow" does not deviate by more than 15% from the Community average unit value, the flow is deemed to represent products of the *middle of the range*. A unit value 15% above that norm makes the flow *top of the range*, whilst a unit value 15% below corresponds to a *bottom of the range* flow.

Introducing prices into the international trade analysis reveals a specialisation by range associated with a price/quality difference that transcends the logics of industry and stage. Although national specificities can be found for one industry or another, generally speaking the *import* structures according to ranges are very similar among the member countries of the EC, suggesting that modes of consumption at this overall level are very

much "harmonised" in Europe. The situation is quite different for *exports*: here we can clearly distinguish the countries of the South that joined late (Greece, Portugal, Spain), countries most of whose exports are low- and medium-range products. On the other side we find Germany in particular, more than half of whose exports are top of the range products, followed by Ireland, the United Kingdom and, to a lesser extent, by Denmark and France.

3.1.1. Proposed method

Our analysis of intra-Community trade in intermediate goods is based on a method initiated by Abd-El-Rahman [1986-a and b] and taken up and refined by Freudenberg and Müller [1992].

3.1.1.1. Definition of "two-way trade in similar products"

Conceptually, the basic idea is to get a clearer picture of the "intra-industry" phenomenon at product level while including the dimension of horizontal versus vertical differentiation, therefore giving the phenomenon a definition that is closer to reality and to economic theory. Like Abd-El-Rahman, we prefer the concept of "two-way trade in similar products".

From an operational point of view we therefore need to define what constitutes a "product", what is a "similar" product and, lastly, what is "two-way" trade. Here, we adopt the following definitions:

- *product*: the fineness of breakdown of the nomenclature is the best guarantee that empirical work will be free from the effect of sectoral aggregation. The harmonised 6-digit system representing some 5,000 items used here distinguishes products by their main technical characteristics[60]. To each elementary flow (bilateral trade in a given item) we apply two criteria:

- *similarity* of the products: even within a category of the "harmonised system", products may be clearly distinguished by their quality. Similar products are taken to be products that are similar in price. In the absence of prices, unit values are used here. Differences in unit values are therefore assumed to reflect differences in quality. Products traded are considered similar (or horizontally differentiated) if the unit values on export or import differ by less than 15%[61]. Otherwise, products are deemed to be differentiated vertically;

- the *overlap* of trade: trade in a product is considered to be "two-way" if the value of the minority flow (imports, for example) represents at least 10% of the majority flow (here, exports). Below this threshold, the minority flow is considered negligible.

If an elementary flow satisfies the two criteria of similarity and overlap of funds at the same time, both exports and imports are considered as forming part of a "bilateral two-way trade in similar products" (see Box 11). Surpluses or deficits may therefore appear. This has important implications for both theoretical and empirical considerations, since we can identify situations where an intra-industry trade (or rather a two-way trade in similar products) goes hand in hand with comparative advantages.

The Grubel and Lloyd indicator and the approach used here are thus complementary rather than alternatives, since each method answers a very precise question: the former measures the intensity of overlap of the trade whilst the latter approach measures the relative size of the flows forming part of a two-way trade in similar products in relation to the total trade.

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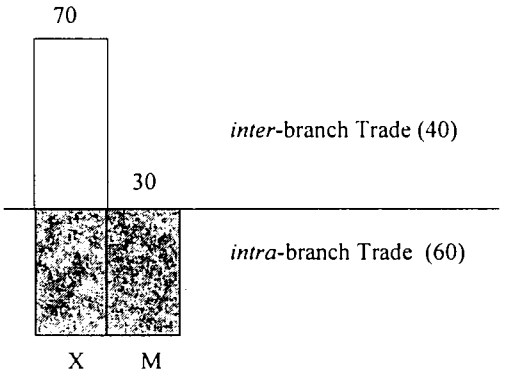
60 For example, within item 8708 ("parts and accessories ... of vehicles...") we distinguish among other things bumpers and parts thereof (870810), safety belts (870821), carrying axles (870860), gearboxes (870870) and wheels (870870) (see Annex).

61 The 15% threshold introduced by Abd-El-Rahman to distinguish similar products from products differentiated vertically was also used by Greenaway, Hine and Milner [1994] despite a more limited degree of disaggregation of the nomenclatures. However, their study follows the "conventional" line in that they calculated the Grubel and Lloyd indicator for these two categories separately.

Box 11: Why take account of *all* trade?

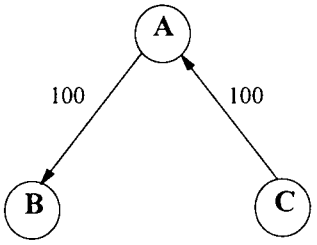
We return to the example of Box 10 of Chapter 2 on the Grubel and Lloyd indicator. For the present, it is unimportant whether we are talking in terms of industry or of product. What we are interested in here is the *interpretation* of the indicator, which considers the balanced part as intra-industry (or intra-product) trade and the rest as inter-industry (or inter-product). In this method, *one and the same flow*, the majority flow (here, exports), *is both intra-industry and inter-industry*. This poses problems of interpretation; thus, for example, exports of cars & HGVs from France to Spain (amounting to 70) are explained by both comparative advantage and monopolistic competition: the balance (40) would be traded in perfect competition and the 30 corresponding to intra-industry trade in imperfect competition.



Our proposed method avoids this problem: *the two flows* are part *either* of an "intra-industry" trade *or* of an "inter-industry" trade. If a certain overlap threshold is reached (as is the case in this example), both exports and imports are considered to be part of a two-way trade if not as one-way trade.

Why analyse the flows *bilaterally*?

Even if we refuse from the outset to combine individual partner countries into a single group so as to avoid the bias that results from geographical aggregation, there are nonetheless two ways of treating the information on bilateral flows: a *bilateral* or *triangular* analysis. Consider for example three countries (A, B, C) which trade a given product with similar prices (unit values): country A exports to B for a value of 100 and imports the same amount from C. Assume there is no trade between B and C.



A strictly *bilateral* analysis between A and B would make this an one-way flow. It is unimportant whether the analysis is made from the point of view of A (one-way exports) or B (one-way imports). Likewise for trade between A and C.

On the other hand, a *triangular* analysis of A's trade (taking account of all flows with the various partners) would find a overlap between exports to B and imports from C, and would describe this flow as forming part of a "*triangular* two-way trade in similar products"[62]. If we are interested only in the nature of a single country's trade relations (here, country A), this analysis (introduced by Abd-El-Rahman) seems preferable, since it thus allows us to detect whether a country is in an "intermediate" position[63]. However, it is not appropriate for a systematic analysis, because from the point of view of countries B and C these flows are one-way. The problem with this triangular analysis is then that the same bilateral flow may be defined differently according to the point of view.

As the same flow cannot be different depending on who declares it, we believe that only a bilateral analysis is suitable for systematic analysis.

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62 See Freudenberg and Müller [1992] for a more detailed discussion.

63 For the concepts "intermediate country" and "hierarchisation of comparative advantages" see Lassudrie-Duchêne and Mucchielli [1979].

3.1.1.2. Typology of foreign trade

However, the main interest of this approach - and this is a second novelty as compared to conventional methods - is that it also identifies flows that do not satisfy these two conditions. This method therefore allows *all* trade to be broken down into different types of trade on the basis of the criteria of similarity and overlap:

- two-way trade in similar products (significant overlap and small difference in unit values);
- two-way trade in vertically differentiated products (significant overlap and large difference in unit values);
- one-way trade (small overlap).

Table 44 sets out this typology of foreign trade. As the work is done at the fine level of the nomenclature, we can then aggregate the items as we wish and get a *breakdown of bilateral trade into the three types of flow, strictly independent of the degree of aggregation of the nomenclature*. This methodology, which is of interest generally, is of particular value when it comes to intermediate goods: if we are going to reaggregate the nomenclature according to the specific logic of intermediate/final goods, it is absolutely essential to use a method for calculating "intra-industry" trade that is free of all aggregation bias.

Table 44
Defining the types of trade

Overlap of trade: Is the value of the minority flow at least 10% of that of the majority flow?	**Definition of which flow?**	**Similarity of the products traded:** Do the unit values of exports and imports differ by less than 15%?	
		Yes (horizontal differentiation)	No (vertical differentiation)
Yes (Two-way trade)	Both exports and imports	Two-way trade in similar products	Two-way trade in vertically differentiated products
No (One-way trade)	Majority flow	one-way trade	
	Minority flow	residual trade	

Note: By design, residual trade is a very small proportion of total trade. Although calculated separately, for the presentation it is put with one-way trade.

3.1.1.3. Analysis by range

Finally, we can turn to the quality segments in which the trade takes place. This analysis grid classifies trade according to its range in relation to a European norm for each elementary flow (flow-declarant-partner-6-digit HS item).

If the unit value of the "elementary flow" differs by no more than 15% from the average European unit value, that flow is considered to represent products of the *middle range*. A unit value 15% higher than the European norm makes the flow *top of the range*, whilst a value 15% below corresponds to a *bottom of the range* flow. Since exports and imports are analysed separately, the flows corresponding to a given product for a particular partner may be in different ranges.

Note that the types of trade are independent of the ranges traded, which allows exports and imports to be analysed according to both types of trade and ranges (see Annex for a numerical and representational example of calculations of the types of trade and the European ranges).

3.1.2. Typology of intra- and extra-Community trade

In order to locate trade better within the EC for intermediate products alone, we shall first give a broader picture presenting the intra- and extra-EC relations of the member countries, all products together, according to the two standard dimensions of trade and ranges traded.

Table 45 shows for 1992 the nature of the trade flows of the twelve member countries of the European Community taken as a whole. Note that the calculations were made for the roughly 5,000 products of the 6-digit HS and bilaterally (the 11 declaring countries of the EC with 31 partner countries/zones). The breakdown (average of the member countries) of the three types of trade is shown for both the intra-EC and extra-EC partners together with the world total.

Looking first at the last line of Table 45 showing the total EC trade for all products, stages, declaring countries and partner countries together:

- nearly one half (47%) of the EC countries' trade with the world is one-way, that is in the form of exports or imports without significant flows in the other direction;
- the second type of trade by order of importance is vertically differentiated two-way trade (nearly 40% of the value of total flows): there is then a significant overlap between bilateral exports and imports, but for different unit values. This may be interpreted as a quality trade.
- two-way trade in similar products has a relatively small part with only 15% of the total. This shows the advantage of our approach when used in addition to that based on the conventional GL coefficient.

One-way trade represents two thirds of trade with the extra-Community partners, but only one third within the EC. The counterpart of this phenomenon is of course that two-way trade is much more developed within the EC. This suggests that in Europe there is a much finer specialisation than that shown by most conventional (intra-industry) approaches. According to our method, this is a specialisation that operates *within* products as defined in the nomenclatures, with a 45% share in vertical differentiation and 20% in horizontal differentiation.

Table 45 also shows the breakdown of the types of trade for trade between the member countries of the EC in 1992 according to four different splits: by stages of processing, by industry, by EC member country and by partner. The phenomenon of two-way trade being much greater within the EC than with extra-EC partners is found systematically regardless of the split adopted. This is why, in the rest of the presentation of this table, we give priority to a reading of intra-EC relations, leaving it to the reader to consult the extra-EC figures.

Examination of the table from the *stage of processing* angle shows that intra-Community trade in primary products - very much marked by the comparative advantage in natural resources - is largely one-way (71%).

We also note the large proportion of two-way trade in vertically differentiated products for parts within the EC (66%). But just as it is easy to treat two-way trade in 1500 - 3000 cm^3 touring cars[64] of different unit values as a range trade, we should be equally cautious when it comes to parts combined in the same nomenclature item. The predominance of parts on the one hand and of vertical differentiation on the other may in part be associated with this kind of phenomenon. We should then be back with a sectoral aggregation phenomenon, even though our approach generally minimises this type of bias. Only by working on each item individually - which is obviously out of the question - could we remove this uncertainty. For this reason, we have elsewhere[65] stated that the only "real intra-industry in intermediate goods" was certainly two-way trade in similar products and therefore of similar unit values.

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[64] Touring cars and other vehicles mainly designed for the transport of persons, including cars of the "station wagon" type and racing cars, with a spark-ignition alternating piston engine, cylinder size >1500 cm^3 but ≤3000 cm^3.

[65] See Fontagné, Freudenberg, Ünal Kesenci and Péridy [1995].

Table 45
Breakdown of the types of trade in intra- and extra-EC trade in 1992, by country, stage, industry and partner

	Intra EC			Extra EC			Total EC		
	TWSP	TWVDP	One-way	TWSP	TWVDP	One-way	TWSP	TWVDP	One-way
By stage									
Primary	10.5	18.5	71.0	1.0	2.8	96.2	4.8	9.0	86.2
Processed	19.9	41.9	38.2	5.3	24.5	70.1	14.3	35.2	50.5
Parts	19.5	66.3	14.2	10.2	54.1	35.8	15.7	61.3	23.0
Final	21.0	43.2	35.8	6.7	29.3	64.0	15.6	38.0	46.4
By industry									
Agriculture	5.6	15.7	78.8	0.5	4.6	94.9	3.7	11.6	84.6
Mining & Quarrying	11.7	16.6	71.7	0.9	0.7	98.4	3.5	4.6	91.9
AFI	13.2	25.4	61.3	1.9	7.6	90.5	10.0	20.3	69.7
Textiles	12.7	42.3	45.0	4.4	19.0	76.6	9.3	32.6	58.1
Wood & Paper	22.9	48.7	28.4	6.7	21.2	72.1	15.8	36.6	47.6
Coking & Refining	17.7	50.5	31.8	8.5	31.2	60.3	13.5	41.8	44.7
Chemicals	18.6	45.8	35.7	5.1	29.9	65.0	14.0	40.3	45.7
Metal products	25.5	41.9	32.6	7.1	24.1	68.9	18.7	35.3	46.0
Mechanical engineering	16.9	56.7	26.4	7.7	36.5	55.8	12.9	47.9	39.2
Data processing	24.5	65.5	10.1	8.4	44.2	47.4	18.0	56.8	25.2
Electrical/electronics	15.2	61.4	23.4	6.7	47.1	46.2	11.1	54.6	34.3
Cars & HGVs	27.0	53.0	20.0	9.3	33.8	56.9	22.6	48.2	29.2
Other transport	55.8	28.5	15.7	15.2	53.9	30.9	34.2	42.0	23.8
Miscellaneous	15.1	47.5	37.3	4.8	36.7	58.5	10.0	42.2	47.8
By country									
France	26.9	46.3	26.9	7.8	31.0	61.2	20.2	40.9	38.9
BLEU	23.6	47.0	29.4	2.9	22.2	74.8	17.9	40.2	41.9
Netherlands	22.3	43.8	33.9	5.0	19.8	75.2	16.6	35.9	47.5
Germany	21.5	48.1	30.4	8.2	33.6	58.2	15.4	41.4	43.2
Italy	11.4	44.5	44.1	5.2	24.2	70.6	8.8	36.1	55.0
UK	19.5	48.2	32.3	5.0	36.9	58.1	12.4	42.7	44.9
Ireland	8.1	42.9	49.1	2.2	27.3	70.5	6.5	38.7	54.7
Denmark	8.8	38.1	53.1	7.5	23.2	69.4	8.2	31.2	60.6
Greece	2.5	10.4	87.0	2.1	8.7	89.2	2.4	9.8	87.8
Portugal	10.2	23.4	66.4	0.8	5.8	93.3	7.8	18.9	73.3
Spain	15.7	39.9	44.4	3.4	11.8	84.8	11.1	29.4	59.4
By partner									
EC	20.0	45.0	35.0				20.0	45.0	35.0
EFTA				12.3	38.4	49.3	12.3	38.4	49.3
Other Europe				4.2	34.1	61.7	4.2	34.1	61.7
ex USSR				0.7	5.8	93.5	0.7	5.8	93.5
Mediterranean countries				6.7	25.2	68.0	6.7	25.2	68.0
ACP				3.2	6.2	90.7	3.2	6.2	90.7
Middle East				1.2	10.3	88.5	1.2	10.3	88.5
USA				10.9	48.9	40.2	10.9	48.9	40.2
Canada				3.2	19.9	76.9	3.2	19.9	76.9
Mexico				1.5	10.0	88.4	1.5	10.0	88.4
Other America				1.6	9.4	89.0	1.6	9.4	89.0
Japan				2.7	24.5	72.8	2.7	24.5	72.8
NICs of Asia				2.2	26.8	71.1	2.2	26.8	71.1
Large countries of Asia				0.6	9.0	90.4	0.6	9.0	90.4
Other Asia-Oceania				1.9	13.7	84.4	1.9	13.7	84.4
Rest of the world				1.8	27.9	70.3	1.8	27.9	70.3
Total	20.0	45.0	35.0	6.2	28.8	65.0	14.5	38.5	47.0

Source: Eurostat, authors' calculation.

Note: TWSP stands for two-way trade in similar products and TWVDP stands for two-way trade in vertically differentiated products. The total of the types of trade for each of the three main columns = 100%.

Following a logic of *industries*, we observe the preponderance of one-way trade in particular in the "primary" industries agriculture and mining and quarrying, for which three quarters of the value of intra-European flows are one-way. On the other hand, more than half the trade in the data processing, electrical/electronics, mechanical engineering, cars & HGVs and coking and refining industries is based on a two-way trade with vertical differentiation. Note here that two-way trade in similar products is extremely important for the "other transport" industry[66].

The principal form of *country* involvement in intra-Community trade is two-way trade in vertically differentiated products, especially in the case of the United Kingdom and Germany (48%), followed by the pair Belgium/ Luxembourg and France. Conversely, Portugal and especially Greece are distinguished by a preponderance of one-way trade. More than one fifth of the bilateral trade of France, Belgium-Luxembourg, the Netherlands and Germany is in the category of two-way trade in similar products.

So far as the *partners* of the member countries of the EC are concerned, most of them exchange products mainly on an one-way basis, despite a potential underestimation bias in this type of trade[67]. The main exceptions are the EFTA countries and the United States, which are the only ones to have a significant proportion of two-way trade in similar products (around 10%).

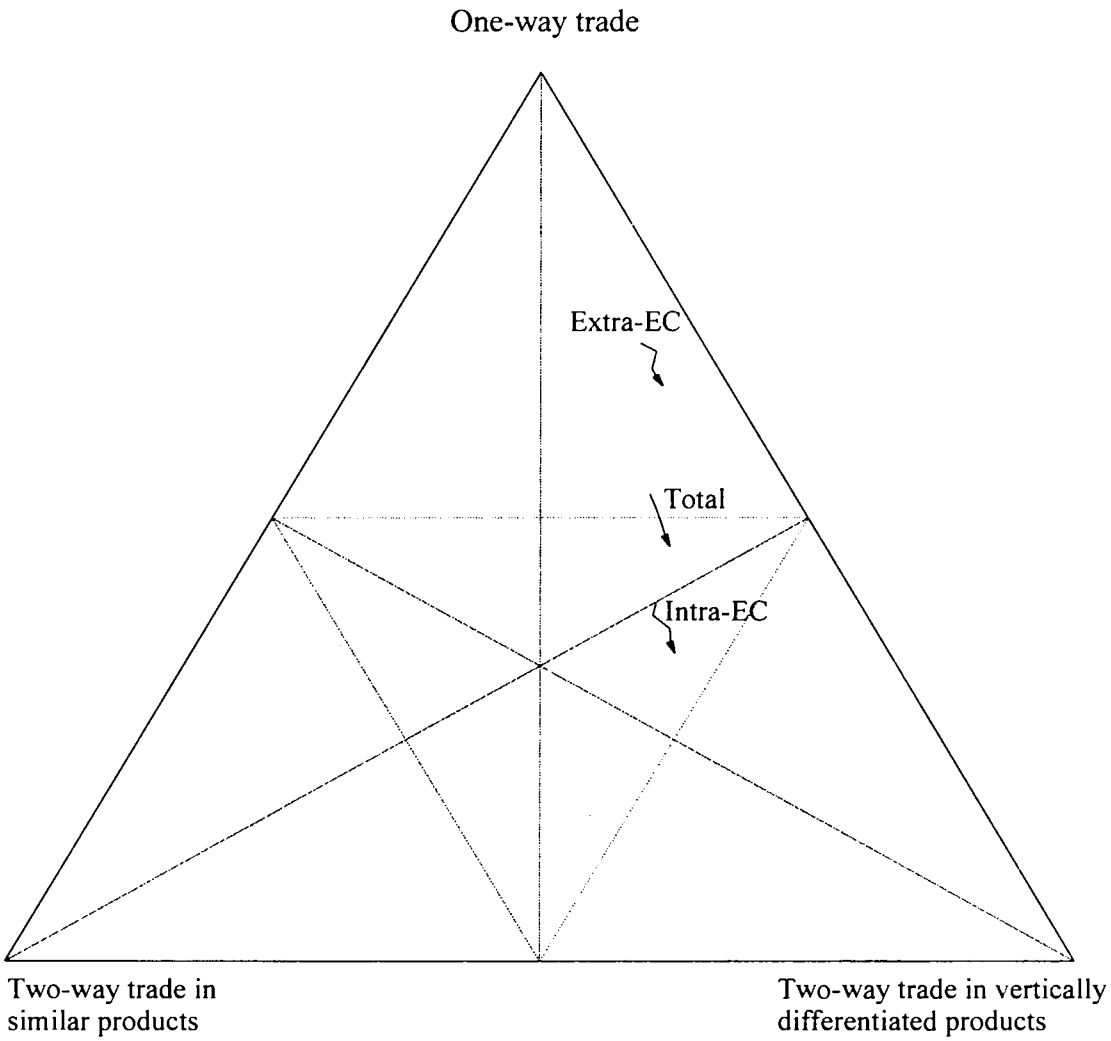
The following charts display most of this information in the form of a triangular distribution for the years 1988 to 1992. The advantage of presenting it in this way rather than the conventional presentation showing the trend in the Grubel and Lloyd is evident: not only is an increase in that indicator (corresponding to an increase in "intra-industry" trade) indicated by a downward movement in our triangles (move away from one-way trade to two-way trade), but it immediately shows whether the trend is towards a two-way trade with vertical differentiation (bottom right) or towards two-way trade with horizontal differentiation (bottom left).

Figure 14 shows the trend in the breakdown of the types of trade of the EC member countries (taken together) according to its intra-EC or extra-EC origin as well as the total trade between 1988 and 1992. As we have already stressed, intra-EC trade is much more "two-way" than that with extra-EC partners for both vertical and horizontal differentiation. The interesting thing in this Figure is that the trend between 1988 and 1992 is very similar for the two types of partner: two-way trade in vertically differentiated products expands, with a movement towards a very fine specialisation based on price and quality within products.

66 See the discussion in the Annex of a possible overestimation of this industry resulting from the statistical systems used.

67 As with the Grubel and Lloyd indicator in Chapter 2, the calculations for the zones other than the EC and EFTA are made from data that has been aggregated in advance.

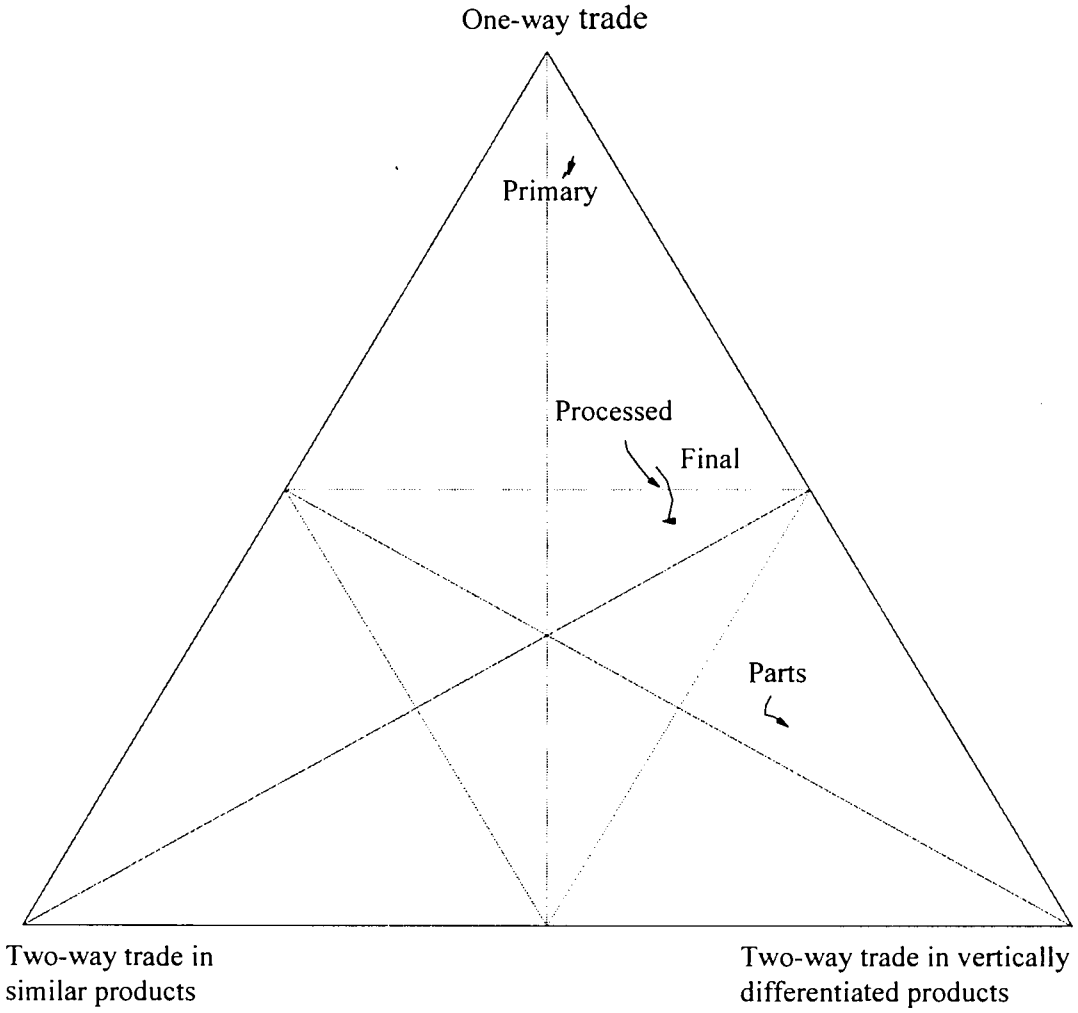
Figure 14
Breakdown of the types of trade within EC trade, 1988-1992, according to intra- or extra-EC origin



Source: Eurostat, authors' calculation.

Figure 15 shows the trend in the breakdown of the types of trade of the EC member countries (taken together) with the world (intra- plus extra-EC) by stage of processing. Apart from primary products, which are mainly traded on an one-way basis and remain so, the other three stages show roughly the same trend as mentioned above, that is towards a two-way trade in products differentiated vertically. Parts are distinguished by the highly two-way nature of the trade and the high proportion of two-way trade in intermediate products differentiated vertically.

Figure 15
Breakdown of the types of trade in EC trade, 1988-1992, by stage

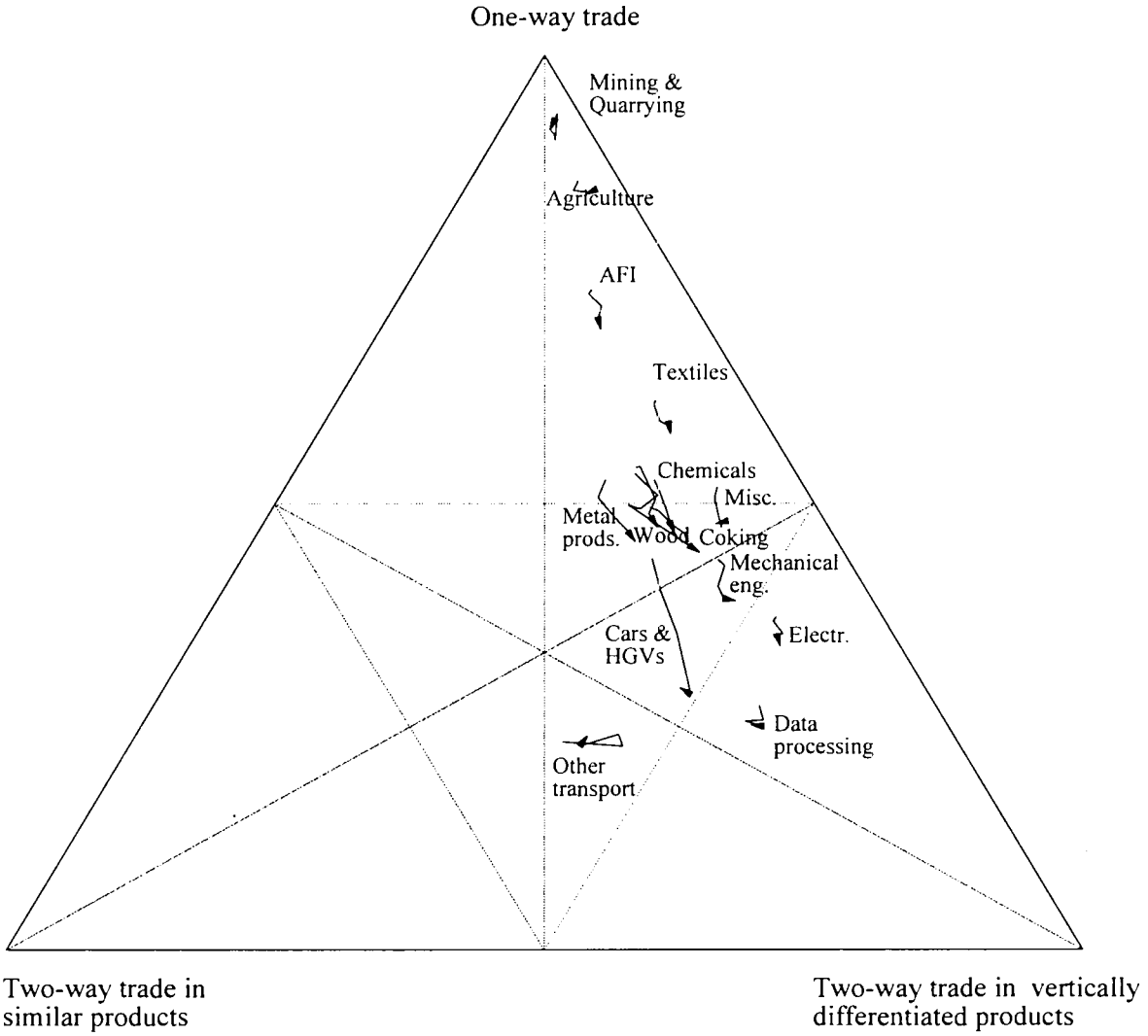


Source: Eurostat, authors' calculation.

Figure 16 shows the trend between 1988 and 1992 by industry. Here again, with the exception of the mining and quarrying and agro-industries, the industries are moving towards a two-way trade in vertically differentiated products. The most spectacular trend is observed in cars & HGVs.

A question frequently raised in discussions of the experience of regional integration in Europe concerns the integration scenario for the least advanced countries of the European Community: do we find an *inter*-industry specialisation - with an even greater complementarity between those countries and the richer ones - or an *intra*-industry specialisation favouring a convergence of economic structures?

Figure 16
Breakdown of the types of trade in EC trade, 1988-1992, by industry



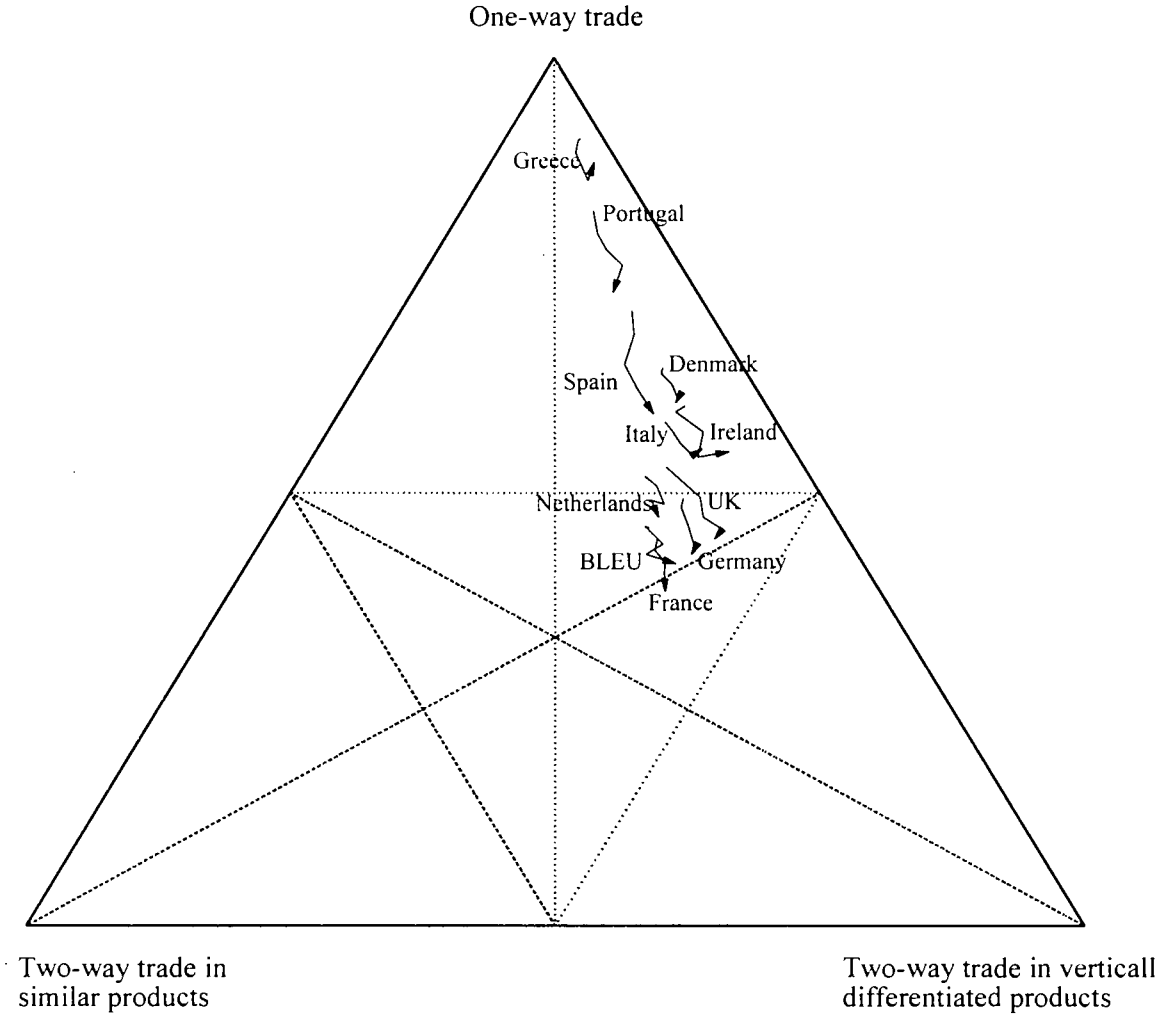
Source: Eurostat, authors' calculation.

An analysis of this kind ought to be made industry by industry, but since this question is not at the heart of this report, we shall show only the overall situation by country. Figure 17 shows the trend between 1988 and 1992 in the distribution of the types of trade of the EC member countries with the world (intra- plus extra-EC), all products and stages of processing taken together.

In the first small upper triangle (where at least 50% of trade is one-way), we find in particular Greece and Portugal, then Spain and Denmark, but also Italy and Ireland. As we have already seen in Table 45, the countries of the "hard core" exchange most products in the form of two-way trade and are thus the furthest removed from the apex representing one-way trade. Almost all the countries are moving downwards and to the right, which reflects a decline in the proportion of one-way trade in favour of two-way trade in vertically differentiated products, the trend being the greatest for Spain, Portugal and the United Kingdom.

This result gives considerable new impetus to the debate on the trade-creating effects of regional integration.

Figure 17
Breakdown of the types of trade in EC trade, 1988-1992, by country



Source: Eurostat, authors' calculation.

Making a connection between regional integration and the creation of two-way trade in similar products is in fact a commonplace in the literature on regional integration between economically similar countries. Economic integration would not therefore entail specialisation[68], but would have primarily a microeconomic effect: a reduction in the variety produced by a firm or a country and an increase in the variety offered on an enlarged market by exploiting economies of scale. Between countries with very different per capita incomes and different relative endowments with resources, this effect ought to be disrupted by the anticipated specialisation effects of exploiting macroeconomic comparative advantages. More intuitively, this means that the integration of trade among the countries of the "North" of Europe ought to take place in intra-industry fashion and between "South" and "North" rather in inter-industry fashion.

Although the initial levels of the different types of trade are naturally different for "North" and "South" and they fit in with the theoretical arguments that have just been briefly reviewed, the trends over time show on the contrary that European integration has resulted above all in a strengthening of two-way trade in vertically differentiated products for all countries, regardless of their level of development. We therefore find neither a growth in "intra-industry" in the true sense nor a specialisation of the inter-industry type.

[68] In the sense used in conventional international trade theory, i.e. on the basis of comparative advantages.

3.1.3. Quality/price of the goods traded

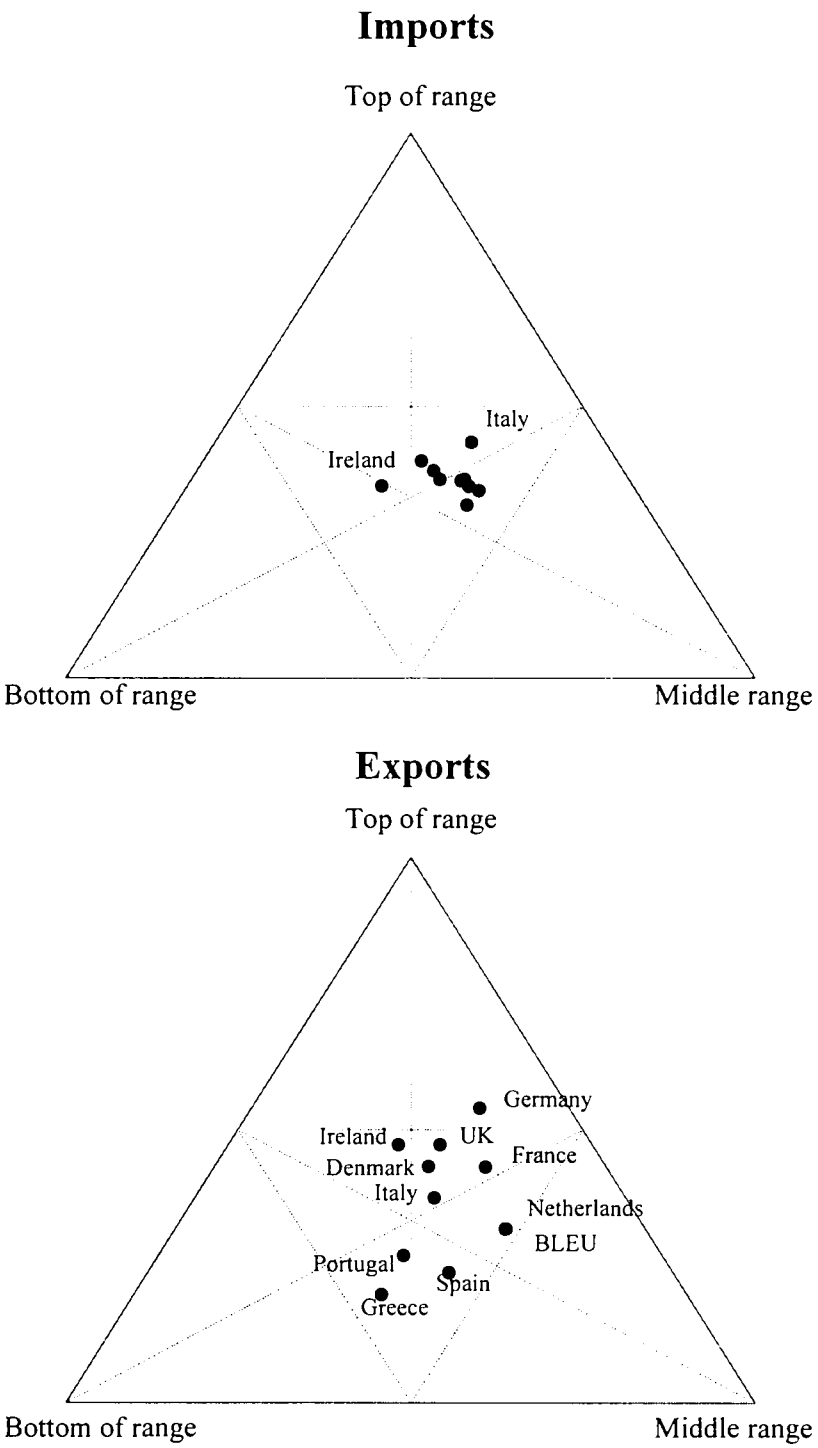
Still at this level of aggregation combining primary and final products as well as intermediate products, Figure 18 gives the European breakdown by range.

In 1992, the *import* structures by range are so close among the countries of the EC that we show only two countries that are relatively specific. Whereas for most countries some 30% of imports are of bottom of the range products and about 40% in the other two ranges, Ireland imports slightly more at the bottom of the range and Italy at the top.

The situation with *exports* is completely different, and we can clearly distinguish the Southern countries which joined late (Greece, Portugal and Spain), countries most of whose exports are bottom and middle range products. At the other extreme we find Germany, more than half of whose exports are top of the range products, followed by Ireland, the United Kingdom and, to a lesser extent, Denmark and France.

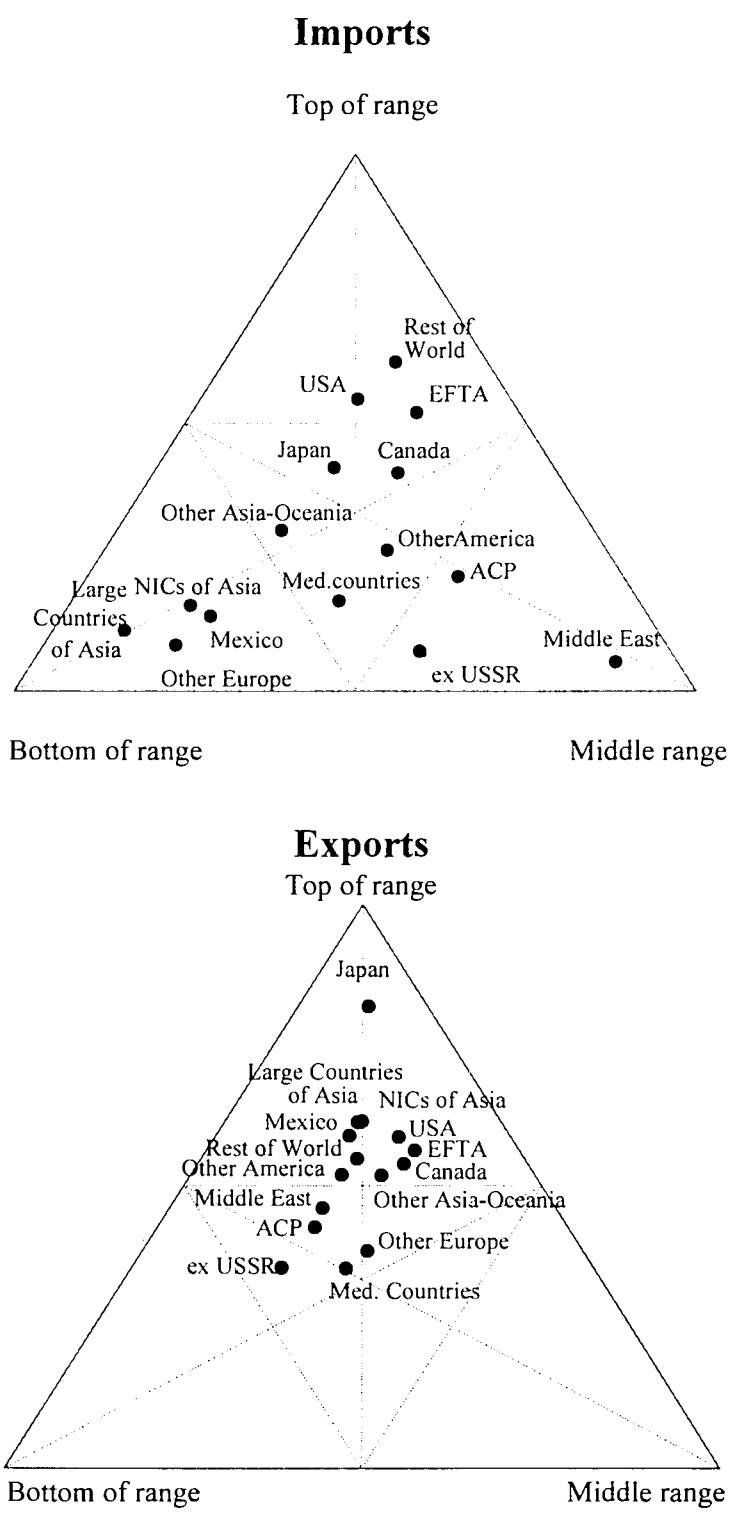
This suggests that modes of consumption at this overall level are very much "harmonised" in Europe. The first results for Germany's exports are compatible with the image of products "Made in Germany", which are considered expensive but of good quality. Obviously, these findings at macroeconomic level must be interpreted with caution, but the country by country and industry by industry analysis presented later supports these first findings.

Figure 18
Structure of imports and exports by range of the EC member countries in 1992



Source: Eurostat, authors' calculation.

Figure 19
Structure of EC imports and exports by range in 1992, by partner zone



Source: Eurostat, authors' calculation.

Let us look now at the trade of these countries, taken together, with their various partners, keeping in mind that the ranges traded have been defined in relation to the "Community norm", that is from the average unit value of intra-EC flows for each product.

Unlike the analysis by member country of the EC, we find more contrast when it comes to imports than for exports. The suppliers of the Community countries may be divided roughly into three groups (Figure 19).

The first group supplies mainly bottom of the range products: the large countries of Asia (LCA, i.e. China, India and Indonesia), "Other Europe" (countries of Central and Eastern Europe), NICs of Asia, Mexico and, to a lesser extent, Mediterranean countries and "Other Asia-Oceania".

The second group comprises the countries of the Middle East, the former USSR, the ACP countries and the zone "Other America", most of whose Community imports are in middle range products. It should be noted right away that imports from these zones are principally primary and/or not very differentiated products, which ought to be reflected in unit values close to the Community norm.

Lastly, the third group consists of the advanced countries, from which the member countries of the EC import mainly top of the range products: United States, EFTA, Japan and Canada.

3.1.4. Types of trade in Community trade in intermediate products.

Having made an initial survey of the EC member countries' trade in all products, we can now concentrate our investigation on trade in intermediate goods alone, that is processed products and parts.

The figures in Table 46 show the bilateral trade in intermediate goods of each member country with each partner of the Community, calculated from 2713 intermediate products, taking account of the unit values on import and export.

Note first of all that each flow is declared twice, by the exporter (fob) and by the importer (cif), which means that the declarations differ and the results are not symmetrical[69]. This difficulty could be resolved in part by harmonising the returns.

[69] The most striking example is that of trade between the United Kingdom and Ireland: whereas according to the British returns, crossed trade in similar products amounts to 27.5% of trade in intermediate goods between the two countries, the figure drops to less than 10% when the Irish returns are used!

Table 46
Weight of the types of trade in bilateral relations in intra-EC trade in intermediate products in 1992

Two-way trade in similar

	FR	BLEU	NL	DE	I	UK	IRL	DK	GR	PT	ES	EC
France		21.5	16.9	32.4	22.1	19.9	1.0	13.0	2.7	7.0	23.6	23.9
BLEU	24.3		36.8	23.4	10.7	17.4	1.9	6.3	2.0	8.3	9.9	24.2
Netherlands	21.1	38.4		21.6	12.8	26.7	1.6	13.3	0.8	4.4	7.3	24.3
Germany	29.7	20.7	25.6		11.5	26.3	2.9	13.8	3.1	3.2	25.4	22.3
Italy	17.1	10.0	5.8	14.2		11.9	0.3	6.1	9.7	9.4	17.8	13.6
UK	18.6	12.5	12.2	20.1	10.2		27.5	10.5	3.7	12.2	10.2	16.5
Ireland	1.7	1.4	2.8	9.6	1.6	9.4		0.8	0.0	0.3	1.6	6.9
Denmark	7.2	2.6	8.6	11.3	3.6	9.3	2.4		0.1	1.0	2.0	8.8
Greece	1.1	1.8	1.5	3.2	5.0	4.0	0.1	0.0		0.0	4.1	3.3
Portugal	9.5	3.9	3.2	10.9	11.1	6.0	0.2	2.9	0.2		11.9	9.2
Spain	14.5	11.0	4.5	14.5	14.7	13.8	2.7	1.8	3.2	15.3		13.4
EC	22.0	21.7	21.8	21.5	14.1	19.6	15.1	11.6	4.8	8.7	18.9	19.8

Two-way trade in vertically differentiated products

	FR	BLEU	NL	DE	I	UK	IRL	DK	GR	PT	ES	EC
France		49.8	51.8	57.0	51.8	62.4	38.0	41.5	18.1	41.5	53.5	54
BLEU	47.2		41.5	55.5	36.0	52.5	23.6	29.0	10.8	22.2	33.7	47.3
Netherlands	48.7	42.4		49.5	37.7	47.2	44.5	46.3	13.5	22.4	45.5	46.3
Germany	55.2	53.2	43.7		54.0	48.4	53.3	47.5	18.1	25.7	42.0	49.6
Italy	55.2	36.5	41.5	54.7		57.8	20.8	43.3	11.7	14.7	43.1	50
UK	61.7	42.4	58.1	60.2	60.0		39.9	49.6	14.2	25.0	55.1	55.1
Ireland	38.4	14.6	47.2	47.7	28.0	61.6		35.2	1.1	9.4	24.7	49.9
Denmark	37.5	26.1	45.1	49.3	40.6	50.9	16.4		3.6	10.8	30.9	44.6
Greece	13.2	12.2	8.1	16.4	11.3	14.2	0.3	4.3		2.5	4.3	12.6
Portugal	25.2	22.9	24.8	19.4	13.2	27.5	6.9	16.5	2.0		40.9	26
Spain	60.0	33.4	33.9	52.9	46.3	49.9	6.9	28.1	10.7	36.1		49.4
EC	53.5	46.1	45.5	53.7	49.3	53.2	39.1	44.6	14.4	29.1	46.1	49.6

One-way trade

	FR	BLEU	NL	DE	I	UK	IRL	DK	GR	PT	ES	EC
France		28.7	31.3	10.6	26.0	17.7	61.0	45.5	79.2	51.5	22.9	22
BLEU	28.4		21.7	21.1	53.3	30.1	74.4	64.8	87.2	69.5	56.4	28.5
Netherlands	30.2	19.2		28.9	49.5	26.1	54.0	40.4	85.8	73.3	47.2	29.4
Germany	15.1	26.0	30.7		34.5	25.3	43.8	38.7	78.8	71.1	32.6	28.1
Italy	27.8	53.5	52.7	31.1		30.3	78.9	50.6	78.5	75.9	39.1	36.3
UK	19.7	45.1	29.7	19.7	29.9		32.6	39.8	82.1	62.8	34.7	28.4
Ireland	59.9	83.9	50.0	42.7	70.5	29.0		64.0	98.9	90.3	73.7	43.3
Denmark	55.3	71.2	46.3	39.4	55.8	39.8	81.2		96.3	88.2	67.1	46.6
Greece	85.6	85.9	90.5	80.4	83.8	81.8	99.6	95.7		97.5	91.6	84.1
Portugal	65.4	73.3	72.0	69.7	75.7	66.5	93.0	80.6	97.7		47.2	64.8
Spain	25.5	55.6	61.6	32.6	39.0	36.3	90.5	70.0	86.1	48.6		37.2
EC	24.4	32.2	32.7	24.8	36.6	27.2	45.7	43.8	80.8	62.2	35.0	30.6

Source: Eurostat, authors' calculation.

Note: For each pair of declaring and partner countries, the sum of the three types of trade gives 100%. The declaring countries are in lines, the partners in columns.

As compared to the Community average, *two-way trade in similar intermediate products* is higher for the Netherlands, Belgium-Luxembourg, France and Germany, with a share between 22 and 25%. Last place is taken by Greece with only around 3%. In bilateral relations, we find in particular the pairs BLEU-Netherlands and France-Germany in the lead with over 30%.

The United Kingdom and France have the highest proportion of *two-way trade in vertically differentiated intermediate products* (55%). The high income countries engage in rather more two-way trade in vertically differentiated intermediate goods with each other[70]. There are of course a few exceptions to this general trend, like the 55% of trade declared by the United Kingdom with Spain for example. Finally, when the countries of the South engage in vertically differentiated two-way trade, this tends to be with the countries of the North[71].

Generally speaking, the countries of the "hard core" do much more two-way trade in intermediate products with each other, whilst "Southern Europe" tends to engage more in one-way trade. At this level of analysis, similarity in levels of development of the trading partners seems to favour two-way trade in intermediate goods, in particular in the form of trade in products of different quality.

Geographic proximity also plays an important part, however, especially when we look at "peripheral" neighbours such as the pairs Spain and Portugal or Ireland and the United Kingdom, for example. In the case of bilateral relations between the countries of the "continental centre" like the pair BLEU-Netherlands, the main form of involvement is more difficult to interpret, given the possible interpenetration of geographical and economic proximity.

This suggests an econometric interpretation capable of capturing the effects of proximity of level of development or per capita income - without prejudging the sectoral effects - while keeping proximity biases in check.[72]

3.1.5. Specialisation of the European Community

Let us now look more closely at the European Community's specialisation[73]. The following charts show the trade balance contribution indicator (Lafay, 1987 and 1990, see also Box 8) of the EC according to different splits. A positive value may be interpreted as revealing a comparative advantage and the reverse for a negative value. An important characteristic of this indicator is that it is additive: the values can thus be aggregated at any desired level without biasing the results. For example, the sum of the values of the three ranges in an industry gives the total advantage for that industry. By definition, the total for all industries is zero.

In Chapter 2 we showed the EC's comparative advantages in relation to the rest of the world. Figure 20 gives the same information, but additionally by European ranges, for 1988 and 1992.

The picture of specialisation that emerges from this work is that of a quality/price hierarchy. The disadvantages in the mining and quarrying and agro-industries and in wood and paper are mainly in the middle range. That this disadvantage is observed in the middle range is not surprising: given that the products of the mining and quarrying industries are not very differentiated, the corresponding trade flows have unit values close to the Community

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70 For example, France with the United Kingdom (62%) and Germany (57%); Germany with France (54%) and Italy (54%); the United Kingdom with France (62%), Italy, Germany (60%) and the Netherlands (55%).

71 Take for example Greece, whose trade of this type is virtually nil with Ireland, very small with Portugal but nevertheless as much as 16% with Germany.

72 The model explaining crossed trade in similar intermediate products developed by Fontagné, Freudenberg, Péridy and Ünal-Kesenci (1995) has great explanatory power and allows us to arrive at meaningful results for virtually all variables. The size of the countries (in GDP terms) increases the proportion of horizontally differentiated crossed trade in intra-European bilateral trade in intermediate goods. Difference in size between the partners to the trade has a symmetrical effect. Per capita income, which usually represents demand for variety, has a positive effect. Geographical proximity between countries reinforces the intra-industry nature of trade in intermediate goods. Import barriers have a negative effect, unlike economies of scale. Overall, the model could, with some refinement, serve as a basis for predicting the effect of the convergence of production systems on the nature of trade in intermediate goods between countries of the Union.

73 It would obviously be tedious to review the results of our method country by country. We have therefore opted to draw up a "list of specializations" of the member countries to which the interested reader may refer.

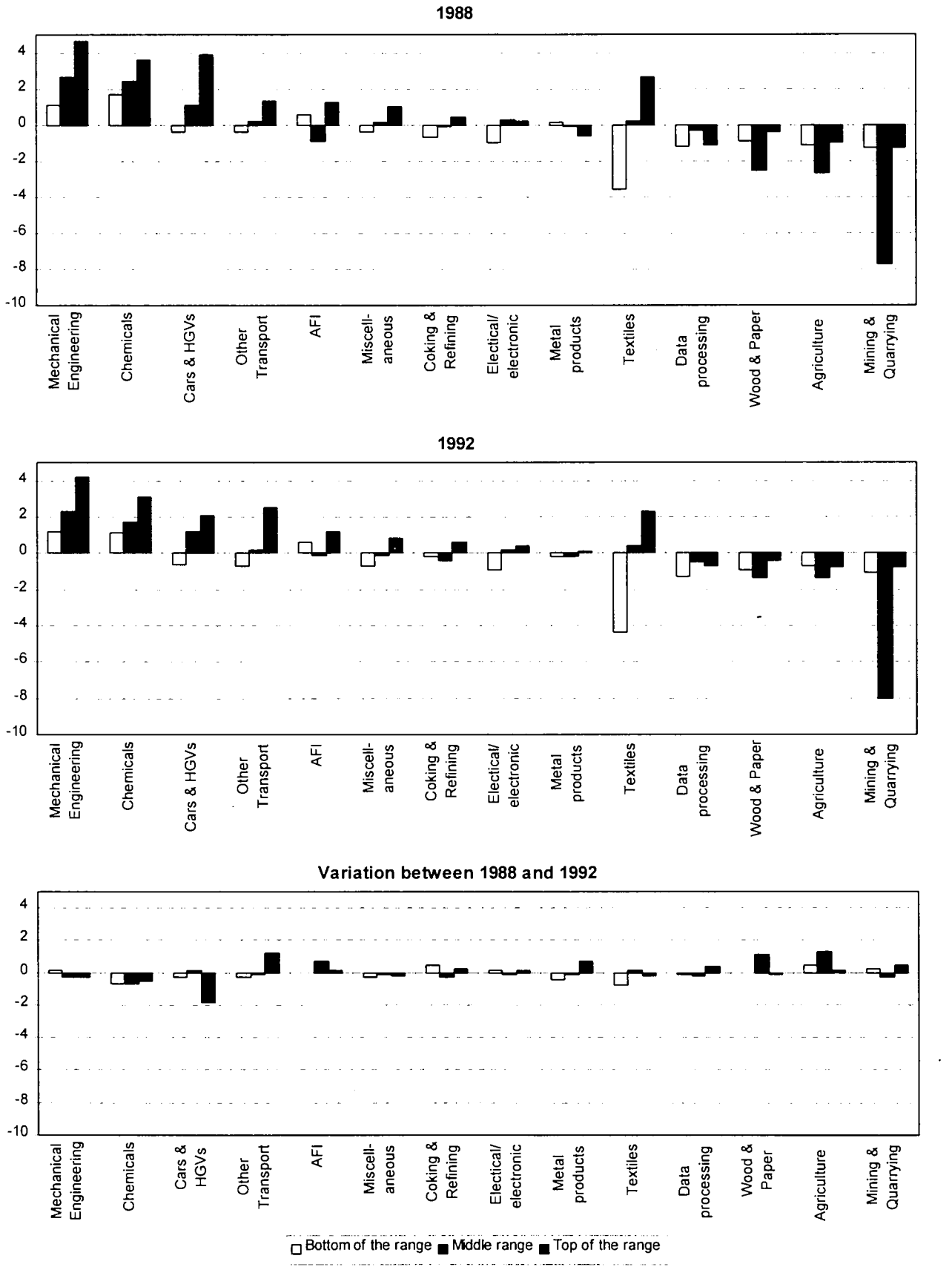
average. On the other hand, the advantages in the mechanical engineering, chemicals, car and other transport sectors are mainly in top of the range products.

In general, we find the following configuration:

- when the EC has an overall advantage for a industry, that advantage is most marked at the top of the range;
- when the EC has a disadvantage, it is in the middle range or at the bottom of the range.

This specialisation is very clear in the textile industry: balanced overall, and therefore with no marked advantage or disadvantage, analysis by range reveals a very clear division of labour between the EC and the rest of the world. Here, the EC is in a very unfavourable position for the bottom of the range but at an advantage at the top of the range.

Figure 20
The EC's comparative advantages by industry and range in 1988 and 1992



Source: Eurostat and CHELEM-PIB, authors' calculation.

The specialisation varies relatively little between 1988 and 1992. So far as its spread is concerned, we generally observe a reduction rather than an increase of specialisation[74]. For example, the positive variation in agriculture is in fact a reduction in the disadvantages, and the negative one in chemicals is a reduction in the advantages. The EC improves its position for other transport, but loses ground in top of the range cars & HGVs.

Figure 21 illustrates the EC's specialisation by stage of processing and by range in 1992[75].

The Community shows a contrasting position for *processed products*. The contribution to the trade balance is positive for all ranges in chemicals (and the highest for top of the range products), and negative everywhere in processed products of the wood and paper industry.

Overall, the Community is at a (slight) advantage for *parts*. This advantage comes especially in top of the range products in mechanical engineering and other transport and to a lesser extent in the car industry.

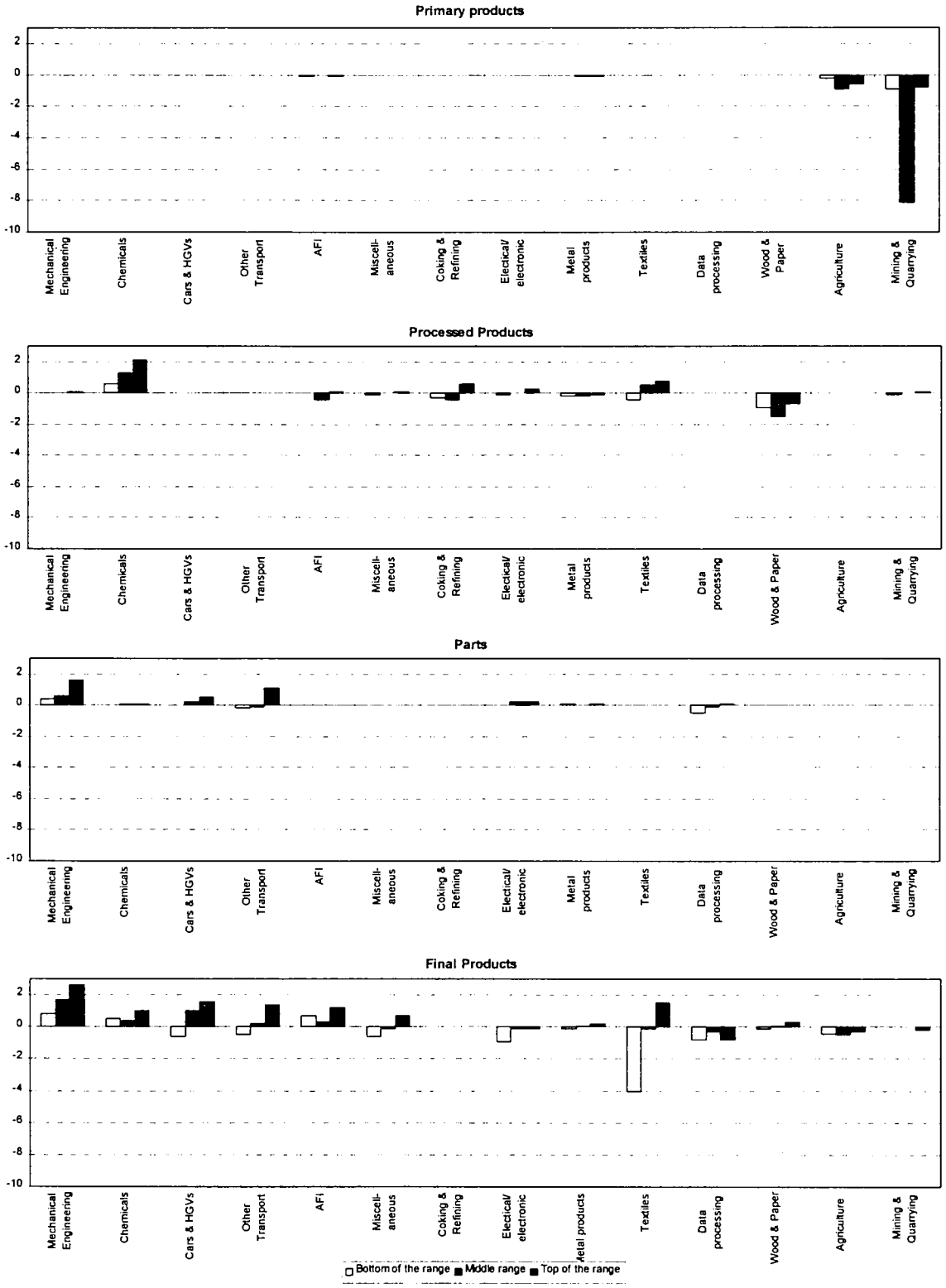
Lastly, in the case of *final products*[76], the EC's first comparative advantages are in top of the range products: in mechanical engineering, cars & HGVs and other means of transport, but also in products of the textile and agri-food industries. The comparative disadvantages in final products are concentrated in bottom of the range textile products.

[74] This specialisation presented here at industry level does not, however, preclude a finer specialisation at product level or even within products.

[75] Aggregating the values of the four stages would bring us back to the same configuration as before. The trade balance contribution indicator is by design zero for industries with no primary goods.

[76] Which, as explained in Chapter 2, include both final consumer goods, capital goods and so-called mixed products.

Figure 21
The EC's comparative advantages by stage of processing and range in 1992



Source: Eurostat and CHELEM-PIB, authors' calculation.

So far, our analysis of the Community's specialisation by range has concentrated on the industrial dimension (product-industry-stage). We must now look at the geographical dimension: which EC countries and which extra-Community partner countries "contribute" to the trade balance of the EC?

As we have said, the indicator used is sensitive, among other things, to the weight of the transactions, that is the importance of an industry in total trade or, as is the case here, the size of the various member countries' extra-EC trade flows; the values for the small countries are therefore small because their contribution to the Community's trade balance is small.

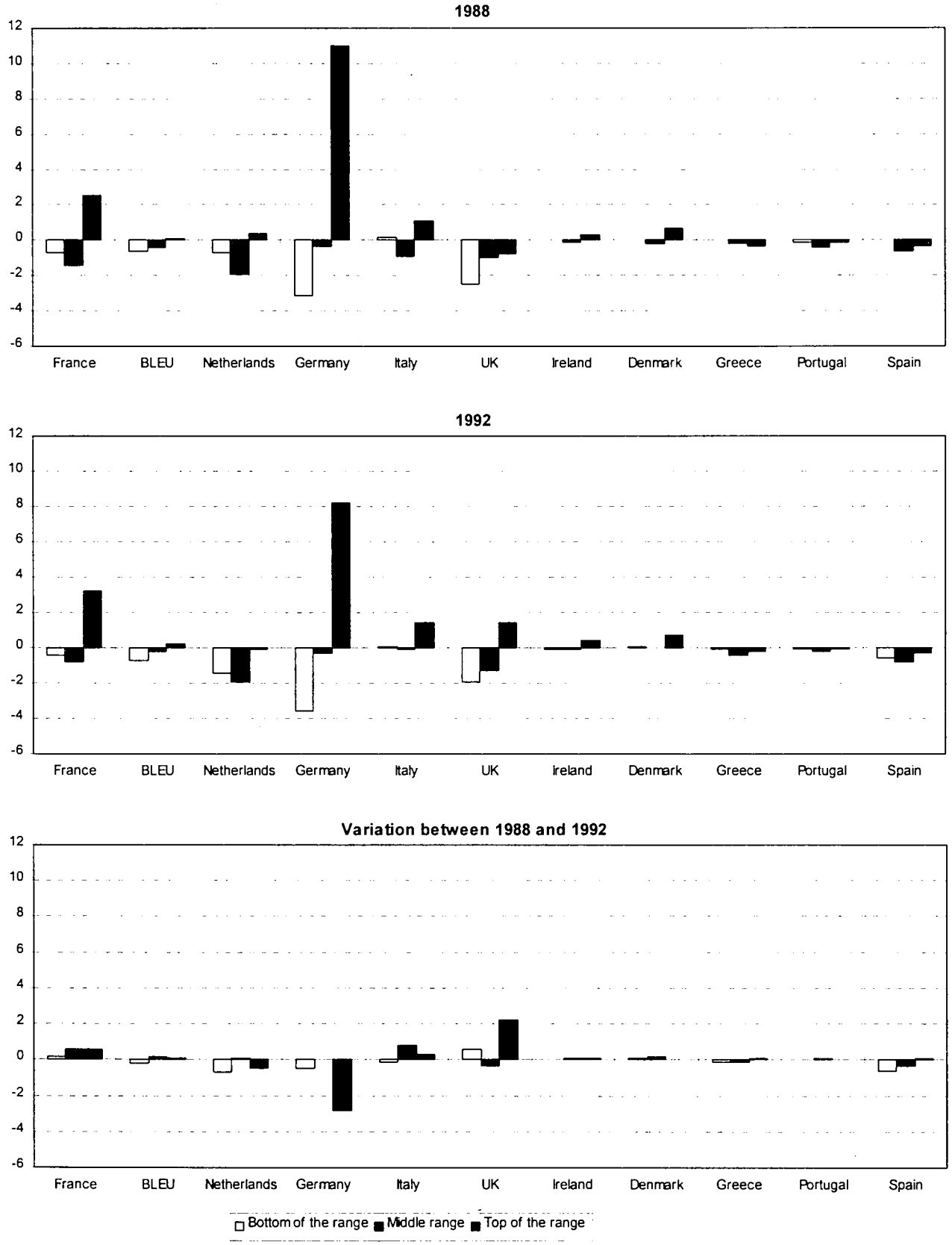
Finally, it must be pointed out that the following charts show not the comparative advantages of the countries of the EC but their contribution to the EC's advantage[77].

Figure 22 illustrates the member countries' contributions by range to the EC's balance in 1988 and 1992 and their variations. Germany stands out: this country in particular explains the quality/price hierarchy already mentioned and is virtually the only one to contribute to the EC's advantage in top of the range products. It is followed by France, Italy and the United Kingdom. Between 1988 and 1992, Germany nonetheless loses ground in top of the range products, a loss which is incidentally more or less offset by the net improvement of the United Kingdom.

Concerning its partners, the countries of the European Community as a whole have comparative advantages in top of the range products in relation to most countries/zones (Figure 23). Japan is the only partner in relation to which the EC shows disadvantages in every range, but here, too, the EC fares better in the top of the range. The division of labour in terms of quality/price is very clear with the Asian countries, especially the NICs and large countries of Asia: very large disadvantages at the bottom of the range go hand in hand with advantages at the top of the range.

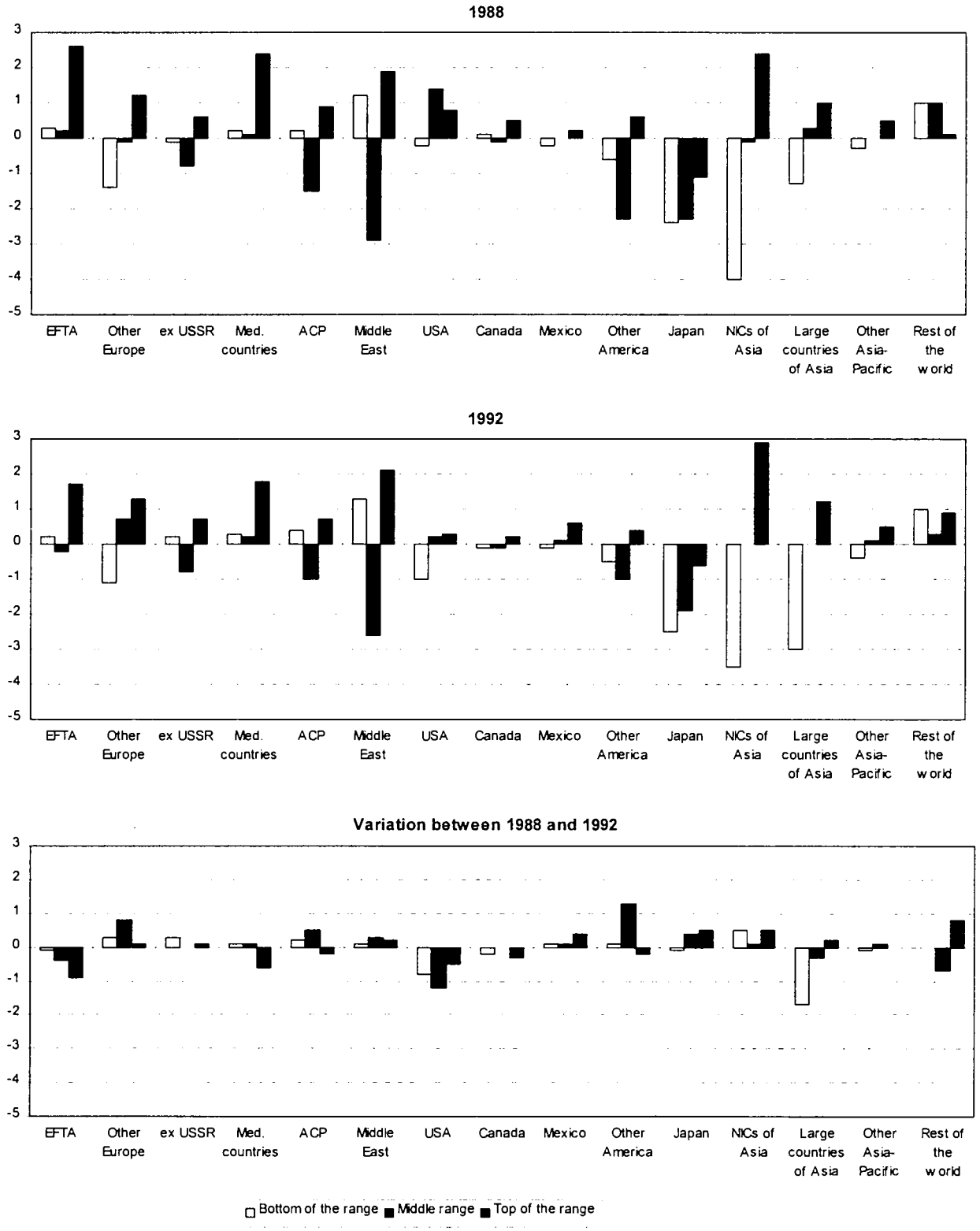
[77] The specific examination of the countries' specialisation is presented later and must obviously take into account trading relations with the other member countries. As we shall see, there are countries whose involvement with intra-EC partners is diametrically opposite to that with its extra-EC partners (the Netherlands, for example) or which are very specialised in the top of the range without, for all that, contributing much to the EC balance because of their small weight (Ireland, for example).

Figure 22
Member countries' contributions by range to the EC balance, 1988 and 1992



Source: Eurostat and CHELEM-PIB, authors' calculation.

Figure 23
The EC's comparative advantages by partner and range in 1988 and 1992



Source: Eurostat and CHELEM-PIB, authors' calculation.

3.2. Input-Output Tables approach (1965-1991)

Trade in intermediate goods is the outcome of a chaining of production operations at international level. Economies import in order to produce, and evidence of this Vertical International Division of Labour can be found in the input-output tables.

Some of the intermediate consumption of the branches is in fact imported products, and it will be possible to trace these if the IOT used make a distinction according to the origin of the intermediate inputs of the branches.

As we said earlier, if empirical work is to be consistent with the definition of intermediate goods as "work in progress" or "middle products" as defined by Sanyal and Jones, we must abandon the traditional concept of intermediate goods as giving an incomplete picture of the reality of international trade in this type of goods (see Box 12).

The two methods capable of being applied in the absence of a systematic microeconomic survey have been used in this report:

the *nature* of the products traded, starting from the most disaggregated (6 digits + unit values) and moving towards the most aggregated (final/ intermediate): *trade data*;

the *use* of the products traded, intermediate consumption *versus* other uses: *Input-Output Tables*.

In this section, we adopt the logic of *use* and take a structural analysis point of view[78]. The focus is on the basic movements of European integration that began at the end of the 1950s and therefore on the role played in that movement by intra- and extra-European trade in intermediate goods.

The method was initially proposed by Fontagné [1991-a]; an analysis using a similar approach is also developed in a study published later by the OECD [1992] covering a range of countries over and beyond Europe, taking in the United States, Japan and Canada. The OECD's conclusions support the findings that will be presented here using a similar methodology (inversion of IOT):

"The direct import of manufactured intermediates from abroad (...) rose more rapidly than domestic sourcing in all countries (...) [This] general growth in foreign sourcing is probably associated with many of the globalisation trends (...)"

The greater use made of intermediate imports is not therefore the result of European integration alone. Regional integration in the broad sense contributes, as evidenced by Canada, for example, whose intensity of productive imports is very high, as does globalisation more generally.

As underlined in Chapter 1, this raises the question of the specific nature of the regionalisation movement within the EC in relation to the trends in trade and world production. Is use being made of middle products favouring the chaining of production operations on a regional basis, or has the EC found complementarities of comparative advantage rather in its relations with third countries?

At an elementary level of analysis, looking at economic activity as a whole, the interpenetration of production activities at intra-European level is evident when we consider the core European countries for which statistics are available over a long period. Over the two decades examined in Table 47, two phenomena appear: greater use of intermediate imports, and a preferred source of these new imports: the EC. This is reflected in a greater divergence between apparent and effective export performances for each member country taken separately, but not for the EC taken as an economic entity. Overall, economic regionalisation has therefore come into play and

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[78] The method of investigation proposed here therefore differs fundamentally from the approach taken so far in this report: the clear picture given by the method of reaggregation of goods according to their technical characteristics, developed in Chapter 2, is replaced by an approach based on the *use* of the goods. Therefore, instead of starting from the most disaggregated and then "ascending" to a more synthetic view, we start directly with a relatively aggregated nomenclature, looking for complementary relationships between these already aggregated branches. Rather than being interested in the detail of the information, we are here concerned with the question of the coherence of production systems, taking account of the underlying inter-industrial relationships.

organised the international division of labour on a primarily European basis. This phenomenon is particularly marked in the case of France: the weight of the European partners in this country's intermediate supplies more than doubled over the period in question[79].

This overall observation needs to be refined, however: in the rest of this chapter we shall concentrate our investigation on industry, taking account of the specific nature of the splitting of production operations along the same chain of value added in order to record the phenomenon of international splitting up of processes referred to in Chapter 1. Finally, the question of the impact of the vertical division of labour on intra-European performances will be worth asking, especially in the case of a "new arrival" such as Spain.

In the following three subsections we present the empirical findings obtained. The remarks are deliberately brief and the technical details left to one side so as to concentrate attention on a few structural facts characterising both the coherence of European production systems and their integration dynamics. The much finer evaluations, necessarily limited in time, made elsewhere in this report will thus be put into perspective[80].

Table 47
France, Germany and Italy: Breakdown and trend of the vertical division of labour according to the origin of the direct intermediate consumptions of all branches

Country	Origin	Breakdown		*Variation*
		1965	1985	
France	Total	100,0	100,0	*0,0*
	Domestic	87,9	80,2	*-8,9*
	EC	4,1	9,0	*118,8*
	Third countries	7,9	10,9	*36,7*
Germany	Total	100,0	100,0	*0,0*
	Domestic	85,7	82,6	*-3,7*
	EC	4,4	7,9	*76,7*
	Third countries	9,8	9,6	*-2,6*
Italy	Total	100,0	100,0	*0,0*
	Domestic	84,4	80,4	*-4,7*
	EC	3,8	7,5	*98,9*
	Third countries	11,8	12,1	*2,1*

Source: Eurostat IOT, authors' calculation.

Note: See **Section 2.1.3** for the methodology;
here we calculate Dj(85)/Dj(65) for all industrial branches together.

3.2.1. Appraisal of the vertical division of labour

As we have already stressed, the importance of trade in intermediate goods in total trade in manufactured goods calls into question the traditional approach to measuring specialisation. Like the theory of trade policies that have long adopted a logic of effective rate of protection, we should today, whenever the data permits, compare the apparent and effective specializations in order to obtain a picture of the vertical international division of labour.

[79] Some of this increase could be the result of the successive enlargements of the EC. In order to check this bias, we work at a size as close as possible to each year's, i.e. 6, 6, 8, 7 and 8 member countries in succession. More generally, we have already shown in Chapter 2 that this phenomenon of interweaving of production processes has extended beyond the borders of the EC to a wider region: "Eurafrica".

[80] Any further information may naturally be obtained from the authors.

3.2.1.1. Input-output method of calculating "Dj"

We do not intend here to trace the specializations of the European countries. There would be no point in view of the level of aggregation adopted, and in any case it has to a large extent been done - with more recent figures - in this report. The subject of this section is quite different: what we are trying to show is the extent of the chainings of production operations, and thus of intermediate imports, and their effect on specialisation. From this point of view, the *ratio of apparent specialisation to effective specialisation* calculated here must be considered an indicator of the use of direct and indirect intermediate imports when producing for export. For each commodity we shall speak of the *ratio of vertical international division of labour and this indicator will be designated Dj.*

A *fall* in this coefficient must therefore be interpreted as a greater contribution by the branch concerned to the overall trade balance[81], that branch's apparent performance being unchanged: the same trading performance is obtained with less chaining of production operations at international level, i.e. exports are less reliant on imports for production.

Conversely, a rise in the coefficient, which is the dominant finding overall, means that increasing use is being made of imports for production purposes: the vertical division of labour in the branch is deepening for the country concerned. In more theoretical terms, we are then witnessing a refining of the exploitation of comparative advantages or a globalisation of the process in question.

This indicator is calculated (cf. Box 12) using an input-output methodology. A valuation is made of the direct intermediate imports contained in the exports of the country in question, to which are added the intermediate imports indirectly contained in the intermediate consumption of products made locally but themselves containing intermediate imports[82].

The Eurostat IOT base used here is of interest in two respects if we are looking for an input-output structure that traces the origin - domestic or imported - of intermediate consumption:

- the nomenclatures are common to all member countries, and transition keys have been developed in the course of time that allow the series to be extrapolated in reverse in a constant nomenclature.

- intermediate inputs are broken down according to origin, domestic or imported. In the latter case a distinction between EC or third countries is also taken from Eurostat's files[83].

The simplified diagram below shows the relationship between the nature of inter-industrial relations and the vertical division of labour on an intra- or extra-European basis.

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81 If the balance is positive of course.

82 In theory, as stressed in Chapter 1, a valuation should also be made of the prior intermediate exports contained in our exports, but this is not possible in practice, hence the "pessimistic" bias already mentioned. Nevertheless, assuming the intermediate products are competitive overall, a country importing few intermediate goods for the purpose of exporting final goods is likely to incorporate more prior exports of intermediate goods in its imports of final goods. Correcting this bias would not therefore alter the hierarchy of countries' actual specializations and would widen the gaps observed between countries. More fundamentally, subtracting the export content of our imports from the import content of our exports would prevent us from gauging the phenomenon of interweaving of production systems that we are trying to record.

83 This distinction is in fact used by Eurostat to construct a "Community" table once the figures are available for all member countries: imports from third countries are then the only element in the European matrix of imported intermediate consumption. The matrix Am is then itself broken down into two matrices corresponding respectively to intermediate imports from EC member countries (Amc) and those from third countries (Amt).

production	intermediate consumption	domestic		intermediate consumption	domestic	
					imported	*third countries*
						member countries
				value added		
		imported	*third countries*			
			member countries			
	value added					

Note: words in italics are the statistical evidence of the vertical international division of labour; words in bold are the statistical evidence of the regional vertical division of labour.

The limits of an exercise of this kind should not be forgotten: the linearity of relationships, the atemporal nature of the adjustments, bottlenecks "forgotten" when there is a crisis in demand, changes in stocks overlooked, unitary elasticity of demand for imports and the fixed nature of the intermediate input coefficients.

Finally, the use of intermediate imports is not unconnected with the *size* of the economies in question: vertical complementarities of comparative advantage being less likely within small or less developed economies, these are expected to make greater use of intermediate imports, all other things being equal. This effect must be cancelled out by working on relative coefficients that relate the individual performances of the branches of each economy, in terms of vertical division of labour, to the indicator obtained for industry as a whole: we shall then speak of a *relative* vertical division of labour.

Box 12: Calculation of Dj, the coefficient of the vertical international division of labour

The *ratio of the apparent specialisation to the effective specialisation* of a branch *j* may be considered to be an indicator of the use of direct and indirect intermediate imports when producing for export. For each commodity we shall speak of a coefficient of the vertical international division of labour and we shall call this indicator Dj.

Following the method proposed by Fontagné [1991-a], we use M_{ij} to refer to the quantity of good i imported for intermediate consumption by the branch j, and $\tilde{X}_i$ to refer to the quantity of the intermediate good i, produced domestically and then exported, contained in the national imports of the good j.

The term α_j refers to the one's complement of the intermediate export content of the imports of final goods, β_j to the one's complement of the intermediate import content of the final output Q_j, and m_{ij} to the imported part of the intermediate consumption i of the branch j, so that:

$$\alpha_j = 1 - \sum_i \tilde{X}_i / M_j$$

$$\beta_j = 1 - \sum_i M_{ij} / Q_j$$

$$m_{ij} = M_{ij} / Q_{ij} = M_{ij} / a_{ij} Q_j$$

Using the tool available, the Input-Output Tables, α_j cannot be determined empirically and we take $\alpha_j = 1$, which corresponds to the assumption (which must be made if the IOT are used) that there are no re-imports of intermediate products that have previously been exported[84].

This assumption obviously gives a downwards bias to the effective specialisation (see **1.3.3**).

The Input-Output Tables link the technical coefficients a_{ij} to the net production F_i of the final good *i* by means of the system of *n* equations of the type

$$a_{i1}.Q_1 + a_{i2}.Q_2 .... + a_{in}.Q_n + F_i = Q_i$$

In matrix form, we write $A.Q + F = Q$ where *A* is the matrix of the total direct technical coefficients (domestic and imported intermediate consumptions), *Q* the column vector of gross outputs and *F* that of net outputs, with 59x59 matrices in the present configuration of the Eurostat database we are using. $[Q = (I-A)^{-1}.F]$ then gives us the level of gross output needed to satisfy one unit of final demand.

The breakdown by origin of the total intermediate consumptions then allows us to obtain two matrices *Ad* and *Am* representing the direct domestic coefficient and the coefficient of imported intermediate goods respectively. The latter in turn breaks down into At, intermediate consumptions imported from third countries, and Ac, those imported from partner countries. All that then needs to be done is to aggregate Ac and Ad to obtain a picture of the European Community as an economic entity.

Finally, we calculate *Lm*, a matrix giving the total amount of products i imported from all sources contained in the production of each branch j:

$$Lm = Am.(I-Ad)^{-1}$$

The line by line total of the columns of this matrix Lm gives us the vector of the total unit intermediate imports

Table 48 shows the present availability of the data for all the European countries. It is immediately evident that Eurostat is considerably behind, as a result both of the time taken by some members to supply IOTs and of the difficulties of harmonising national accounting methods. The chief quality of this database is also its chief failing: strict comparability of the figures takes a long time to achieve. Finally, and this applies to the whole of the database, despite the Community's efforts to harmonise, some problems still remain in the processing of intra-consumptions by country. In addition, the transition from a more detailed to a less detailed nomenclature is the source of overestimates when intra-consumptions are added.

[84] In all, and on the assumption that has just been discussed, $\theta_j = 1$ if all the intermediate consumptions of the branch j are produced domestically.

Table 48
Availability of Eurostat IOT data

	1959	1965	1970	1975	1980	1985	1991
France	x	x	x	x	x	x	
BLEU	x	x	x	x	x		
Netherlands	x	x	x	x	x	(87)	
Germany		x	x	x	x	x	
Italy	x	x	x	x	x	x	
UK			x	x	x	x	
Ireland			x	x		x	
Denmark			x	x	x	x	
Greece							
Portugal					x		
Spain				x	x	x	
EC		x	x	x	x	x	x

We have used the 1959 and 1965 tables, extrapolated back into 44 branches, and reaggregated those of 1980 and 1985 in the same nomenclature. Unfortunately, 1991 is as yet available only in a much more aggregated nomenclature (25 branches), which means that, after reaggregation, we can take account of only 13 industrial branches if we want to cover the whole period[85].

[85] Particular difficulties were encountered when using the Italian and especially the Dutch tables for 1985. In the latter case there must be some doubts about the result obtained (cf. below). Table EC 85 was also provided to us in a highly aggregated nomenclature that could not be connected to the long series formed, and the 1991 figures are only a projection from this initial table. This makes it particularly tricky to interpret the reversal of trend reflected by the calculation of series of coefficients of vertical division of labour extrapolated back into nomenclature R25. We shall come back to this.

Table 49
Nace clio 44 and R25; reaggregation into R25 of the results obtained in R59 and NC44

Heading R59	R59	R44	R25	Heading R25
iron ore and ECSC iron and steel products	135	130	13	ferrous and non-ferrous ores and metals
non-ECSC iron and steel products	136	130	13	ferrous and non-ferrous ores and metals
ferrous ores, non-ferrous metals	137	130	13	ferrous and non-ferrous ores and metals
cement, lime, plaster	151	150	15	non-metallic minerals and mineral products
glass	153	150	15	non-metallic minerals and mineral products
terra cotta, ceramic products	155	150	15	non-metallic minerals and mineral products
other minerals and by-products	157	150	15	non-metallic minerals and mineral products
chemical products	170	170	17	chemical products
metal products	190	190	19	metal products except machinery and transport equipment
agricultural and industrial machinery	210	210	21	industrial and agricultural machinery
office machinery, precision and optical instruments	230	230	23	office machinery, precision and optical instruments
electrical equipment and supplies	250	250	25	electrical equipment and supplies
motor vehicles and engines	270	270	28	means of transport
other means of transport	290	290	28	means of transport
meat and preserves	310	310	36	food products, beverages, tobacco products
milk, dairy products	330	330	36	food products, beverages, tobacco products
other foods	350	350	36	food products, beverages, tobacco products
beverages	370	370	36	food products, beverages, tobacco products
tobacco	390	390	36	food products, beverages, tobacco products
textile products, clothing	410	410	42	textile products, leather & footwear, clothing
leather, leather goods, skins, footwear	430	430	42	textile products, leather & footwear, clothing
pulp, paper, paperboard	471	470	47	paper, paper articles, printed matter
wood and wooden furniture	450	450	48	other industrial products
products of other manufacturing industries	510	510	48	other industrial products
paper articles and printed matter	473	470	49	rubber and plastic products
products of rubber and plastic	490	490	49	rubber and plastic products

Since the problem at issue essentially concerns industrial branches, we have excluded service branches from the analysis. Likewise, since unavailabilities must be excluded from a study of specialisation, we have not retained any of the branches of raw materials or minerals[86]. All the matrix calculations have, of course, been made with all branches in order to take account of input-output relationships, including those with non-"industry" branches, including services if necessary, for which we do not present any results.

Thus, 20 (or 13, depending on the level of aggregation) industrial branches are combined in a nomenclature[87] shown in Table 49. Finally, we have constructed a notional branch "all industry" combining the 20 (13) industrial branches adopted.

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[86] Products of agriculture, forestry and fishing, hard coal and patent hard-coal fuels, lignite and lignite briquettes, coking products, crude oil, refined petroleum products, natural gas, water, electricity, gas, steam, hot water, air, nuclear fuels.

[87] This nomenclature suffers from a few exceptions since branches B8 and B9 are merged for Denmark and Portugal and branches 5 and 6 for Portugal.

3.2.1.2. Illustration of the method: a comparison of Germany and France

The comparison offered here illustrates the role played by intermediate imports in the specializations of the various members of the Community, enabling us to dispense with an exhaustive presentation.

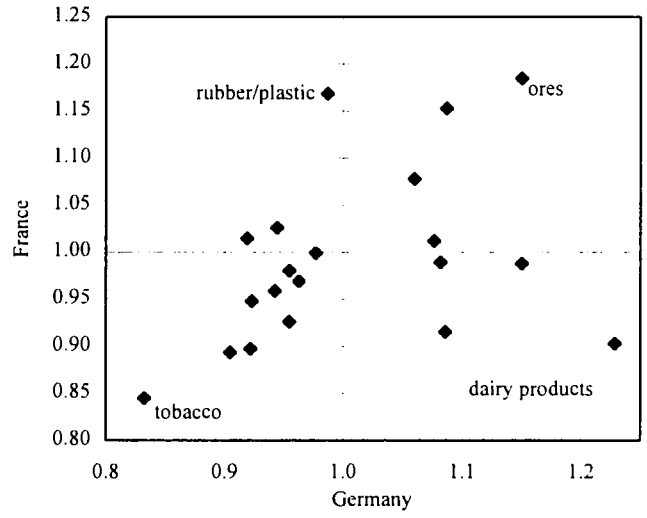
Large divergences immediately appear between the two countries for a number of industries in 1985 (Figure 24):

- machinery, cars, rubber & plastic, for which Germany has much fuller comparative advantages than France, all other things being equal, and therefore has relatively much less recourse to intermediate imports. These three industries have a rather less than average involvement in the vertical division of labour in Germany's case and rather more in France.

- the situation is symmetrical for meat and preserves, dairy products, leather & footwear and paper & printing.

Although we can mention a problem of natural resources in the case of paper and printing, the balance of these observations gives a clear picture of a Germany specialised rather *horizontally* in mechanical engineering and processing chemicals, and a France advantaged primarily *horizontally* in the food industry.

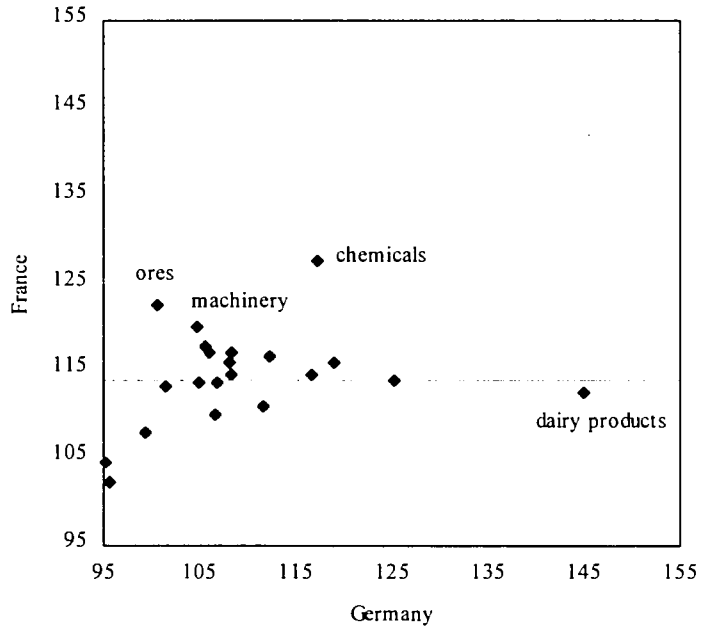
Figure 24
Vertical international division of labour: France and Germany
(relative Dj - 1985)



Source: Eurostat IOT, authors' calculation.

Taking a long-term view (Figure 25), over the two decades leading up to the mid 1980s, the use of intermediate imports has increased appreciably in both countries, but more so in the case of France.

Figure 25
Use of direct and indirect intermediate imports in 1985, 1965=100



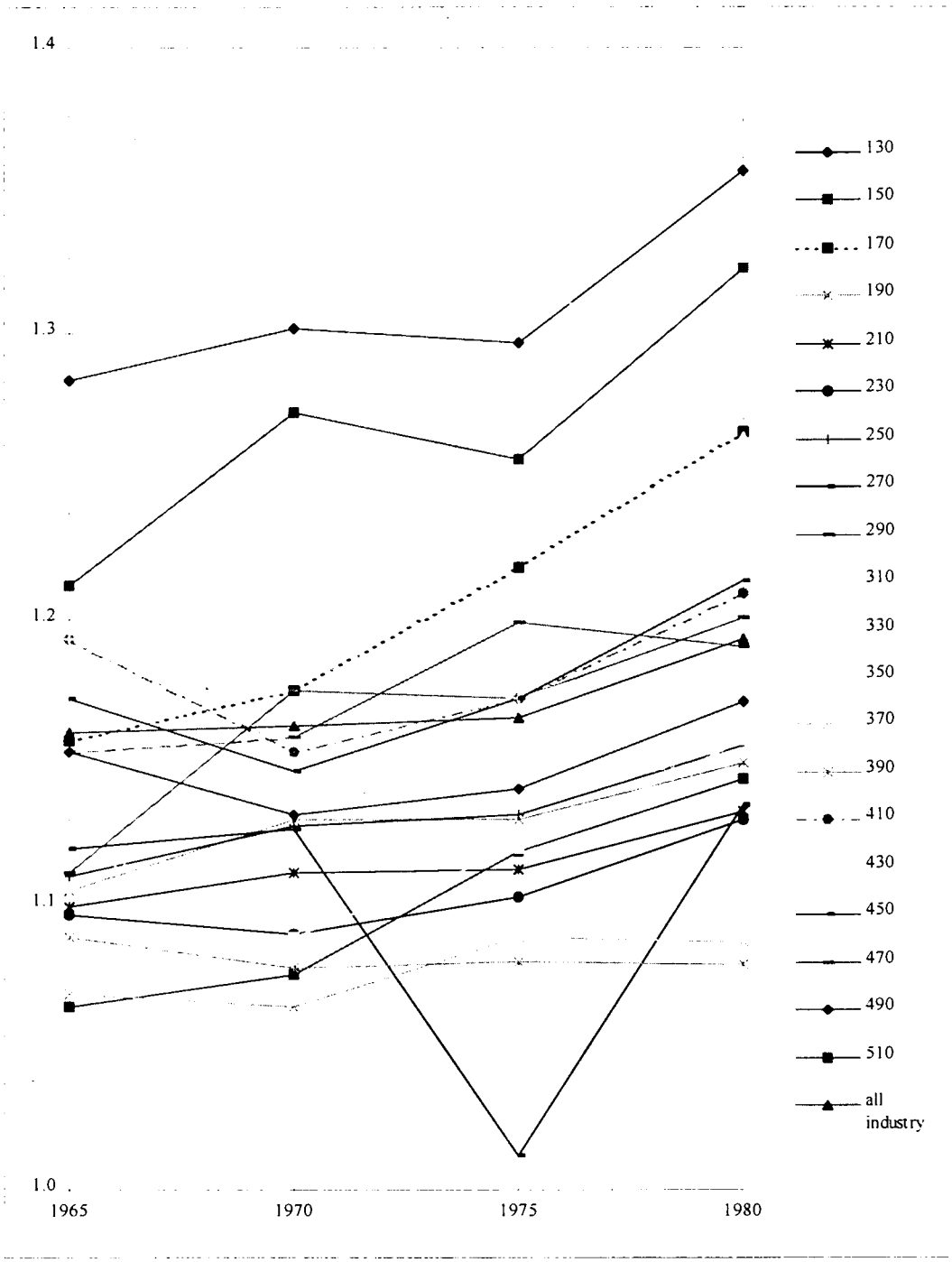
Source: Eurostat IOT, authors' calculation.

The most striking observation is that of the dairy products industry in Germany, where the vertical division of labour is very advanced. The same is found to a lesser extent in meat and preserves. In these food industry industries Germany has therefore played the card of imports for production, to the benefit of European integration. Chemicals and ores, but also machinery or cars in France, show similar, but less marked, trends.

3.2.1.3. Analysis by member country

At European level, overall (all industry) we find a relative stability of the overall coefficient Dj over the period 1965-1980 (Figure 26). During the European integration process, domestic intermediate consumptions have been replaced by imported intermediate consumptions, with Community intermediate goods being imported overall.

Figure 26
Relative stability of the Community vertical division of labour for all industry

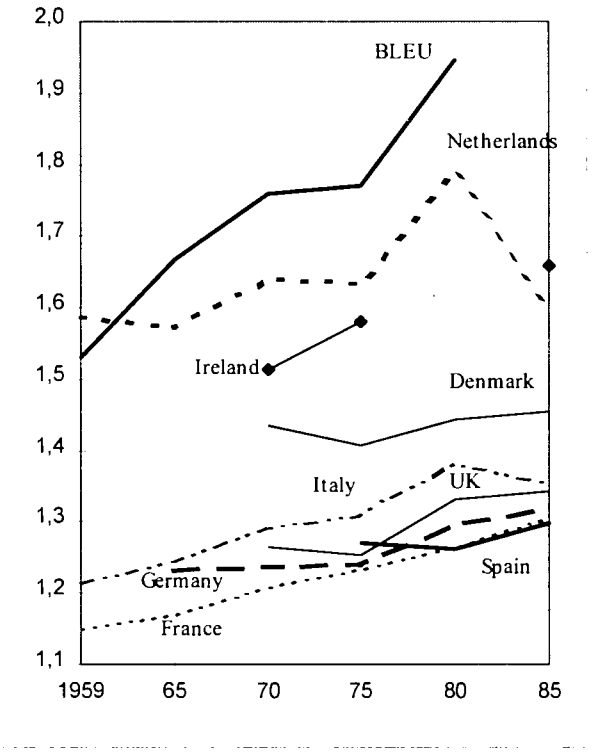


Source: Eurostat IOT, authors' calculation.

On the other hand, if each country is taken individually, the increase in the coefficient of vertical division of labour is manifest, as Figure 27 illustrates. However, this process seems to have reached its limits in the case of Italy and especially the Netherlands, where we find the reverse trend at the end of the period, a phenomenon that can be given no a priori explanation at this stage in the analysis.

This means that if each European country's production system's dependence on intermediate imports has increased, this is rather the result of an increasing interweaving of production systems *within* the European Community.

Figure 27
Vertical division of labour (Dj), 1959-1985, "all industry"



Source: Eurostat IOT, authors' calculation.

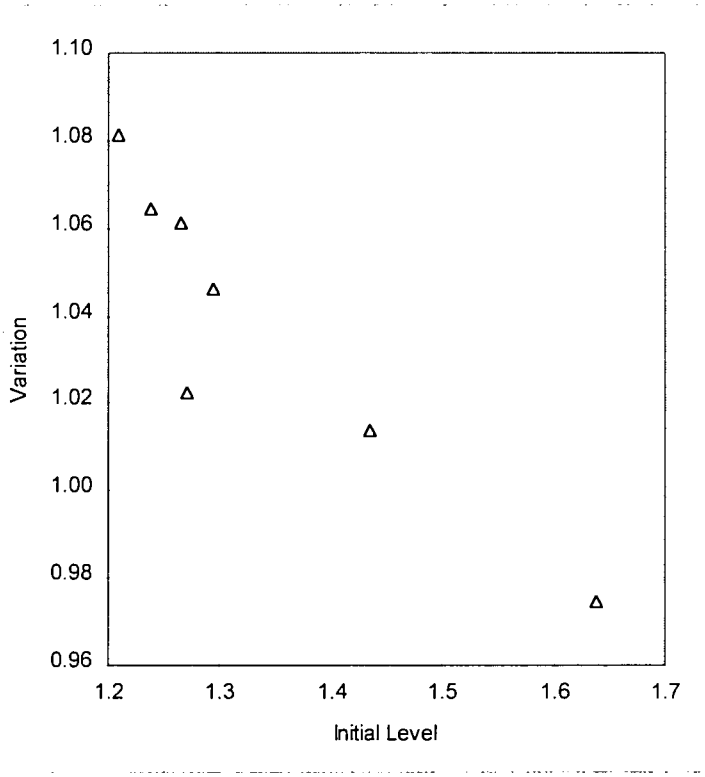
This trend is not unrelated to the initial level of opening of the European economies to the vertical division of labour. In fact, we find a significant negative relationship between the initial level of the vertical division and the growing openness to intermediate imports (Figure 28): comparing the initial levels[88] with the rise in imports for production[89], this means that the more *horizontally* specialised the European economies were at the start of the period, the more they are open to intermediate imports and the greater their *vertical* specialisation.

This relationship is very clearly non-linear, with a strong inflection for those countries initially either very open or not very open to intermediate imports. As might be expected, Ireland is an atypical case, greatly upsetting the relationship under consideration here; it is therefore excluded from Figure 28. Reintegrating it would make the relationship meaningless. It is in fact the only European country to make great use of intermediate imports initially and to accentuate this structural trait still further over the period in question; it takes us to the limits of an analysis in terms of trade flows, which is by nature unable to take account of direct investment flows and their consequences for the specialisation of the host country. The intermediate imports of a given country may be induced by foreign companies locating there, multinationals using this new location as an assembly site to supply the European market. In such a case, trade and investment are highly complementary.

[88] 1970 for all countries, 1975 for Spain.

[89] That is, the growth in the inverse of the coefficient θ calculated for total intermediate consumption.

Figure 28
Relationship between initial vertical division and the rise in direct and indirect intermediate imports (all industry)



Source: Eurostat IOT, authors' calculation

Note: each point represents one European country.

3.2.1.4. Analysis of the EC as an economic entity

As already pointed out earlier, the method's main difficulty is the collection of information over a long period in a constant nomenclature. The work done on the *EC considered as an economic union* in its own right illustrates this difficulty.

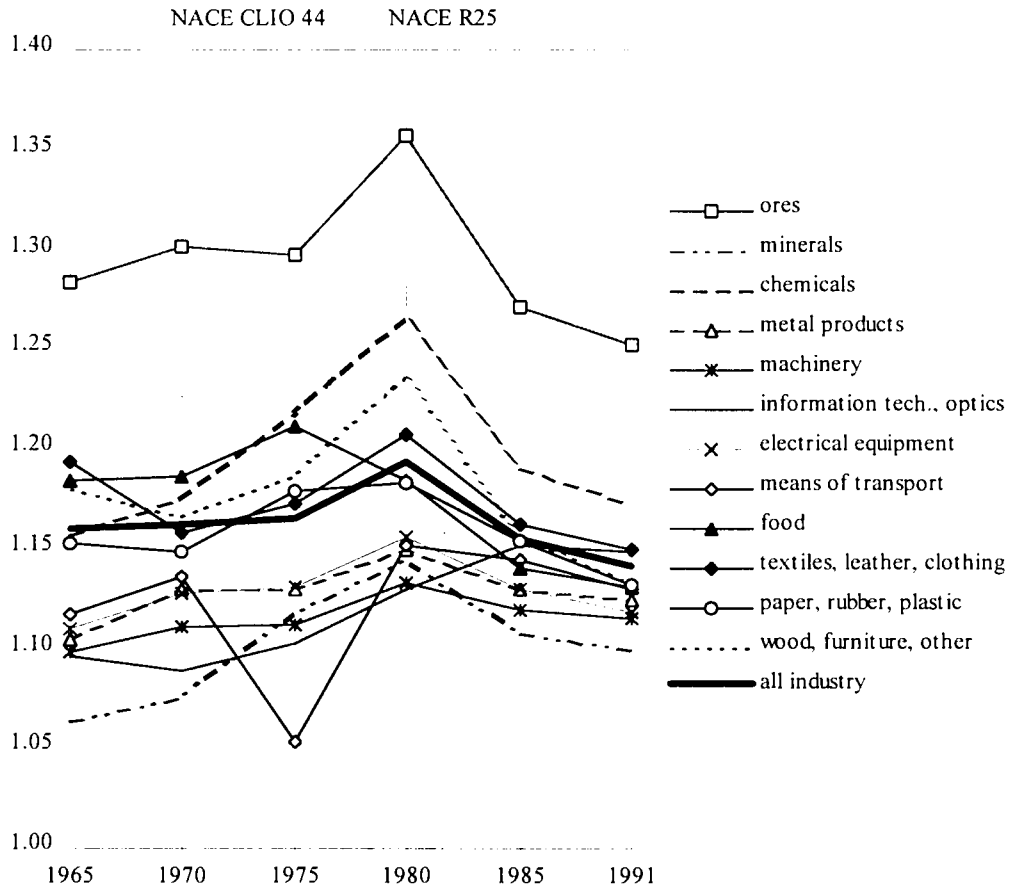
Here, intra-European trade in intermediate goods is considered "domestic" intermediate consumption. From the point of view of the logic of European integration, the fact that Italy imports parts from Germany to assemble a finished product is not an intermediate import but simply an intermediate consumption, just like supplies to the same assembler by an Italian subcontractor. On the other hand, if the Italian producer uses parts from Japan, that is an intermediate import (by the EC) and must therefore be taken into account when measuring the *European* vertical division of labour. That is what we have done here for the period 1965-1991 (no figures for 1959) in order to get a picture of the logic of the vertical division of labour associated with the movement towards European integration (Figure 29).

It is immediately apparent that the greater use of intermediate imports found for most member countries at national level is not verified at the end of the period for European industry taken as a whole. In other words, in the most recent phase of integration the vertical division of labour within the EC has tended to be intra-European rather than extra-European, bearing out the expectations of the promoters of the "Single Market" phase. The lowering of non-tariff barriers, the free movement of factors, or more precisely the *anticipation* by agents of these two developments, since our observation is appreciably earlier[90], appear to have caused production processes to be reorganised on the basis of an *intra-European* vertical division of labour.

[90] This anticipation phenomenon is known to have been quite marked in the case of cross-border mergers and acquisitions.

Unfortunately, the change in nomenclature on the one hand, and the extrapolated nature of the 1991 table on the other, mean that the result of our calculation cannot be claimed to be altogether as sound as is necessary for such conclusions. We shall therefore confine ourselves to suggesting that it will be very important to re-examine this problem when the database is more complete, or to do so using a different methodology based on the econometric estimate of an "anti-world" and exploiting the nomenclature reaggregation method developed in this study. However, this concern goes far beyond this present report.

Figure 29
Vertical division of labour between the EC and third countries: 1959-1991



Source: Eurostat IOT, authors' calculation.

The European industries that are the most concerned with intermediate imports and whose effective performances therefore diverge the most from the apparent performances are, in 1991, ores, chemicals, information technology/optics and textiles and clothing (Figure 30). This observation calls for three comments:

- so far as ores are concerned, and to a lesser extent chemicals, the fact that the EC has had to have recourse to third countries to chain its production operations has to do with what international trade theory calls the problem of unavailabilities. Whatever the strategies pursued by firms and whatever the industrial policies or European efforts towards innovation, these activities will by nature always need high levels of intermediate imports, for obvious reasons.

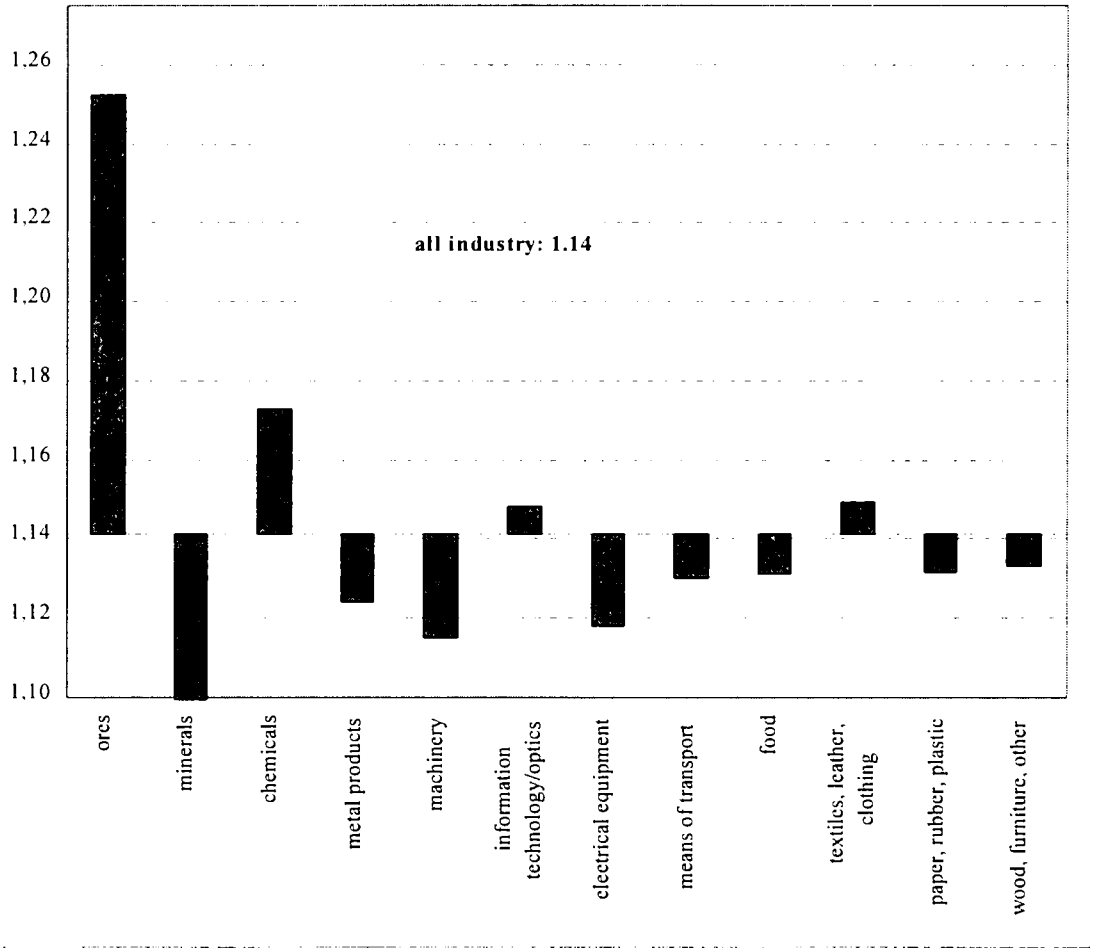
- in textiles and clothing the EC has preserved a vertical specialisation in those segments of processes where there was still a comparative advantage. The great use made of intermediate imports from third countries therefore corresponds here to the vertical chaining of comparative advantages, the theory of which we referred to in Chapter 1.

- finally, the case of electronics and optics underlines Europe's difficulties in this sector; here, intermediate imports mean above all that there is no intra-European division of labour in these innovating industries. For reasons that are generally known and need not be gone into here, the complementary competences are to be found in third countries.

Let us note for the record the products concerned, the performances by product offsetting each other at this level of aggregation: office machinery, data processing equipment, precision instruments, measurement and control apparatus, medical and surgical equipment, orthopaedic apparatus, optical instruments, photographic equipment, watches, clocks.

Finally, these figures should not be interpreted as indicators of balance, cover rate, market position, etc. They do not reflect any deficit or surplus the EC may have in relation to third countries in the information technology industry: regardless of the assumed performances elsewhere, the division of labour in the industries in question could not be made on a European scale. *Here, globalisation was not preceded by regionalisation.*

Figure 30
Vertical division of labour of the manufacturing industries (Dj), EC, 1991



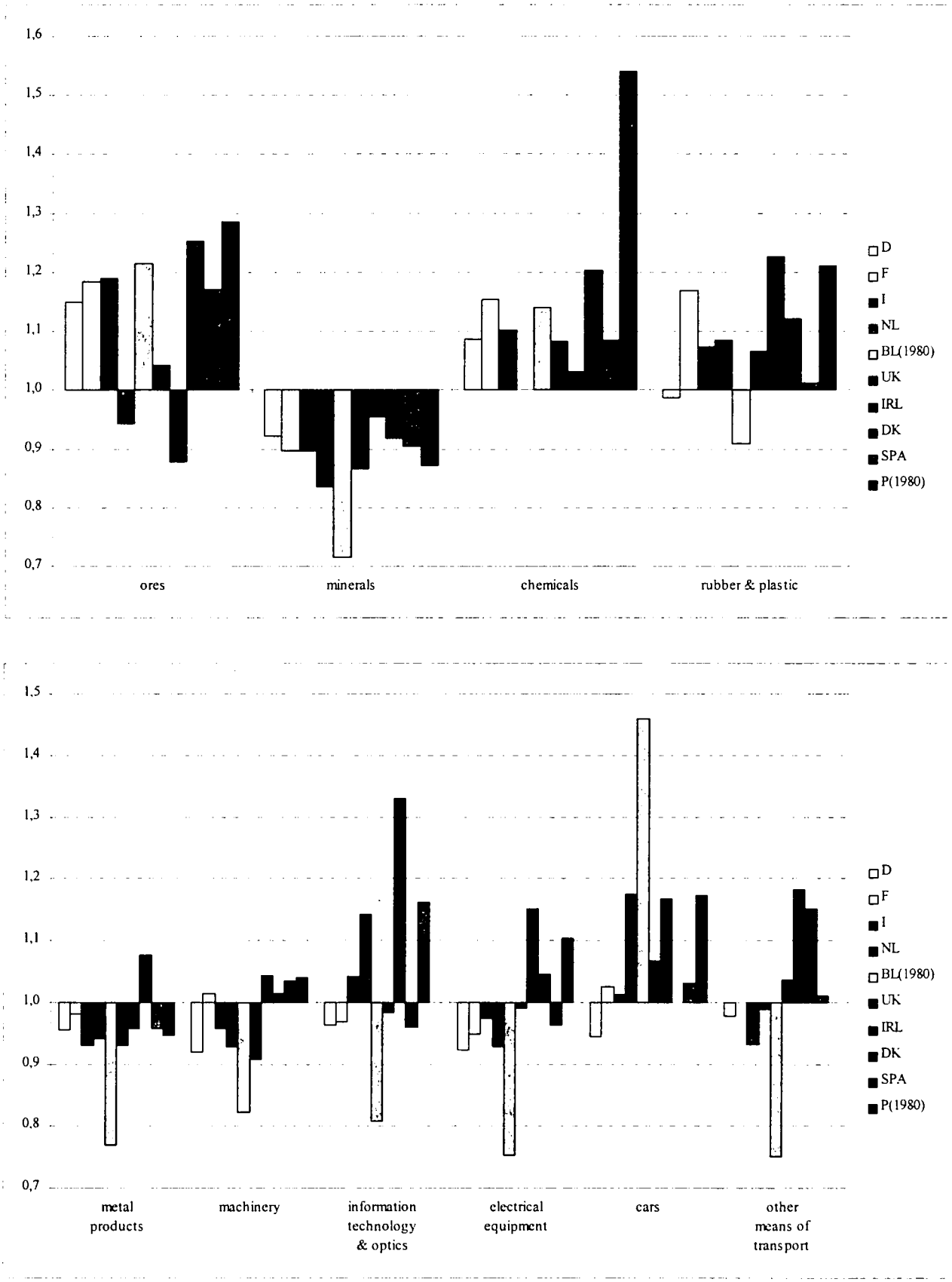
Source: Eurostat IOT, authors' calculation.

3.2.1.5. A plural vertical division of labour

We consider here *total* intermediate imports, whether they originate in the EC or in third countries. Again, the calculation is both direct and indirect and we use the relative coefficient Dj, which enables us to take account of the greater propensity of small economies to import intermediate goods, ceteris paribus.

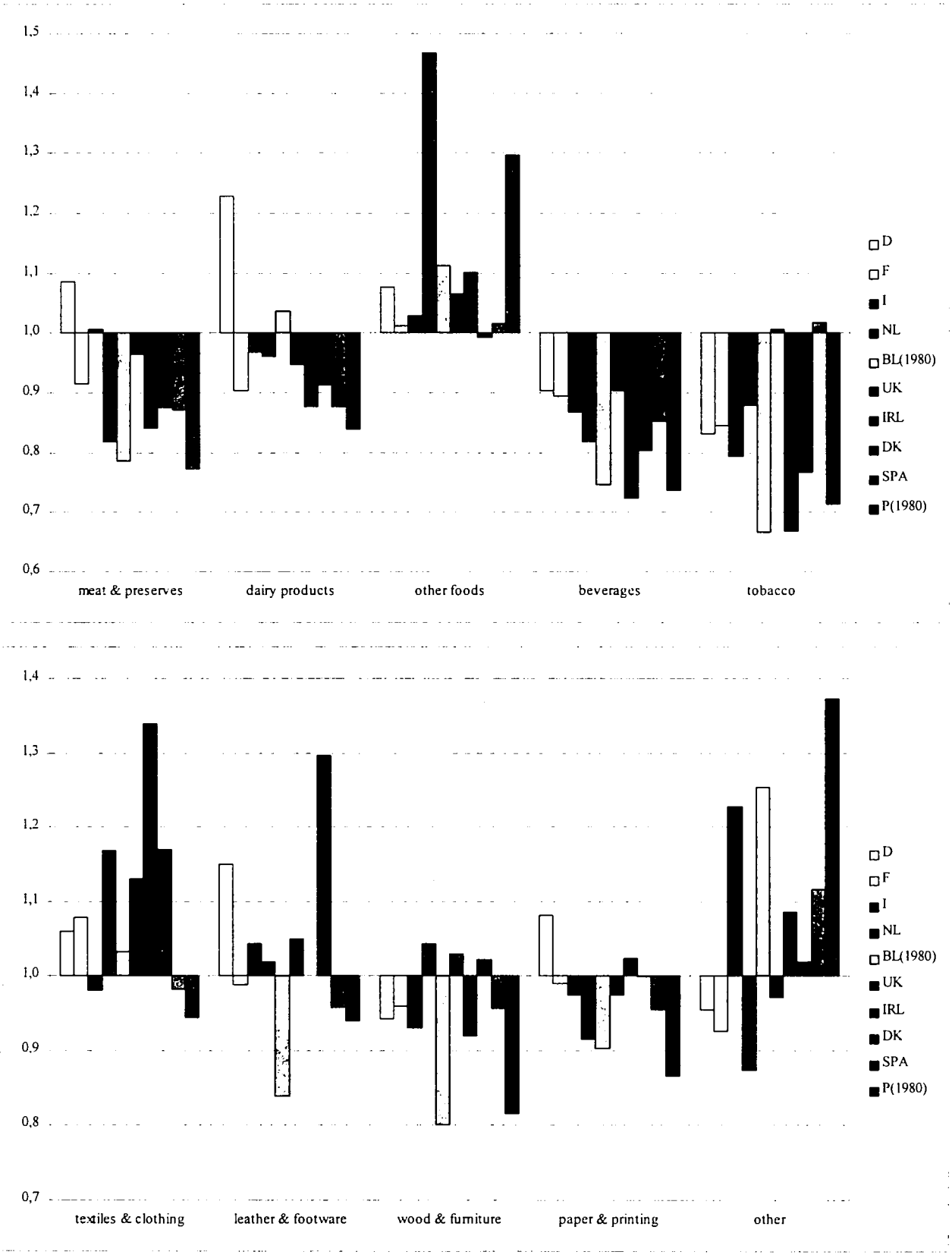
Figure 31 shows contrasting performances when this criterion is adopted. These graphs are designed such that a value of the indicator *greater* than 1 corresponds to industries using more intermediate imports in order to produce, in relative terms. The norm taken is therefore the country in question, not the industry.

Figure 31
The relative vertical division of labour of the European countries in 1985



Source: Eurostat IOT, authors' calculation.

Figure 31 (continued)



Source: Eurostat IOT, authors' calculation.

Thus, chemicals appears to be an activity with a high intermediate import[91] content in all the European countries, especially Portugal. Reciprocally, we note the very low productive import content of ores and metal in Belgium.

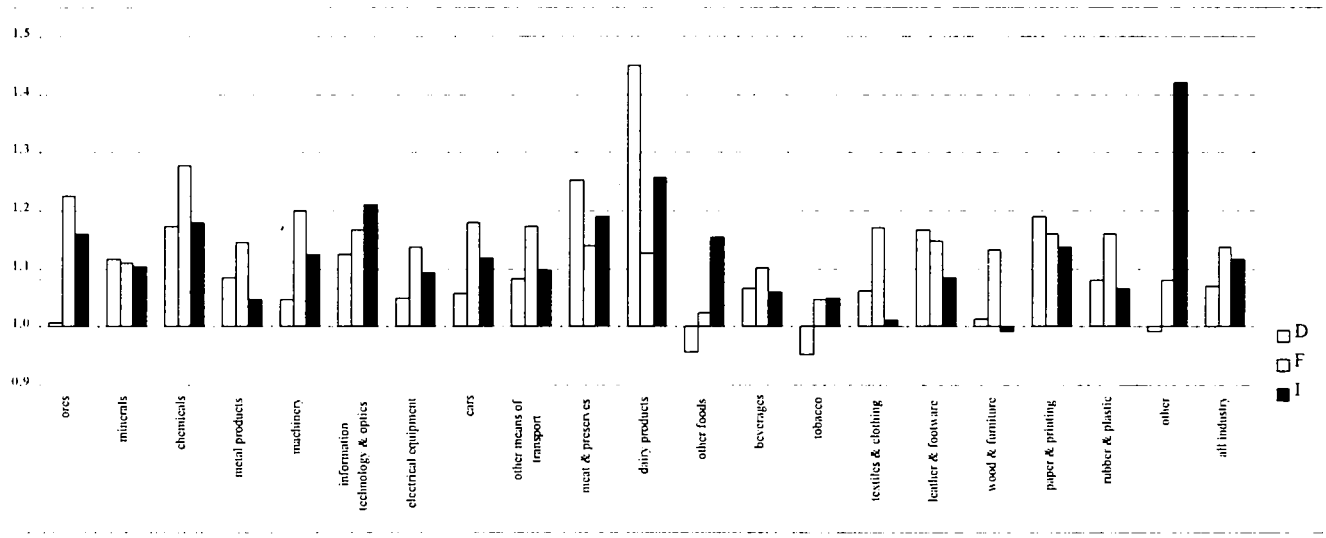
By contrast, the Belgian motor industry is the most dependent on intermediate imports in Europe, far ahead of the Netherlands, Ireland or Portugal. This is of course explained by the country's role as a European assembler, there being many foreign companies there in the motor sector. The other Belgian industries of the mechanical engineering, electrical and electronics sector appear to have very few imports by comparison.

We also note that Ireland is very dependent on the information technology industry, the electrical equipment industry and other means of transport.

Finally, in the food industry, apart from the industry "other foods", the coefficients calculated here are almost all greater than 1[92] for all countries except Germany.

Looking at the dynamics of European integration since its inception, this increased use of intermediate imports is particularly clear (Figure 32) in dairy products, meat and preserves (Germany and Italy), miscellaneous industries (Italy), ores and chemicals (France), information technology and optics (Italy and France), cars and other means of transport (France) and textiles and clothing (France).

Figure 32
Variation in the vertical division of labour by industry 1959-1985



Note: Since the 1959 IOT is not available for Germany, the period taken is 1965-1985 for that country.

Source: Eurostat IOT, authors' calculation.

91 Direct and indirect.

92 Consisting of fats, fruit, vegetable and fish preserves, flour, pasta products, biscuits, sugar, cocoa-based products and animal feeding stuffs.

3.2.2. Weight of the international splitting up of production processes

As emphasised in Chapter 1, the international splitting up of production processes is a phenomenon that must be distinguished from intermediate imports in the broad sense. What we are trying to pinpoint here is the typical case where the vertical division of labour leads a given country's motor industry, for example, to import car components, or the electronics industry to import electronic components. We therefore have intermediate imports by a industry of work in progress *from the same industry*. In such a case we shall speak of *imports for intra-consumption*.

3.2.2.1. Input-output method of measuring process splitting up

Crudely speaking, within the meaning of the input-output method described above, the phenomenon we are trying to account for here corresponds to the imports contained "in the diagonal" of the input-output matrix. Such imports for intra-consumption serve as the numerator for a ratio measuring the international splitting up of production processes, a ratio that may have a variety of denominators, including total intra-consumption or total intermediate imports. Both these ratios have methodological advantages and disadvantages that will not be gone into here.

We shall opt for the *ratio of imported intra-consumption to total intermediate imports*: we shall then speak of the "weight of splitting up".

The calculation can be made country by country, year by year, industry by industry or at Community level. Our presentation is confined to 1985 (Table 50).

3.2.2.2. Large national and sectoral differences

The European country most affected by the international splitting up of production processes is Ireland, and this is confirmed by an elementary analysis of the type of this country's involvement in the International Division of Labour. In addition to the industries generally affected by the phenomenon in the EC and to which we shall return, we find a high level of international splitting up of production processes in Ireland in electrical equipment and supplies, motor vehicles and engines, other means of transport and rubber and plastic products. As has often been mentioned, Ireland is the European country that has been able to take advantage of the economic distance separating it from the "hard core" of the EC in order to play the globalisation card. A country that welcomes foreign investment, Ireland thus appears to be a country that uses intermediate imports as a lever of competitiveness.

The Netherlands is also affected by the phenomenon to a greater extent than the other European countries: as in the case of Ireland, electrical equipment, wood and wooden furniture should be added to the industries concerned in other countries.

It is followed by Spain, where we find a high level of international splitting up of production processes in "other industries" and tobacco.

Table 50
The international splitting up of production processes

(1985, ratio of imported intra-consumption to intermediate imports in %)

code	Germany	Denmark	Spain	France	Italy	Ireland	Netherlands (87)	UK
135	**55.74**	44.78	**58.61**	31.72	20.77	*35.32*	***55.24***	40.17
136	7.59			2.36	1.16	*35.32*	***55.24***	
137	**81.69**	27.66	33.35	**85.36**	**81.92**	*35.32*	**59.56**	**50.55**
151	0.10	1.53	0.03	0.15	1.11	*17.38*	32.25	0.72
153	22.37	45.45	2.06	0.21	20.83	*17.38*	37.51	22.29
155	15.08	13.84	0.70	5.14	0.39	*17.38*	0.56	10.46
157	17.70	12.57	33.21	9.71	21.73	*17.38*	18.11	3.77
170	48.65	**51.18**	**64.70**	**51.50**	**56.23**	**55.41**	**54.36**	49.53
190	5.68	21.36	11.77	7.74	3.37	8.02	15.87	5.03
210	21.11	23.74	46.43	28.09	29.75	46.38	35.00	19.60
230	25.21	16.14	**72.19**	**52.11**	46.99	**58.39**	0.00	9.01
250	29.86	35.94	40.49	26.80	33.31	**57.05**	**50.21**	48.05
270	16.92	*21.76*	29.18	18.46	23.54	**60.98**	18.87	39.97
290	26.52	*21.76*	43.98	18.60	23.94	**82.33**	16.74	48.10
310	9.96	3.03	3.81	17.06	15.25	6.61	2.24	8.71
330	4.55	2.78	6.26	4.82	**54.26**	1.79	14.16	12.50
350	19.15	27.55	7.73	28.90	13.77	30.44	23.44	34.73
370	7.76	2.54	1.18	2.58	5.53	1.51	13.24	8.03
390	3.74	0.07	**57.00**	0.00	0.00	49.88	37.91	0.01
410	**54.91**	**59.47**	38.35	47.61	40.84	**66.67**	**60.63**	**57.38**
430	46.96	**53.20**	22.19	43.31	27.96	36.27	43.22	41.31
450	24.58	33.98	38.84	33.90	41.42	44.32	**55.19**	43.97
471	**55.59**	20.99	35.60	**69.97**	**60.66**	***69.09***	**56.33**	**56.87**
473	3.33	10.26	4.94	3.24	6.36	***69.09***	9.43	3.14
490	5.85	10.82	2.03	18.73	13.12	**53.25**	21.18	10.01
510	9.76	26.47	**60.66**	0.07	1.28	13.72	11.01	9.15

Source: Eurostat IOT, authors' calculation.

Finally, two special cases must be noted, Denmark for the leather and footwear industries and Italy for dairy products.

Having emphasised these specific national characteristics, it will be remembered that some industries are more affected by the phenomenon than others. In view of the method used, this may be the result either of an aggregation bias in the nomenclatures used or of really specific forms of involvement in the International Division of Labour. Only a more detailed analysis would enable us to decide between these two interpretations. However, the presence of the chemical industry, information technology and optics, textiles and clothing and paper among these industries must be borne in mind when reading the results for the EC's relationships with third countries in the international splitting up of production processes; we are now going to look at those relationships.

3.2.2.3. International splitting up of production processes: intra- or extra-regional?

European integration has gone hand in hand with the globalisation of production processes, the two phenomena combining to increase trade in intermediate goods, both intra- and extra-European. The movement towards European integration therefore has two dimensions for a given country:

- firstly, there is the question of the benefit the country in question obtains from the integration of the European market in obtaining strong competitive positions on that market: have the individual performances of the industries tended to be better in relation to European partners or in relation to third countries?

- the second dimension concerns the strategies for the international splitting up of production processes used to achieve those performances. Has the country in question favoured an international splitting up of production processes with the member countries, taking part in a vertical division of labour on a regional basis, or has it rather looked for vertical complementarities of comparative advantage outside the Community?

We illustrate this problem for Italy and Spain. The case of the Community in 1991 will be discussed in the following section.

The two dimensions of integration that have just been mentioned may be recorded simply by using a relative ratio of trade performances[93] for the first and a ratio of the relative international splitting up of production processes[94] for the second.

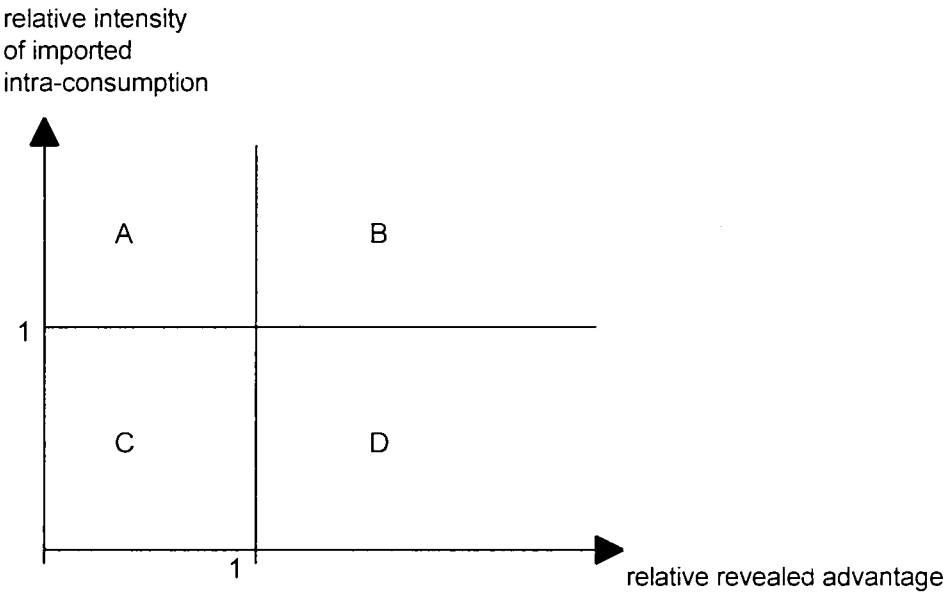
This principle is represented diagrammatically in Figure 33 below.

The most interesting cases in relation to the dynamics of European integration are certainly B and D. In B, the country in question has a revealed comparative advantage within the EC for the industry concerned and gains that advantage by organising a splitting up of the process on a European basis. It is a "winning" pro-European strategy. In D, on the other hand, a strong position on the European market is obtained from an extra-European international splitting up of production processes. This will in particular be the case if the country has broadly welcomed extra-Community affiliated companies, acting as it were as an assembly platform for extra-Community competitors looking for a "doorway" into the Community.

[93] Like the ratio of cover rates by partner, corrected for the overall trade balance.

[94] Higher than 1 if the international segmentation of production processes is greater with the member countries.

Figure 33
Intermediate imports and competitiveness



A : revealed comparative disadvantage in relation to the EC, international splitting up of production processes with the EC

B : revealed comparative advantage over the EC, international splitting up of production processes with the EC

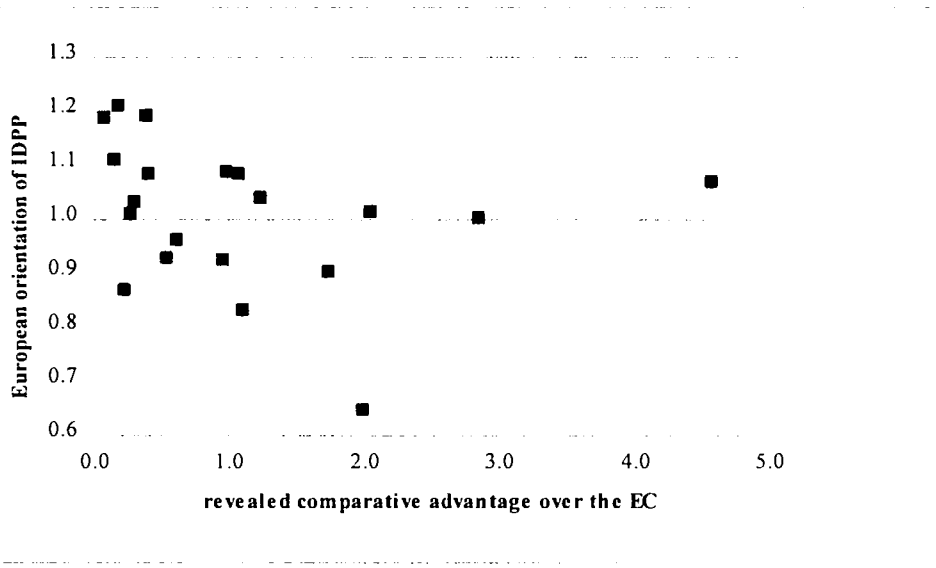
C : revealed comparative disadvantage in relation to the EC, international splitting up of production processes with third countries

D : revealed comparative advantage over the EC, international splitting up of production processes with third countries

3.2.2.4. A primarily European international splitting up of production processes

Is the widespread idea that a country like Spain could have acted as a "doorway" on to the European market for foreign investors justified empirically? Figure 34 shows that this country has quite a high concentration of industries in quadrant A, giving a picture of a vertical complementarity of comparative advantage with *European* partners.

Figure 34
International splitting up of production processes and European integration: the case of Spain



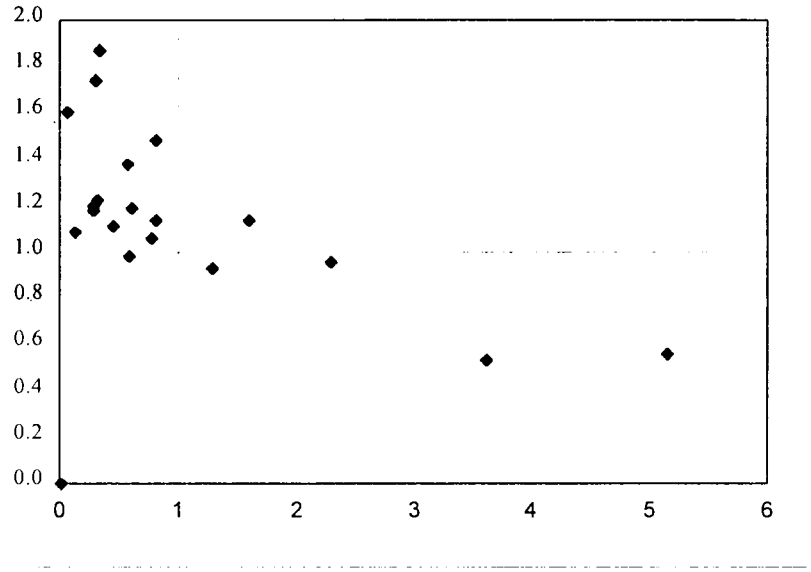
Source: Eurostat IOT, authors' calculation.

The few cases where outside competences are called upon to cushion a disadvantage in relation to partners (ores and non-metal products, other means of transport, tobacco, other industries), or the international splitting up of production processes with third countries is used to gain a comparative advantage over partners (other food, leather and footwear, paper and printing), do not allow us to conclude that this "late arrival" is engaging in atypical behaviour in its inter-industrial relations with third countries.

We can be convinced of this by looking at the case of Italy, a country that has belonged to the EC from the outset (Figure 35): the 13 industries of quadrant A establish the dominant nature of the Community strategy followed by Italy in the international splitting up of production processes. The 4 industries of quadrant D (ores and metals, leather and footwear, wood and furniture, paper and printing) correspond conversely to the use of outside competences in order to support intra-European competition.

Finally, in both countries, the observed instances of international splitting up of production processes with third countries concern rather traditional industries, the "heart" of the international splitting up of production processes corresponding on the other hand to an integration of production systems on a primarily regional basis.

Figure 35
International splitting up of production processes and European integration: the case of Italy



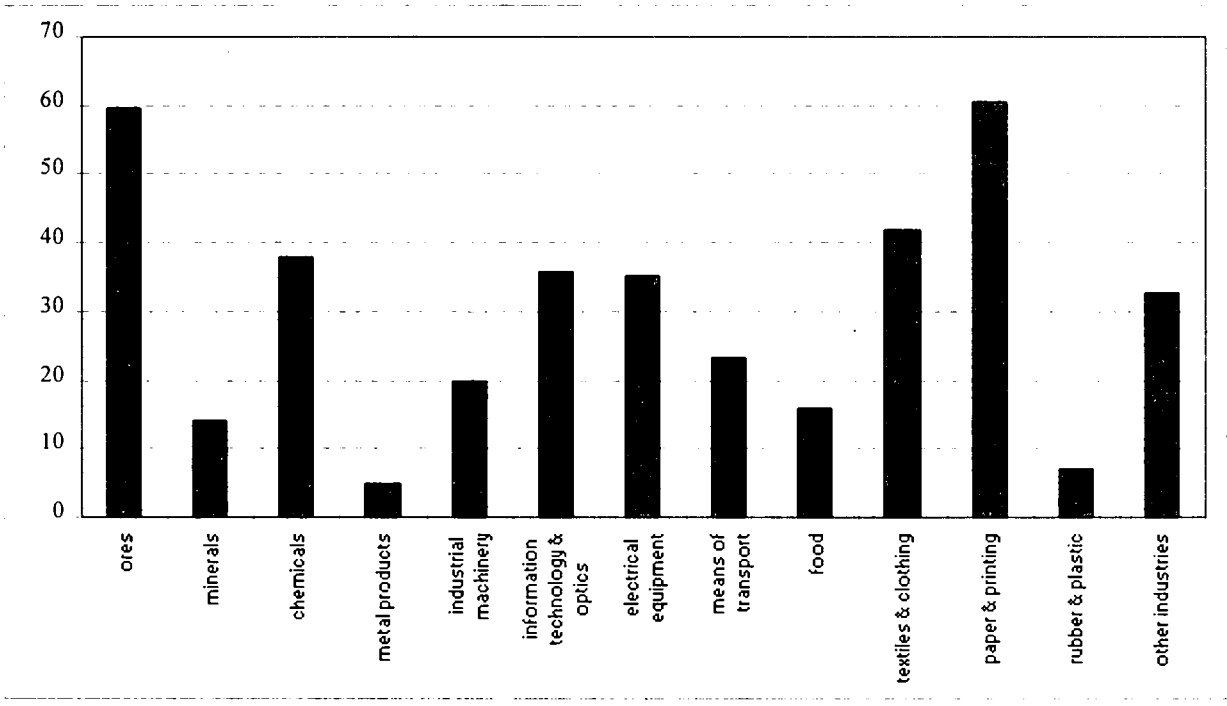
Source: Eurostat IOT, authors' calculation.

3.2.2.5. European Community in 1991

With each country following a specific behaviour in the international splitting up of production processes, the overall result for the EC may be obtained by adding the various member countries' intermediate imports from third countries so as to obtain a picture of Europe as an integrated economic entity organising an international splitting up of production processes with its extra-regional partners. We can then calculate the weight of the intra-consumption imported from third countries in the total intermediate imports from those countries.

As Figure 36 shows, the industries very much involved in the international splitting up of production processes with third countries are ores, paper and printing, textiles and clothing, chemicals, information technology and optics and electrical equipment.

Figure 36
The weight of the international splitting up of production processes in the EC's intermediate imports, 1991 (in %)



Source: Eurostat IOT, authors' calculation.

This observation calls for three comments:

- in the case of ores, paper and, to a lesser extent, chemicals, for the EC the use of international splitting up of production processes with third countries reflects a problem of unavailability in the sense given to the term in international trade theory. For obvious reasons, these industries will always, by their very nature, make use of much intra-consumption from third countries irrespective of company strategy, industrial policy or innovation efforts.

- similarly, the high level of international splitting up of production processes with third countries in the field of textiles and clothing reflects Europe's strategy of residual specialisation in those process segments that still enjoy a comparative advantage[95];

- finally, in the case of information technology/optics and electrical equipment[96], the international splitting up of production processes with third countries has different foundations which it is not necessary to review here. Processes are not divided on a regional basis: the entire electronics industry is shown to have a "European deficit" by the intra-consumption of intermediate goods imported from third countries. This comment brings us back to what has already been said about European intermediate imports from third countries. Our diagnosis then was that "globalisation was not preceded by regionalisation" in the industries in question. What we are showing here is something more precise: this use of intermediate imports from third countries is the result of an international splitting up of production processes.

[95] It can also be assumed that the high non-tariff barriers in this sector covered by the Multifibre Arrangement have helped to facilitate this fallback strategy.

[96] Office machinery and data processing equipment, precision instruments, measurement and control apparatus, medical and surgical equipment, orthopaedic equipment, optical instruments, photographic equipment, watches, clocks, electric wires and cables, electrical equipment and tools, batteries and accumulators, telecommunications equipment, meters, measuring instruments, electro-medical equipment, electronic radio and TV equipment, electro-acoustic equipment, magnetic disks and tapes, electrical domestic appliances, lamps and lighting equipment.

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Annexes

A.1. Geographical nomenclature

This is the nomenclature used in Chapter 2 and section 3.1. It was constructed from the Eurostat foreign trade geonomenclature in 1993.

Declaring countries/zones

EC (1010+1011)	001 France 002 BLEU 003 Netherlands 004 Germany 005 Italy 006 UK 007 Ireland 008 Denmark 009 Greece 010 Portugal 011 Spain
EFTA (1021)	024 Iceland 028 Norway 030 Sweden 032 Finland 036 Switzerland 038 Austria
United States (400)	
Japan (732)	

Partner countries/zones

EC (1010+1011)	
EFTA (1021)	
Other Europe	060 Poland 061 Czech Republic 063 Slovakia 064 Hungary 066 Romania 068 Bulgaria 070 Albania
Ex Soviet Union	
Mediterranean countries	046 Malta 052 Turkey 091 Slovenia 092 Croatia 093 Bosnia-Herzegovina 094 Serbia and Montenegro 096 Macedonia 204 Morocco

	208 Algeria 212 Tunisia 220 Egypt 600 Cyprus 604 Lebanon 608 Syria 624 Israel 628 Jordan
ACP countries (1031)	
Middle East	216 Libya 612 Iraq 616 Iran 632 Saudi Arabia 636 Kuwait 640 Bahrain 644 Qatar 647 United Arab Emirates 649 Oman 653 Yemen
United States (400)	
Canada (404)	
Mexico (412)	
Other America	416 Guatemala 424 Honduras 428 El Salvador 432 Nicaragua 436 Costa Rica 442 Panama 448 Cuba 457 Virgin Islands 480 Colombia 484 Venezuela 500 Ecuador 504 Peru 508 Brazil 512 Chile 516 Bolivia 520 Paraguay 524 Uruguay 528 Argentina
Japan (732)	
NICs of Asia	680 Thailand 701 Malaysia 706 Singapore 708 Philippines 728 South Korea 736 Taiwan 740 Hong Kong

Large countries of Asia	604 India
	700 Indonesia
	720 China
Other Asia-Oceania	660 Afghanistan
	662 Pakistan
	666 Bangladesh
	667 Maldives
	669 Sri Lanka
	672 Nepal
	675 Bhutan
	676 Myanmar
	684 Laos
	690 Vietnam
	696 Kampuchea
	703 Brunei
	716 Mongolia
	724 North Korea
	743 Macao
	800 Australia
	802 Australian Oceania
	803 Nauru
	804 New Zealand
	810 American Oceania
	814 New Zealand Oceania
	823 Micronesia
	824 Marshall Islands
Rest of the world	041 Faroe Islands
	043 Andorra
	044 Gibraltar
	045 Vatican City
	388 South Africa
	890 Polar regions
	(950-979) Miscellaneous
	1032 Overseas departments
	1033 Overseas territories
1000 World	

A.2. Breakdown by stage and industry of trade between zones in 1992

(as % of total inter-zone total trade of the 4 declaring zones)

	primary	processed	parts	final	total branch
Agriculture	**2.7**	**0.0**	**-**	**1.2**	**4.0**
Agriculture	*2.4*	*0.0*	*-*	*1.0*	*3.4*
Forestry	*0.3*	*0.0*	*-*	*0.0*	*0.3*
Fishing	*0.0*	*0.0*	*-*	*0.2*	*0.2*
Mining & Quarrying	**7.4**	**0.8**	**-**	**0.0**	**8.3**
Coal, lignite	*0.7*	*0.0*	*-*	*-*	*0.7*
Hydrocarbons	*5.8*	*0.4*	*-*	*-*	*6.2*
Uranium	*0.0*	*-*	*-*	*-*	*0.0*
Metallic minerals	*0.7*	*-*	*-*	*-*	*0.7*
Sundry mining & quarrying	*0.3*	*0.5*	*-*	*0.0*	*0.8*
Wood & Paper	**0.2**	**3.4**	**0.0**	**0.9**	**4.4**
Woodworking	*0.1*	*1.1*	*-*	*0.1*	*1.3*
Paper, paperboard	*0.0*	*2.2*	*-*	*0.1*	*2.3*
Publishing	*-*	*0.1*	*0.0*	*0.7*	*0.8*
Coking & refining	**0.0**	**2.5**	**-**	**0.0**	**2.5**
Chemicals	**0.0**	**8.9**	**0.5**	**2.4**	**11.8**
Chemicals	*0.0*	*6.9*		*1.6*	*8.5*
Rubber, plastic	*0.0*	*0.9*	*0.5*	*0.6*	*2.0*
Other non-metal	*-*	*1.0*	*0.0*	*0.2*	*1.3*
Metals	**0.3**	**6.2**	**0.4**	**0.5**	**7.5**
Metal products	*0.3*	*5.0*	*-*	*-*	*5.4*
Metalworking	*-*	*1.2*	*0.4*	*0.5*	*2.1*
Mechanical Engineering	**-**	**0.1**	**3.3**	**6.9**	**10.4**
Data processing	**-**	**-**	**1.7**	**3.2**	**4.8**
Electrical/electronic	**-**	**1.1**	**5.7**	**7.1**	**13.9**
Electrical equipment	*-*	*0.8*	*1.7*	*1.2*	*3.7*
Radio, TV, Communication	*-*	*-*	*3.7*	*2.9*	*6.5*
Precision Instruments	*-*	*0.3*	*0.3*	*3.0*	*3.6*
Cars & HGVs	**-**	**-**	**3.3**	**6.7**	**10.0**
Other Transport	**-**	**0.0**	**1.8**	**3.4**	**5.3**
AFI	**0.3**	**1.1**	**-**	**4.3**	**5.7**
AFI	*0.3*	*1.1*	*-*	*4.0*	*5.4*
Tobacco products	*0.0*	*-*	*-*	*0.3*	*0.3*
Textiles	**0.1**	**1.9**	**0.1**	**5.8**	**7.9**
Textiles	*0.1*	*1.7*	*0.1*	*1.1*	*2.9*
Clothing	*0.0*	*0.0*	*-*	*3.3*	*3.4*
Leather	*0.0*	*0.2*	*0.0*	*1.4*	*1.6*
Miscellaneous	**0.0**	**0.9**	**0.0**	**2.6**	**3.6**
Total stage	**11.0**	**27.1**	**16.7**	**45.2**	**100.0**

Source: Eurostat, authors' calculation.

A.3. Detailed results of the "Grubel & Lloyd" indicator

GL by stage, 1992 (%)

	Primary	Processed	Parts	Final	Total declaring country
France	7.3	35.5	52.9	41.9	39.7
BLEU	12.4	32.9	39.8	38.6	34.5
Netherlands	10.3	32.1	54.2	33.5	32.9
Germany	8.1	32.7	49.1	36.8	35.8
Italy	3.7	25.1	47.8	26.7	27.4
UK	6.7	25.9	53.6	34.4	33.9
Ireland	13.4	20.2	46.9	22.9	26.2
Denmark	20.8	23.3	41.6	20.6	23.7
Greece	3.2	10.1	10.7	6.1	7.3
Portugal	2.5	14.6	22.2	17.3	15.7
Spain	3.4	23.5	45.8	21.7	24.0
Iceland	0.7	0.9	0.6	0.8	0.8
Norway	2.7	15.6	27.5	14.4	12.3
Sweden	5.3	18.4	35.2	25.2	23.8
Finland	1.8	10.2	28.0	20.0	14.9
Switzerland	8.1	37.1	46.0	29.1	33.5
Austria	8.1	30.5	43.3	30.7	32.0
USA	4.9	24.2	52.7	23.4	28.2
Japan	0.8	16.7	27.8	14.1	15.6
Average of 19 countries	5.7	27.3	46.7	28.8	29.5

Source: Eurostat, authors' calculation.

GL by industry, intermediate products, 1992 (%)

Agriculture		Mining & Quarrying		AFI		Textiles		Wood & Paper		Coking & Refining		Chemicals		Metal products		Mech. Eng.		Data processing		Electical/ electronic		Cars & HGVs		Other Transport		Misc.	
	18.2		**14.8**		**15.8**		**26.1**		**22.0**		**28.9**		**29.4**		**29.0**		**44.0**		**54.7**		**44.9**		**44.2**		**51.2**		**37.2**
Ireland	52.3	Switz.	80.4	BLE	26.0	Neth.	37.2	BLE	37.7	Denm.	52.2	Fra.	37.1	Switz.	38.2	Neth.	54.6	Italy	68.0	USA	57.6	Spain	57.0	Fra.	60.0	Switz.	66.1
Neth.	44.2	Port.	33.0	Germ.	22.5	Aus.	35.0	Neth.	35.7	Spain	48.4	BLE	34.7	Germ.	37.8	Aust.	52.1	UK	66.3	Neth.	48.0	USA	53.2	Swed.	59.0	Fra.	46.2
BLEU	34.9	Fin.	26.6	Neth.	20.9	BLE	34.1	Fra.	35.4	Italy	41.3	Neth.	34.2	Fra.	37.4	Germ.	51.2	Neth.	65.8	UK	47.9	Fra.	53.0	UK	55.9	BLE	43.1
UK	25.4	Fra.	20.5	Fra.	20.8	Fra.	34.0	Switz.	34.0	Greec.	41.3	Germ.	32.7	Aust.	37.2	UK	50.8	BLEU	65.4	Fra.	47.1	Italy	51.7	USA	53.0	USA	40.2
Denm.	24.6	USA	18.8	UK	18.5	Switz	33.7	Germ.	32.3	Port.	34.3	Switz.	32.1	Neth.	36.7	Fra.	50.6	Fra.	64.0	Switz.	46.9	UK	51.5	Italy	52.3	Neth.	36.8
Switz.	21.8	BLE	17.6	Switz.	16.0	Germ.	31.3	Irel.	25.9	Fra.	33.3	UK	30.6	BLE	33.4	Switz.	48.2	Irel.	58.0	Germ.	46.1	Neth.	48.0	Neth.	48.4	Irel.	36.1
USA	20.8	Germ.	15.1	Irel.	12.4	Swed.	27.8	Aust.	24.4	UK	33.1	Italy	27.6	Denm	30.7	BLE	46.8	Germ.	55.5	Italy	41.5	Germ.	47.7	Irel.	46.8	Germ.	34.2
Spain	17.0	Greec	8.5	Denm	10.6	UK	24.9	Italy	20.7	USA	29.9	USA	26.8	UK	28.2	Denm	43.6	USA	53.7	Denm	39.7	Aust.	46.4	Denm.	44.9	Spain	28.2
Japan	16.3	Irel.	7.1	USA	8.3	Italy	23.2	UK	19.2	BLEU	29.2	Aust.	25.8	Spain	26.9	Irel.	42.6	Aust.	44.6	BLE	38.3	Irel.	41.1	Spain	44.3	Aust.	27.5
Italy	16.2	Neth.	6.9	Italy	8.2	Spain	21.2	Denm	18.0	Nor.	26.7	Spain	23.7	Swed.	25.2	Italy	41.6	Switz.	44.1	Aust.	36.8	Switz.	40.7	Germ.	39.8	Swed.	26.9
Germ.	14.4	Nor.	6.4	Swed.	8.1	USA	20.2	Spain	16.5	Germ.	25.9	Japan	22.8	Italy	24.4	Swed.	38.1	Denm.	43.4	Spain	33.9	Denm.	40.6	Nor.	38.4	Denm	26.2
France	13.1	Denm	3.4	Spain	7.9	Port.	17.4	USA	15.8	Irel.	25.3	Swed.	21.5	Irel.	24.4	USA	36.9	Swed.	42.9	Irel.	33.5	Swed.	33.2	BLEU	37.2	Italy	26.1
Austria	10.4	Italy	1.5	Aust.	7.3	Denm	16.6	Nor.	13.5	Aust.	22.8	Denm	18.9	USA	22.0	Spain	35.2	Japan	40.0	Japan	31.5	Nor.	30.1	Aust.	34.0	Port.	24.9
Norway	7.5	Swed.	0.9	Nor.	5.3	Irel.	16.5	Port.	9.1	Neth.	22.7	Irel.	18.8	Japan	15.7	Fin.	33.3	Spain	39.7	Nor.	30.9	BLEU	27.4	Japan	31.7	UK	24.5
Sweden	5.5	Aust.	0.5	Japan	4.0	Fin.	15.6	Swed.	8.8	Japan	19.1	Nor.	16.1	Fin.	14.9	Japan	28.4	Port.	28.8	Swed.	30.7	Fin.	20.9	Switz.	30.3	Nor.	17.7
Port.	0.3	UK	0.3	Greec	2.7	Japan	13.3	Japan	5.2	Fin.	18.2	Fin.	14.3	Port.	14.2	Nor.	26.3	Nor.	27.6	Fin.	30.1	Port.	20.4	Port.	29.5	Japan	14.7
Greece	0.0	Spain	0.0	Port.	2.7	Nor.	12.7	Fin.	4.3	Swed.	10.7	Port.	11.9	Nor.	11.3	Port.	17.9	Fin.	20.5	Port.	21.2	Japan	10.9	Fin.	15.0	Fin.	14.5
Iceland	0.0	Icel.	0.0	Fin.	2.6	Greec	10.4	Greec	3.0	Switz.	6.8	Greec	6.0	Greec	7.3	Greec	5.1	Greec.	10.7	Greec	16.7	Greec.	3.8	Greec.	12.5	Greec	14.0
Finland	0.0	Japan	0.0	Icel.	0.8	Icel.	4.9	Icel.	0.4	Icel.	0.0	Icel.	1.8	Icel.	0.5	Icel.	1.6	Icel.	2.0	Icel.	0.3	Icel.	0.2	Icel.	0.0	Icel.	0.0

Source: Eurostat, authors' calculation.

Note: Here, "intermediate products" combines processed products and parts. The figures in bold under the industry headings are the average for the 19 declaring countries for the industry concerned. The countries are arranged in order, and those whose two-way trade is higher than the average are located above the dotted lines.

Bilateral GL, intermediate products, 1992 (%)

declaring / *partner country*	Fra.	BLEU	Neth.	erm	Italy	UK	Irel.	DK	GR	Port.	Spai	Icel.	Nor.	Swed.	Fin.	Switz	Aust.	USA	Japan
France	.	43.8	43.3	55.7	43.2	51.2	22.5	26.5	11.3	21.1	47.8	0.6	9.5	26.6	10.5	39.5	29.1	50.9	20.8
BLEU	41.7	.	51.5	41.7	25.8	34.4	10.7	18.2	6.0	15.2	24.0	0.4	10.0	14.2	11.4	42.0	20.8	23.2	7.6
Netherlands	42.2	49.5	.	45.5	28.5	49.6	26.2	31.7	7.6	18.5	25.4	0.5	14.2	21.0	9.5	30.9	23.4	24.5	12.5
Germany	59.3	43.5	46.3	.	43.9	53.4	29.2	38.3	10.8	16.8	43.3	0.9	16.5	27.6	14.3	53.9	49.7	38.9	29.0
Italy	43.0	25.3	32.8	40.7	.	41.8	16.0	26.4	9.8	11.6	33.5	0.0	7.7	22.1	8.9	35.5	22.3	30.7	23.8
UK	49.5	42.1	50.6	47.2	44.5	.	40.2	35.8	11.3	18.5	38.5	1.0	20.0	26.5	10.8	61.1	21.9	43.5	19.3
Ireland	24.4	18.5	23.1	31.8	12.6	38.0	.	13.5	0.3	3.5	6.0	0.2	5.0	15.4	4.2	53.3	9.1	22.9	8.2
Denmark	30.8	22.0	37.9	39.1	25.2	35.8	21.1	.	3.2	11.2	15.9	2.2	28.7	39.3	18.3	23.1	22.4	21.5	14.6
Greece	12.4	6.2	9.6	11.3	14.1	10.8	0.9	1.8	.	1.6	6.9	0.0	1.0	1.7	0.4	4.6	6.0	3.6	0.4
Portugal	23.9	18.4	12.7	17.8	13.3	22.4	5.4	7.5	3.5	.	30.4	0.0	4.0	10.9	4.8	6.6	8.1	8.8	1.0
Spain	45.1	25.7	33.7	38.4	34.7	43.1	10.8	17.8	5.0	27.6	.	1.3	13.0	18.2	5.7	17.3	9.9	22.5	7.3
Iceland	2.3	1.1	2.0	1.1	0.5	1.9	5.6	1.9	0.0	1.3	0.7	.	1.5	0.8	0.2	1.1	1.1	10.1	0.5
Norway	11.6	11.4	14.3	16.2	10.2	23.0	5.5	22.9	0.9	2.6	10.9	1.4	.	33.9	15.9	13.6	15.6	10.2	2.2
Sweden	24.8	14.6	26.7	28.4	20.8	29.6	17.8	41.1	1.4	10.7	16.4	0.5	39.0	.	36.5	21.4	22.7	33.2	15.1
Finland	11.4	11.6	11.3	15.7	9.1	11.6	5.4	16.9	0.7	7.0	5.0	0.3	15.9	39.5	.	7.6	13.1	7.7	4.1
Switzerland	42.5	28.8	31.5	51.7	29.5	31.0	40.8	26.0	6.2	6.3	18.1	0.0	15.1	24.7	8.7	.	42.1	27.2	17.1
Austria	32.0	22.0	28.5	48.4	24.3	22.6	11.2	21.3	4.6	6.5	15.6	0.0	14.4	23.1	10.6	42.1	.	20.4	9.6
Other Europe	21.9	17.4	18.9	33.3	19.7	20.9	3.7	16.5	10.7	2.2	10.6	0.0	10.4	19.8	7.8	17.2	28.2	13.7	1.9
ex USSR	4.1	1.0	1.2	4.0	2.0	2.4	0.0	3.2	14.7	0.7	0.5	0.0	2.6	4.8	16.7	0.6	2.9	2.7	0.5
Med. countries	22.5	18.1	14.4	23.8	33.2	21.0	12.1	9.5	31.7	6.9	15.8	0.0	4.5	5.8	1.9	12.3	21.7	22.7	2.1
ACP countries	3.6	3.5	3.3	1.9	10.8	5.0	2.8	1.5	1.2	6.7	1.7	.	.	.	.	.	.	.	.
Middle East	14.0	11.9	8.3	2.3	16.6	18.8	3.3	0.8	10.1	0.1	6.4	0.0	1.0	0.5	0.5	25.1	0.3	1.5	0.2
USA	54.6	25.0	32.2	40.0	32.9	47.7	42.2	33.4	3.9	10.9	23.7	1.5	13.6	35.9	9.3	33.5	26.0	.	34.2
Canada	17.6	6.9	17.7	13.3	10.4	18.3	1.8	20.0	1.8	1.0	5.0	0.4	2.0	12.0	5.5	13.5	8.7	49.1	6.5
Mexico	7.0	2.6	3.3	8.0	4.7	12.4	1.2	0.7	0.0	0.6	12.1	0.0	3.2	5.1	1.3	8.6	1.9	41.4	2.9
Other America	8.1	5.4	8.4	14.4	11.4	11.4	5.6	0.9	9.9	0.6	8.1	0.2	2.6	6.8	0.9	16.3	3.5	21.8	2.0
Japan	21.2	13.5	13.9	27.2	21.5	21.8	29.7	10.5	0.4	0.6	7.1	0.0	4.2	14.7	4.3	20.8	8.5	34.8	.
NICs of Asia	31.6	28.2	21.1	28.5	19.5	32.5	30.2	13.8	1.8	7.8	13.2	0.8	12.9	13.2	10.3	35.1	11.7	46.2	26.1
Lg. countries of Asia	18.1	2.2	6.4	11.3	17.0	12.1	7.4	4.9	0.2	1.6	7.5	0.0	2.0	3.8	1.2	12.9	4.8	16.0	10.4
Other Asia-Pacific	10.6	16.7	8.7	6.1	5.5	16.4	5.4	6.6	7.5	7.1	3.3	0.0	1.9	4.7	0.9	6.4	5.3	13.0	5.6
Rest of the World	11.4	9.2	8.3	6.7	6.3	26.9	2.4	1.5	4.6	5.5	25.7	0.0	0.2	0.0	0.0	0.3	3.5	2.8	0.8
World	**41.8**	**34.2**	**37.9**	**38.1**	**31.9**	**37.3**	**30.6**	**28.5**	**10.2**	**16.5**	**31.0**	**0.9**	**18.5**	**24.5**	**13.7**	**39.3**	**34.9**	**37.9**	**21.5**

Source: Eurostat, authors' calculation.

Note: Here, "Intermediate products" combine processed products and parts.

A.4. Example and definition of the types of trade and ranges traded for France and item HS 870323, 1992

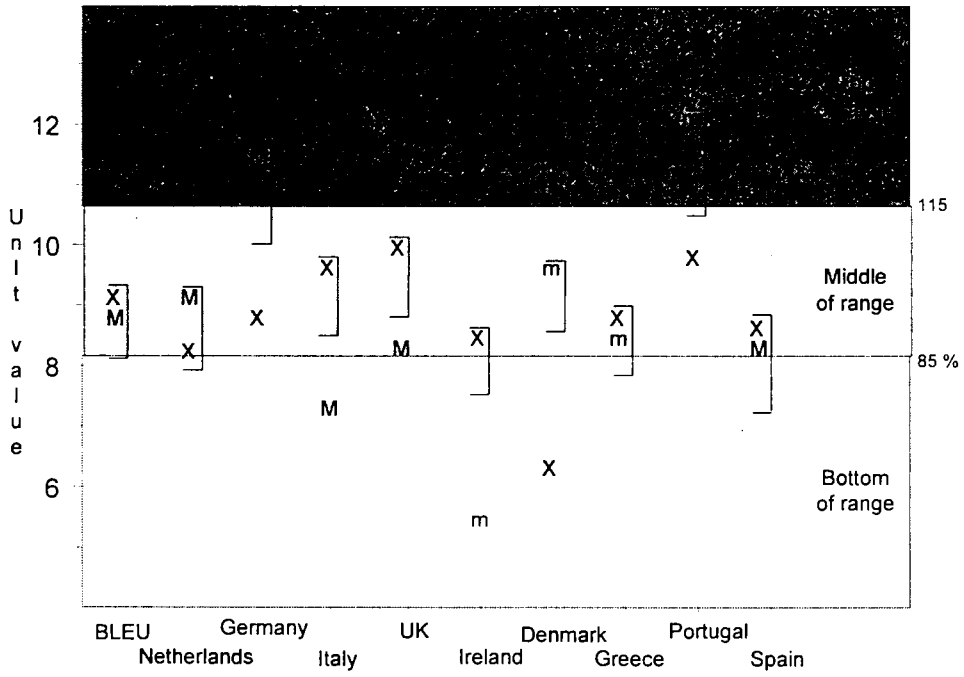
	Value		Quantity		Unit value		Similarity		Overlap		Type		Range	
	X	M	X	M	X	M	100* VUX/VUM	yes/no	100*VX/VM	yes/no	X	M	X	M
BLEU	213,827	533,246	23,143	60,650	9.2	8.8	105.09	yes	40.10	yes	TWSP	TWSP	Middle	Middle
Netherlands	184,752	43,698	22,217	4,798	8.3	9.1	91.31	yes	422.79	yes	TWSP	TWSP	Middle	Middle
Germany	1,018,723	1,278,220	113,935	111,245	8.9	11.5	77.82	no	79.70	yes	TWVDP	TWVDP	Middle	Top
Italy	367,897	139,609	38,174	19,131	9.6	7.3	132.06	no	263.52	yes	TWVDP	TWVDP	Middle	Bottom
UK	365,219	235,475	36,543	28,652	10.0	8.2	121.61	no	155.10	yes	TWVDP	TWVDP	Middle	Middle
Ireland	3,705	17	433	3	8.6	5.7	151.00	no	21,794.12	no	One-way	Residual	Middle	Bottom
Denmark	46,454	2,702	7,045	279	6.6	9.7	68.09	no	1,719.25	no	One-way	Residual	Bottom	Middle
Greece	29,792	76	3,336	9	8.9	8.4	105.76	yes	39,200.00	no	One-way	Residual	Middle	Middle
Portugal	19,988	122	2,019	10	9.9	12.2	81.15	no	16,383.61	no	One-way	Residual	Middle	Top
Spain	367,341	250,348	42,626	29,783	8.6	8.4	102.52	yes	146.73	yes	TWSP	TWSP	Middle	Middle
Total France-EC	2,617,698	2,483,513	289,471	254,560										
Total EC-EC	26,026,665		2,721,591		9.6 average European price 8.3 lower limit (9.6/1.15) 11.0 upper limit (9.6*1.15)									

	Types of trade	X	M	X+M
Value	TWSP	765,920	827,292	1,593,212
	TWVDP	1,751,839	1,653,304	3,405,143
	One-way	99,939	2,917	102,856
	Total	2,617,698	2,483,513	5,101,211
Distribution	TWSP	29.3	33.3	31.2
	TWVDP	66.9	66.6	66.8
	One-way	3.8	0.1	2.0
	Total	100.0	100.0	100.0

	Ranges traded	X	M	X+M
Value	Bottom	46,454	139,626	186,080
	Middle	2,571,244	1,065,545	3,636,789
	Top	0	1,278,220	1,278,220
	Total	2,617,698	2,483,391	5,101,089
Distribution	Bottom	1.8	5.6	3.6
	Middle	98.2	42.9	71.3
	Top	0.0	51.5	25.1
	Total	100.0	100.0	100.0

Note: Value and unit value in 1000 ECU and quantities in tonnes.

Item HS 870323 corresponds to "saloon cars and other vehicles designed principally for the transport of persons, including cars of the 'break' type and racing cars, with a spark-ignition alternating piston engine, cylinder size >1500 cm^3 but =<3000 cm^3 (...)".



Note: Where there is a "overlap" between the value of exports and imports, X and M are shown in upper case (XM). Otherwise, only the majority flow is shown in upper case and the minority flow in lower case (Xm, xM).

The square brackets represent the "similarity" criterion: they show the maximum deviation of the unit values between exports and imports if the two flows are to be said to be similar.

A.5 Individual situation of the member countries of the European Community

A.5.1 France

France, exports, imports and trade balance in 1992

(in billion ECU)

	Exports					Imports					Balance				
	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total
Total	**1.8**	**15.9**	**12.7**	**37.4**	**67.9**	**10.7**	**15.5**	**8.8**	**27.9**	**62.9**	**-8.9**	**0.4**	**4.0**	**9.6**	**5.0**
Other transport	0.0	0.0	2.9	9.8	12.7	0.0	0.0	3.0	4.4	7.4	0.0	0.0	-0.1	5.4	5.3
Chemicals	0.0	6.1	0.6	4.1	10.7	0.0	4.4	0.2	1.2	5.8	0.0	1.7	0.4	2.9	4.9
Cars & HGVs	0.0	0.0	2.1	3.6	5.7	0.0	0.0	0.8	1.7	2.5	0.0	0.0	1.4	1.9	3.2
AFI	0.1	0.9	0.0	5.5	6.5	0.2	1.2	0.0	2.1	3.5	-0.1	-0.2	0.0	3.3	3.0
Mechanical eng.	0.0	0.1	2.8	4.1	7.0	0.0	0.1	1.3	2.9	4.3	0.0	0.0	1.5	1.2	2.8
Electical/electronic	0.0	0.7	3.5	3.9	8.1	0.0	0.5	2.4	4.2	7.0	0.0	0.3	1.1	-0.2	1.1
Metal products	0.1	3.8	0.2	0.5	4.6	0.1	3.1	0.2	0.2	3.5	-0.0	0.7	0.1	0.3	1.1
Miscellaneous	0.0	0.2	0.0	1.5	1.7	0.0	0.4	0.1	2.0	2.4	0.0	-0.1	-0.0	-0.5	-0.6
Coking & Refining	0.0	1.3	0.0	0.1	1.5	0.0	2.3	0.0	0.0	2.3	0.0	-1.0	0.0	0.1	-0.8
Agriculture	1.4	0.0	0.0	0.3	1.7	1.5	0.0	0.0	1.5	3.0	-0.1	0.0	0.0	-1.2	-1.3
Wood & Paper	0.0	1.1	0.0	0.7	1.9	0.0	2.8	0.0	0.5	3.3	0.0	-1.6	0.0	0.2	-1.4
Data processing	0.0	0.0	0.6	0.9	1.5	0.0	0.0	1.0	2.1	3.1	0.0	0.0	-0.4	-1.2	-1.6
Textiles	0.1	1.6	0.0	2.5	4.2	0.0	1.0	0.0	5.1	6.1	0.0	0.6	0.0	-2.6	-1.9
Mining & Quarrying	0.1	0.0	0.0	0.0	0.1	8.8	0.0	0.0	0.0	8.8	-8.7	0.0	0.0	0.0	-8.7

(in billion ECU)

Source: Eurostat, authors' calculation.

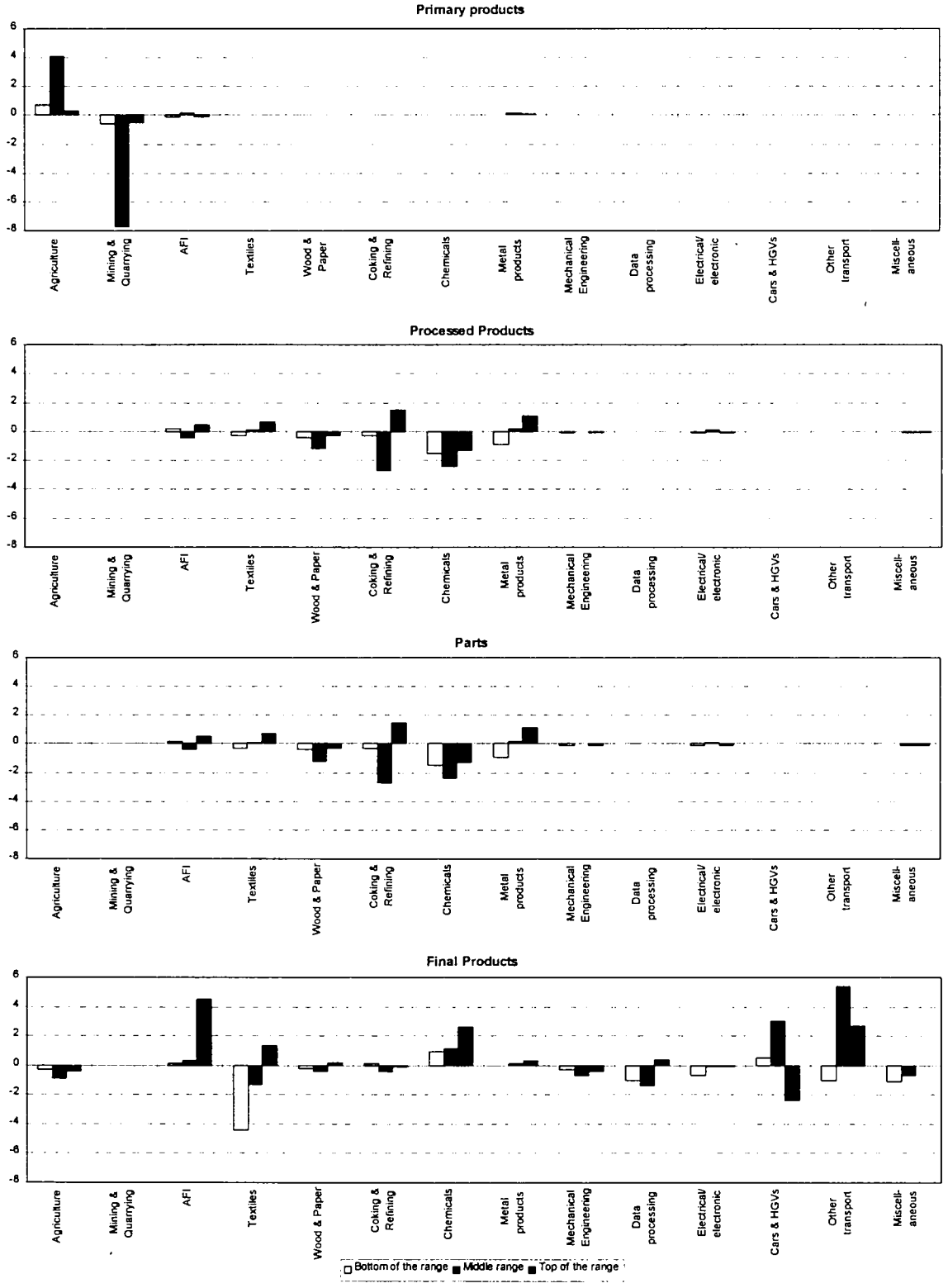
France, comparative advantages in 1992

(in 1/1000 of GDP))

	Intra-EC					Extra-EC					World				
	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total
Total	**5.0**	**-7.6**	**2.2**	**-5.4**	**-5.9**	**-8.4**	**0.0**	**4.0**	**10.2**	**5.9**	**-3.4**	**-7.6**	**6.2**	**4.8**	**0.0**
Cars & HGVs	0.0	0.0	3.4	-0.9	2.5	0.0	0.0	1.2	1.9	3.2	0.0	0.0	4.6	1.1	5.7
Other transport	0.0	0.0	-1.5	1.7	0.2	0.0	0.0	-0.1	5.4	5.3	0.0	0.0	-1.6	7.0	5.5
AFI	0.1	0.5	0.0	1.5	2.1	-0.1	-0.2	0.0	3.4	3.1	0.0	0.3	0.0	4.9	5.2
Agriculture	5.1	-0.0	0.0	-0.4	4.7	0.0	0.0	0.0	-1.2	-1.2	5.1	-0.0	0.0	-1.6	3.5
Metal products	0.4	-0.4	-0.2	0.1	-0.1	-0.0	0.9	0.0	0.3	1.2	0.4	0.5	-0.2	0.4	1.1
Electical/electronic	0.0	-0.3	0.5	-0.8	-0.6	0.0	0.3	1.1	-0.2	1.2	0.0	-0.0	1.6	-1.0	0.6
Chemicals	0.0	-6.3	0.7	1.7	-3.9	0.0	1.1	0.4	2.9	4.3	0.0	-5.2	1.1	4.5	0.4
Mechanical eng.	0.0	-0.1	-0.6	-2.7	-3.5	0.0	0.0	1.7	1.3	3.0	0.0	-0.1	1.0	-1.4	-0.5
Coking & Refining	0.0	-0.5	0.0	-0.5	-1.1	0.0	-0.9	0.0	0.1	-0.8	0.0	-1.5	0.0	-0.4	-1.9
Miscellaneous	0.0	-0.1	-0.0	-1.3	-1.4	0.0	-0.1	-0.0	-0.5	-0.6	-0.0	-0.2	-0.1	-1.8	-2.0
Wood & Paper	0.1	-0.2	-0.0	-0.6	-0.8	0.0	-1.7	0.0	0.2	-1.5	0.1	-1.9	-0.0	-0.4	-2.2
Data processing	0.0	0.0	-0.1	-1.0	-1.0	0.0	0.0	-0.3	-1.1	-1.4	0.0	0.0	-0.4	-2.1	-2.5
Textiles	0.0	-0.2	-0.0	-2.2	-2.4	0.0	0.7	0.0	-2.3	-1.6	0.0	0.5	0.0	-4.5	-4.0
Mining & Quarrying	-0.6	-0.0	0.0	0.0	-0.7	-8.2	0.0	0.0	0.0	-8.2	-8.9	-0.0	0.0	0.0	-8.9

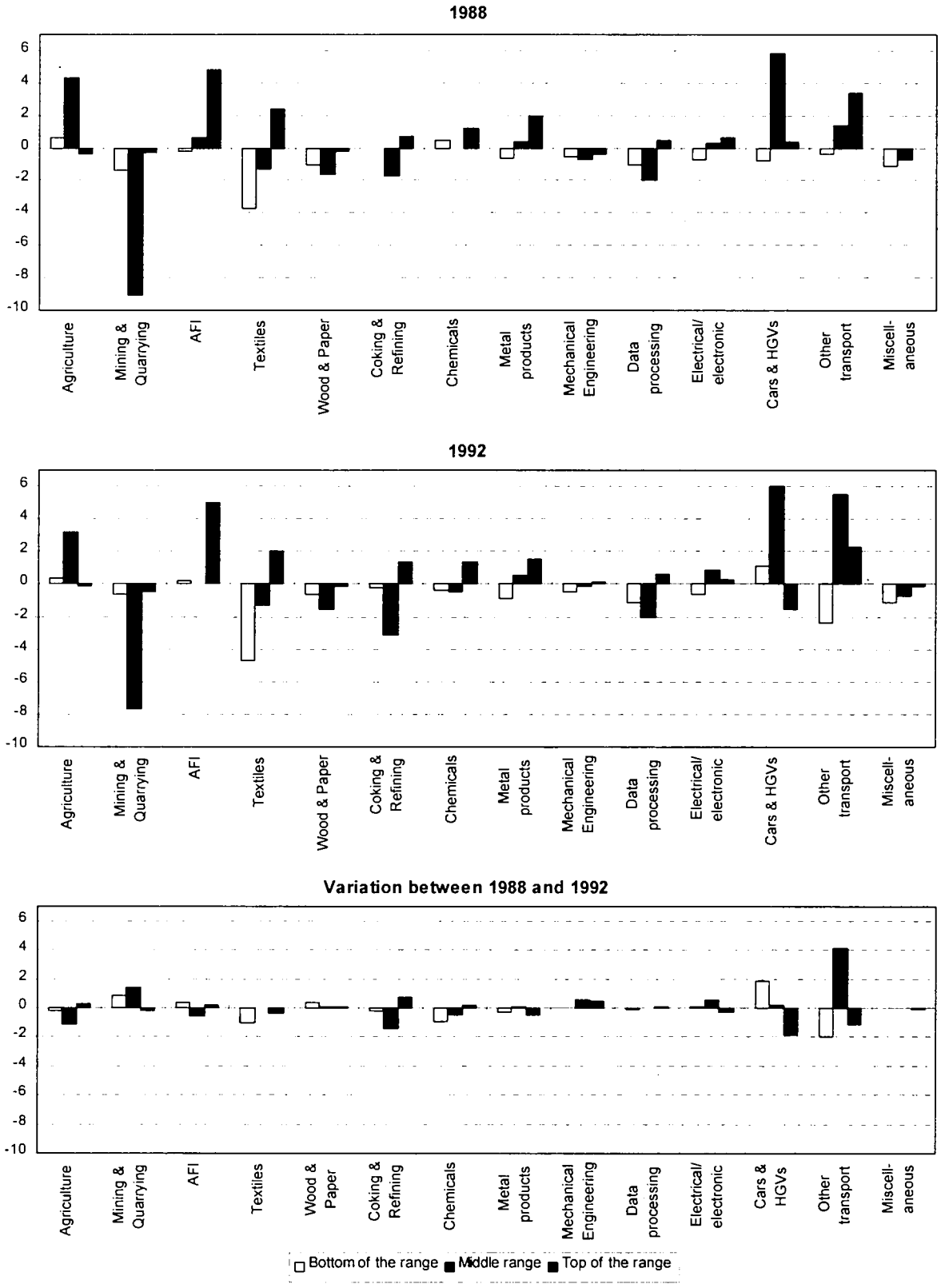
Source: Eurostat and CHELEM-PIB, authors' calculation.

Comparative advantages of France by stage and range in 1992



Source: Eurostat and CHELEM-PIB, authors' calculation.

Comparative advantages of France by industry and range, 1988-92



Source: Eurostat and CHELEM-PIB, authors' calculation.

A.5.2 BLEU

BLEU, exports, imports and trade balance in 1992

(in billion ECU)

	Exports					Imports					Balance				
	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total
Total	**0.5**	**12.8**	**2.0**	**6.6**	**21.9**	**3.3**	**12.5**	**3.5**	**10.1**	**29.4**	**-2.8**	**0.2**	**-1.4**	**-3.6**	**-7.6**
Coking & Refining	0.0	1.2	0.0	0.0	1.2	0.0	0.6	0.0	0.0	0.6	0.0	0.7	0.0	0.0	0.7
Metal products	0.1	1.8	0.1	0.1	2.1	0.2	1.7	0.1	0.1	2.1	-0.2	0.1	0.1	0.0	0.0
Miscellaneous	0.0	2.3	0.0	0.2	2.5	0.0	2.1	0.0	0.5	2.6	0.0	0.2	0.0	-0.3	-0.1
AFI	0.0	0.4	0.0	0.9	1.4	0.1	0.3	0.0	1.1	1.5	-0.0	0.1	0.0	-0.2	-0.1
Mechanical eng.	0.0	0.0	0.7	0.9	1.6	0.0	0.0	0.7	1.1	1.8	0.0	-0.0	0.0	-0.2	-0.2
Chemicals	0.0	3.3	0.1	0.9	4.4	0.0	3.9	0.2	0.5	4.6	-0.0	-0.5	-0.1	0.4	-0.2
Data processing	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.2	0.5	0.6	0.0	0.0	-0.1	-0.3	-0.5
Other transport	0.0	0.0	0.2	0.0	0.2	0.0	0.0	0.4	0.3	0.7	0.0	0.0	-0.2	-0.2	-0.5
Textiles	0.1	0.6	0.0	0.6	1.3	0.0	0.6	0.0	1.3	1.9	0.1	-0.0	0.0	-0.7	-0.7
Cars & HGVs	0.0	0.0	0.2	2.1	2.4	0.0	0.0	1.5	1.9	3.3	0.0	0.0	-1.3	0.3	-1.0
Wood & Paper	0.0	0.3	0.0	0.1	0.4	0.0	1.2	0.0	0.1	1.4	-0.0	-1.0	0.0	-0.1	-1.0
Electical/electronic	0.0	0.1	0.6	0.5	1.3	0.0	0.1	0.5	1.8	2.5	0.0	0.0	0.1	-1.3	-1.2
Agriculture	0.2	0.0	0.0	0.1	0.3	0.9	0.0	0.0	0.7	1.5	-0.6	0.0	0.0	-0.6	-1.2
Mining & Quarrying	0.1	2.6	0.0	0.0	2.7	2.1	2.0	0.0	0.3	4.4	-2.0	0.6	0.0	-0.3	-1.7

Source: Eurostat, authors' calculation

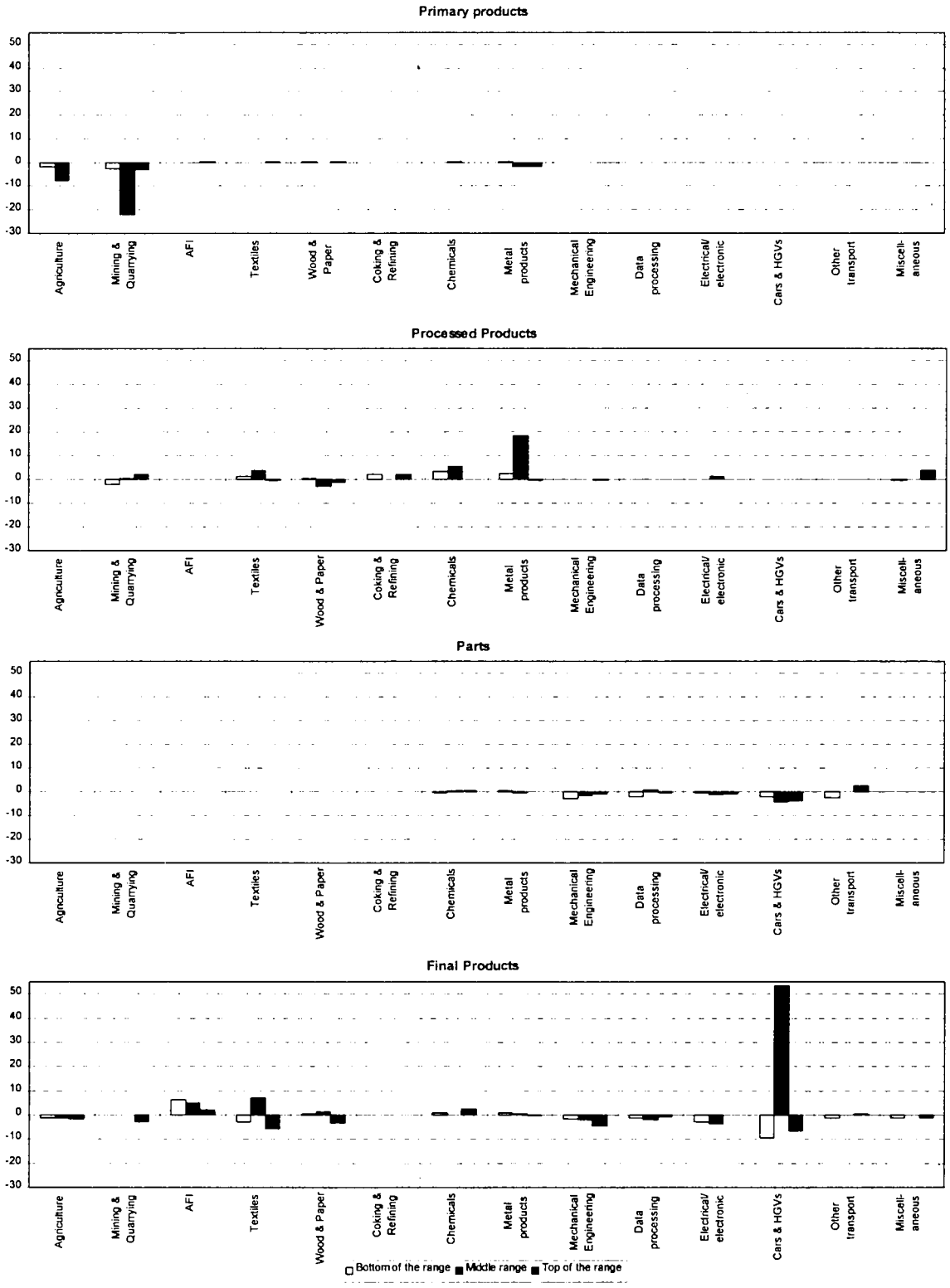
BLEU, comparative advantages in 1992

(in 1/1000 of GDP))

	Intra-EC					Extra-EC					World				
	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total
Total	**-26.0**	**33.4**	**-13.1**	**36.5**	**30.9**	**-14.7**	**6.0**	**-6.2**	**-16.0**	**-30.9**	**-40.7**	**39.4**	**-19.2**	**20.5**	**0.0**
Cars & HGVs	0.0	0.0	-3.9	37.6	33.7	0.0	0.0	-6.0	-0.1	-6.1	0.0	0.0	-9.9	37.5	27.6
Metal products	-2.5	20.0	-0.7	0.3	17.1	-1.0	0.5	0.3	0.0	-0.2	-3.5	20.4	-0.4	0.4	16.9
AFI	-0.0	-0.7	0.0	11.3	10.5	-0.2	0.8	0.0	1.6	2.2	-0.3	0.1	0.0	12.9	12.7
Chemicals	0.0	10.9	0.6	0.6	12.2	-0.0	-1.9	-0.2	2.5	0.4	0.0	9.1	0.4	3.1	12.6
Coking & Refining	0.0	-0.1	0.0	-0.1	-0.2	0.0	4.1	0.0	0.0	4.1	0.0	4.1	0.0	-0.1	4.0
Textiles	-0.1	4.5	0.0	1.6	6.1	0.3	0.2	0.0	-3.6	-3.1	0.3	4.7	0.1	-2.1	3.0
Miscellaneous	-0.1	1.0	-0.0	-0.9	0.0	-0.0	2.2	0.0	-1.3	0.8	-0.1	3.2	-0.0	-2.3	0.8
Other transport	0.0	0.0	1.3	0.4	1.7	0.0	0.0	-1.3	-1.2	-2.5	0.0	0.0	-0.1	-0.8	-0.9
Wood & Paper	0.0	0.9	-0.0	-1.5	-0.5	-0.0	-4.9	0.0	-0.3	-5.2	-0.0	-3.9	-0.0	-1.8	-5.7
Data processing	0.0	0.0	-1.3	-2.6	-3.9	0.0	0.0	-0.3	-1.7	-2.1	0.0	0.0	-1.6	-4.4	-6.0
Electical/electronic	0.0	1.3	-3.1	-0.3	-2.1	0.0	0.1	0.7	-6.4	-5.5	0.0	1.4	-2.4	-6.7	-7.6
Agriculture	-6.3	0.0	0.0	-0.8	-7.1	-3.3	0.0	0.0	-3.2	-6.5	-9.6	0.0	0.0	-4.0	-13.6
Mechanical eng.	0.0	-0.2	-6.0	-7.4	-13.5	0.0	-0.2	0.6	-0.9	-0.4	0.0	-0.3	-5.3	-8.3	-13.9
Mining & Quarrying	-17.1	-4.4	0.0	-1.6	-23.0	-10.5	5.0	0.0	-1.5	-7.0	-27.6	0.7	0.0	-3.1	-30.0

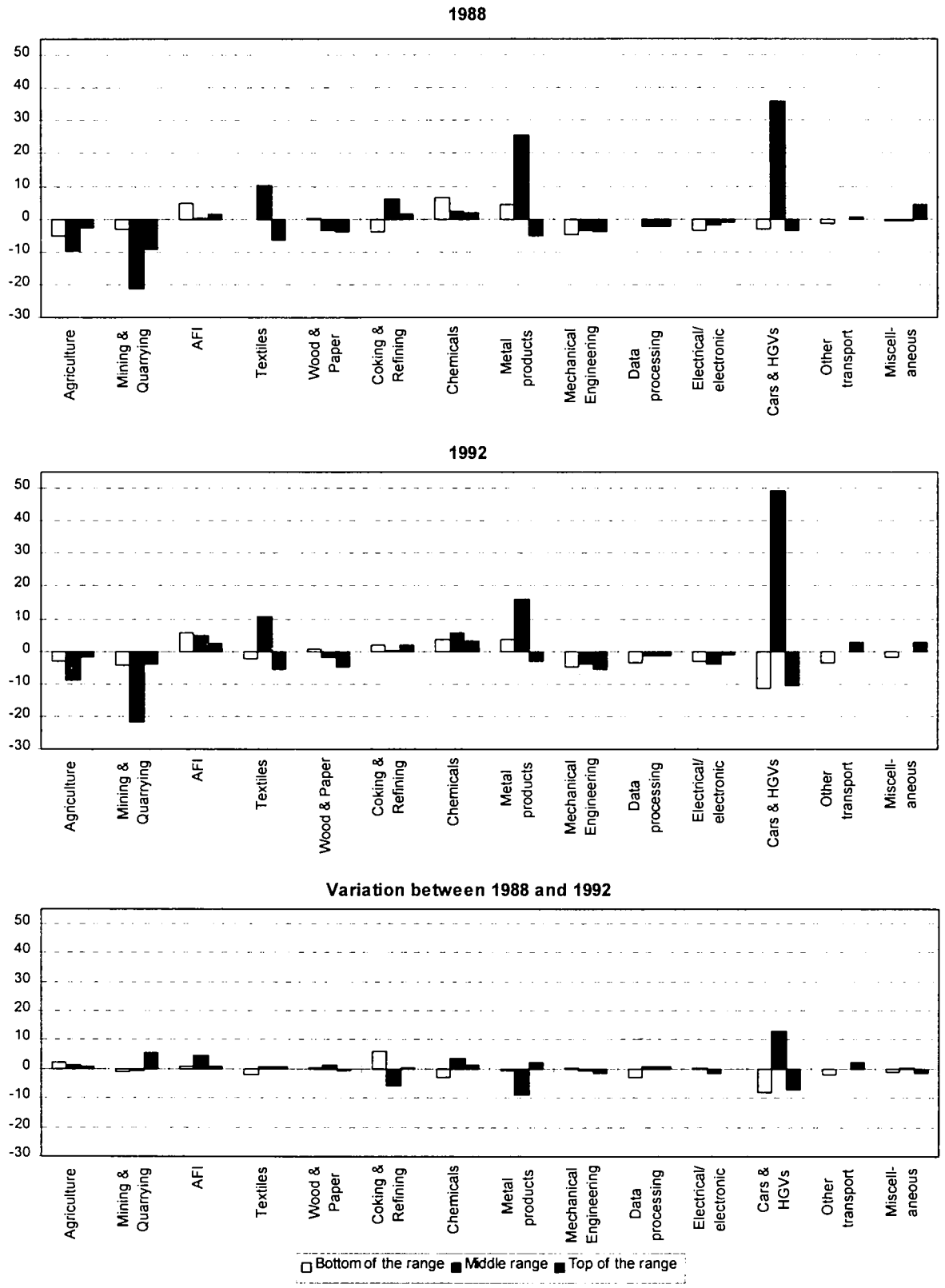
Source: Eurostat and CHELEM-PIB, authors' calculation.

Comparative advantages of the BLEU by stage and range in 1992



Source: Eurostat and CHELEM-PIB, authors' calculation.

Comparative advantages of the BLEU by industry and range, 1988-92



Source: Eurostat and CHELEM-PIB, authors' calculation.

A.5.3 Netherlands

Netherlands, exports, imports and trade balance in 1992

(in billion ECU)

	Exports					Imports					Balance				
	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total
Total	**1.5**	**8.3**	**3.1**	**10.7**	**23.5**	**11.5**	**12.1**	**4.7**	**18.3**	**46.6**	**-10.0**	**-3.8**	**-1.6**	**-7.6**	**-23.1**
AFI	0.2	0.9	0.0	3.0	4.0	0.2	1.3	0.0	1.3	2.9	-0.0	-0.4	0.0	1.6	1.2
Other transport	0.0	0.0	0.3	1.4	1.7	0.0	0.0	0.6	1.0	1.6	0.0	0.0	-0.3	0.4	0.1
Mechanical eng.	0.0	0.0	0.9	1.3	2.3	0.0	0.0	0.8	1.5	2.4	0.0	-0.0	0.1	-0.2	-0.1
Coking & Refining	0.0	1.3	0.0	0.0	1.3	0.0	1.6	0.0	0.0	1.6	0.0	-0.2	0.0	0.0	-0.2
Miscellaneous	0.0	0.1	0.0	0.2	0.3	0.0	0.1	0.0	0.8	1.0	0.0	-0.0	0.0	-0.6	-0.6
Chemicals	0.0	3.6	0.1	0.9	4.6	0.0	4.1	0.2	1.0	5.4	0.0	-0.6	-0.1	-0.1	-0.7
Metal products	0.3	1.2	0.1	0.1	1.7	0.1	2.1	0.1	0.2	2.5	0.2	-0.8	-0.1	-0.1	-0.8
Cars & HGVs	0.0	0.0	0.3	0.6	0.9	0.0	0.0	0.5	1.8	2.3	0.0	0.0	-0.2	-1.2	-1.4
Wood & Paper	0.0	0.5	0.0	0.3	0.8	0.0	2.2	0.0	0.4	2.6	0.0	-1.7	0.0	-0.1	-1.8
Textiles	0.0	0.5	0.0	0.4	1.0	0.0	0.4	0.0	2.7	3.2	0.0	0.1	0.0	-2.4	-2.2
Electical/electronic	0.0	0.2	0.8	1.1	2.0	0.0	0.3	1.1	3.0	4.3	0.0	-0.1	-0.3	-1.9	-2.3
Agriculture	0.8	0.0	0.0	0.9	1.6	2.9	0.0	0.0	1.0	4.0	-2.1	0.0	0.0	-0.2	-2.3
Data processing	0.0	0.0	0.5	0.6	1.1	0.0	0.0	1.2	3.5	4.8	0.0	0.0	-0.8	-2.9	-3.7
Mining & Quarrying	0.1	0.0	0.0	0.0	0.2	8.3	0.0	0.0	0.0	8.3	-8.1	0.0	0.0	0.0	-8.1

Source: Eurostat, authors' calculation

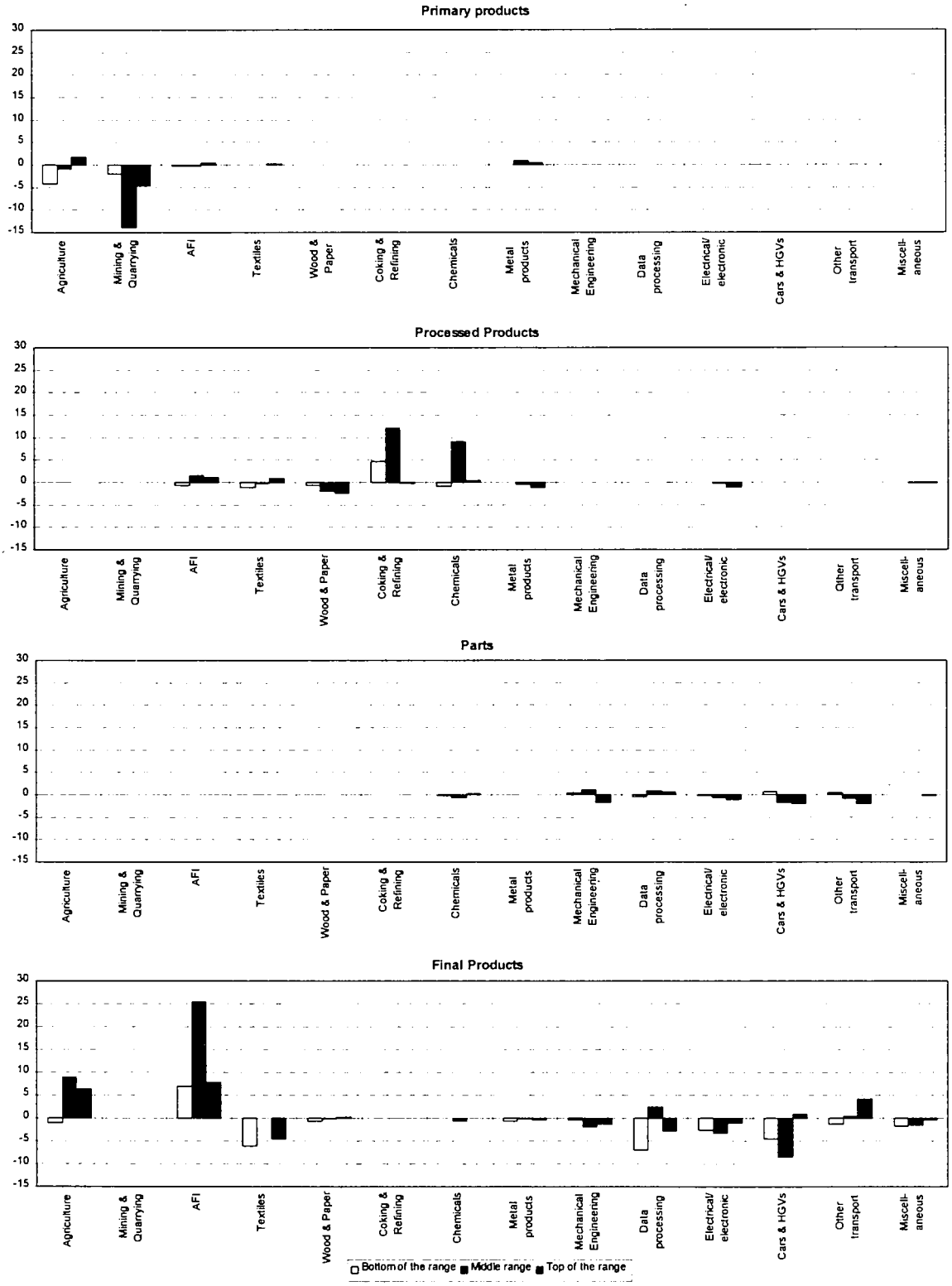
Netherlands, comparative advantages in 1992

(in 1/1000 of GDP))

	Intra-EC					Extra-EC					World				
	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total
Total	**14.7**	**29.0**	**-3.8**	**33.8**	**73.7**	**-36.6**	**-10.4**	**-3.6**	**-23.1**	**-73.7**	**-22.0**	**18.6**	**-7.4**	**10.8**	**0.0**
AFI	0.2	3.5	0.0	32.2	35.9	-0.1	-1.5	0.0	7.9	6.4	0.1	2.0	0.0	40.2	42.3
Coking & Refining	0.0	16.9	0.0	-0.0	16.8	0.0	-0.2	0.0	0.0	-0.2	0.0	16.7	0.0	-0.0	16.6
Agriculture	4.1	0.0	0.0	14.4	18.5	-7.4	-0.0	0.0	-0.3	-7.7	-3.3	0.0	0.0	14.1	10.9
Chemicals	0.1	9.1	-0.3	-0.9	7.9	0.0	-0.4	-0.2	0.3	-0.4	0.1	8.7	-0.6	-0.6	7.6
Other transport	0.0	0.0	-1.6	0.4	-1.2	0.0	0.0	-0.9	2.8	1.9	0.0	0.0	-2.5	3.2	0.7
Metal products	0.4	1.0	0.1	-1.1	0.4	1.0	-2.4	-0.1	-0.2	-1.8	1.4	-1.5	0.0	-1.4	-1.4
Mechanical eng.	0.0	-0.1	-1.1	-3.8	-5.1	0.0	-0.0	0.7	0.2	0.9	0.0	-0.1	-0.4	-3.6	-4.2
Miscellaneous	0.0	-0.3	-0.1	-1.3	-1.7	0.0	-0.1	0.0	-2.3	-2.4	0.0	-0.4	-0.1	-3.7	-4.2
Wood & Paper	-0.1	1.2	0.0	-0.1	1.1	0.0	-6.3	0.0	-0.5	-6.8	-0.0	-5.1	0.0	-0.5	-5.6
Data processing	0.0	0.0	2.6	2.8	5.4	0.0	0.0	-1.6	-10.1	-11.7	0.0	0.0	1.1	-7.3	-6.2
Electical/electronic	0.0	-1.1	-1.2	0.2	-2.1	0.0	-0.2	-0.7	-6.9	-7.8	0.0	-1.3	-1.9	-6.7	-9.9
Textiles	0.0	-1.0	-0.0	-1.9	-2.9	0.1	0.7	-0.0	-8.8	-8.0	0.2	-0.3	-0.1	-10.7	-10.9
Cars & HGVs	0.0	0.0	-2.3	-7.0	-9.2	0.0	0.0	-0.8	-5.2	-6.0	0.0	0.0	-3.1	-12.2	-15.3
Mining & Quarrying	9.9	0.0	0.0	0.0	9.9	-30.2	0.0	0.0	0.0	-30.2	-20.3	0.0	0.0	0.0	-20.3

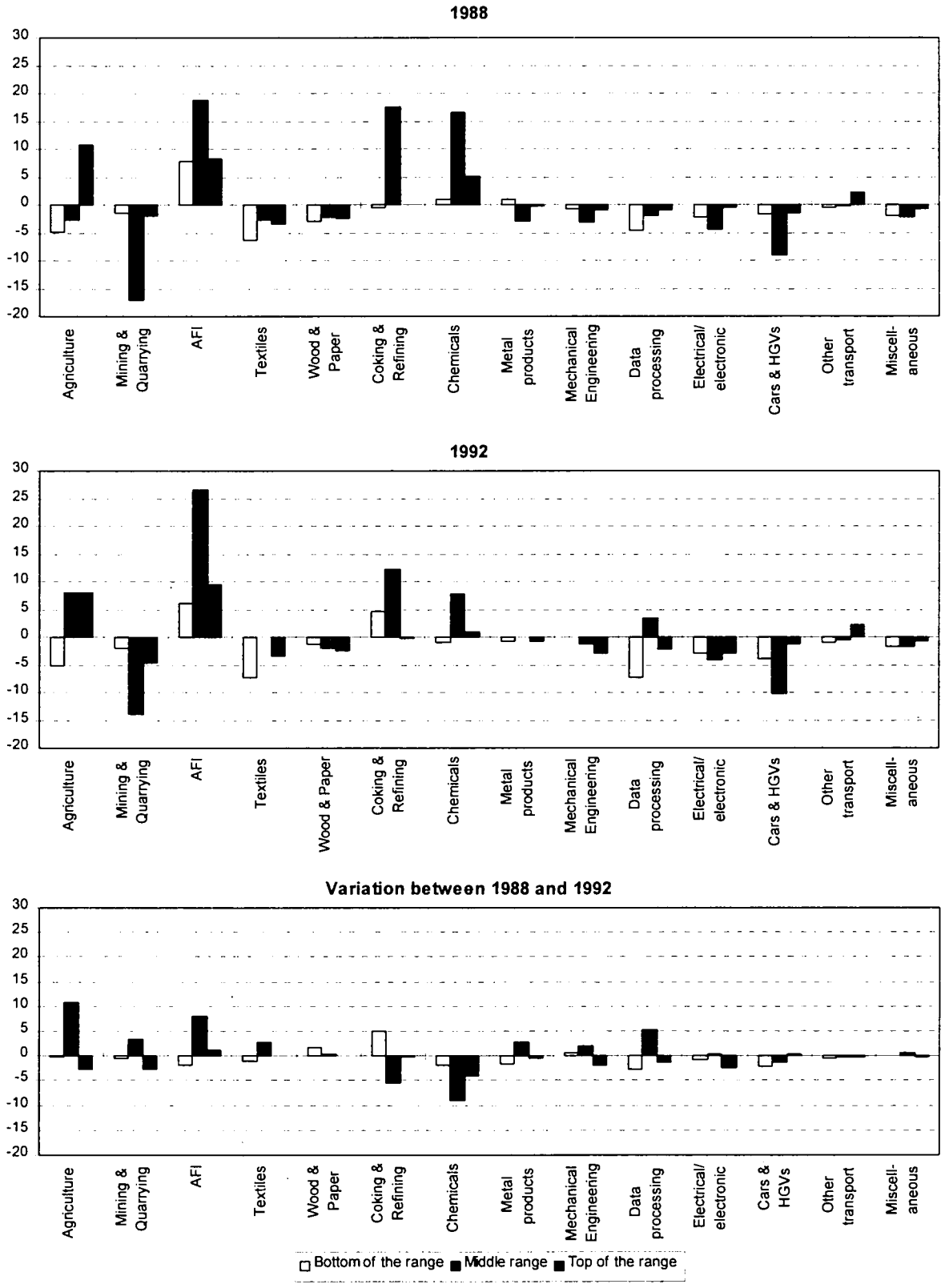
Source: Eurostat and CHELEM-PIB, authors' calculation.

Comparative advantages of the Netherlands by stage and range in 1992



Source: Eurostat and CHELEM-PIB, authors' calculation.

Comparative advantages of the Netherlands by industry and range, 1988-92



Source: Eurostat and CHELEM-PIB, authors' calculation.

A.5.4 Germany

Germany, exports, imports and trade balance in 1992

(in billion ECU)

	Exports					Imports					Balance				
	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total
Total	**2.7**	**46.6**	**26.0**	**70.3**	**145.6**	**20.8**	**35.8**	**18.1**	**62.9**	**137.7**	**-18.1**	**10.8**	**7.9**	**7.3**	**7.9**
Mechanical eng.	0.0	0.4	9.6	21.4	31.4	0.0	0.2	3.8	7.5	11.5	0.0	0.2	5.8	13.9	19.9
Chemicals	0.0	23.2	0.6	5.1	28.9	0.0	9.8	0.6	2.7	13.1	0.0	13.4	0.0	2.4	15.8
Cars & HGVs	0.0	0.0	5.3	15.8	21.1	0.0	0.0	3.4	6.6	10.0	0.0	0.0	1.9	9.2	11.1
Other transport	0.0	0.0	1.2	2.9	4.1	0.0	0.0	1.1	2.6	3.6	0.0	0.0	0.1	0.4	0.5
Electical/electronic	0.0	1.8	7.3	10.2	19.2	0.0	1.8	6.1	10.9	18.8	0.0	-0.1	1.2	-0.7	0.4
Metal products	0.3	10.1	0.9	1.1	12.4	0.9	9.8	0.5	1.1	12.3	-0.6	0.3	0.3	0.1	0.1
Coking & Refining	0.2	1.6	0.0	0.1	2.0	0.0	2.2	0.0	0.1	2.3	0.2	-0.6	0.0	0.1	-0.3
AFI	0.3	1.2	0.0	3.4	4.9	0.6	1.3	0.0	3.5	5.4	-0.3	-0.1	0.0	-0.2	-0.5
Miscellaneous	0.0	0.7	0.1	2.8	3.6	0.0	0.8	0.1	4.1	5.0	0.0	-0.1	0.1	-1.4	-1.4
Wood & Paper	0.1	3.0	0.0	1.9	5.1	0.1	7.5	0.0	1.1	8.7	0.1	-4.5	0.0	0.8	-3.6
Agriculture	1.3	0.0	0.0	0.2	1.5	3.8	0.0	0.0	2.1	5.9	-2.5	-0.0	0.0	-1.9	-4.4
Data processing	0.0	0.0	0.8	1.8	2.6	0.0	0.0	2.5	5.4	7.9	0.0	0.0	-1.7	-3.6	-5.3
Textiles	0.1	4.5	0.2	3.7	8.5	0.1	2.3	0.1	15.4	17.9	0.0	2.2	0.1	-11.7	-9.4
Mining & Quarrying	0.4	0.0	0.0	0.0	0.4	15.4	0.0	0.0	0.0	15.5	-15.0	0.0	0.0	0.0	-15.0

Source: Eurostat, authors' calculation

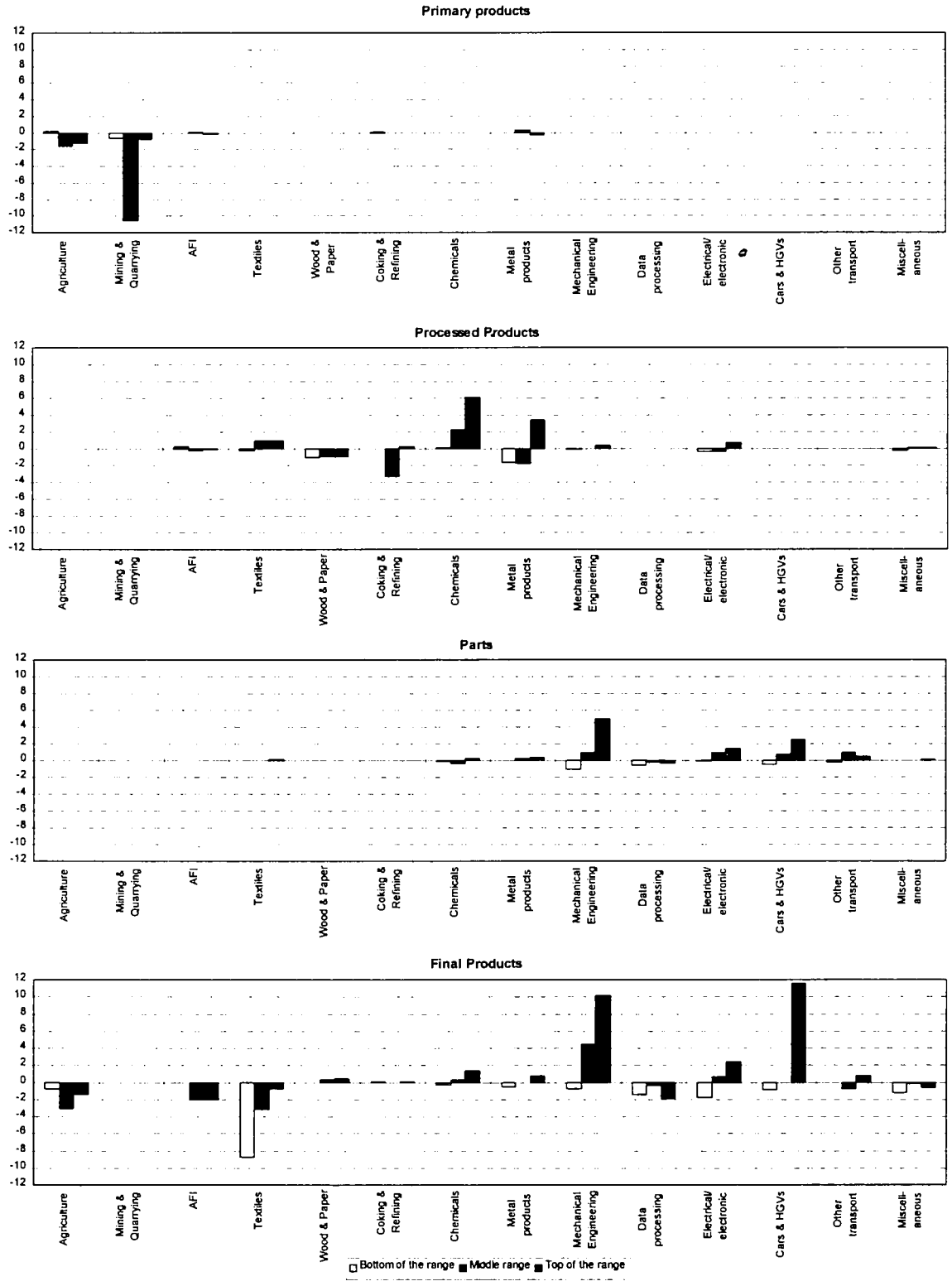
Germany, comparative advantages in 1992

(in 1/1000 of GDP))

	Intra-EC					Extra-EC					World				
	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total
Total	**-1.9**	**-0.8**	**5.6**	**-2.7**	**0.1**	**-12.8**	**4.9**	**4.7**	**3.1**	**-0.1**	**-14.7**	**4.1**	**10.3**	**0.4**	**0.0**
Mechanical eng.	0.0	0.1	1.3	5.0	6.3	0.0	0.1	3.6	9.0	12.8	0.0	0.2	4.9	14.0	19.1
Cars & HGVs	0.0	0.0	1.6	4.9	6.5	0.0	0.0	1.0	5.8	6.8	0.0	0.0	2.6	10.7	13.3
Chemicals	0.0	0.7	-0.3	-0.2	0.2	0.0	7.7	-0.0	1.5	9.2	0.0	8.4	-0.3	1.3	9.4
Electical/electronic	0.0	0.1	1.8	1.9	3.7	0.0	-0.1	0.5	-0.7	-0.3	0.0	-0.1	2.3	1.1	3.4
Other transport	0.0	0.0	1.0	-0.3	0.7	0.0	0.0	0.2	0.2	0.4	0.0	0.0	1.3	-0.1	1.1
Metal products	0.4	0.1	0.4	0.2	1.0	-0.4	-0.2	0.2	0.0	-0.4	-0.0	-0.1	0.5	0.2	0.6
Miscellaneous	-0.0	0.1	0.0	-0.8	-0.8	0.0	-0.1	0.0	-1.1	-1.1	-0.0	0.0	0.1	-1.9	-1.8
Wood & Paper	0.0	0.6	0.0	0.2	0.8	0.0	-3.4	0.0	0.4	-2.9	0.1	-2.8	0.0	0.7	-2.1
Coking & Refining	0.0	-2.6	0.0	0.1	-2.4	0.1	-0.6	0.0	0.1	-0.3	0.1	-3.1	0.0	0.2	-2.8
AFI	0.0	0.1	0.0	-4.0	-3.9	-0.2	-0.2	0.0	-0.2	-0.5	-0.2	-0.0	0.0	-4.2	-4.4
Data processing	0.0	0.0	-0.2	-1.1	-1.3	0.0	0.0	-0.9	-2.6	-3.6	0.0	0.0	-1.2	-3.7	-4.9
Agriculture	-0.8	0.0	0.0	-3.9	-4.7	-1.9	-0.0	0.0	-1.3	-3.2	-2.6	-0.0	0.0	-5.3	-7.9
Textiles	0.1	0.1	0.0	-4.6	-4.5	0.0	1.5	0.1	-8.1	-6.5	0.1	1.6	0.1	-12.7	-11.0
Mining & Quarrying	-1.6	0.0	0.0	0.0	-1.6	-10.5	0.0	0.0	0.0	-10.5	-12.1	0.1	0.0	0.0	-12.1

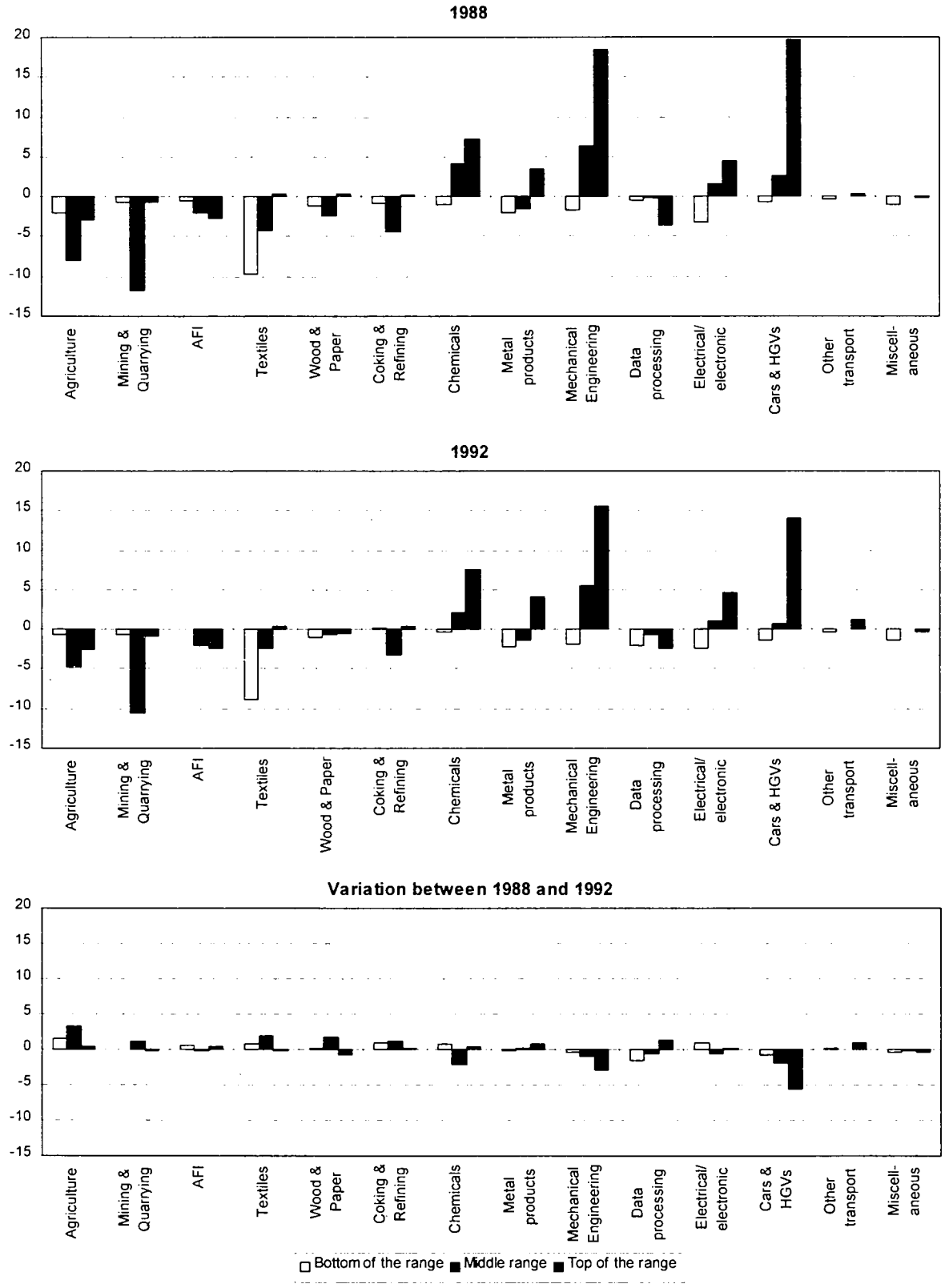
Source: Eurostat and CHELEM-PIB, authors' calculation.

Comparative advantages of Germany by stage and range in 1992



Source: Eurostat and CHELEM-PIB, authors' calculation.

Comparative advantages of Germany by industry and range, 1988-92



Source: Eurostat and CHELEM-PIB, authors' calculation.

A.5.5 Italy

Italy, exports, imports and trade balance in 1992

(in billion ECU)

	Exports					Imports					Balance				
	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total
Total	**0.5**	**17.6**	**9.2**	**29.9**	**57.2**	**12.9**	**20.0**	**4.6**	**17.9**	**55.4**	**-12.4**	**-2.5**	**4.5**	**12.0**	**1.7**
Mechanical eng.	0.0	0.2	4.1	9.3	13.5	0.0	0.0	1.0	2.2	3.3	0.0	0.1	3.0	7.1	10.2
Textiles	0.1	3.2	0.0	6.6	9.9	0.2	2.0	0.0	3.2	5.4	-0.1	1.2	0.0	3.4	4.5
Miscellaneous	0.0	0.2	0.1	4.1	4.4	0.0	0.2	0.0	1.1	1.4	-0.0	-0.1	0.1	3.0	3.0
Chemicals	0.0	6.5	0.3	1.3	8.1	0.0	4.6	0.2	1.2	6.1	-0.0	1.9	0.1	0.1	2.0
Cars & HGVs	0.0	0.0	1.5	1.5	3.0	0.0	0.0	0.3	1.0	1.3	0.0	0.0	1.2	0.5	1.7
AFI	0.1	0.7	0.0	2.3	3.1	0.4	0.6	0.0	1.8	2.8	-0.3	0.0	0.0	0.6	0.3
Other transport	0.0	0.0	0.7	1.2	1.8	0.0	0.0	0.5	1.6	2.1	0.0	0.0	0.2	-0.5	-0.3
Data processing	0.0	0.0	0.3	0.5	0.8	0.0	0.0	0.5	1.1	1.6	0.0	0.0	-0.1	-0.7	-0.8
Coking & Refining	0.0	1.7	0.0	0.0	1.7	0.0	2.5	0.0	0.0	2.5	0.0	-0.9	0.0	0.0	-0.9
Electical/electronic	0.0	0.6	2.0	1.9	4.6	0.0	0.2	2.0	3.4	5.6	0.0	0.4	0.1	-1.5	-1.1
Metal products	0.0	3.8	0.2	0.5	4.6	0.3	6.1	0.2	0.2	6.8	-0.3	-2.3	0.1	0.3	-2.2
Wood & Paper	0.0	0.8	0.0	0.3	1.1	0.1	3.5	0.0	0.2	3.8	-0.0	-2.8	0.0	0.1	-2.7
Agriculture	0.2	0.0	0.0	0.5	0.7	2.5	0.0	0.0	0.9	3.4	-2.3	0.0	0.0	-0.4	-2.7
Mining & Quarrying	0.2	0.0	0.0	0.0	0.2	9.4	0.0	0.0	0.0	9.4	-9.2	-0.0	0.0	0.0	-9.2

Source: Eurostat, authors' calculation

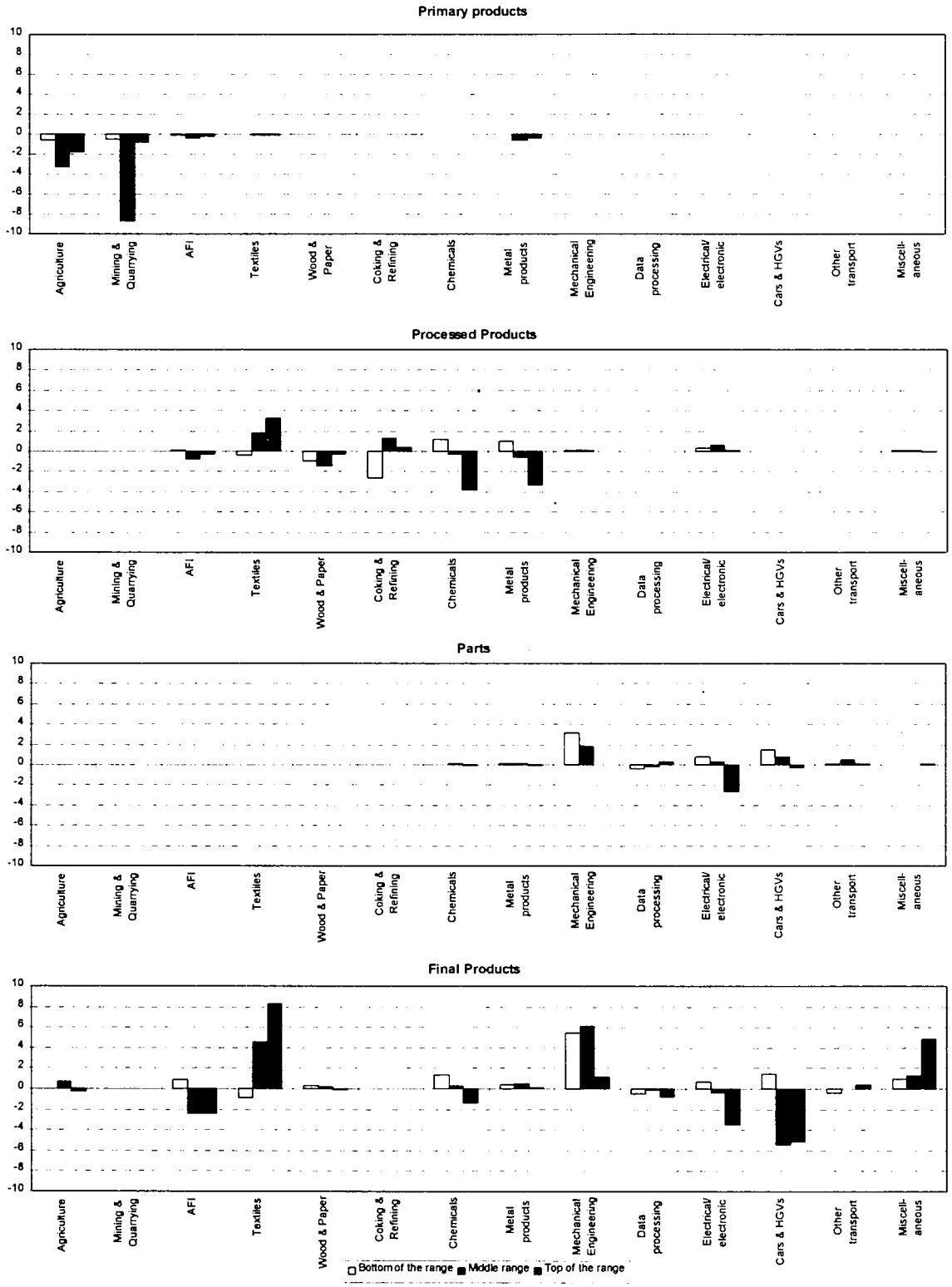
Italy, comparative advantages in 1992

(in 1/1000 of GDP))

	Intra-EC					Extra-EC					World				
	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total
Total	**-4.9**	**-1.5**	**0.9**	**3.1**	**-2.3**	**-12.9**	**-3.2**	**5.1**	**13.4**	**2.3**	**-17.8**	**-4.6**	**6.0**	**16.4**	**0.0**
Mechanical eng.	0.0	0.0	1.5	5.1	6.6	0.0	0.1	3.3	7.6	11.1	0.0	0.1	4.9	12.7	17.7
Textiles	-0.1	3.2	0.0	8.4	11.5	-0.2	1.3	0.0	3.6	4.8	-0.3	4.6	0.0	12.0	16.3
Miscellaneous	-0.0	0.1	0.0	3.9	4.1	-0.0	-0.1	0.1	3.3	3.3	-0.1	0.0	0.1	7.3	7.4
Other transport	0.0	0.0	0.5	0.3	0.8	0.0	0.0	0.3	-0.3	-0.0	0.0	0.0	0.8	0.0	0.8
Coking & Refining	0.0	0.1	0.0	0.0	0.1	0.0	-1.0	0.0	0.0	-1.0	0.0	-0.8	0.0	0.0	-0.8
Data processing	0.0	0.0	-0.1	-0.6	-0.7	0.0	0.0	-0.1	-0.8	-0.9	0.0	0.0	-0.3	-1.3	-1.6
Wood & Paper	-0.1	0.2	0.0	0.3	0.5	-0.0	-2.9	0.0	0.1	-2.9	-0.1	-2.7	0.0	0.4	-2.4
Chemicals	-0.0	-4.6	-0.1	0.2	-4.6	-0.0	1.7	0.1	0.1	1.9	-0.0	-2.9	-0.0	0.3	-2.7
Metal products	-0.7	-0.1	0.0	0.5	-0.2	-0.3	-2.8	0.1	0.4	-2.7	-1.0	-2.9	0.1	0.9	-2.9
Electical/electronic	0.0	0.6	-1.6	-1.7	-2.7	0.0	0.4	0.1	-1.6	-1.1	0.0	1.0	-1.5	-3.3	-3.8
Agriculture	-3.2	0.0	0.0	0.8	-2.4	-2.5	0.0	0.0	-0.4	-2.9	-5.7	0.0	0.0	0.4	-5.3
AFI	-0.4	-1.0	0.0	-4.5	-6.0	-0.3	0.1	0.0	0.6	0.4	-0.7	-1.0	0.0	-3.9	-5.6
Cars & HGVs	0.0	0.0	0.7	-9.6	-8.9	0.0	0.0	1.3	0.6	1.9	0.0	0.0	2.0	-9.0	-7.0
Mining & Quarrying	-0.4	-0.0	0.0	0.0	-0.4	-9.6	-0.0	0.0	0.0	-9.6	-10.0	-0.1	0.0	0.0	-10.1

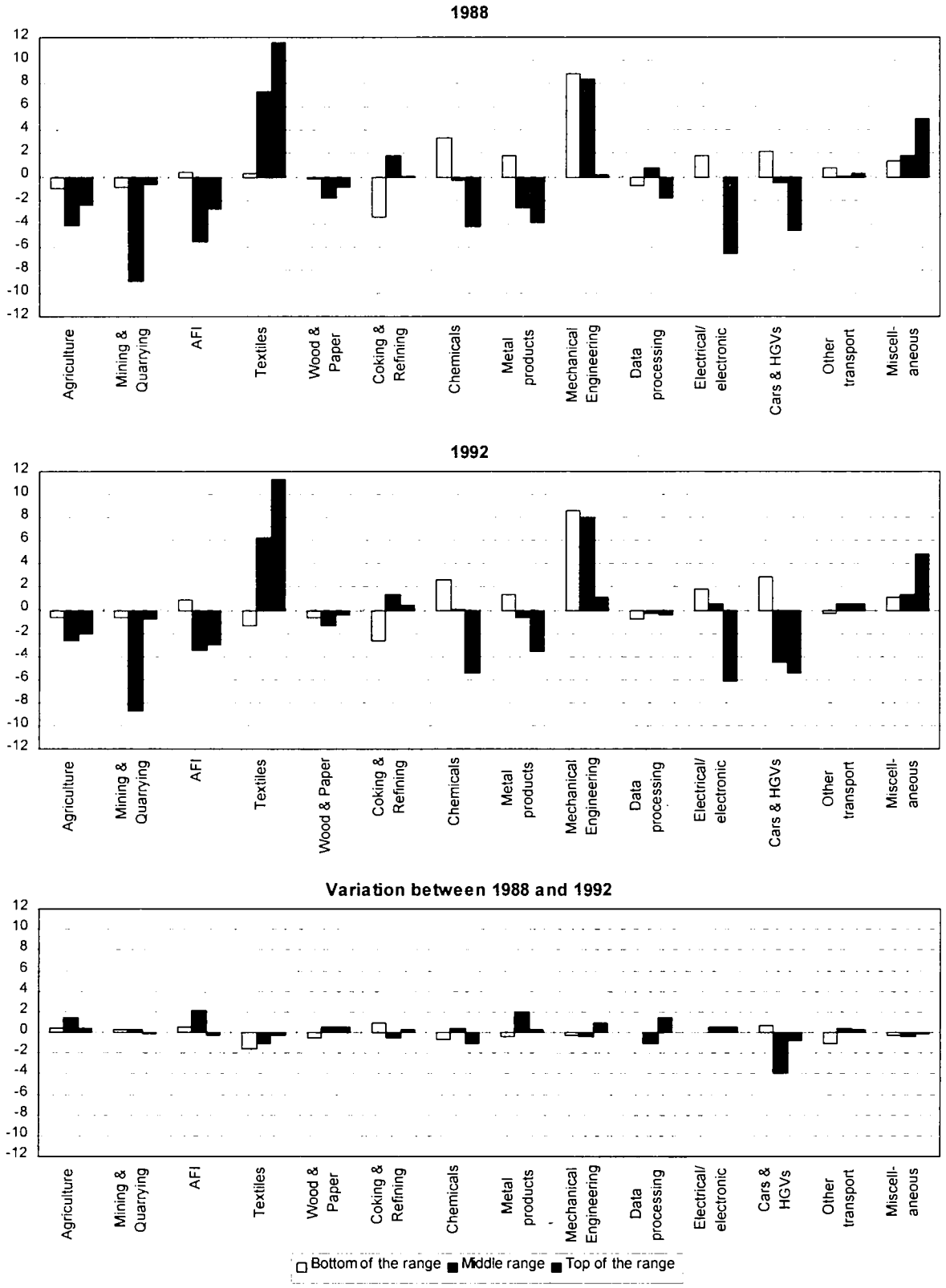
Source: Eurostat and CHELEM-PIB, authors' calculation.

Comparative advantages of Italy by stage and range in 1992



Source: Eurostat and CHELEM-PIB, authors' calculation.

Comparative advantages of Italy by industry and range, 1988-92



Source: Eurostat and CHELEM-PIB, authors' calculation.

A.5.6 United Kingdom

United Kingdom, exports, imports and trade balance in 1992

(in billion ECU)

	Exports					Imports					Balance				
	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total
Total	**3.8**	**18.1**	**16.7**	**26.7**	**65.3**	**9.8**	**24.9**	**13.8**	**35.2**	**83.7**	**-6.0**	**-6.8**	**2.9**	**-8.5**	**-18.4**
Chemicals	0.0	7.2	0.3	3.2	10.7	0.0	5.1	0.3	1.6	7.0	0.0	2.1	-0.0	1.6	3.7
Mechanical eng.	0.0	0.1	3.5	5.1	8.7	0.0	0.1	2.2	3.5	5.7	0.0	0.0	1.4	1.6	3.0
Other transport	0.0	0.0	6.7	1.9	8.6	0.0	0.0	3.3	3.6	6.9	0.0	0.0	3.4	-1.7	1.8
Coking & Refining	0.0	2.6	0.0	0.0	2.6	0.0	1.4	0.0	0.0	1.4	0.0	1.2	0.0	0.0	1.2
AFI	0.1	0.3	0.0	3.9	4.3	0.2	1.3	0.0	2.7	4.2	-0.1	-1.0	0.0	1.3	0.1
Cars & HGVs	0.0	0.0	1.6	1.5	3.1	0.0	0.0	1.4	2.3	3.6	0.0	0.0	0.3	-0.8	-0.5
Miscellaneous	0.0	0.2	0.1	1.2	1.5	0.0	0.5	0.0	2.7	3.2	-0.0	-0.3	0.1	-1.4	-1.7
Electical/electronic	0.0	0.6	3.3	5.0	8.9	0.0	0.6	4.4	6.3	11.2	0.0	-0.0	-1.1	-1.3	-2.4
Agriculture	0.3	0.0	0.0	0.1	0.4	1.3	0.0	0.0	1.7	3.0	-1.0	0.0	0.0	-1.6	-2.6
Metal products	0.3	3.7	0.3	0.4	4.7	0.2	7.1	0.2	0.4	8.0	0.1	-3.4	0.0	-0.1	-3.3
Data processing	0.0	0.0	0.9	1.8	2.6	0.0	0.0	2.1	3.9	6.0	0.0	0.0	-1.2	-2.2	-3.4
Textiles	0.1	1.1	0.1	1.4	2.7	0.1	1.5	0.0	5.1	6.8	-0.0	-0.4	0.1	-3.7	-4.1
Wood & Paper	0.0	1.0	0.0	1.2	2.2	0.1	5.3	0.0	1.0	6.3	-0.0	-4.3	0.0	0.2	-4.1
Mining & Quarrying	2.9	1.3	0.0	0.0	4.3	7.9	2.1	0.0	0.6	10.5	-4.9	-0.7	0.0	-0.6	-6.2

Source: Eurostat, authors' calculation

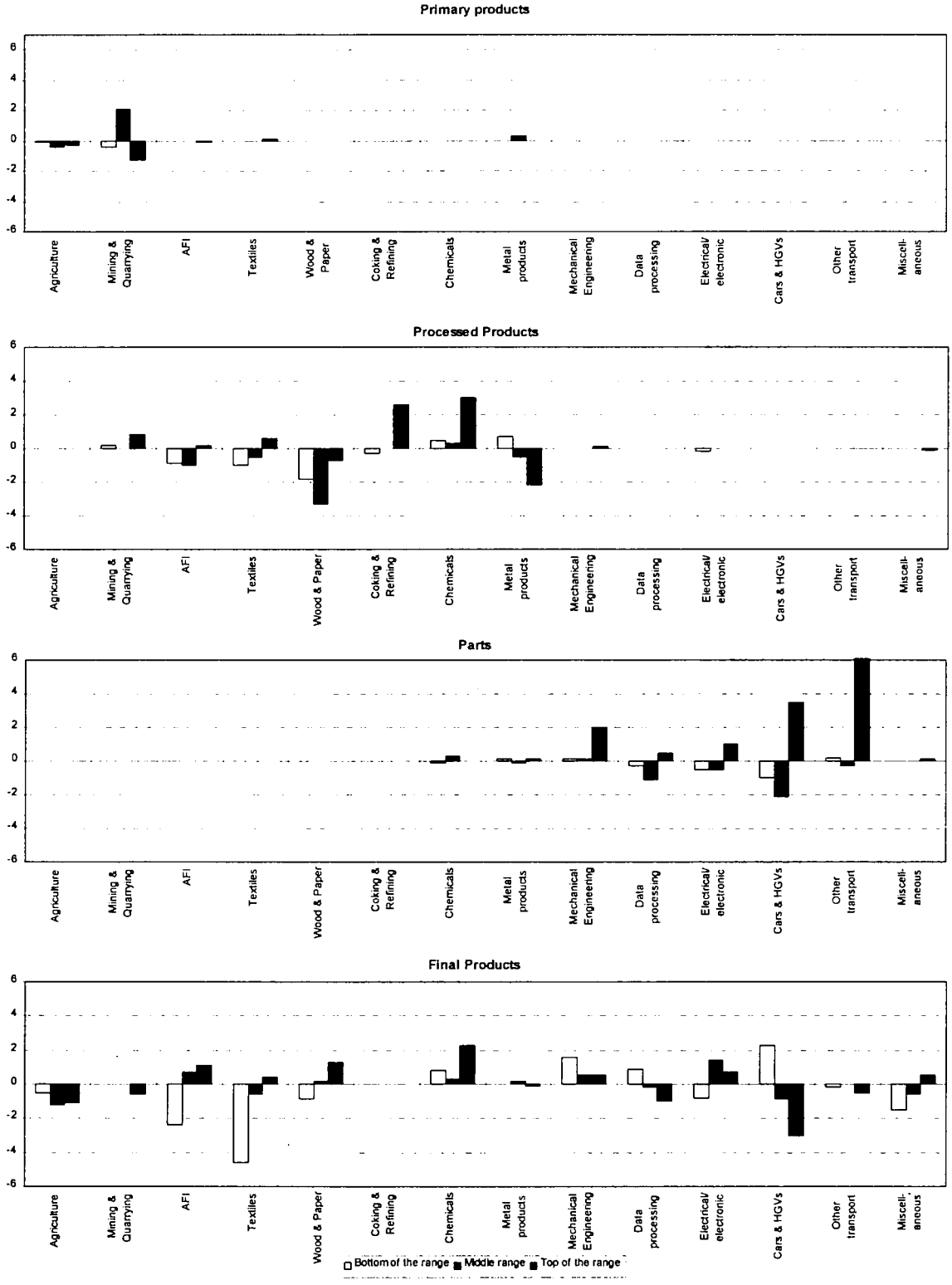
United Kingdom, comparative advantages in 1992

(in 1/1000 of GDP))

	Intra-EC					Extra-EC					World				
	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total
Total	**5.1**	**1.1**	**0.8**	**-1.3**	**5.8**	**-5.3**	**-4.9**	**7.9**	**-3.5**	**-5.8**	**-0.2**	**-3.7**	**8.7**	**-4.8**	**0.0**
Chemicals	0.0	0.4	0.2	1.1	1.7	0.0	3.4	0.0	2.4	5.8	0.0	3.8	0.2	3.5	7.5
Other transport	0.0	0.0	0.7	0.1	0.8	0.0	0.0	5.6	-0.8	4.8	0.0	0.0	6.4	-0.7	5.7
Mechanical eng.	0.0	0.1	-0.2	-0.3	-0.4	0.0	0.0	2.4	2.9	5.3	0.0	0.1	2.2	2.6	4.9
Coking & Refining	0.0	0.7	0.0	0.0	0.7	0.0	1.6	0.0	0.0	1.6	0.0	2.2	0.0	0.0	2.3
Electical/electronic	0.0	-0.3	0.5	1.6	1.9	0.0	0.1	-0.5	-0.3	-0.7	0.0	-0.2	0.1	1.3	1.2
Mining & Quarrying	4.6	1.6	0.0	0.0	6.2	-4.1	-0.6	0.0	-0.6	-5.3	0.5	1.0	0.0	-0.6	0.9
Data processing	0.0	0.0	-0.2	2.0	1.8	0.0	0.0	-0.7	-2.3	-3.0	0.0	0.0	-0.9	-0.3	-1.1
Cars & HGVs	0.0	0.0	-0.4	-1.0	-1.4	0.0	0.0	0.8	-0.6	0.2	0.0	0.0	0.4	-1.6	-1.2
Metal products	0.2	0.9	0.0	0.1	1.2	0.1	-2.9	0.1	0.0	-2.7	0.3	-2.1	0.2	0.1	-1.5
Miscellaneous	0.0	0.1	0.1	-0.3	-0.1	-0.0	-0.2	0.1	-1.4	-1.5	0.0	-0.1	0.2	-1.6	-1.6
AFI	0.0	-0.5	0.0	-3.0	-3.5	-0.2	-1.2	0.0	2.4	1.1	-0.1	-1.7	0.0	-0.6	-2.4
Agriculture	0.3	0.0	0.0	-1.0	-0.7	-1.1	0.0	0.0	-1.8	-2.9	-0.8	0.0	0.0	-2.8	-3.6
Wood & Paper	-0.0	-1.0	0.0	0.2	-0.8	-0.1	-4.9	0.0	0.4	-4.5	-0.1	-5.9	0.0	0.6	-5.3
Textiles	0.1	-0.7	0.0	-0.9	-1.5	0.0	-0.2	0.1	-3.9	-4.0	0.1	-1.0	0.1	-4.8	-5.6

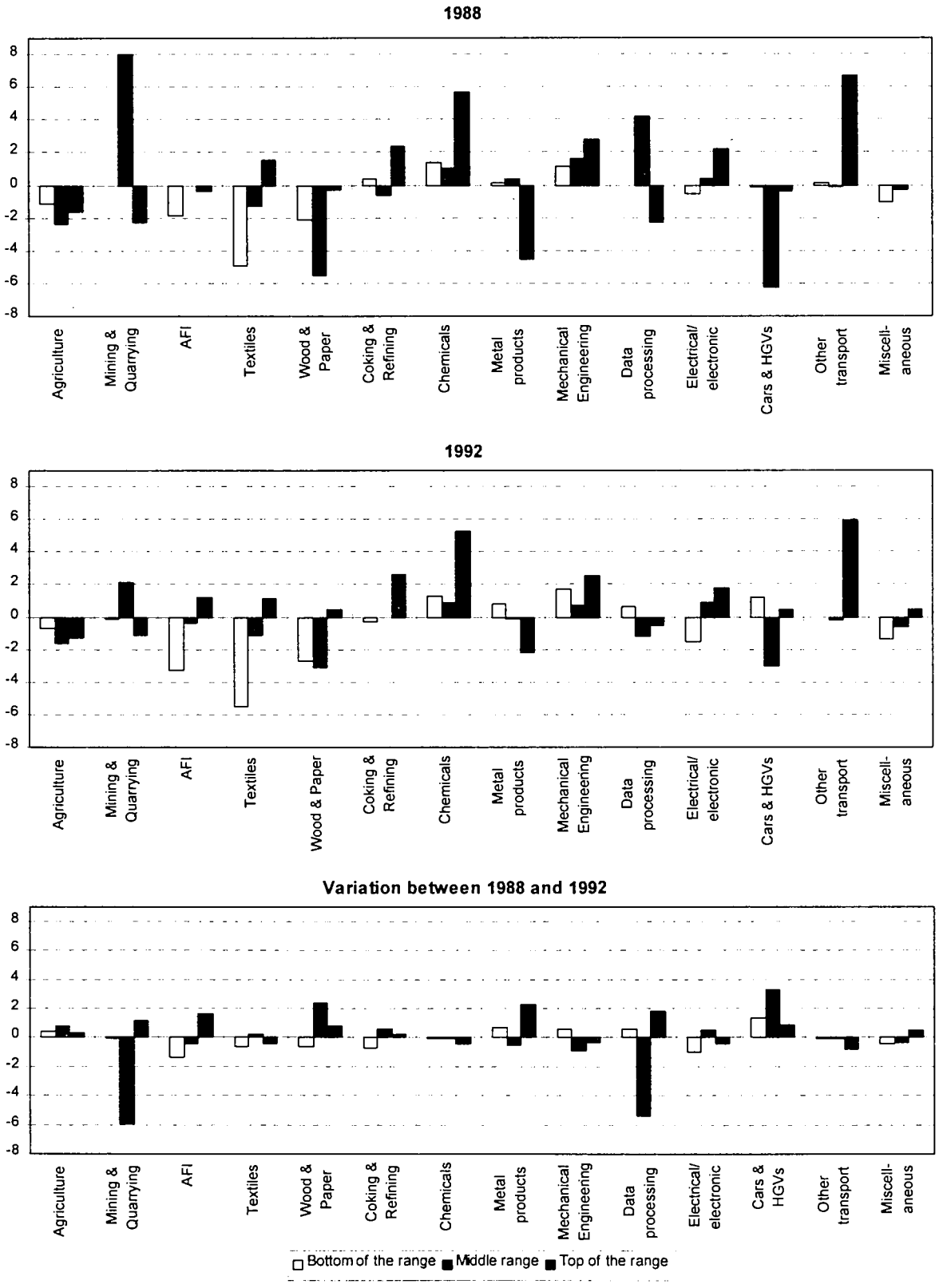
Source: Eurostat and CHELEM-PIB, authors' calculation.

Comparative advantages of the United Kingdom by stage and range in 1992



Source: Eurostat and CHELEM-PIB, authors' calculation.

Comparative advantages of the United Kingdom by industry and range, 1988-92



Source: Eurostat and CHELEM-PIB, authors' calculation.

A.5.7 Ireland

Ireland, exports, imports and trade balance in 1992

(in billion ECU)

	Exports					Imports					Balance				
	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total
Total	**0.2**	**1.6**	**0.9**	**2.7**	**5.5**	**0.5**	**1.4**	**1.3**	**1.6**	**4.8**	**-0.3**	**0.3**	**-0.4**	**1.1**	**0.6**
AFI	0.0	0.3	0.0	1.0	1.2	0.0	0.2	0.0	0.0	0.2	0.0	0.1	0.0	0.9	1.0
Chemicals	0.0	1.1	0.0	0.6	1.7	0.0	0.7	0.0	0.1	0.8	0.0	0.5	0.0	0.4	0.9
Data processing	0.0	0.0	0.4	0.5	0.9	0.0	0.0	0.5	0.3	0.8	0.0	0.0	-0.1	0.2	0.1
Miscellaneous	0.1	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	-0.0	0.1
Metal products	0.0	0.1	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.2	0.0	-0.0	0.0	0.0	0.0
Coking & Refining	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0	0.0	0.0	-0.0
Agriculture	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	-0.0	0.0	0.0	-0.0	-0.1
Electical/electronic	0.0	0.1	0.3	0.3	0.6	0.0	0.1	0.4	0.3	0.8	0.0	0.0	-0.2	0.0	-0.1
Wood & Paper	0.0	0.0	0.0	0.2	0.2	0.0	0.3	0.0	0.1	0.3	0.0	-0.3	0.0	0.1	-0.2
Mechanical eng.	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.2	0.2	0.4	0.0	0.0	-0.1	-0.1	-0.2
Cars & HGVs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	-0.0	-0.2	-0.2
Textiles	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.2	0.3	0.0	-0.0	0.0	-0.1	-0.2
Other transport	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.2	0.3	0.0	0.0	-0.1	-0.2	-0.3
Mining & Quarrying	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.4	-0.4	0.0	0.0	0.0	-0.4

Source: Eurostat, authors' calculation

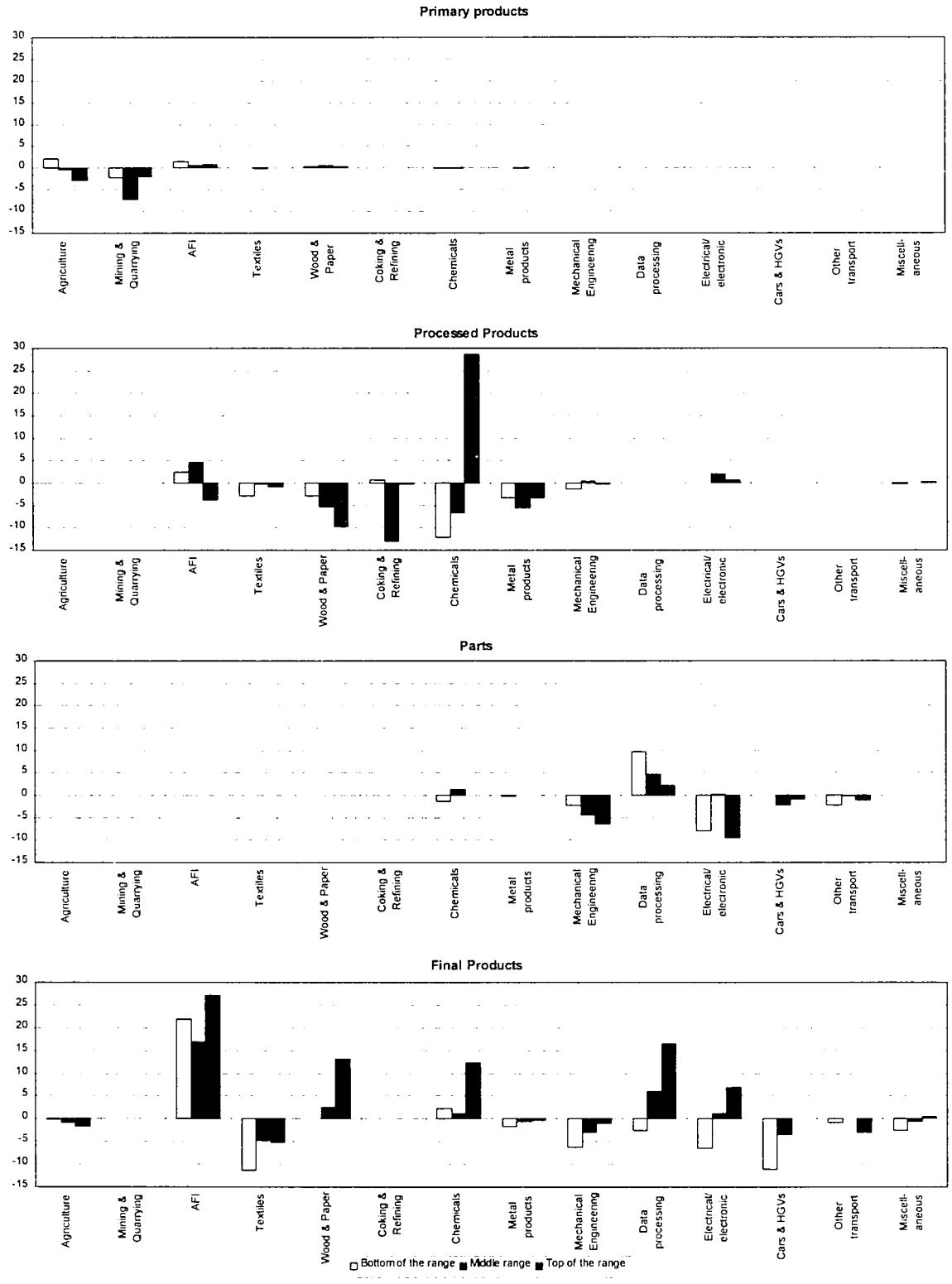
Ireland, comparative advantages in 1992

(in 1/1000 of GDP))

	Intra-EC					Extra-EC					World				
	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total
Total	**5.2**	**-26.0**	**-6.2**	**41.0**	**14.1**	**-14.5**	**-5.7**	**-14.9**	**21.1**	**-14.1**	**-9.3**	**-31.8**	**-21.0**	**62.1**	**0.0**
AFI	2.9	1.8	0.0	45.2	49.9	-0.3	1.6	0.0	20.8	22.1	2.6	3.3	0.0	66.0	72.0
Data processing	0.0	0.0	16.9	17.5	34.3	0.0	0.0	-0.5	2.3	1.8	0.0	0.0	16.3	19.8	36.1
Chemicals	-0.2	5.4	0.0	3.8	9.1	-0.1	4.6	-0.2	11.8	16.1	-0.3	10.0	-0.2	15.6	25.2
Wood & Paper	1.1	-9.4	-0.1	13.2	4.8	-0.1	-8.4	0.0	2.5	-5.9	1.1	-17.8	-0.1	15.8	-1.1
Miscellaneous	-0.0	-0.0	-0.0	-1.8	-1.9	-0.0	0.0	-0.0	-0.7	-0.7	-0.1	-0.0	-0.0	-2.5	-2.6
Agriculture	0.2	0.0	0.0	-1.2	-1.0	-1.4	0.0	0.0	-1.3	-2.7	-1.2	0.0	0.0	-2.5	-3.7
Other transport	0.0	-0.0	-0.9	-0.7	-1.7	0.0	0.0	-2.8	-3.0	-5.8	0.0	-0.0	-3.7	-3.7	-7.4
Mining & Quarrying	1.3	-0.1	0.0	0.0	1.2	-12.6	0.0	0.0	0.0	-12.6	-11.3	-0.1	0.0	0.0	-11.4
Coking & Refining	0.0	-11.7	0.0	0.0	-11.7	0.0	-0.9	0.0	0.0	-0.9	0.0	-12.6	0.0	0.0	-12.6
Electical/electronic	0.0	2.6	-10.4	2.9	-4.9	0.0	-0.0	-6.9	-1.2	-8.1	0.0	2.6	-17.3	1.7	-13.0
Metal products	-0.0	-11.1	0.2	-2.4	-13.4	0.0	-0.9	-0.3	-0.0	-1.2	-0.0	-12.0	-0.1	-2.4	-14.6
Cars & HGVs	0.0	0.0	-2.8	-11.8	-14.5	0.0	0.0	-0.4	-2.6	-3.0	0.0	0.0	-3.2	-14.3	-17.5
Mechanical eng.	0.0	-1.2	-9.1	-7.0	-17.3	0.0	-0.1	-3.8	-3.3	-7.2	0.0	-1.3	-13.0	-10.3	-24.5
Textiles	-0.1	-2.2	0.1	-16.6	-18.8	-0.1	-1.6	0.0	-4.3	-6.0	-0.1	-3.8	0.1	-20.9	-24.8

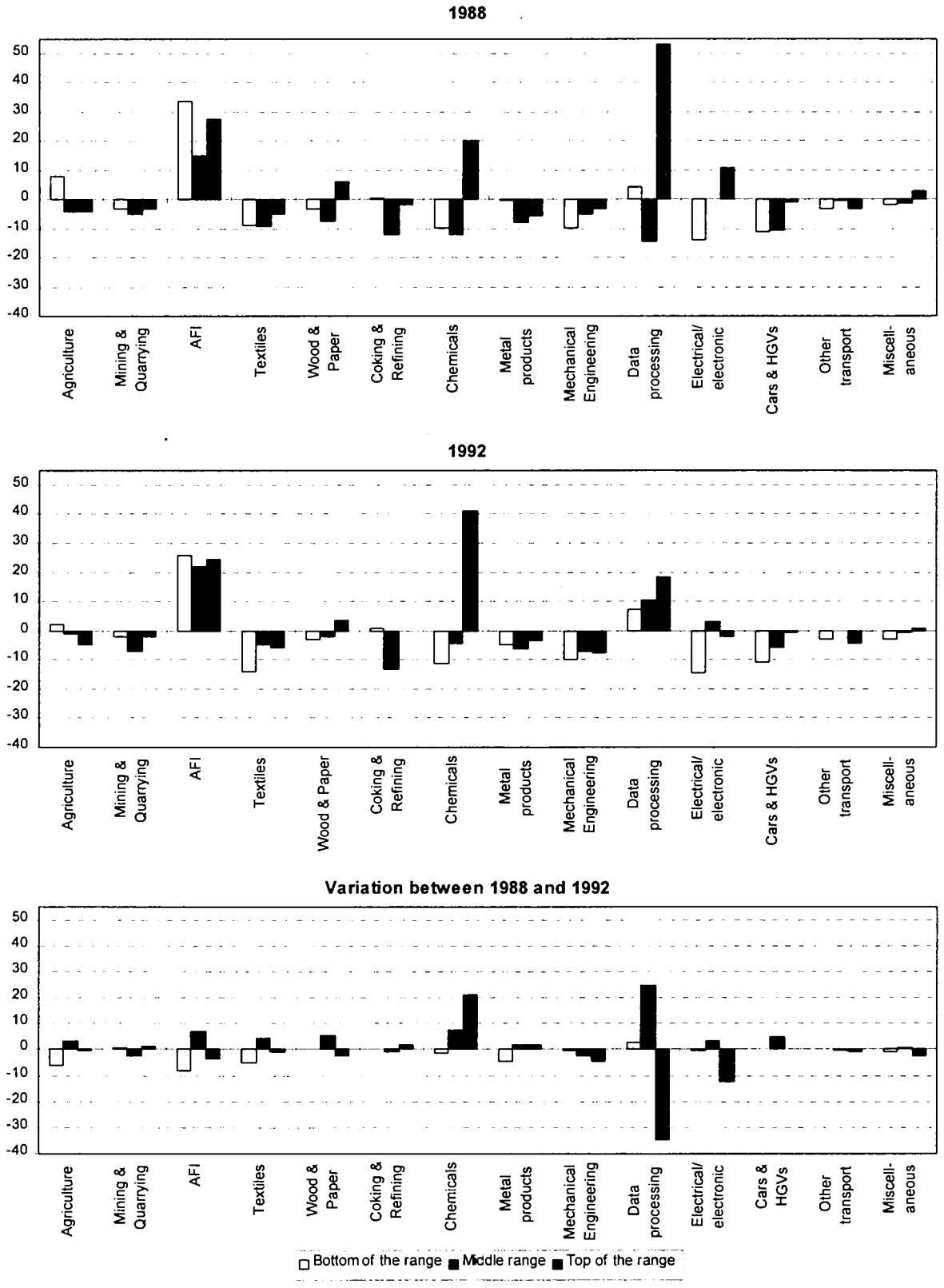
Source: Eurostat and CHELEM-PIB, authors' calculation.

Comparative advantages of Ireland by stage and range in 1992



Source: Eurostat and CHELEM-PIB, authors' calculation.

Comparative advantages of Ireland by industry and range, 1988-92



Source: Eurostat and CHELEM-PIB, authors' calculation.

A.5.8 Denmark

Denmark, exports, imports and trade balance in 1992

(in billion ECU)

	Exports					Imports					Balance				
	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total
Total	**1.0**	**3.1**	**1.4**	**8.4**	**13.9**	**1.2**	**3.9**	**1.0**	**5.2**	**11.3**	**-0.2**	**-0.8**	**0.4**	**3.2**	**2.6**
AFI	0.1	0.3	0.0	2.4	2.8	0.1	0.4	0.0	0.8	1.3	-0.0	-0.1	0.0	1.6	1.5
Chemicals	0.0	1.5	0.0	1.1	2.6	0.0	0.9	0.1	0.3	1.3	0.0	0.6	-0.0	0.8	1.4
Mechanical eng.	0.0	0.0	0.7	1.3	2.0	0.0	0.0	0.3	0.5	0.9	0.0	0.0	0.4	0.8	1.1
Other transport	0.0	0.0	0.1	0.9	0.9	0.0	0.0	0.1	0.5	0.6	0.0	0.0	-0.0	0.4	0.4
Miscellaneous	0.0	0.0	0.0	0.6	0.7	0.0	0.0	0.0	0.3	0.3	0.0	-0.0	0.0	0.3	0.3
Electical/electronic	0.0	0.1	0.3	0.8	1.2	0.0	0.1	0.3	0.6	1.0	0.0	0.0	-0.0	0.2	0.2
Agriculture	0.5	0.0	0.0	0.1	0.6	0.3	0.0	0.0	0.3	0.6	0.3	0.0	0.0	-0.2	0.0
Data processing	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.2	0.2	0.3	0.0	0.0	-0.1	-0.1	-0.1
Coking & Refining	0.0	0.2	0.0	0.0	0.2	0.0	0.3	0.0	0.0	0.3	0.0	-0.2	0.0	0.0	-0.2
Cars & HGVs	0.0	0.0	0.2	0.1	0.3	0.0	0.0	0.1	0.4	0.5	0.0	0.0	0.1	-0.3	-0.2
Textiles	0.0	0.2	0.0	0.7	0.8	0.0	0.2	0.0	1.0	1.2	-0.0	0.0	0.0	-0.3	-0.4
Metal products	0.0	0.5	0.0	0.1	0.6	0.0	0.9	0.0	0.1	1.0	0.0	-0.4	0.0	0.0	-0.4
Mining & Quarrying	0.4	0.0	0.0	0.0	0.4	0.8	0.0	0.0	0.0	0.8	-0.5	0.0	0.0	0.0	-0.5
Wood & Paper	0.0	0.4	0.0	0.2	0.6	0.0	1.1	0.0	0.2	1.3	0.0	-0.7	0.0	0.0	-0.7

Source: Eurostat, authors' calculation

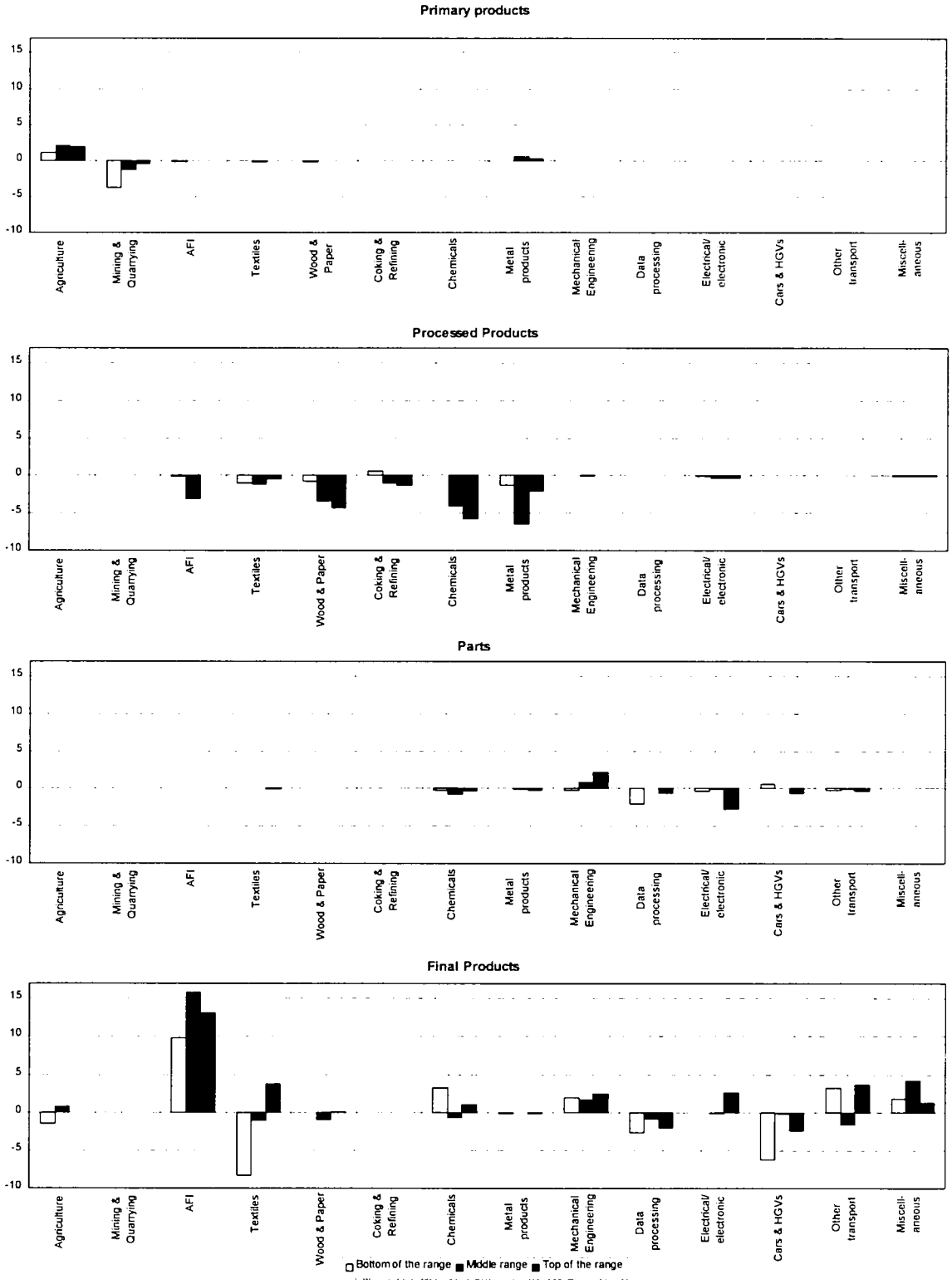
Denmark, comparative advantages in 1992

(in 1/1000 of GDP))

	Intra-EC					Extra-EC					World				
	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total
Total	**3.4**	**-22.6**	**-7.0**	**18.3**	**-7.9**	**-3.3**	**-13.7**	**2.2**	**22.7**	**7.9**	**0.1**	**-36.3**	**-4.8**	**41.0**	**0.0**
AFI	0.4	-1.7	0.0	25.8	24.5	-0.5	-1.4	0.0	13.0	11.1	-0.1	-3.1	0.0	38.8	35.6
Mechanical eng.	0.0	-0.1	0.3	-0.2	-0.0	0.0	0.0	2.6	6.1	8.7	0.0	-0.1	2.9	6.0	8.7
Miscellaneous	0.0	-0.2	-0.0	5.0	4.8	-0.0	-0.0	0.0	2.1	2.1	-0.0	-0.3	0.0	7.2	6.9
Other transport	0.0	0.0	-0.4	1.6	1.2	0.0	0.0	-0.2	3.7	3.5	0.0	0.0	-0.7	5.4	4.7
Agriculture	3.0	0.0	0.0	1.4	4.3	2.1	-0.0	0.0	-2.2	-0.1	5.1	0.0	0.0	-0.8	4.3
Electical/electronic	0.0	-0.8	-2.4	1.1	-2.2	0.0	0.0	-0.6	1.4	0.9	0.0	-0.8	-3.0	2.5	-1.3
Coking & Refining	0.0	0.5	0.0	0.0	0.5	0.0	-2.2	0.0	0.0	-2.2	0.0	-1.6	0.0	0.0	-1.6
Mining & Quarrying	-0.4	0.0	0.0	0.0	-0.4	-5.0	0.0	0.0	0.0	-5.0	-5.4	-0.0	0.0	0.0	-5.4
Chemicals	0.0	-12.0	-0.8	-2.8	-15.6	-0.0	2.4	-0.4	6.4	8.5	-0.0	-9.6	-1.2	3.6	-7.2
Data processing	0.0	0.0	-2.0	-5.2	-7.2	0.0	0.0	-0.6	-0.4	-0.9	0.0	0.0	-2.6	-5.6	-8.2
Textiles	-0.0	-2.5	-0.0	-2.4	-4.9	-0.0	-0.1	-0.0	-3.4	-3.6	-0.1	-2.6	-0.1	-5.8	-8.5
Cars & HGVs	0.0	0.0	-1.1	-4.9	-6.1	0.0	0.0	1.2	-3.8	-2.6	0.0	0.0	0.1	-8.8	-8.7
Wood & Paper	-0.1	-0.6	-0.1	-0.8	-1.5	0.0	-7.9	0.0	-0.1	-8.0	-0.1	-8.5	-0.0	-0.9	-9.4
Metal products	0.5	-5.2	-0.3	-0.4	-5.4	0.1	-4.4	0.1	-0.2	-4.5	0.6	-9.6	-0.2	-0.6	-9.9

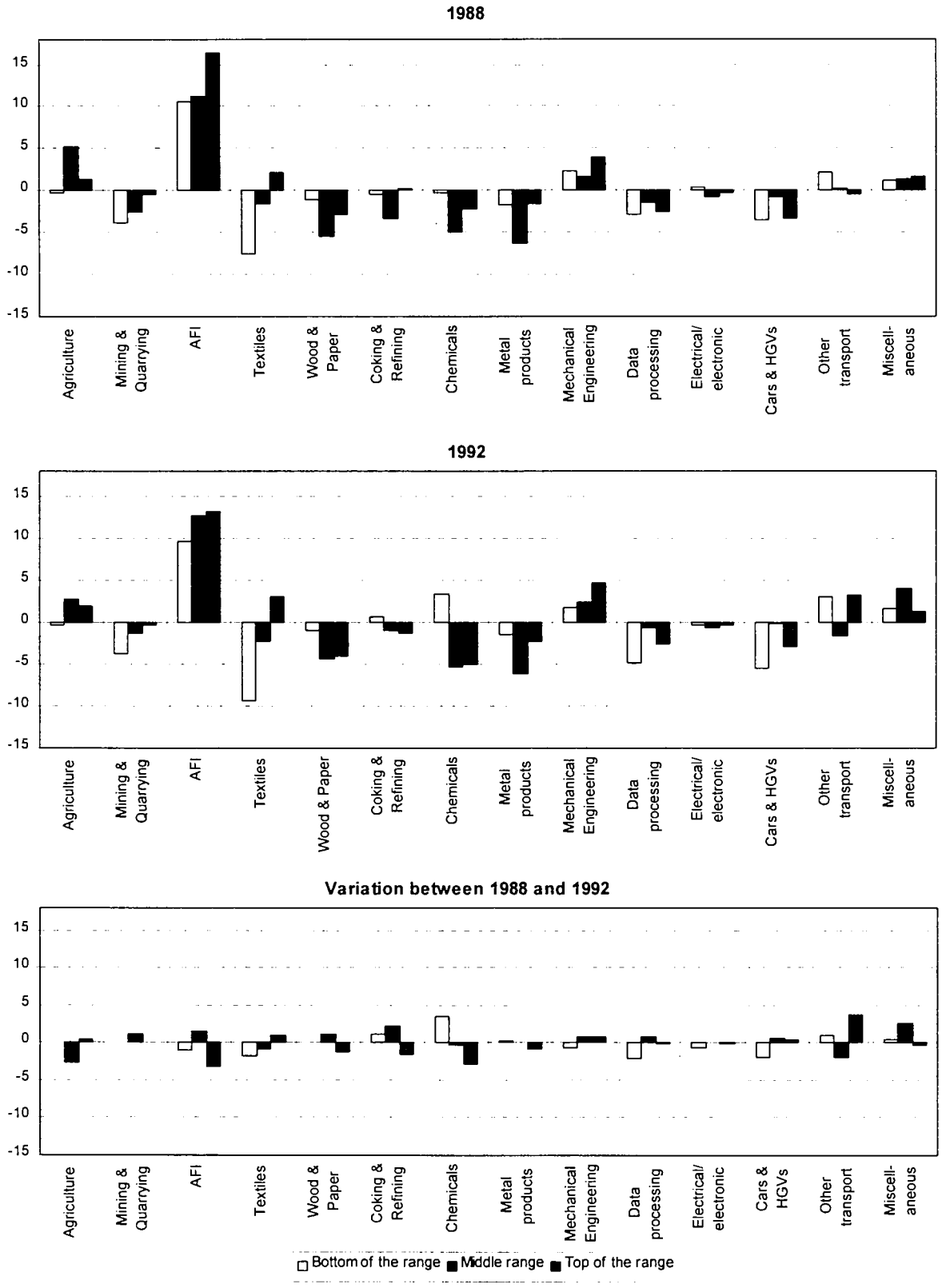
Source: Eurostat and CHELEM-PIB, authors' calculation.

Comparative advantages of Denmark by stage and range in 1992



Source: Eurostat and CHELEM-PIB, authors' calculation.

Comparative advantages of Denmark by industry and range, 1988-92



Source: Eurostat and CHELEM-PIB, authors' calculation.

A.5.9 Greece

Greece, exports, imports and trade balance in 1992

(in billion ECU)

	Exports					Imports					Balance				
	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total
Total	**0.3**	**1.0**	**0.1**	**1.2**	**2.6**	**1.7**	**1.6**	**0.4**	**2.7**	**6.4**	**-1.4**	**-0.6**	**-0.4**	**-1.5**	**-3.8**
AFI	0.0	0.0	0.0	0.4	0.5	0.0	0.0	0.0	0.2	0.3	0.0	-0.0	0.0	0.2	0.2
Textiles	0.0	0.1	0.0	0.4	0.5	0.0	0.2	0.0	0.2	0.4	-0.0	-0.1	0.0	0.2	0.1
Agriculture	0.3	0.0	0.0	0.1	0.4	0.2	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.1
Coking & Refining	0.0	0.3	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Data processing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	-0.1	-0.1	-0.1
Miscellaneous	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	-0.0	0.0	-0.1	-0.1
Metal products	0.0	0.3	0.0	0.0	0.3	0.0	0.4	0.0	0.1	0.4	-0.0	-0.1	-0.0	-0.0	-0.1
Chemicals	0.0	0.3	0.0	0.1	0.4	0.0	0.4	0.0	0.2	0.6	0.0	-0.1	-0.0	-0.1	-0.3
Wood & Paper	0.0	0.1	0.0	0.0	0.1	0.0	0.3	0.0	0.0	0.4	-0.0	-0.3	0.0	-0.0	-0.3
Electical/electronic	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.3	0.4	0.0	0.0	-0.1	-0.3	-0.3
Mechanical eng.	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.4	0.5	0.0	0.0	-0.1	-0.3	-0.4
Other transport	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.5	0.0	0.0	-0.1	-0.4	-0.5
Cars & HGVs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	0.7	0.0	0.0	-0.1	-0.6	-0.7
Mining & Quarrying	0.1	0.0	0.0	0.0	0.1	1.4	0.0	0.0	0.0	1.4	-1.4	0.0	0.0	0.0	-1.4

Source: Eurostat, authors' calculation

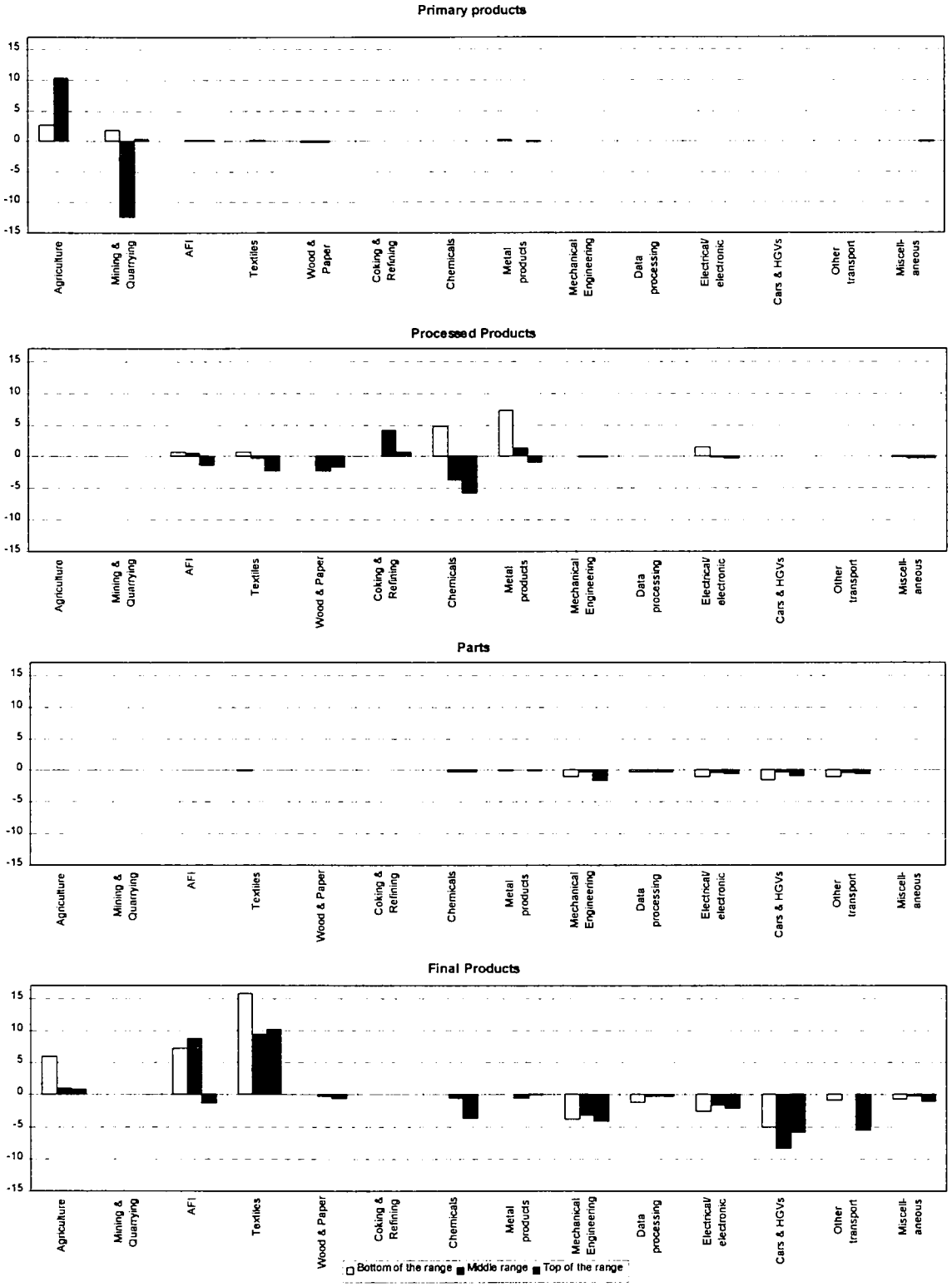
Greece, comparative advantages in 1992

(in 1/1000 of GDP))

	Intra-EC					Extra-EC					World				
	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total
Total	**12.1**	**-5.2**	**-8.3**	**5.4**	**4.0**	**-8.8**	**7.9**	**-2.9**	**-0.2**	**-4.0**	**3.3**	**2.7**	**-11.3**	**5.2**	**0.0**
Textiles	0.3	-1.8	-0.1	28.6	27.1	0.0	0.0	-0.0	6.6	6.6	0.3	-1.8	-0.1	35.3	33.7
Agriculture	9.5	0.0	0.0	5.8	15.3	3.6	-0.0	0.0	2.0	5.5	13.1	-0.0	0.0	7.8	20.8
AFI	0.2	-0.4	0.0	7.2	7.0	0.2	0.5	0.0	7.4	8.1	0.4	0.1	0.0	14.6	15.0
Metal products	0.1	5.4	-0.1	-1.2	4.2	-0.1	2.3	-0.0	0.5	2.7	0.0	7.7	-0.2	-0.7	6.8
Coking & Refining	0.0	0.5	0.0	0.0	0.5	0.0	4.3	0.0	0.0	4.3	0.0	4.8	0.0	0.0	4.8
Data processing	0.0	0.0	-0.3	-1.2	-1.5	0.0	0.0	-0.5	-0.5	-1.0	0.0	0.0	-0.8	-1.7	-2.4
Miscellaneous	-0.1	-0.3	0.0	-1.4	-1.8	0.0	-0.2	0.0	-0.6	-0.8	-0.1	-0.5	0.0	-2.1	-2.6
Wood & Paper	-0.1	-1.6	-0.0	-0.7	-2.4	-0.1	-2.2	0.0	0.0	-2.2	-0.2	-3.7	-0.0	-0.7	-4.6
Electical/electronic	0.0	0.6	-1.5	-3.9	-4.8	0.0	0.5	-0.6	-2.4	-2.5	0.0	1.1	-2.1	-6.3	-7.4
Other transport	0.0	0.0	-1.1	-1.6	-2.7	0.0	0.0	-0.6	-4.9	-5.5	0.0	0.0	-1.7	-6.5	-8.2
Chemicals	-0.0	-7.4	-0.3	-4.0	-11.6	0.0	2.7	-0.2	-0.3	2.2	-0.0	-4.7	-0.5	-4.2	-9.4
Mining & Quarrying	2.2	0.0	0.0	0.0	2.2	-12.4	0.0	0.0	0.0	-12.4	-10.3	0.0	0.0	0.0	-10.3
Mechanical eng.	0.0	-0.2	-2.8	-8.9	-11.9	0.0	-0.0	-0.4	-2.3	-2.7	0.0	-0.2	-3.2	-11.1	-14.5
Cars & HGVs	0.0	0.0	-2.1	-13.3	-15.4	0.0	0.0	-0.7	-5.7	-6.4	0.0	0.0	-2.8	-19.0	-21.8

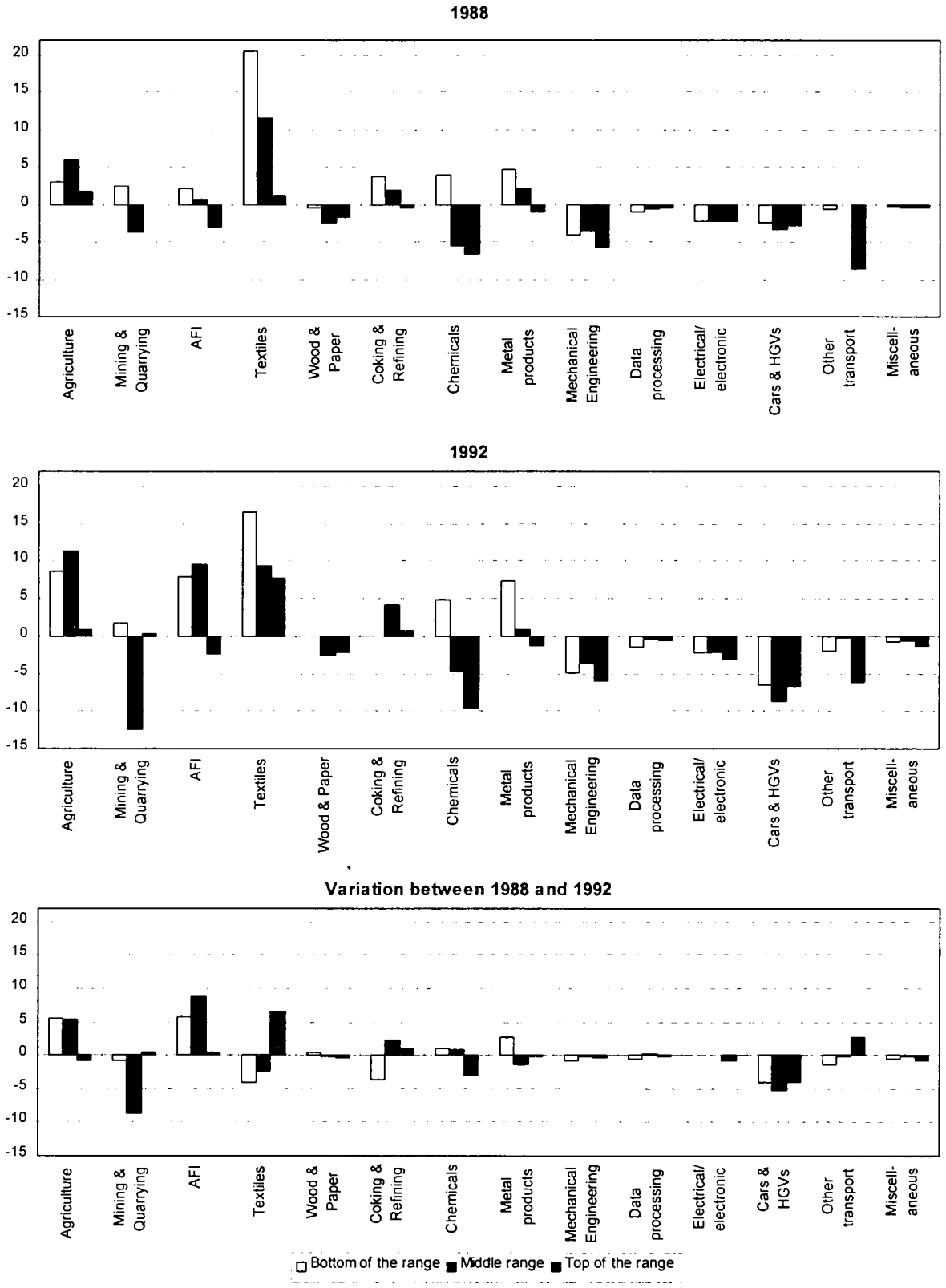
Source: Eurostat and CHELEM-PIB, authors' calculation.

Comparative advantages of Greece by stage and range in 1992



Source: Eurostat and CHELEM-PIB, authors' calculation.

Comparative advantages of Greece by industry and range, 1988-92



Source: Eurostat and CHELEM-PIB, authors' calculation.

A.5.10 Portugal

Portugal, exports, imports and trade balance in 1992

(in billion ECU)

	Exports					Imports					Balance				
	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total
Total	**0.2**	**1.1**	**0.2**	**2.2**	**3.7**	**2.0**	**1.4**	**0.6**	**2.1**	**6.0**	**-1.8**	**-0.3**	**-0.4**	**0.2**	**-2.3**
Textiles	0.0	0.2	0.0	1.2	1.4	0.0	0.3	0.0	0.1	0.4	-0.0	-0.1	-0.0	1.1	1.0
Wood & Paper	0.0	0.3	0.0	0.0	0.4	0.0	0.2	0.0	0.0	0.2	0.0	0.2	0.0	-0.0	0.2
Coking & Refining	0.0	0.2	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1
Miscellaneous	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	-0.0	-0.0
Chemicals	0.0	0.3	0.0	0.1	0.4	0.0	0.3	0.0	0.1	0.5	0.0	-0.1	-0.0	0.0	-0.1
Other transport	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.2	0.0	0.0	-0.0	-0.0	-0.1
Metal products	0.0	0.1	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.2	0.0	-0.1	-0.0	0.0	-0.1
Data processing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	-0.0	-0.1	-0.1
Mechanical eng.	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.1	0.4	0.4	0.0	-0.0	-0.0	-0.2	-0.2
Electical/electronic	0.0	0.1	0.1	0.1	0.2	0.0	0.0	0.2	0.3	0.5	0.0	0.0	-0.1	-0.2	-0.3
AFI	0.0	0.0	0.0	0.3	0.4	0.0	0.2	0.0	0.5	0.8	-0.0	-0.2	0.0	-0.1	-0.4
Cars & HGVs	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.2	0.4	0.0	0.0	-0.2	-0.2	-0.4
Agriculture	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.1	0.7	-0.6	0.0	0.0	-0.1	-0.6
Mining & Quarrying	0.1	0.0	0.0	0.0	0.1	1.3	0.0	0.0	0.0	1.4	-1.2	-0.0	0.0	0.0	-1.2

Source: Eurostat, authors' calculation

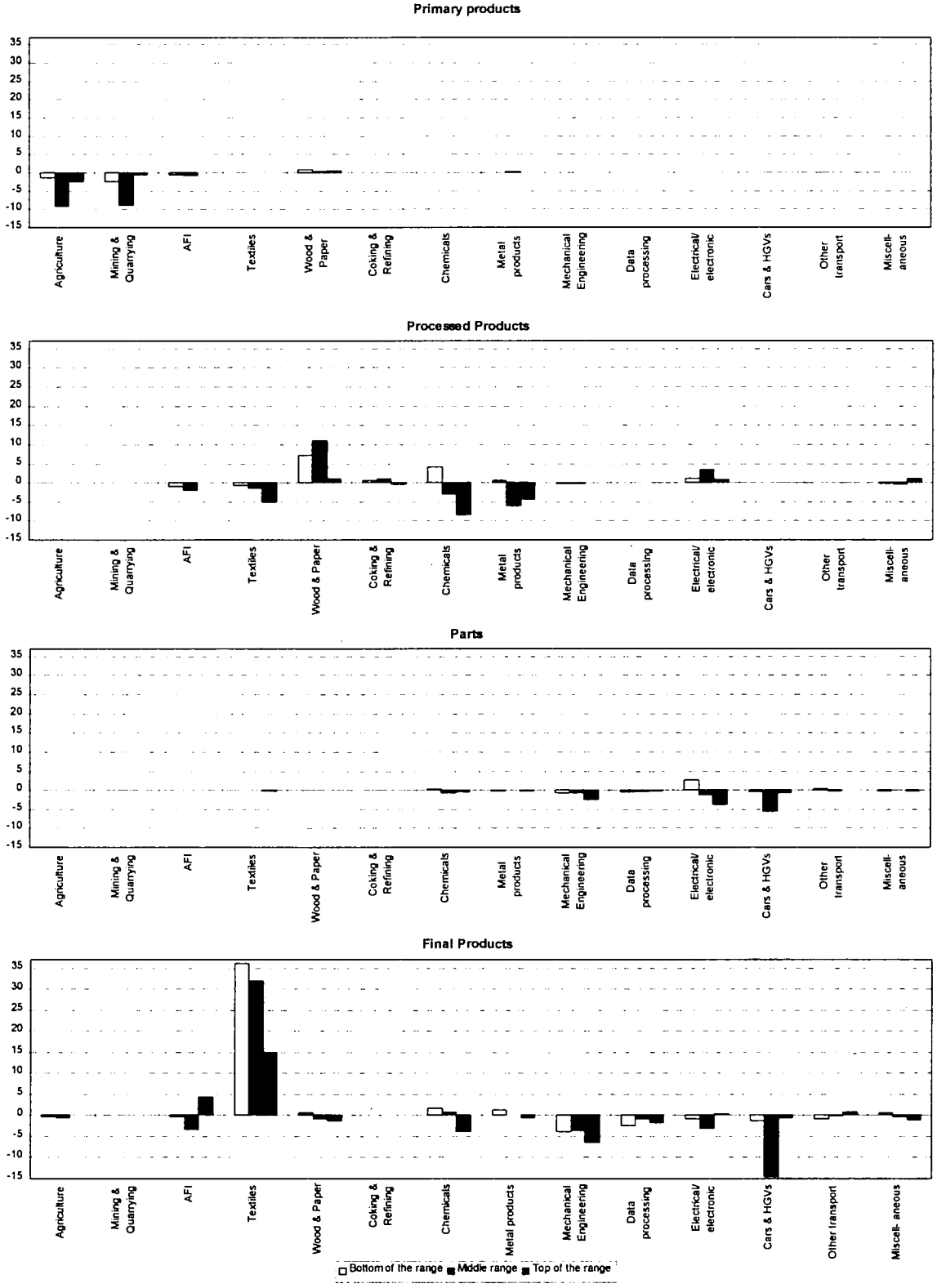
Portugal, comparative advantages in 1992

(in 1/1000 of GDP))

	Intra-EC					Extra-EC					World				
	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total
Total	**-4.2**	**-5.4**	**-11.4**	**24.2**	**3.1**	**-19.7**	**4.0**	**-4.0**	**16.7**	**-3.1**	**-23.9**	**-1.5**	**-15.5**	**40.9**	**0.0**
Textiles	0.1	-6.8	-0.1	63.1	56.2	-0.0	-0.3	-0.0	19.9	19.5	0.0	-7.1	-0.1	82.9	75.7
Wood & Paper	1.0	15.2	-0.0	-1.4	14.8	0.4	3.9	0.0	-0.3	4.0	1.4	19.1	-0.0	-1.7	18.8
Coking & Refining	0.0	-0.9	0.0	0.0	-0.9	-0.0	2.1	0.0	0.0	2.1	-0.0	1.3	0.0	0.0	1.3
Other transport	0.0	0.0	0.0	-1.1	-1.1	0.0	-0.0	0.1	0.9	1.0	0.0	-0.0	0.1	-0.2	-0.2
Miscellaneous	-0.1	0.2	-0.1	-1.0	-1.0	-0.0	0.3	-0.0	0.2	0.5	-0.1	0.5	-0.1	-0.8	-0.5
Electical/electronic	0.0	4.8	-1.6	-1.7	1.6	0.0	0.5	-0.9	-2.1	-2.5	0.0	5.3	-2.5	-3.8	-1.0
AFI	-0.9	-1.0	0.0	0.1	-1.8	-0.4	-2.0	0.0	0.6	-1.8	-1.3	-3.1	0.0	0.7	-3.7
Data processing	0.0	0.0	-0.8	-4.0	-4.8	0.0	0.0	-0.3	-1.1	-1.4	0.0	0.0	-1.1	-5.0	-6.1
Metal products	0.5	-9.4	-0.2	0.5	-8.7	0.0	-0.7	-0.0	0.6	-0.2	0.5	-10.1	-0.3	1.1	-8.9
Chemicals	-0.0	-7.8	-1.0	-2.5	-11.3	0.0	0.5	0.0	1.4	1.9	-0.0	-7.2	-1.0	-1.1	-9.4
Mining & Quarrying	1.3	0.2	0.0	0.0	1.5	-13.1	-0.3	0.0	0.0	-13.3	-11.8	-0.0	0.0	0.0	-11.8
Agriculture	-6.1	0.1	0.0	-0.1	-6.1	-6.5	0.0	0.0	-0.8	-7.4	-12.7	0.1	0.0	-0.9	-13.5
Mechanical eng.	0.0	-0.0	-3.3	-12.8	-16.1	0.0	-0.1	-0.4	-1.1	-1.5	0.0	-0.1	-3.7	-13.9	-17.6
Cars & HGVs	0.0	0.0	-4.3	-14.8	-19.2	0.0	0.0	-2.5	-1.6	-4.1	0.0	0.0	-6.8	-16.4	-23.2

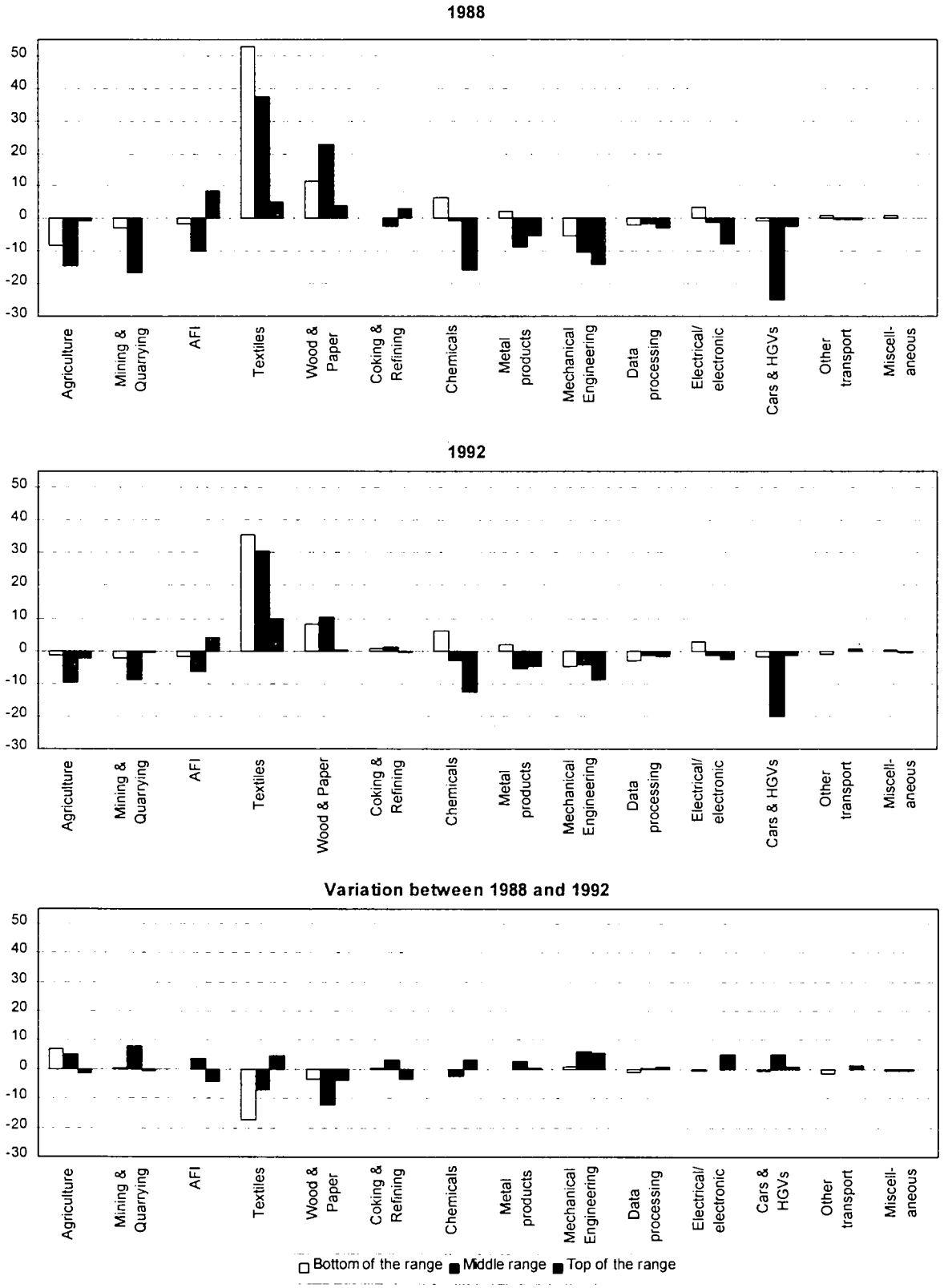
Source: Eurostat and CHELEM-PIB, authors' calculation.

Comparative advantages of Portugal by stage and range in 1992



Source: Eurostat and CHELEM-PIB, authors' calculation.

Comparative advantages of Portugal by industry and range, 1988-92



Source: Eurostat and CHELEM-PIB, authors' calculation.

A.5.11 Spain

Spain, exports, imports and trade balance in 1992

(in billion ECU)

	Exports					Imports					Balance				
	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total
Total	**0.4**	**6.1**	**1.9**	**9.2**	**17.5**	**7.9**	**6.5**	**2.4**	**11.4**	**28.2**	**-7.5**	**-0.4**	**-0.5**	**-2.2**	**-10.7**
Chemicals	0.0	2.4	0.3	0.8	3.4	0.0	2.0	0.1	0.6	2.6	-0.0	0.4	0.2	0.2	0.8
Metal products	0.0	1.6	0.1	0.2	1.9	0.1	0.9	0.1	0.1	1.2	-0.1	0.7	0.0	0.1	0.7
Cars & HGVs	0.0	0.0	0.4	0.7	1.1	0.0	0.0	0.5	0.5	1.0	0.0	0.0	-0.2	0.3	0.1
Coking & Refining	0.0	0.7	0.0	0.0	0.7	0.0	0.6	0.0	0.0	0.6	0.0	0.1	0.0	0.0	0.1
Mechanical eng.	0.0	0.0	0.5	1.3	1.8	0.0	0.0	0.4	1.4	1.8	0.0	0.0	0.1	-0.1	-0.0
Other transport	0.0	0.0	0.2	0.9	1.1	0.0	0.0	0.3	0.9	1.2	0.0	0.0	-0.1	0.1	-0.1
Miscellaneous	0.0	0.0	0.0	0.6	0.6	0.0	0.1	0.0	0.8	0.9	0.0	-0.1	0.0	-0.2	-0.2
Textiles	0.0	0.5	0.0	1.1	1.6	0.0	0.5	0.0	1.3	1.8	-0.0	-0.1	0.0	-0.2	-0.3
Wood & Paper	0.0	0.5	0.0	0.4	0.9	0.0	1.2	0.0	0.2	1.4	0.0	-0.7	0.0	0.2	-0.5
AFI	0.0	0.2	0.0	1.9	2.1	0.1	0.6	0.0	2.0	2.7	-0.1	-0.3	0.0	-0.1	-0.5
Data processing	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.3	0.8	1.2	0.0	0.0	-0.3	-0.6	-0.9
Electical/electronic	0.0	0.2	0.4	0.6	1.2	0.0	0.1	0.7	2.1	2.9	0.0	0.1	-0.2	-1.5	-1.7
Agriculture	0.2	0.0	0.0	0.6	0.7	1.5	0.0	0.0	0.9	2.4	-1.4	0.0	0.0	-0.3	-1.7
Mining & Quarrying	0.1	0.0	0.0	0.0	0.1	6.1	0.5	0.0	0.0	6.6	-6.0	-0.5	0.0	0.0	-6.5

Source: Eurostat, authors' calculation

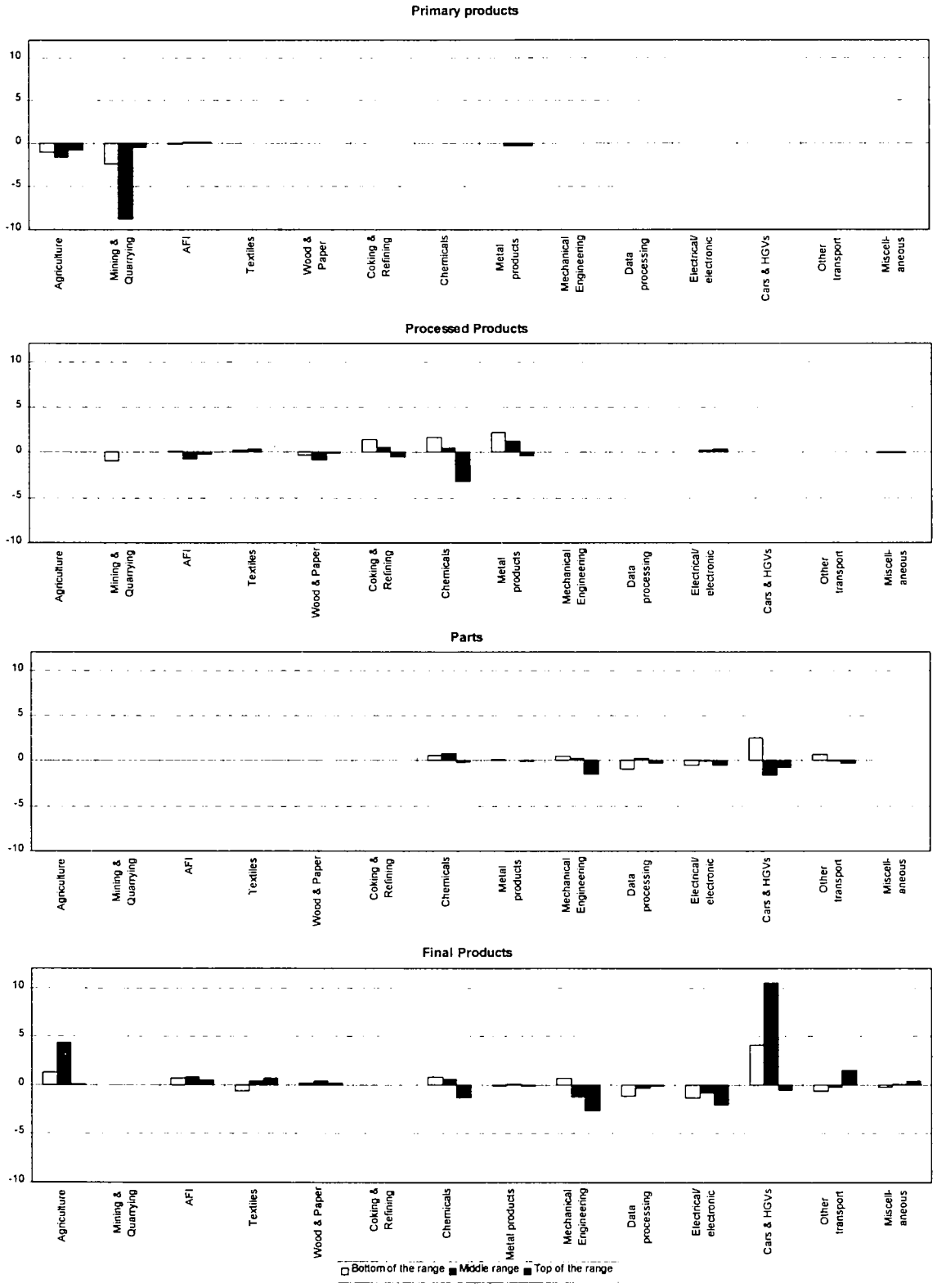
Spain, comparative advantages in 1992

(in 1/1000 of GDP))

	Intra-EC					Extra-EC					World				
	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total	Prim.	Proc.	Parts	Final	Total
Total	**-1.4**	**-1.7**	**-1.6**	**13.5**	**8.7**	**-13.9**	**3.1**	**0.4**	**1.7**	**-8.7**	**-15.4**	**1.4**	**-1.2**	**15.2**	**0.0**
Cars & HGVs	0.0	0.0	-0.0	13.3	13.3	0.0	0.0	0.2	0.8	1.0	0.0	0.0	0.2	14.1	14.3
Agriculture	-0.9	0.0	0.0	6.1	5.2	-2.5	0.0	0.0	-0.4	-2.9	-3.4	0.0	0.0	5.7	2.3
Metal products	-0.5	0.6	0.0	-0.4	-0.2	-0.1	2.4	0.0	0.3	2.6	-0.6	3.0	0.1	-0.1	2.3
Coking & Refining	0.0	0.8	0.0	-0.0	0.7	0.0	0.7	0.0	0.0	0.7	0.0	1.5	0.0	-0.0	1.5
AFI	0.3	-0.3	0.0	0.7	0.7	-0.1	-0.5	0.0	1.3	0.7	0.2	-0.7	0.0	1.9	1.4
Textiles	-0.0	0.3	-0.0	0.0	0.3	-0.0	0.2	0.0	0.5	0.7	-0.1	0.5	0.0	0.5	1.0
Other transport	0.0	0.0	0.3	-0.2	0.1	0.0	0.0	-0.1	0.9	0.8	0.0	0.0	0.2	0.7	1.0
Chemicals	-0.0	-3.0	0.7	-0.9	-3.3	0.0	2.0	0.6	1.0	3.5	-0.0	-1.0	1.2	0.1	0.2
Miscellaneous	-0.0	-0.1	0.0	0.2	0.1	0.0	-0.1	0.0	0.1	-0.0	-0.0	-0.2	0.0	0.3	0.1
Wood & Paper	-0.0	-0.2	-0.0	0.0	-0.2	0.0	-1.0	0.0	0.7	-0.3	0.0	-1.2	-0.0	0.7	-0.5
Data processing	0.0	0.0	-0.5	-0.2	-0.8	0.0	0.0	-0.5	-1.3	-1.8	0.0	0.0	-1.1	-1.5	-2.6
Mechnical eng.	0.0	-0.0	-1.2	-3.7	-4.9	0.0	0.1	0.4	0.6	1.1	0.0	0.0	-0.8	-3.0	-3.8
Electical/electronic	0.0	0.3	-0.9	-1.4	-2.0	0.0	0.3	-0.3	-2.7	-2.7	0.0	0.5	-1.2	-4.1	-4.8
Mechanical eng.	-0.4	0.0	0.0	0.0	-0.4	-11.1	-0.9	0.0	0.0	-12.0	-11.5	-0.9	0.0	0.0	-12.4

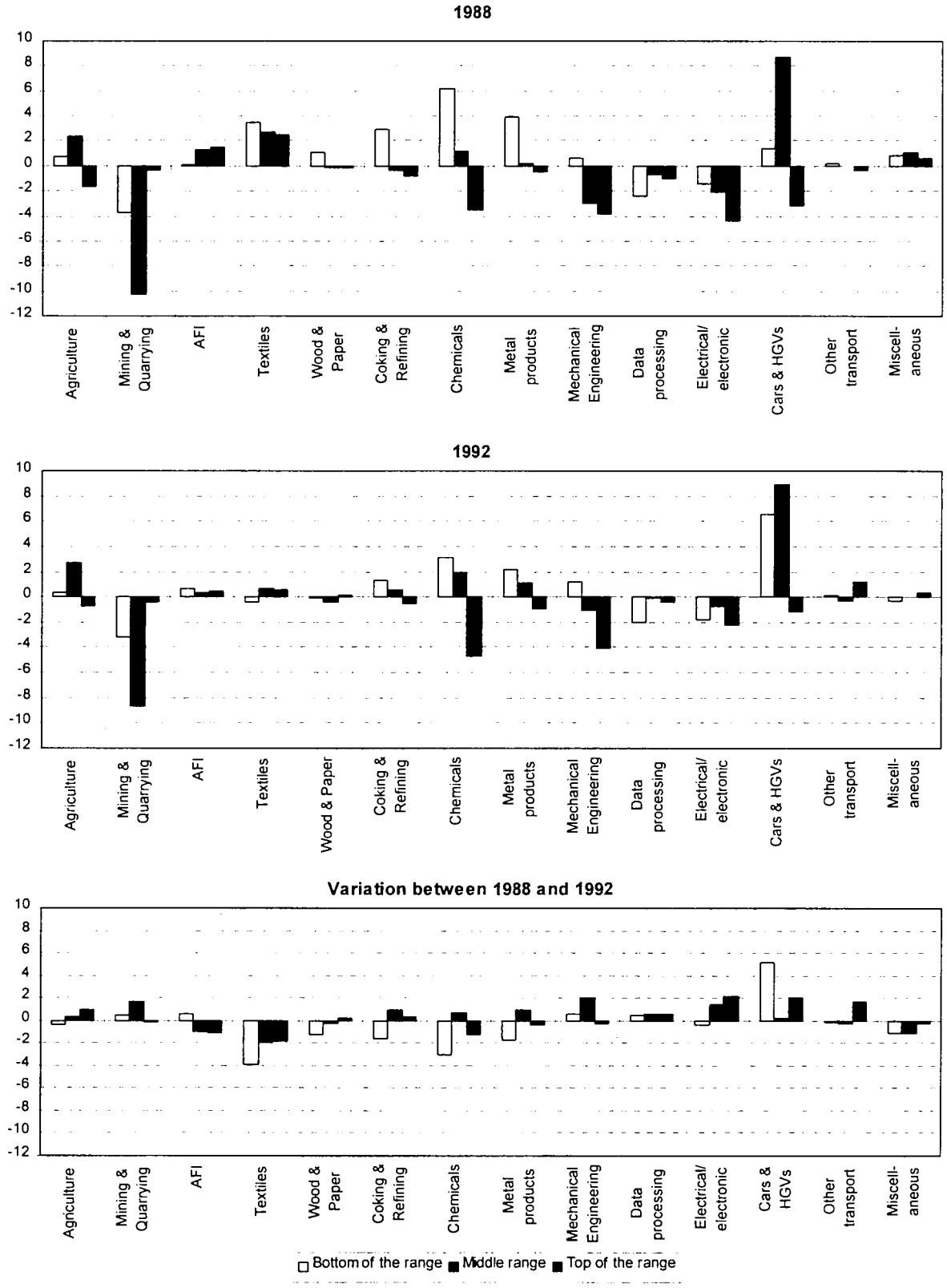
Source: Eurostat and CHELEM-PIB, authors' calculation.

Comparative advantages of Spain by stage and range in 1992



Source: Eurostat and CHELEM-PIB, authors' calculation.

Comparative advantages of Spain by industry and range, 1988-92



Source: Eurostat and CHELEM-PIB, authors' calculation.

A.6. Problems connected with the nomenclatures and statistical systems

The heterogeneous nature of the nomenclatures

The example of the treatment of intermediate goods from the car industry illustrates the difficulty of dealing with parts. We begin by looking at how they are treated in the NIMEXE nomenclature and then in the combined nomenclature (CN). If all products are taken together, these two nomenclatures distinguish about 10,000 products at the finest level (6 digits for NIMEXE and 8 digits for the CN). Remember that the calculations for this report were made at level 6 of the CN with some 5,000 products[97].

(I) The NIMEXE nomenclature

The intermediate goods associated with Chapter 87 (vehicles other than railway and tramway rolling-stock, and parts thereof) are divided into two items at 4-digit level: bodies on the one hand and parts and accessories on the other. So far as this latter item is concerned, a breakdown at 6-digit level gives some fifteen items that may be combined into three categories:

- the first group is defined in great detail (11 items, ranging from wheels, bumpers and gear boxes to safety belts). These "parts" *are not intended for industrial assembly*, but they may be used as replacements (spares).
- "parts" *for assembly*, and therefore directly involved in the splitting of production processes, are divided into only two items (items 870611 and 870649);
- finally, there are three items for which it is not stated whether they are for assembly or not.

The detail of this breakdown is given in the table below.

What are the implications of this breakdown for the recording of trade flows and thus for our findings? This may be illustrated by looking at EC-EC trade and trade between the EC and the rest of the world in a given year (1987). Two things appear right away:

- the very great detail (11 items) for parts not intended for assembly affects only 15% of flows in all;
- around 30% of the flows involve parts for industrial assembly, which may be very diverse;
- lastly, more than one half of the trade is recorded under a single "catch all" item ("parts and accessories other than of closed-die forged steel" not included in the previous breakdown).

[97] At 6 digit level CN=HS.

Breakdown of intermediate products

Level			Description	EC-World		EC-EC	
2	4	6		Value	%	Value	%
87			Vehicles, other than railway or tramway rolling-stock, and parts thereof				
	8705		Bodies (including cabs) for the motor vehicles falling within heading No 8701, 8702 or 8703				
	8706		***Parts and accessories of the motor vehicles falling within heading No 8701, 8702 or 0703***	***44 044***	***100.0***	***32 188***	***100.0***
		for		***12 702***	***28.8***	***10 547***	***32.8***
		870611	Parts for industrial assembly. Assembly of agricultural walking tractors, motor vehicles for the transport of max. 15 persons, lorries with a spark ignition engine of cylinder capacity <2800 cm3 or a compression ignition engine of a cylinder capacity <2500 cm3 and special purpose motor vehicles	12 348	28.0	10 233	31.8
		870649	Non-driving axles, other than of closed-die forged steel, for industrial assembly	354	0.8	314	1.0
		not for		***6 499***	***14.8***	***4 758***	***14.8***
		870621	Wheel centres in star form, cast in one piece, of iron or steel, not for industrial assembly	16	0.0	11	0.0
		870626	Bumpers and parts thereof, not for industrial assembly	258	0.6	189	0.6
		870627	Safety belts, not for industrial assembly	133	0.3	58	0.2
		870628	Body parts other than bumpers and safety belts, not including parts for industrial assembly	2 722	6.2	2 120	6.6
		870631	Gear boxes, complete, not for industrial assembly	1 555	3.5	1 053	3.3
		870635	Rear-axles with differentials, complete, not for industrial assembly	393	0.9	299	0.9
		870641	Wheels, parts of wheels (other than those of item 8706.21) and accessories for wheels, not for assembly	1 324	3.0	968	3.0
		870643	Non-driving axles, of closed-die forged steel, other than for industrial assembly	98	0.2	60	0.2
		870651	Shock absorbers and parts thereof, other than absorber blocks of rubber or artificial plastic material, not for assembly	728	1.7	557	1.7
		870655	Radiators and parts thereof, not for industrial assembly	401	0.9	328	1.0
		870661	Fuel tanks, not for industrial assembly	42	0.1	36	0.1
		nec		***24 843***	***56.4***	***16 883***	***52.5***
		870671	Mounted pads for disc brakes	293	0.7	248	0.8
		870691	Parts and accessories, of closed-die forged steel, not falling under 8706.11 to 71	290	0.7	194	0.6
		870698	Parts and accessories, other than of closed-die forged steel, not falling under 8706.11 to 76	23 090	52.4	15 519	48.2

Thus, over 80% of the value of the flows falls under just 2 items whose content is *de facto* very varied. We therefore expect trade in parts to have a large component of two-way flows for different values, flows for which the term vertical "differentiation" seem inappropriate. This is just an example chosen to illustrate the point, but there is nothing to suggest that this bias caused by insufficient disaggregation of the nomenclatures is not insignificant for parts as a whole. The phenomenon is just as marked in intra-EC trade, the weight of assembly being increased by the extent of the intra-European division of processes.

(ii) The Combined Nomenclature

Did going over to the combined nomenclature (CN) in 1988 reduce these difficulties? The table below shows, for the same products (Chapter 87: "Vehicles other than railway or tramway rolling-stock, and parts thereof") the breakdown into 16 headings at level 4 and the breakdown of the EC's trade with the rest of the world for 1994.

Two headings stand out clearly because of their size: Saloon cars (8703), which account for 58% of the Chapter 87 flows, and parts and accessories (8708) with 21% of the flows.

The detail of the latter at 6-digit level reveals 15 sub-headings, enabling a distinction to be made between bumpers, safety belts, gear boxes, wheels, etc. The three most important of these sub-headings are:

- parts and accessories ... nec (870899), which represent 21% of Chapter 87 (or 50% of sub-heading 8708);
- gear boxes (870840) with a nearly 3% share of Chapter 87 (14% of 8708);
- and body parts and accessories ... (870829), with 2.2% (or 10% of 8708).

Overall, then, one half of the flows are concentrated in just one sub-heading.

87	**100**	**Vehicles, other than railway or tramway rolling-stock, and parts thereof**
8701	3.8	**Tractors**, not including tractors of No 8709
8702	1.0	**Motor vehicles for the transport of ten or more persons**, including driver
8703	**57.6**	**Saloon cars** and other motor vehicles designed principally **for the transport of persons** (other than motor vehicles for the transport of ten or more persons, including driver, of heading 8702); vehicles of the 'break' type and racing cars.
8704	6.5	**Motor vehicles for the transport of goods or materials**, including chassis with engines and cabs
8705	1.3	**Special purpose motor lorries and vans** (other than those designed principally for the transport of persons, goods or materials): breakdown lorries, crane lorries, fire-engines, concrete-mixer lorries, road sweeper lorries, spraying lorries, mobile workshops, mobile radiological units.
8706	0.7	**Chassis** of tractors, vehicles for the transport of ten or more persons including driver, saloon cars, vehicles for the transport of goods or materials, and special purpose vehicles of Nos 8701 to 8705, fitted with engine (but not with engine and cab)
8707	0.6	**Bodies** of tractors, vehicles for the transport of ten or more persons including driver, saloon cars, vehicles for the transport of goods or materials, and special purpose vehicles of Nos 8701 to 8705, including cabs.
8708	***21.3***	***Parts and accessories*** *of tractors, vehicles for the transport of ten or more persons including driver, saloon cars, vehicles for the transport of goods or materials, and special purpose vehicles of Nos 8701 to 8705, nec.*
8709	0.1	**Work trucks, mechanically propelled,** (not fitted with lifting device) of the types used in factories, warehouses, dock areas or airports for short distance transport of goods; tractors of the type used on railway station platforms; parts of the foregoing vehicles, nec.

8710	0.1	**Tanks and other armoured fighting vehicles, motorised,** whether or not fitted with weapons, and parts of such vehicles, nec.
8711	2.5	**Motorcycles** - including mopeds - and cycles fitted with an auxiliary motor, with or without side-cars; side-cars.
8712	0.8	**Bicycles** and other cycles - including delivery tricycles - not motorised.
8713	0.1	**Invalid carriages**, whether or not motorised or otherwise mechanically propelled (not including cars and bicycles fitted with special equipment).
8714	1.7	**Parts and accessories of motorcycles**, cycles, invalid carriages, nec.
8715	0.1	**Prams, pushchairs** and similar vehicles **for the carriage of children** and parts thereof, nec.
8716	1.8	**Trailers and semi-trailers** for all vehicles; other vehicles (not motor vehicles, not running on rails); parts thereof, nec.

8708	***21.3***	**100**	***Parts and accessories** of tractors, vehicles for the transport of ten or more persons including driver, saloon cars, vehicles for the transport of goods or materials, and special purpose vehicles of Nos 8701 to 8705, nec.*
870810	0.3	1.6	**Bumpers and parts thereof**
870821	0.1	0.6	**Safety belts** for vehicles
870829	2.2	10.2	**Body parts and accessories** of tractors, vehicles for the transport of ten or more persons including driver, saloon cars, vehicles for the transport of goods or materials, and special purpose vehicles (except bumpers and parts thereof and safety belts).
870831	0.4	1.8	**Assembled brake linings**, for tractors, vehicles for the transport of ten or more persons including driver, saloon cars, vehicles for the transport of goods or materials, and special purpose vehicles.
870839	0.9	4.3	**Brakes and power brakes and parts thereof**, for tractors, vehicles for the transport of ten or more persons including driver, saloon cars, vehicles for the transport of goods or materials, and special purpose vehicles, nec.
870840	2.9	13.7	**Gear boxes** for tractors, vehicles for the transport of ten or more persons including driver, saloon cars, vehicles for the transport of goods or materials, and special purpose vehicles.
870850	0.5	2.3	**Axles with differentials** including axles with other transmission gear for vehicles.
870860	0.3	1.5	**Non-driving axles and parts thereof**, for tractors, vehicles for the transport of ten or more persons including driver, saloon cars, vehicles for the transport of goods or materials, and special purpose vehicles, nec.
870870	0.8	3.6	**Wheels, parts and accessories thereof**, for tractors, vehicles for the transport of ten or more persons including driver, saloon cars, vehicles for the transport of goods or materials, and special purpose vehicles, nec.
870880	0.4	2.0	**Shock absorbers**, for tractors, vehicles for the transport of ten or more persons including driver, saloon cars, vehicles for the transport of goods or materials, and special purpose vehicles.
870891	0.3	1.3	**Radiators**, for tractors, vehicles for the transport of ten or more persons including driver, saloon cars, vehicles for the transport of goods or materials, and special purpose vehicles.
870892	0.4	2.0	**Silencers and exhaust pipes**, for tractors, vehicles for the transport of ten or more persons including driver, saloon cars, vehicles for the transport of goods or materials, and special purpose vehicles.

870893	0.6	2.7	**Clutches and parts thereof**, for tractors, vehicles for the transport of ten or more persons including driver, saloon cars, vehicles for the transport of goods or materials, and special purpose vehicles, nec.
870894	0.6	2.9	**Steering wheels, steering columns and steering gearboxes**, for tractors, vehicles for the transport of ten or more persons including driver, saloon cars, vehicles for the transport of goods or materials, and special purpose vehicles.
870899	***10.6***	49.5	***Parts and accessories**, for tractors, vehicles for the transport of ten or more persons including driver, saloon cars, vehicles for the transport of goods or materials, and special purpose vehicles, nec.*

We shall now turn our attention to the content of this last item, which is not identified further at the level of breakdown of the nomenclature used in this report. The second largest item is parts and accessories for industrial assembly (87089910). Now, most of the trade is in "parts and accessories not elsewhere classified" (87089999), which alone accounts for three quarters of the flows recorded in CN 870899 (or 8% of the total trade of Chapter 87).

We see, therefore, that advances in nomenclature do not necessarily resolve the difficulties raised here if increasing the number of items does not prevent the flows being concentrated on a small number of items.

870899	***10.6***	***100***	*Parts and accessories, for tractors, vehicles for the transport of ten or more persons including driver, saloon cars, vehicles for the transport of goods or materials, and special purpose vehicles, nec.*
87089910	2.1	20.4	**Parts and accessories for assembly**, for agricultural walking tractors of heading 8701.10, saloon cars, vehicles for the transport of goods or materials, with a **diesel or semi-diesel engine of a cylinder capacity =<2500 cm3** or **with a spark ignition piston engine of a cylinder capacity =<2800 cm3**, special purpose vehicles of heading 8705, nec.
87089930	0.0	0.2	**Stabiliser bars** for tractors, vehicles for the transport of ten or more persons including driver, saloon cars, vehicles for the transport of goods or materials, and special purpose vehicles (not for assembly on certain vehicles mentioned in heading 8708.99.10).
87089950	0.0	0.2	**Torsion bars** for tractors, vehicles for the transport of ten or more persons including driver, saloon cars, vehicles for the transport of goods or materials, and special purpose vehicles (not for assembly on certain vehicles mentioned in heading 8708.99.10).
87089991		0.0	**Parts and accessories of closed-die forged steel**, for vehicles of 8701.10-10 to 8705.90-90, (not included under 8708.10-10 to 8708.99-10).
87089992	0.2	2.1	**Parts and accessories of closed-die forged steel**, for tractors, vehicles for the transport of ten or more persons including driver, saloon cars, vehicles for the transport of goods or materials, and special purpose vehicles (not for assembly on certain vehicles mentioned in heading 8708.99.10).
87089998	***8.1***	77.2	***Parts and accessories**, for tractors, vehicles for the transport of ten or more persons including driver, saloon cars, vehicles for the transport of goods or materials, and special purpose vehicles, nec, (not for assembly on certain vehicles mentioned in heading 8708.99.10).*

Statistical systems

Statistical systems are defined by reference to customs procedures. Since 1 January 1988, the statistical systems have been codified in Eurostat statistics as follows:

- ordinary import, ordinary export (SS 1);
- import after outward processing, export for outward processing (SS 3);
- import for inward processing; suspension system, export after inward processing; suspension system (SS 5);
- import for inward processing; drawback system, export after inward processing; drawback system (SS 6);
- sum of statistical systems 1, 3, 5 and 6 (SS 4).

Our calculations have been made from the total, i.e. from statistical system 4. This may, however, lead to a major over-estimate of the amount of overlap between export and import, whether measured by the Grubel and Lloyd indicator or our own.

The following illustrative example is calculated not from the data made available to us by Eurostat (4 to 6 digit SS of the HS) but from the CD-ROM for the 8-digit combined nomenclature (CN). It concerns trade between France and Cyprus in 1994, where we found a very large amount of two-way trade in similar products (as well as a very high GL).

An analysis by product shows that almost all the "intra-product trade" comes from a single item (CN 88024010: "aeroplanes and other aircraft designed for mechanical propulsion (not including helicopters and dirigibles), of an unladen weight > 15,000 kg, civil").

An analysis in terms of statistical systems reveals that all the trade in this product concerns SS 5: France imports these aircraft for inward processing and exports them afterwards,

This phenomenon raises problems, because it almost automatically "creates" a "two-way" trade with close unit values. The table below shows that in the case of item CN 88024010 the quantities are identical (984 tonnes) and the values are extremely close. Even if trade in all the other products were one-way, given the importance of these aircraft in total trade more than three quarters of the trade between France and Cyprus would be two-way trade in similar products!

Statistical systems: Example of trade between France and Cyprus, 1994

		Value		Quantity		Unit value		Value	
		X	M	X	M	X	M	X+M	as % of total
Total trade	SS 4	390,016	277,916	102,339	12,084			667,932	100.0
	SS 1	119,209	14,948	99,756	11,053			134,157	20.1
	SS 3	12	16	0	0			28	0.0
	SS 5	270,448	262,952	2,495	1,031			533,400	79.9
	SS 6	347	0	88	0			347	0.1
CN 88024010	SS 4	258,743	255,022	984	984	263.0	259.2	513,765	76.9
	SS1	0	0	0	0			0	0.0
	SS 3	0	0	0	0			0	0.0
	SS 5	**258,743**	**255,022**	**984**	**984**			**513,765**	**76.9**
	SS 6	0	0	0	0			0	0.0

One might be tempted to exclude from the field of analysis all statistical systems other than SS 1.

The table below shows the EC's extra-zone trade according to the various statistical systems. "Normal" exports and imports represent nearly 90% of total trade. Could we therefore exclude the remaining 10%? Compared with the overall trade balance, the "normal" balance is very negative and almost entirely counterbalanced by SS 5, inward processing in Europe. Excluding this flow would therefore change the picture of extra-EC trade completely.

Statistical systems: EC trade with non-EC partners, 1994

	X	M	X+M	X+M (%)	X-M
SS 1	450,678,053	490,870,423	941,548,476	87.3	-40,192,370
SS 3	11,034,653	11,956,864	22,991,517	2.1	922,211
SS 5	70,570,979	30,295,482	100,866,461	9.4	40,275,497
SS 6	6,504,179	6,701,466	13,205,645	1.2	197,287
SS 4	538,787,864	539,824,235	1,078,612,099	100.0	1,036,371

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ISBN 92-827-7456-2

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