Miscellany

Main trends of Catalan export and import patterns*

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One of the most distinctive features of the development of Catalan economy in the last fifteen years is its progressive opening to international exchange that has become apparent in the evolution of the foreign trade volume in Catalonia. However, this opening, bigger (in both absolute and relative terms) than in Spanish economy, has not only generated strengths and opportunities but also certain risks.

* These observations are a summary of the results presented in the document *Canvis recents en el patró exportador i importador català*, the result of a study project of the Ministry of Innovation, Universities and Enterprise of the Government of Catalonia.

Introduction

The observed deterioration of coverage in foreign goods exchange reopens the discussion on the danger of high trade deficit and especially on its trend in the years to come. These data pose particularly the question of whether there has been a shift in the export and import pattern of Catalan economy. One way of trying to state this possible shift and its causes and expectations is to analyse the evolution of the macro data on exports and imports. However, the evolution of aggregated data may hide many important issues.

For instance, it is possible to think of a situation in which the increase of exports is only due to a growth of export volumes while it is the same products that are exported to the same countries by the same companies. It is also possible to think of a completely different situation by which this increase comes with a change of product type, the countries of destination or exporting companies.

An analysis of disaggregated information by product type, country of origin or destination and industrial sector is therefore necessary. This paper intends to identify the most distinctive features of the import and export patterns in current Catalan economy (the analysis goes up to 2005) and to detect the most relevant changes in the last ten years. This analysis is indispensable for detecting and measuring the impact on overall Catalan economy of this shift in the foreign trade pattern, at least in the cases most affected by it.

According to this diagnose on the current situation and occurred changes, strategies or action lines can be set out that may be interesting to correct weaknesses, take advantage of strengths and improve coverage in the future.

Methodology

As has been previously mentioned, mere trade account metrics is not enough to get an accurate picture of what is behind such big figures. First of all, in order to determine the most adequate trade policy it is necessary to know what products and markets are most relevant in the import and export flows and especially if this pattern is changing.

The methodology used for this paper is based on analysing the data provided by the Directorate General of Customs on exports and imports of goods between 1994 and 2005. Unavailability of data on service exports and imports (at least in a detail comparable to goods) and on overall exchange with the rest of Spain poses a limitation to the analysis, yet the conclusions thereof are still relevant.

The analysis is based on considerably disaggregated product and market data. An important aspect to consider is that all these data are measured at current prices. The price is obviously of big importance in trade relations, but at this degree of disaggregation it is not possible to have information at specific constant prices. In section 3 there is a description of the most important features of the export and import pattern in Catalonia over the period between 1994 and 2005.

The analysis is made from different perspectives, going into detail from five different departure points:

- Monthly evolution
- Types of exported and imported goods
- Countries of origin and destination of this exchange
- Branches and companies of origin and destination
- Technological intensity related to this exchange

The analysis is based on considerably disaggregated product and market data.

Section 4 concludes with a summary of the main conclusions and some thoughts on possible future action lines or strategies that may help to envisage the future in the best way possible.

Distinctive features of foreign trade in Catalonia

Relevance and evolution of foreign trade in Catalonia

From an aggregated point of view, it can be observed that both acquisitions and sales of goods abroad almost tripled between 1994 and 2005, exports thus increasing to over 42 billion and imports to over 67 billion euros (at current prices).

However, this growth is comparable to that of overall Catalan economy. In fact, goods exports decreased in relation to GDP by almost four points between 2001 and 2005, whereas goods imports stayed almost even. The trade deficit thus jumped from 10% to almost 14% of GDP within three years.

The most recent history of foreign trade is marked by accession to the EEC in 1986, which meant a significant structural change in Catalonia's economic relations with other countries. In fact, exports increased rapidly between 1986 and 1994, at an average 20% per year, so coverage jumped from under 50% in 1986 to over 75% in 1997. This increase by 25 points in ten years is a very significant change. Two later points in time can further be considered of key relevance:

- On 1 January 1999 the European Monetary Union came into force. The 1992 and 1995 devaluations definitely had their positive influence on the evolution so far, but from 1999 this resort ceased to exist.

- The other key moment was 1 January 2002, when the arrival of the euro to Catalan economy changed the market rules as price comparison became much more transparent, among other effects.

As already pointed out, this considerable increase in the foreign trade volume in recent years follows the overall trend of Catalan economy during the same period. In fact, the trade deficit increase is not so much due to an «abnormal» growth of imports (which kept the same percentage on GDP) but rather to exports not having grown at the same rate. An evidence to this is graph 1, which shows within a historical perspective how the degree of openness of Catalan economy increased significantly up to the year 2000 before a turn took place in 2001.

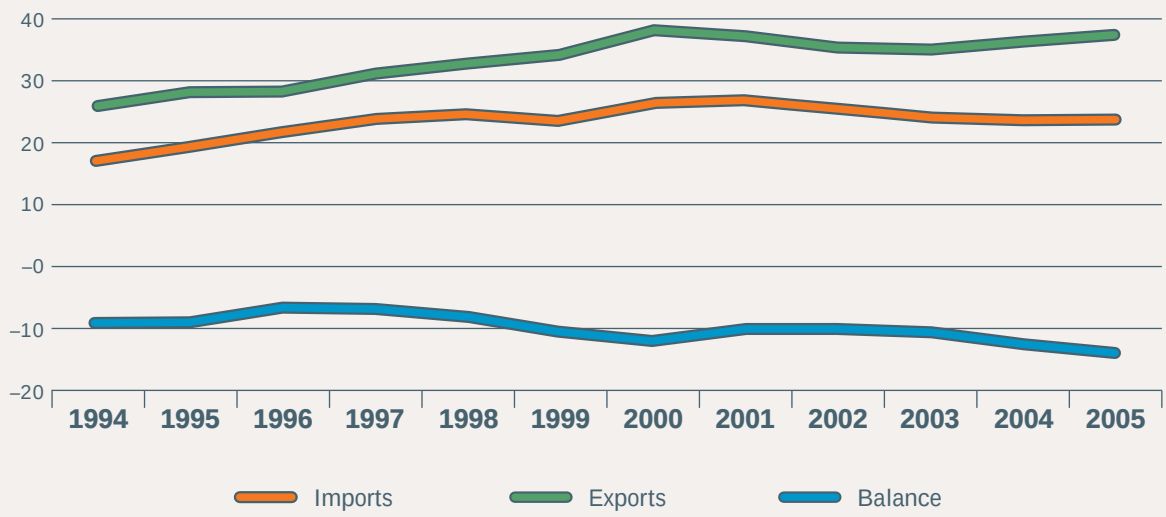
Besides, during practically the whole period, imports grew at a stronger pace than exports (graph 2), so the (negative) balance has been increasing progressively.

As the graph shows, its mid-term evolution can be seen in the linear trend (dotted line). The alignment of the evolution of the variable with a clear trend is a statistical indicator for long-term stability in the trade pattern. This first result may be surprising but it says that there is no significant change, at least in aggregated terms. However, these macro data provide two further conclusions that are relevant for the subject of this paper:

- The import trend shows a pace of growth higher than that of exports. A trend towards an increasing trade imbalance has been observed ever since 1994.

- A change in the slope of

Graph 1. **Relevance of foreign trade on overall Catalan GDP**



▲ The degree of openness of Catalan economy increased significantly up to the year 2000 before a turn took place in 2001.

both trends occurred between 2000 and 2001, affecting both imports and exports, as the graph shows. It is significant that both trends change precisely at the same point.

We have so far been focusing exclusively on the foreign trade balance as an indicator to summarise the evolution of Catalan foreign trade in goods, but it is relevant to also have a look at coverage, calculated as the quotient between imports and exports.

Here we state again that there are different stages in the flow of Catalan foreign trade, with clearly distinct trends coinciding with those mentioned above. We can particularly state that coverage fell from 73% to 63% between 2001 and 2005.

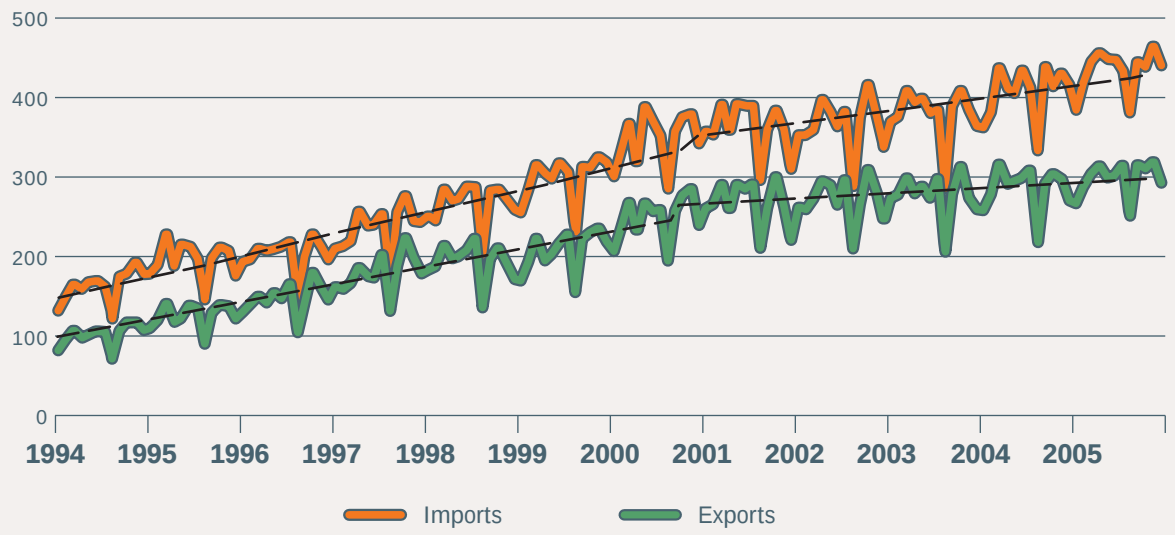
Distribution of exports and imports by product type

It is easy to suspect that the cyclical trade deficit oscillations have to do with other aspects beyond competitiveness such as the overall economic situation. In this respect, a more detailed analysis of how these exports and imports are distributed by product, branch and geographical origin and destination is necessary to analyse if there is a loss of competitiveness.

The point of departure for this analysis has been the calculation of coverage in the different TARIC sections. One first conclusion is that coverage has not decreased in all products in the last years but only in some. Of course, not all these product types are equally relevant to Catalan foreign trade, so the loss of coverage does not always affect the same way.

Taking this point into consideration, charts A1 and A2 in the annex show the relevance of each section in total Cata-

Graph 2. **Monthly evolution of exports, imports and balance**



During the whole period, imports grew at a stronger pace than exports, so the (negative) balance has been increasing progressively.

lan exports and imports. Considering this information, we will rapidly conclude that the origin of this coverage loss between 2001 and 2005 is to be found in the evolution of the trade deficit in four product groups (sections):

- Metal and articles thereof
- Electrical machinery, appliances and equipment
- Transport equipment
- Textile equipment

In some cases the existence of very plain trends as mentioned before also applies.

There are two exceptions:

a) Sections with an irrelevant foreign trade volume (works of art, arms and ammunition, fats and oils, wood and wood products and precious stones), in which erratic factors predominate.

b) There are also some interesting exceptions in products generating a very high level of exchange. The first is the change of the typical trend in textile equipment exports from 2001, when they started decreasing clearly. The second is an unprecedented significant increase in transport equipment imports from 2001.

Apart from these exceptions, if a five-year forecast on the foreign trade volume had been made based on historical series only, the margin of error would have been minimal.

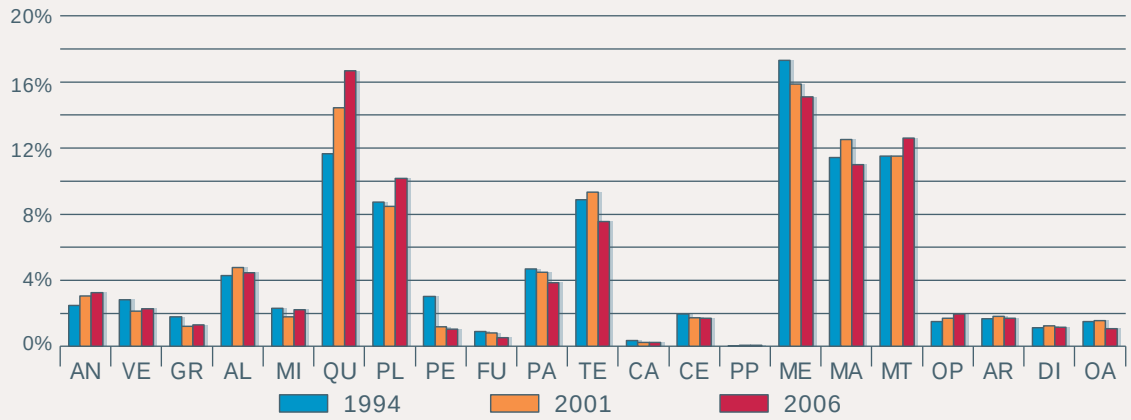
To see more clearly which are the most significant changes over these twelve years, graphs 3 and 4 compare the distribution of exports and imports by section in 1994 and 2005. To distinguish better between changes occurred before and after 2001, this year has also been included.

First of all, there is a big similarity between the three years

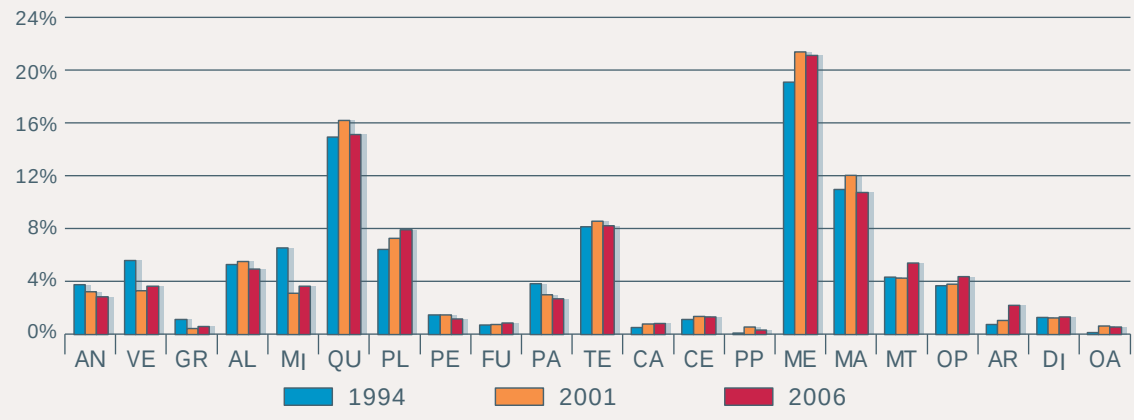
(1994, 2001 and 2005). Put in other words, the structure of Catalan economy has not changed a lot as to sales of goods abroad, which as such is a relatively surprising result given the deep changes Catalan economy has undergone in other aspects.

As to exports, we can state an increase in chemical products and, to a lesser extent, a decrease in relevance of metals and articles thereof before 2002. There is also a reduction of fur products although they are not very relevant compared to the total volume. After 2002 there is an increase in relevance of the export of plastics and articles thereof, transport equipment and chemical products as well as a relative reduction of textile products. Related to imports before 2001, the loss of relevance of primary and

Graph 3. Distribution of exports according to product type (TARIC)[4]



Graph 4. Distribution of imports by product type (TARIC)[5]



▲ There is a big similarity between the three years (1994, 2001 and 2005), which as such is a relatively surprising result given the deep changes Catalan economy has undergone.

mineral products (though none of them of overall relevance) and the increase in imports of metals and articles thereof and chemical products is remarkable. After 2001 there are even less changes and the only noticeable one is the relative increase in imports of transport equipment and optical and photographic products.

The structure of Catalan economy has not changed a lot within twelve years as to the sales of goods abroad.

Comparing graphs 1 and 2, a high coincidence in their shape can be observed, i.e. in the distribution of the most important and exported product types. This suggests that we are basically dealing with an intra-industry rather than inter-industry trade type. However, information needs to be further disaggregated to prove this assumption.

Analysing the disaggregated TARIC data up to four digits, some interesting features will come forth. To see to what extent similar products are exported and imported, we have calculated the correlation between both variables based on the 1251 sets of data referred to by the different TARIC codes.

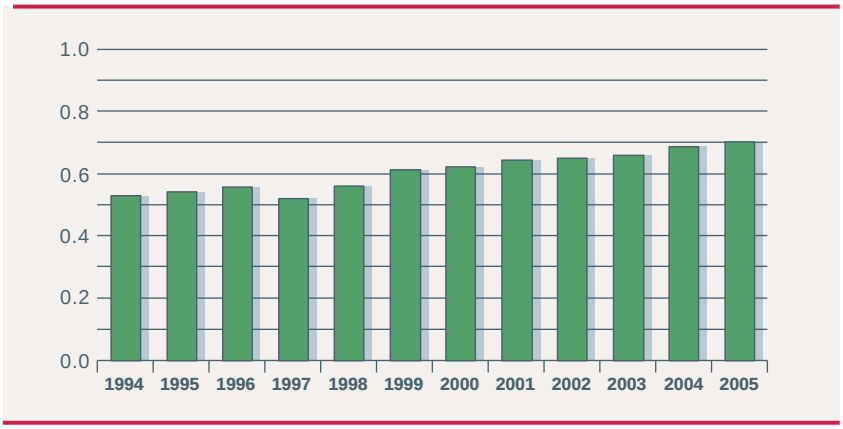
Graph 5 shows that correlation values are fairly high, although the information is very disaggregated now. This confirms the assumption that it is a mainly intra-industry trade. Besides, looking at the historical evolution of this correlation, a trend towards intensification can be stated.

It is also interesting to state in how far exports or imports concentrate heavily on certain product types. An according aggregated analysis can be done graphically with the so-called Lorenz curve. Graph 4 seems to indicate that there is more diversification in exports than in imports. Said in other words, there is a higher concentration with imports although none of both metrics show a really relevant concentration (as to four-digit TARIC). Although graph 6 only refers to 2005 data, calculations will show that the results are practically the same for the other years analysed.

To draw a comparison with this degree of concentration any related index (e.g. the Gini index) can be used. The use of synthetic metrics is useful as the degree of concentration we «capture» with the Lorenz curve can sometimes be «sensitive» to the degree of disaggregation. In this case, the calculation of the Gini index with four-digit or two-digit data does not affect the result.

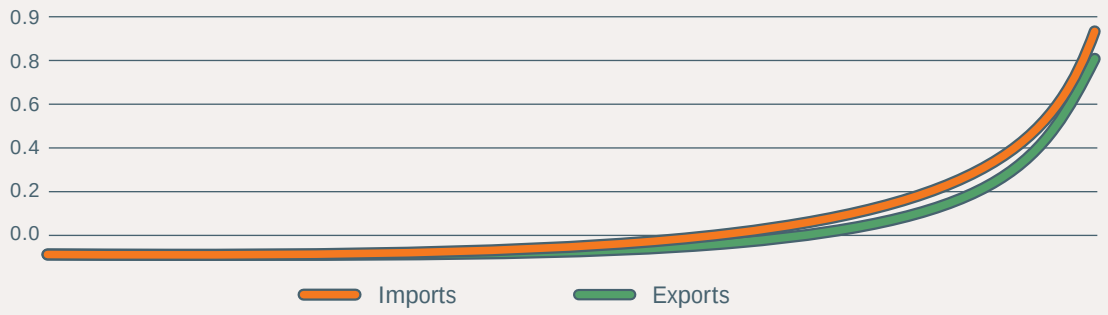
In short, there is no clearly higher concentration in imports or exports nor any explicit trend towards long-term increase or decrease in this concentration. However,

Graph 5. **Correlation between exports and imports**



▲ The graph shows that correlation values are fairly high, although the information is very disaggregated now.

Graph 6. **Concentration of exports and imports (2005)**



▲ The graph only refers to 2005 data; calculations show that the results are practically the same for the other years analysed.

this does not mean that there may not be variations in exported and imported goods year after year. To have a clear picture, an analysis can be made of how many products (out of the 1251 four-digit categories considered) have become more relevant compared to exports and imports between 1994 and 2005. Chart 7 gives a summary of this matter.

We can observe a high variability as to what product categories gain or lose importance. Although chart 7 does not show it, increase in one year does not prevent the contrary to occur the following one. This volatility also shows in the trade balance (exports minus imports) for each category over different years. To make the analysis simpler, if we look at 1994 and 2005 only (chart 8), we will find a much larger proportion of categories in which the balance sign changed. In fact, similar proportions are found when doing a year-by-year analysis.

There is also a trend towards higher variation among exported than imported goods but always within the same product category.

So despite the absence of any trend towards concentration, there are significant variations in imported or exported products every year, but they do not follow a given pattern or trend. The relevance of the different product types grouped by categories has therefore changed very little in twelve years.

This volatility and the difficulty to observe clear trends (except in very concrete cases) is shown in charts A1 and A2 in the annex.

There is also a clear trend towards higher variation among exported than imported goods but, as said before, always within the same product category. Five of these chapters alone concentrate almost 40% of exchange, and they are also the same in both exports and imports.

The high correlation between imported and exported goods is remarkable. An analysis of these five chapters, 29, 39, 84, 85 and 87 (which we will call chemicals, plastics, electronic machinery, electrical machinery and vehicles to simplify) will provide a better understanding of the reasons for

Chart 7. Proportion of categories increasing in relevance

In percent

		95	96	97	98	99	00	01	02	03	04	05	94-05
Exports	Increase	52	54	52	51	51	55	54	50	52	51	56	**49**
	Decrease	48	46	48	49	49	45	46	50	48	49	44	**51**
Imports	Increase	55	49	50	51	51	55	52	48	52	54	53	**52**
	Decrease	45	51	50	49	49	45	48	52	48	46	47	**48**

Source: Own research based on data from the Directorate General of Customs

recent changes in the trade balance. Generally speaking, these products take half the increase of foreign trade over the analysed period. Considering that textile products are spread over two chapters (61 and 62) but amounted altogether to 5% of imports in 2005, including these two chapters, most of foreign trade variation in recent years is identified.

To deepen further into this analysis we can break down the trade deficit increase between 1994 and 2005 into the different chapters. By doing so, we will see (on graph 9 the sum of associated rates in each chapter amounts to 100% of the trade deficit increase) that the products with the worst trade balance development over these years are clearly identified: electrical machinery, electronic machinery, mineral fuels, textile products, furniture and photographic and optical instruments. This deterioration of the trade balance has not been compensated by an improvement in other kinds of products, which is almost exclusively restricted to chemicals.

Chart 8. Proportion of sign changes

	Balance 2005 >0	Balance 2005 <0	
Balance 1994 >0	13.7%	10.7%	**24.4%**
Balance 1994 <0	10.3%	65.3%	**75.6%**
Total	**24.0%**	**76.0%**	**100.0%**

Source: Own research

These years have consolidated already commercial trends rather than bringing about a change in the pattern.

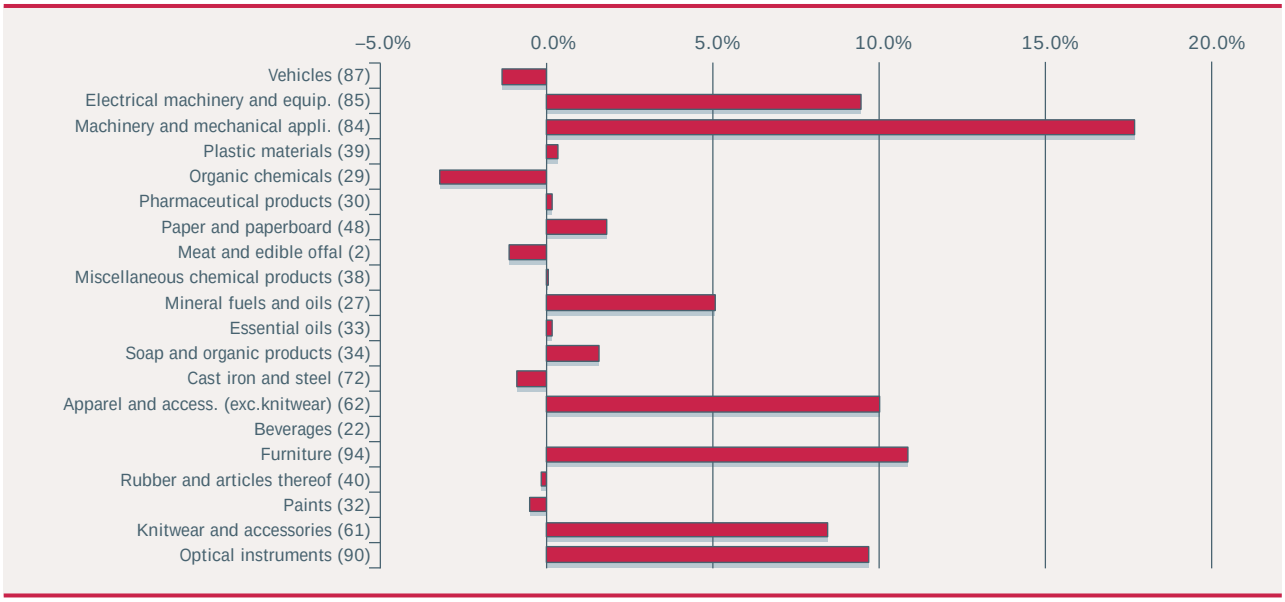
So far, only the evolution of the different product types has been analysed. In this respect, it can be clearly said that these years have consolidated already commercial trends rather than bringing about a change in the pattern.

There are only two exceptions with specific products the trend of which has changed after 2002. The first is textile products, which reversed the common export trend that year, starting a clear decline. The second is transport equipment, which increased its imports after 2002 in relation to previous years.

Distribution of exports and imports by origin and destination

Additionally, an analysis should be made on whether

Graph 9. **Contribution to trade deficit increase by chapters**



▲ The products with the worst trade balance development over these years are clearly identified.

the pattern has changed as to geographical areas from which imports come or to which exports go. However, it should be first checked if there is any relation between the product type and the specific importing or exporting country, i.e. if there is a certain pattern associating specific products with specific regions.

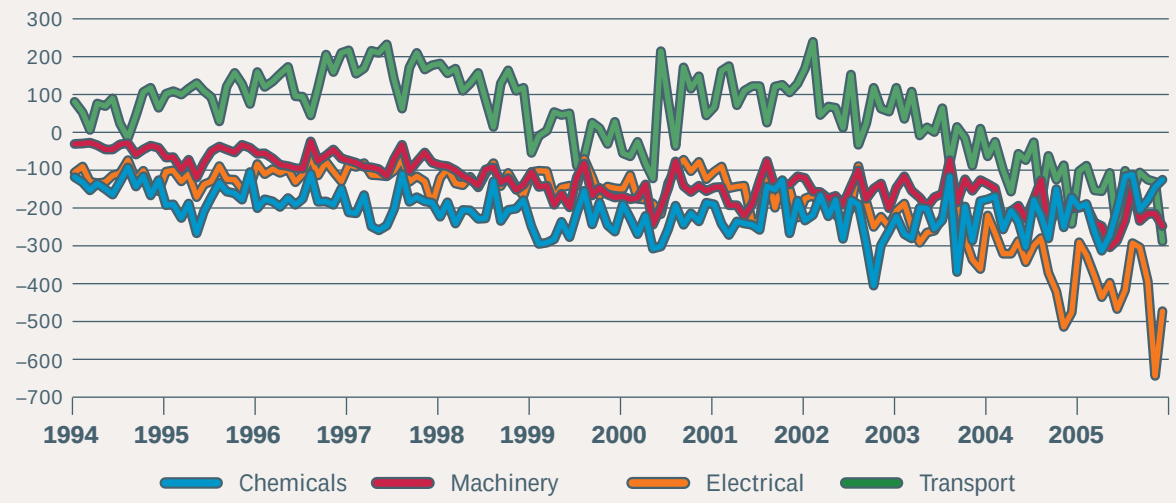
When analysing the information crossing over the country of origin or destination with the product type (according to four-digit TARIC), the conclusion is plain: there is no relation at all. More precisely, when analysing cross-over information, it turns out that there is just one single relevant parameter, namely the intensity of trade relations with that country. In other words, there are countries with which there are strong trade bonds and others with weaker ones. Here come in the usual factors well studied in specific literature, such as distance and transport and transaction costs.

The product type variable is much more important than the country variable.

If the analysis is restricted to those countries with exchange (either exports or imports) above 1% of the total volume, the list will just include 25. In fact, joint exports to and imports from these countries (charts A3 and A4) concentrate over 80% of the total volume. It is no surprise that only eight or nine countries (Germany, France, Italy, the United Kingdom, Japan, the United States, the Netherlands, Portugal and China) are really relevant in these trade relations. However, the most striking feature when comparing the 1994 and 2005 import and export country lists is perhaps that there are only minor differences. In fact, the only relevant change relates to imports from China.

In short, these results confirm that the product type

Graph 10. **Evolution of the trade balance by activity branch**



▲ The graph shows the evolution of the balance of the four most relevant sectors: chemicals, machinery, electrical and transport equipment.

variable is much more important than that related to importing or exporting countries, which can be associated with the above conclusion by which the most important product categories are also the most exported ones.

Of course, this does not mean that the distribution by exported and imported products from each country is exactly the same but the product variable is much more important than the country variable. A more detailed analysis will allow to observe interesting differences such as the relative importance of textile imports from China (in both 1994 and 2002).

Distribution of exports and imports by activity branch

The above sections have shown that export and import trends growing at a different pace cause the trade balance gap to widen. However, no big changes by product type have been detected, whereas different trends and some specific peculiarities have been observed as to the countries of origin and destination but, generally speaking, the so-called degree of trade «intensity» (according to distance, accessibility, costs and related aspects) prevails rather than the product type. To complete this analysis a breakdown of foreign trade exchange by activity branch is necessary.

First of all, we find that a few branches take the lion's share of foreign trade. Specifically four of them concentrate over 60% of exports and 55% of imports. Moreover, comparing this distribution by branch between 1994 and 2005, we will find that there has been some shift in importance but the most relevant branches in 1994 were still the most relevant ones in 2005.

To analyse in detail the evolution of observed changes we can look at the dynamic aspect by means of the evo-

lution of this relevance over time. Based on this, it can be stated that no specific trend has taken place but there has been an oscillation around very stable values. This result is relevant as the distribution by activity branch is even more stable than the one observed above by product type.

However, if we analyse the disaggregated two-digit information of the Spanish National Classification of Economic Activities (CNAE), we can state that there have been more changes than initially presumed. These variations are observed especially in some industries after 2001.

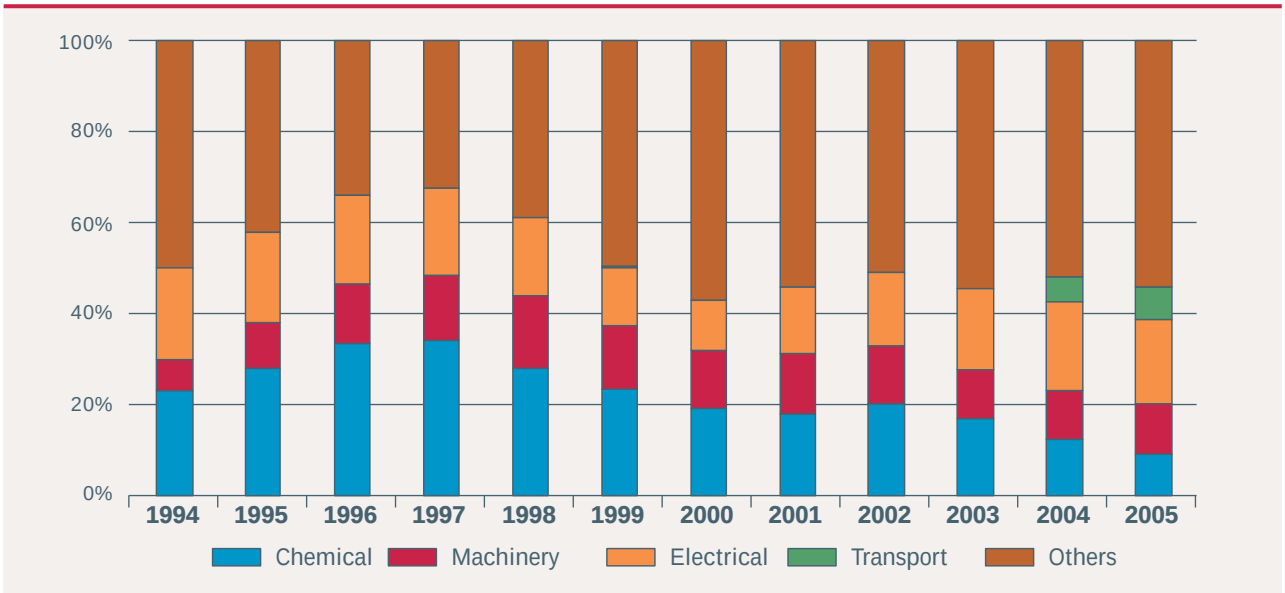
The data on charts A5 and A6 indicate that changes in the foreign trade structure could have occurred from 2001, as between then and 2005 more changes have been detected than between 1994 and 2001.

Changes in the foreign trade structure could have occurred from 2001

To go into further detail, graph 10 shows the evolution of the balance of the four most relevant sectors (chemicals, machinery, electrical and transport equipment), which we must not forget that concentrate over 60% of both exports and imports. From this graph we may conclude that the important change occurs in transport and electrical, electronic and optical equipment; furthermore, these four sectors as a whole only made a negative contribution to the trade balance after 2004 as the particular trade balance of transport equipment started featuring worse figures.

To assess more correctly the importance of this contribution to trade deficit, graph 11 compares its relative contribution based on the total. This graph shows how the joint contribution of these four branches to total trade deficit has been decreasing

Graph 11. **Contribution to deficit distributed by activity branch**



▲ To assess more correctly the importance of this contribution to trade deficit, the graph compares its relative contribution based on the total.

ever since 1997. So despite being sectors generating foreign trade deficit, they are by no means the only culprits of trade balance deterioration. The most obvious case is chemicals, which has improved significantly its relative trade balance.

Another important issue to be analysed is whether the relevance of these sectors contributing most to foreign trade is due to their importance within overall Catalan economy. We will therefore compare their relevance in foreign trade with related production and employment figures.

We can observe that the four above sectors being the main contributors to foreign trade (chemicals, electrical, machinery and transport) are clearly less important as to production and employment. They can therefore be considered as industries specifically geared to foreign markets. However, the opposite case is seldom found. Only the food and publishing industries are much more relevant for production than foreign trade.

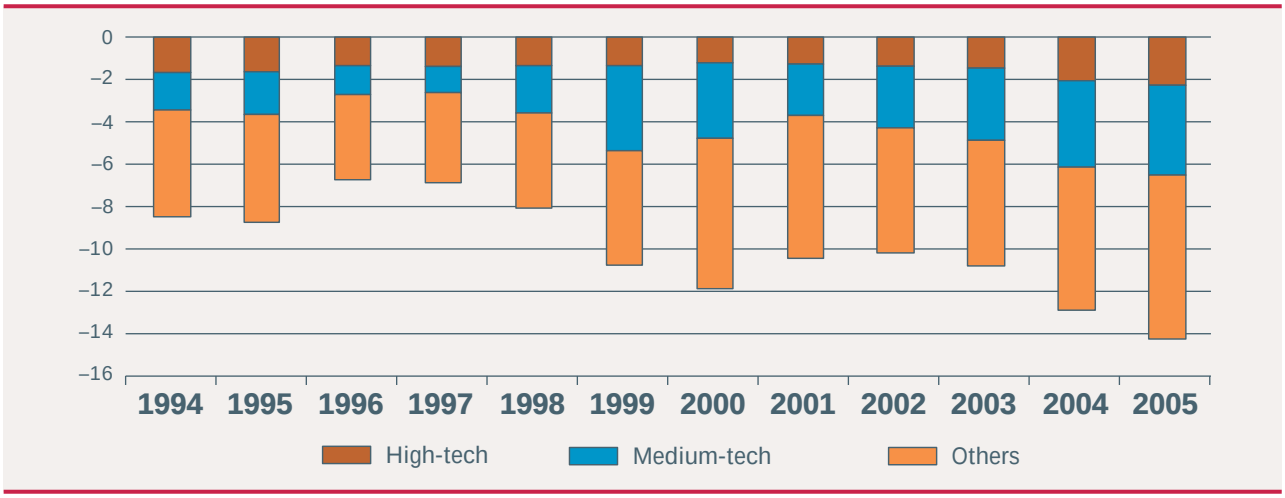
Distribution of exports and imports by degree of technological intensity

It is also interesting to see if foreign trade trends are different according to whether it is a more or less so-called technology-intensive activity.

It is often argued that for achieving higher economic growth it is recommendable to foster more technology-intensive activities, but one can ask if these activities generate more or less trade deficit compared to the rest, at least in our country. To answer this question we need to confront a methodological difficulty due to the fact that it is not possible to set a clear borderline between technology-intensive and non-technology-intensive activities based on the usual international trade classifications. Therefore, any approach to such a distinction will be a mere attempt to simplify a much more complex reality.

Despite these difficulties we believe that this issue is rele-

Graph 12. **Evolution of the trade balance (related to GDP)**



▲ Evolution of the trade balance in each category over the period analysed in this paper, i.e. 1994 to 2005.

vant and have therefore based our analysis on the definitions proposed by IDESCAT on what sectors are more technology-intensive. According to this classification, we consider as high-technology sectors those encompassed in the CNAE codes 30, 32 and 33, while the medium-technology ones are those corresponding to CNAE codes 24, 29, 31, 34 and 35.

The rest of sectors will obviously be considered as low-technology. Once divided into these three categories, we can have a look at the evolution of total exports and imports and the trade balance in each category over the period analysed in this paper, i.e. 1994 to 2005.

Looking at the time profile of exports, imports and the balance we will conclude that the proportion of medium-technology exports is quite high (over 60% over the whole analysed period). In fact, this rate is much higher than the proportion of these sectors in imports.

Another aspect to be pointed out is that in spite of a general downward trend in the trade balance – especially from 2001 – in the three activity groups, this has been much stronger in low-technology activities than in the others. However, it is important to remind here, as has been stated earlier, that we must not forget that this increase in foreign trade needs to be placed in due relation with the relevance of each group of activity.

Analysis at current vs. constant prices

The analysis made so far has been based on export and import data measured at current prices (just like data referred to inbound and outbound value are gathered). One could therefore think that price variations over time may affect subsequent conclusions.

Price variations over time may affect subsequent conclusions.

Given that data are available in both euros and weight, it is possible to create own deflators working at the maximum disaggregation level (product type, three-digit TARIC code). However, without doing such an accurate analysis it can be stated that the results would be similar as the characteristics of the time series reflecting the evolution of exports and imports in physical units are the same as if measured in monetary units. Only some change in trends can be observed.

Conclusions

2001 marks the start of a trend change in the foreign trade pattern of Catalan economy. This change, related to the introduction of the euro and the effect this had on relative prices and their visibility, did not come about suddenly but progressively, so we cannot exclude that we are still in a transitional stage. We therefore may need to wait some years to see how the new foreign trade pattern becomes consolidated. This change of pattern is most probably intricately related to a shift in the production structure of Catalan economy.

It is precisely during this transitional stage towards a new foreign trade pattern when the pace of trade deficit growth increased. This acceleration is also due to imports being much more sensitive to economic cycles than exports.

Changes do not only affect the relevance of each product, branch our country but there is also a clear variation in coverage after 2001, especially with some types of products and branches.

Based on these conclusions it is possible to think of future action lines to ensure that current trade deficit does not slip into a structural problem

on the long run. However, several related matters need to be considered. First of all, this paper starts from a limitation. Only foreign exchange of goods has been analysed. The study should go into further detail and include the service flows abroad and acquisitions and sales of goods and services in the rest of Spain. We can assume that in developed economies as our one, manufacturing industries may be replaced to a certain extent by services in foreign exchange.

Secondly, the current globalisation process also means that it is easier for companies to go international. In this respect, Catalan companies looking for lower production costs and new markets open plants abroad so they do not export out of Catalonia anymore. Furthermore, the increase in imports of products with less added value may partly come from these plants. Developed countries like Catalonia also intensify service exchange at international level, and WTO agreements have encouraged the advent of new main players in trade relations such as China.

Finally, the changes of consumption patterns also affect the structure of foreign exchange relations.

To summarise very briefly, action should consider the following items:

- Special care needs to be taken to clearly identify where the current transition process is leading to, especially when analysing the evolution of exports and imports once the next recession sets in.

- Given that structural trends towards an increase of trade deficit due to different growth patterns of imports and exports are observed, short-term policies will not help overcome this deficit. Structural issues need to be addressed.

- The way of acting most directly on reducing trade deficit is to modify the specialisation profile, especially related to product types.

- It seems that there is room for improving inter-industry instead of intra-industry trade, which is now predominant.

- Related to the previous item, encouraging the export of high-demand products also seems to be a good strategy, as is diversification towards more dynamic markets with a higher growth potential, especially big non-European markets like China, India and the United States.

- Apart from other positive effects, anything encouraging specialisation in more technology-intensive branches will also result in a reduction of foreign deficit.

ANNEX

Distribution of exports and imports by origin and destination, product and activity branch (1994-2005)

Chart A1. Distribution of exports and imports by TARIC section (in percent)

		1995		1997		1999		2001		2003		2005	
		Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
AN	Live animals and animal products	2.6%	3.5%	2.9%	3.1%	2.8%	3.1%	3.1%	3.2%	3.4%	3.0%	3.3%	2.9%
VE	Vegetable products	2.7%	5.4%	2.8%	4.5%	2.0%	3.9%	2.1%	3.3%	2.3%	3.3%	2.3%	3.6%
GR	Fats and oils	1.4%	1.1%	1.8%	0.7%	1.3%	0.6%	1.2%	0.5%	1.4%	0.6%	1.3%	0.6%
AL	Prepared foodstuffs	4.4%	5.5%	4.9%	5.2%	5.0%	5.2%	4.8%	5.5%	4.8%	5.7%	4.5%	4.9%
MI	Mineral products	2.2%	5.3%	2.0%	3.9%	1.6%	3.5%	1.8%	3.1%	1.9%	3.3%	2.2%	3.7%
QU	Products of chemical industries	11.8%	15.6%	11.9%	16.8%	13.0%	15.9%	14.4%	16.2%	16.0%	16.5%	16.7%	15.1%
PL	Plastics and articles thereof	9.1%	7.2%	8.4%	7.2%	8.7%	7.7%	8.5%	7.3%	9.2%	7.6%	10.2%	7.9%
PE	Skins, leather, fur and articles thereof	2.5%	1.3%	1.7%	1.5%	1.5%	1.2%	1.2%	1.5%	1.1%	1.2%	1.1%	1.2%
FU	Wood, charcoal, cork and articles thereof	0.8%	0.7%	0.7%	0.7%	0.8%	0.9%	0.8%	0.8%	0.8%	0.9%	0.5%	0.9%
PA	Pulp of wood or of other fibrous cellulosic material	4.8%	3.9%	4.3%	3.3%	4.1%	3.3%	4.5%	3.0%	4.2%	3.0%	3.8%	2.7%
TE	Textiles and textile articles	9.5%	7.7%	9.6%	8.7%	10.2%	8.5%	9.3%	8.6%	8.6%	8.4%	7.6%	8.2%
CA	Footwear, headgear and umbrellas	0.3%	0.5%	0.2%	0.9%	0.3%	0.8%	0.2%	0.8%	0.2%	0.7%	0.2%	0.9%
CE	Articles of stone, ceramic products, glass and glassware	1.9%	1.3%	1.7%	1.4%	1.7%	1.5%	1.7%	1.4%	1.7%	1.4%	1.7%	1.3%
PP	Pearls, precious stones etc.	0.1%	0.2%	0.1%	0.2%	0.2%	0.3%	0.1%	0.6%	0.1%	0.5%	0.1%	0.4%
ME	Base metals and articles thereof	16.9%	20.6%	16.2%	21.4%	16.6%	21.7%	15.9%	21.4%	14.8%	20.3%	15.1%	21.1%
MA	Machinery, mechanical appliances, electrical equipment	12.1%	10.7%	12.3%	10.6%	12.0%	10.6%	12.5%	12.1%	11.7%	11.6%	11.0%	10.7%
MT	Transport equipment	11.0%	3.8%	11.9%	3.8%	11.9%	4.6%	11.5%	4.3%	11.8%	4.5%	12.6%	5.4%
OP	Optical instruments and apparatus	1.4%	3.5%	1.5%	3.9%	1.5%	4.1%	1.7%	3.8%	1.8%	4.1%	2.0%	4.4%
AR	Arms and ammunition	1.7%	0.7%	1.8%	0.7%	2.0%	1.1%	1.8%	1.0%	1.7%	1.7%	1.7%	2.2%
DI	Miscellaneous manufactured articles	1.2%	1.2%	1.2%	1.3%	1.3%	1.3%	1.3%	1.2%	1.2%	1.3%	1.2%	1.3%
OA	Works of art	1.8%	0.1%	2.0%	0.1%	1.6%	0.1%	1.6%	0.6%	1.5%	0.6%	1.1%	0.6%
TOTAL		**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Chart A2. Distribution of exports and imports by area of origin and destination (in percent)

	1995		1997		1999		2001		2003		2005	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
Germany	17.4%	20.0%	15.6%	19.7%	14.6%	18.9%	13.2%	19.1%	12.5%	19.8%	11.8%	18.5%
France	19.9%	14.9%	17.2%	14.8%	17.7%	13.8%	18.9%	12.5%	18.7%	12.3%	20.4%	11.7%
United Kingdom	6.1%	6.2%	6.9%	7.3%	6.9%	6.1%	6.9%	5.7%	7.9%	5.1%	7.2%	4.6%
Italy	10.8%	13.3%	11.4%	13.0%	10.4%	12.3%	10.4%	11.9%	10.3%	11.4%	9.7%	10.9%
Netherlands	3.2%	5.4%	3.3%	5.2%	3.4%	4.7%	3.8%	4.3%	3.5%	4.4%	3.3%	5.4%
Portugal	7.9%	1.5%	8.4%	1.5%	9.3%	1.7%	9.0%	1.7%	8.9%	2.0%	8.7%	1.7%
Rest of European Union	6.6%	5.4%	8.1%	5.6%	11.6%	10.7%	12.4%	10.1%	13.1%	10.8%	13.0%	11.4%
United States	3.0%	5.2%	3.3%	5.0%	4.0%	3.8%	3.3%	3.6%	3.4%	3.0%	2.8%	2.6%
Japan	2.6%	6.0%	1.0%	4.6%	0.8%	5.5%	0.8%	4.7%	0.7%	5.2%	0.9%	4.6%
Africa	4.0%	4.9%	3.9%	4.5%	3.9%	3.7%	3.5%	6.4%	3.6%	5.5%	3.6%	5.0%
Latin America	5.3%	2.7%	7.0%	3.4%	6.4%	3.0%	6.6%	3.1%	5.0%	2.8%	4.9%	3.2%
Middle East	2.4%	1.3%	2.6%	1.5%	2.2%	1.1%	2.3%	1.2%	2.1%	1.2%	1.9%	1.7%
China	0.9%	2.4%	0.4%	3.1%	0.4%	3.8%	0.6%	3.9%	1.2%	4.7%	0.9%	6.0%
India	0.2%	0.6%	0.2%	0.7%	0.2%	0.7%	0.2%	0.7%	0.2%	0.7%	0.3%	0.8%
Rest of the world	9.6%	10.2%	10.6%	10.0%	8.3%	10.3%	8.0%	11.2%	8.6%	11.0%	10.6%	11.9%
TOTAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Chart A3. Distribution of exports and imports by CNAE code (in percent)

		1995		1997		1999		2001		2003		2005	
		Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
1	Agriculture, stock farming, hunting	2.2%	6.4%	2.3%	6.1%	1.7%	4.6%	1.7%	3.7%	1.9%	3.7%	1.8%	3.3%
2	Forestry	0.0%	0.1%	0.0%	0.1%	0.0%	0.1%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%
5	Fisheries, aquaculture and related activities	0.1%	0.4%	0.1%	0.4%	0.1%	0.4%	0.1%	0.3%	0.2%	0.3%	0.2%	0.3%
10	Anthracite, coal, lignite and peat mining	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
11	Raw oil and natural gas extraction	0.0%	3.6%	0.0%	3.9%	0.0%	2.8%	0.0%	4.7%	0.0%	4.1%	0.0%	5.1%
12	Uranium and thorium mining	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
13	Metal mining	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

(Continuation)		1995		1997		1999		2001		2003		2005	
		Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
14	Non-metal and non-energetic mineral extraction	0.1%	0.2%	0.1%	0.2%	0.1%	0.2%	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%
15	Food and beverage industries	7.8%	7.7%	8.9%	7.5%	8.3%	6.8%	8.3%	7.0%	8.7%	6.8%	8.7%	5.9%
16	Tobacco industries	0.1%	1.2%	0.1%	0.4%	0.1%	0.6%	0.1%	0.8%	0.1%	0.8%	0.0%	0.8%
17	Textile industries	5.8%	3.5%	5.7%	3.9%	5.5%	3.9%	4.9%	3.6%	4.5%	3.4%	3.7%	2.7%
18	Garment and fur industries	2.5%	2.0%	2.8%	2.5%	3.2%	2.7%	2.8%	2.9%	3.2%	3.3%	2.6%	3.5%
19	Leather processing, tanning and finishing	1.4%	0.9%	1.1%	1.3%	1.1%	1.1%	1.0%	1.2%	0.9%	1.0%	0.8%	1.0%
20	Wood and cork industries	0.7%	0.6%	0.6%	0.6%	0.7%	0.8%	0.7%	0.6%	0.7%	0.7%	0.4%	0.6%
21	Paper industries	2.7%	3.2%	2.2%	2.5%	2.2%	2.6%	2.4%	2.3%	2.5%	2.2%	2.2%	1.8%
22	Publishing, graphic arts and reprographics	1.8%	0.5%	1.8%	0.5%	1.5%	0.4%	1.6%	0.4%	1.3%	0.4%	1.1%	0.3%
23	Coking, oil refining and nuclear plants	1.1%	1.7%	1.0%	1.4%	0.8%	1.5%	0.9%	3.1%	1.0%	2.8%	1.1%	3.9%
24	Chemical industries	16.7%	20.3%	16.2%	20.3%	17.4%	19.2%	18.4%	18.2%	21.0%	19.7%	22.3%	17.3%
25	Manufacturing of rubber and plastic products	4.0%	3.1%	3.7%	3.1%	3.9%	3.4%	3.8%	3.3%	3.9%	3.3%	4.1%	3.1%
26	Manufacturing of other non-metal mineral products	2.2%	1.3%	2.1%	1.4%	1.9%	1.4%	1.7%	1.2%	1.7%	1.2%	1.6%	1.1%
27	Metallurgy	2.2%	4.4%	1.8%	4.2%	1.7%	3.9%	1.7%	4.8%	2.0%	4.2%	2.7%	4.2%
28	Manufacturing of metal products except machinery	2.8%	2.3%	2.7%	2.4%	3.2%	2.6%	3.1%	2.5%	3.1%	2.5%	2.9%	2.4%
29	Machine engineering and mechanical equipment industries	9.4%	9.6%	9.1%	10.3%	9.0%	10.7%	8.2%	9.6%	7.7%	8.7%	6.9%	8.4%
30	Manufacturing of office and computer equipment	2.3%	3.5%	2.0%	3.1%	3.4%	2.7%	2.2%	1.8%	1.1%	1.8%	1.1%	2.9%
31	Manufacturing of electric machinery and equipment	5.6%	4.1%	5.5%	3.9%	5.7%	3.8%	5.3%	4.2%	4.5%	4.4%	4.7%	3.9%
32	Manufacturing of electronic equipment	4.1%	4.5%	4.6%	4.5%	4.8%	4.4%	5.7%	5.5%	5.9%	5.2%	5.4%	4.9%
33	Manufacturing of precision, optical and clock equipment	1.2%	3.1%	1.3%	3.3%	1.4%	3.4%	1.5%	3.1%	1.7%	3.3%	1.7%	3.6%
34	Manufacturing of motor vehicles and trailers	20.2%	8.6%	20.1%	8.4%	17.6%	12.0%	19.5%	11.5%	18.0%	12.4%	19.7%	14.3%
35	Manufacturing of other transport equipment	0.8%	0.7%	1.3%	1.4%	1.9%	1.4%	1.7%	1.0%	2.0%	1.1%	1.7%	1.7%
36	Manufacturing of furniture; other manufacturing industries	2.2%	1.9%	2.3%	2.0%	2.5%	2.2%	2.3%	2.1%	2.2%	2.4%	2.2%	2.7%
40	Production and distribution of electric power, gas, steam	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
72	Computer activities	0.0%	0.2%	0.1%	0.2%	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%
74	Other business activities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
90	Public sanitation activities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
92	Recreational, cultural and sports activities	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.3%
93	Miscellaneous personal service activities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
TOTAL		**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

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Notes

1. We would like to thank Catalan Institute of Statistics (IDESCAT) for its cooperation in providing us with this information.

2. The start of the study was set in 1994 as it is the first year for which we have sufficiently disaggregated information.

3. TARIC (Tarif Integré Communautaire) or Integrated Tariff of the European Communities is a classification of international trade products.

4. For product codes cf. chart A1 in the annex

5. For product codes cf. chart A1 in the annex

6. The Lorenz curve relates the cumulative percentage of all categories with that of exports or imports, classifying categories according to their relevance in increasing order.

7. The Gini index measures the degree of concentration based on the Lorenz curve, so the closer it is to one the higher the concentration, and the closer to zero the lower it is.

8. We have included the sector corresponding to CNAE code 24 into *chemicals*, CNAE code 29 into *machinery*, CNAE codes 30, 31, 32 and 33 into *electrical* and CNAE codes 34 and 35 into *transport*.