

THE EFFECTS OF EU ENLARGEMENT ON THE SPANISH ECONOMY: PRODUCTIVE
STRUCTURES AND TRADE FLOWS

The effects of EU enlargement on the Spanish economy: productive structures and trade flows

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Introduction

On 1 May this year the European Union took a far-reaching step in its project to achieve a single European market, with the accession of ten new members: Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia. Some figures help illustrate the scale of this enlargement. The population of these countries accounts for 16.3% of the enlarged EU, while their weight in real GDP stands at around 4%. The disparities in terms of per capita income between the new and existing members are substantial, and only Cyprus, Slovenia and Malta are close to the less developed States of the EU-15. The demographic and economic significance of the ten new members is very uneven, since Poland, the Czech Republic and Hungary alone account for 80% of their GDP.

The geopolitical dimension of this fifth enlargement has momentous implications for the workings of the EU, in both the political and institutional domain. But the development gap between the new and existing members also confers special characteristics on this process since, given the circumstances, adjustments in the financial framework and the redistribution of trade flows and of productive factors could prove greater than those recorded in previous enlargements.

Among the numerous implications of the enlargement, one of the areas arousing most interest is its impact on international trade and foreign direct investment flows. Since the late 1980s, when most of the enlargement countries began the transition towards a market economy, trade ties between the existing and new EU members have stepped up notably, in keeping with the progressive lifting of barriers stipulated in the European Association Agreements¹. Initially, the increasing trade with the enlargement countries was more favourable for the EU-15, since the dismantling of the protectionist barriers of the future members started from higher levels of protection. Nonetheless, in recent years imports of products from these countries have been gaining notable momentum.

The enlargement will undoubtedly bear on the Spanish economy not only via direct trade exchanges between the two areas, but also because Spanish exporters to the EU-15 market may be indirectly affected. The possibility of Spanish products being displaced by those from the new members will depend on the degree of similarity between their productive and trade structures, and also on their respective competitive positions. In this respect, it should be borne in mind that the growing presence of foreign capital in the eastern European economies – lured by the availability of highly-skilled labour at a comparatively low cost and by the geographical proximity of these countries to the major EU markets – is proving a crucial factor in the modernisation, opening up and transformation of the enlargement countries.

This paper focuses on the assessment of this latter aspect. In particular, through analysis of the productive and trade specialisation patterns the new members are pursuing, it is sought to ascertain whether the enlargement will entail, in addition to a heightening of Spanish trade with

1. The forthcoming Occasional Paper "Algunas implicaciones de la ampliación de la UE para la economía española" ("Implications of the EU enlargement for the Spanish economy") analyses the response by EU-15 and Spanish trade flows to this enlargement and the available leeway to continue increasing trade relations with the new members is estimated.

these countries, a sectoral or geographical restructuring of our industrial output and of our foreign trade flows. The analysis focuses primarily on manufacturing industry, since it is here where the effects of economic integration are most intensely perceived. The time span for the analysis is the period between 1995 – when these countries may be considered to have left behind the recession in which they were immersed following the transformation of their productive systems – and 2002, the latest year for which information is available. During this period, the opening up and integration of the enlargement countries into European markets was very intense. Indeed, a free-trade area for the exchange of industrial products was already practically in place in 2002, though certain restrictions on so-called “sensitive” products persisted. Consequently, the transformation of productive structures and trade flows witnessed since 1995 provides valuable information on the costs and benefits enlargement may have entailed for the Spanish economy, and it allows certain future developments to be anticipated.

The paper is structured as follows. After this introduction, the second section compares the productive and trade specialisation pattern of the new members with that of Spain and of the EU as a whole. The third section attempts to analyse in greater depth the degree of substitution of the new members’ tradable goods for those of Spain, using an approximate measure of product quality. Finally, the main conclusions are drawn.

The productive and trade specialisation pattern of the enlargement countries in comparison with Spain and the EU

Before embarking on the path of opening up and transformation, most of these countries had a pattern of industrial specialisation characteristic of less developed economies, with a marked orientation towards activities making intensive use of natural resources and unskilled labour and towards the so-called “heavy industries”. All these sectors had to undergo intense restructuring during the transition period, leading to a notable contraction in industrial activity during the early 1990s.

In 1995, the enlargement countries as a whole had an industrial production structure² that was broadly similar to that of the Spanish economy, although medium-high technology activities and, in particular, the production of motor vehicles, were more important in the Spanish structure, while other activities that make intensive use of natural resources (such as refined petroleum products and basic metals) had a greater weight in the enlargement countries. In comparison with the EU as a whole, both Spain and the enlargement countries specialised to some extent in low-technology industries, while more technologically complex activities had a relatively lower importance (see Chart 1).

The changes in the pattern of productive specialisation in the enlargement countries to 2001 (the latest year for which information on industrial production is available with the level of sectoral detail used in this paper) reveal a shift in production towards activities with higher technological requirements, away from industries that make intensive use of unskilled labour in which, according to traditional trade theory, there might be expected to be greater specialisation on account of the labour-cost advantages in these countries relative to their new trade partners. Between 1995 and 2001, the most dynamic industries were office machinery and computers, communication equipment and apparatus and, most especially, motor vehicles.

2. The figures used to analyse the changes in productive specialisation come from the Eurostat database “Structural Business Statistics” which only provides figures for output at current prices. That said, figures for value added at constant prices from the OECD’s STAN database for Hungary, Poland, the Czech Republic and Slovakia enable the conclusions drawn from the Eurostat data to be corroborated in the case of these countries. Meanwhile, the classification of industrial activities by their technological intensity is that compiled by the OECD, taking into consideration the overall intensity of the R&D expenditure of the various industries in the countries that provide this information at sector level.



SOURCES: Banco de España based on Eurostat SBSPLUS data.

a. Based on current price series.

This shift in the productive structure towards high and medium-high technology industries was the same as that seen in the Spanish economy, although in the case of the enlargement countries, the transformations were much more intense. Accordingly, in 2001, the weight of medium-high technology activities in the industrial production of the enlargement countries as a whole was similar to what it was in the Spanish economy, while high-technology industries had even achieved a higher relative weight in the former.

Compared to the EU, Spain and the enlargement countries were, in terms of productive specialisation, in a similar position. In 2001 they were relatively specialised in labour-intensive activities, while the presence of activities with a high technological content was smaller.

The pattern of export specialisation of these countries has followed the same trends as production. Charts 2 and 3 show the structure of the foreign trade of Spain and of the enlargement countries with the EU-15, as well as the weight of this market in the total exports and imports of both these geographic areas. As can be seen, there are significant similarities in the patterns of export specialisation of the Spanish economy and of the enlargement countries, both as regards their sectoral structure and their geographical orientation. In effect, during the period analysed, the changes in the export structure of these countries have led to an increase in the share of high and medium-high technology industries, to the detriment of more traditional activities, while the focus of sales can be seen to be increasingly towards the EU market. As already seen in the case of the productive structures, these transformations have the same features as those recorded by the Spanish economy, although their intensity has been greater, which has enabled the pattern of specialisation of the two areas to converge. Thus, in 2002, the structure of exports of both was centred on medium-high technology activities, although motor vehicles were still more important in the Spanish structure. In turn, the high-technology industries (and, especially, office machinery and computers and communication equipment and apparatus) were relatively more important in the enlargement countries.

On the imports side, the enlargement countries are characterised by the growing weight of motor vehicles and communication equipment and apparatus. The fact that these industries



SOURCES: Banco de España based on Eurostat COMEXT data.

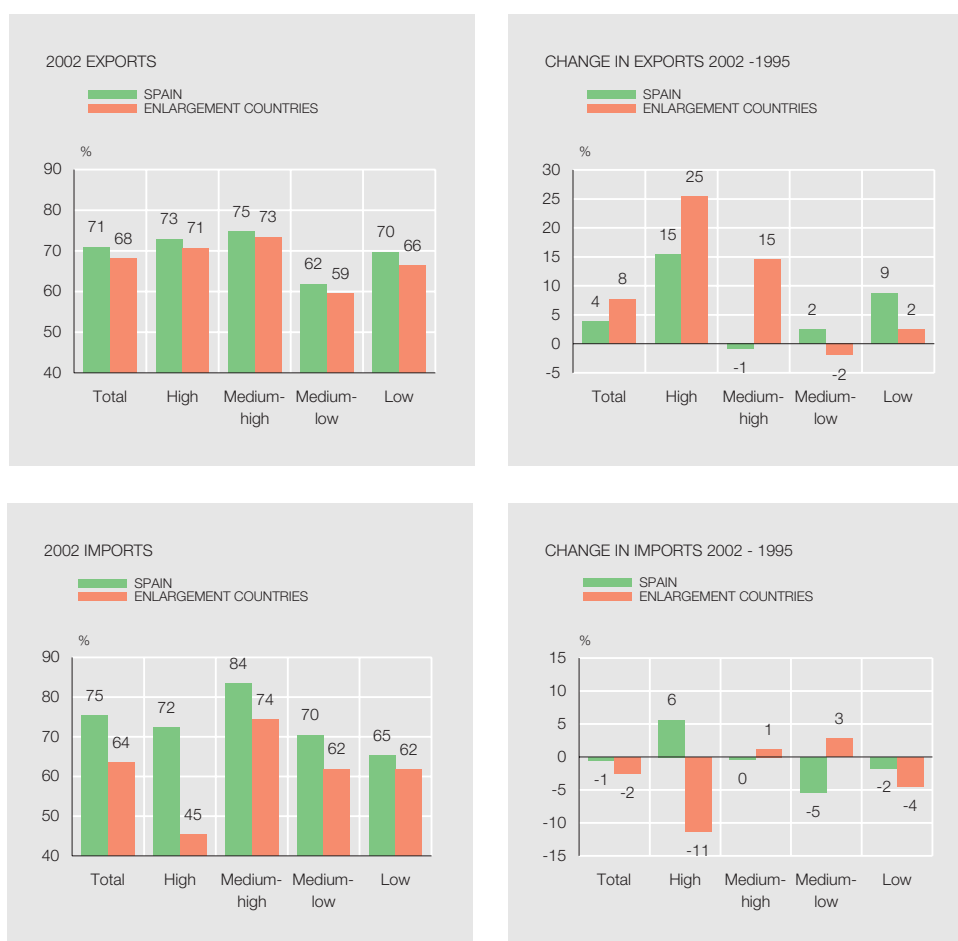
a. The enlargement countries do not include Cyprus or Malta. The underlying data are in current prices.

have also displayed greater dynamism in production and in foreign sales is linked to the presence therein of multinationals whose strategy is based on the international division of productive processes [see Freudenberg and Lemoine (1999)].

It follows from the foregoing that the enlargement countries, far from having specialised in the most labour intensive industries, as some authors anticipated [see Neven (1995)], are developing a pattern of specialisation based on activities requiring higher technology and the intensive use of skilled labour. The comparative advantage indices³ presented in Chart 4 support this conclusion. Thus, the comparative advantage that these countries used to have in the low and medium-low technology industries vis-à-vis the EU diminished in most cases during the period under analysis. By contrast, in 2002, they had comparative advantages in certain high and medium-high technology industries, where in the past they had accumulated large trade deficits. In comparison with the structure of advantages and disadvantages of Spanish trade with

3. Revealed comparative advantage indices are defined as $\left(\frac{x_i - m_i}{x_i + m_i} \right)$, so that the index of each industry for a specific

period represents the deficit or surplus of that industry as a percentage of its total trade. In the absence of distortions arising from the existence of trade barriers, this index might be expected to have positive (negative) values in those industries that make intensive use of the factor of production in which the country enjoys comparative advantages (disadvantages) relative to the reference area.



SOURCES: Banco de España based on Eurostat COMEXT data.

a. The enlargement countries do not include Cyprus or Malta. The underlying data are in current prices.

the rest of the countries of the EU-15, it is important to highlight the surplus that these countries display in certain specific branches, such as motor vehicles and other transport equipment (railway equipment and boats), where the comparative advantages of the Spanish economy are concentrated.

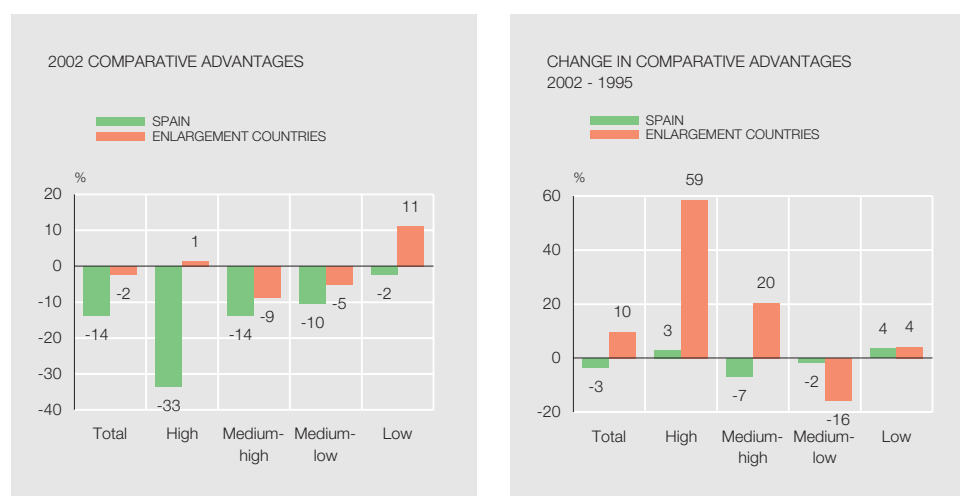
Specialisation in quality segments

The information provided by analysing the similarities between the productive and trade structures is not sufficient to conclude that the competitive pressures faced by the Spanish economy, in the context of integration of these countries, has been increasing over time. Nowadays, most of the products traded on international markets are not homogeneous; on the contrary, they are mostly products that are differentiated by their design or quality. In consequence, industrial competitiveness increasingly depends on elements of this kind which are, in turn, closely related to the technological capacity of the countries [see Helpman and Krugman (1995)] and which qualify the effect of price and cost differences. In this respect, in order to enable the magnitude of the competition faced by Spanish products destined for the EU market to be assessed, it is necessary to study whether the exports of each industry in Spain and the enlargement countries are in different quality segments.

To carry out this task, the empirical literature has developed a method based on the comparison of unit export values (i.e. the nominal value of the sales of a particular product divided by

**COMPARATIVE ADVANTAGES IN THE TRADE OF SPAIN
AND OF THE ENLARGEMENT COUNTRIES WITH THE EU BROKEN DOWN
BY TECHNOLOGICAL INTENSITY (a)**

CHART 4



SOURCES: Banco de España based on Eurostat COMEXT data.

a. The enlargement countries do not include Cyprus or Malta. The underlying data are in current prices.

their physical weight), as a way of approximating the quality of the exports of a country to a certain market.

Of course the results of this exercise have to be analysed with some caution and can only be indicative of certain trends that may eventually become significant. On one hand, the unit export and import values constitute an imperfect approximation of prices, since the foreign trade statistics do not enable an individual product to be identified, but only a set of similar products, so that these indicators reflect not just the differences in the prices of the products, but also the discrepancies in the composition of each heading. To avoid this problem, the calculations should be made, as far as possible, with the aim of minimising the risk of comparing different products. The six-digit classification of the combined nomenclature is considered appropriate for this purpose, in which more than 5,000 products are identified⁴.

The basic assumption of this procedure is that higher quality products incorporate some characteristic that consumers value positively, so that they are prepared to pay a higher price. However, in practice, price levels are imperfect indicators of differences in product quality since they reflect the influence of many other factors. In consequence, while in some industries unit value may be an indicator of production cost, so that increases in it may reflect a rise in inflationary pressures and a loss of competitiveness, in others they might reflect an increase in quality. Thus, in order to be able to conclude that an increase in the relative unit values of an industry reflects an improvement in the quality of its products, the analysis of these indicators needs to be supplemented by a study of export shares⁵. That way it can be seen whether the increase in prices is accompanied by an increase or a decline in export shares in that market, helping to discriminate between those movements

4. In this paper, unit value ratios are calculated using the foreign trade figures at the 6 digit level of the combined nomenclature, with the results subsequently being aggregated to the various NACE sectors in accordance with the weight of each heading in the sector's total exports. For more details, see Gordo, Moral and Pérez (2004), mimeo. 5. It is worth stressing that, in any case, there is presently no better alternative that is easy to calculate. Aiginger (2000) justifies the relevance of this procedure for assessing the international competitiveness of countries and discusses in greater detail the problems involved in using unit values to approximate prices.

COMPARISON OF PRICE LEVELS IN SPAIN AND IN THE ENLARGEMENT COUNTRIES WITH THE EU-15 BROKEN DOWN BY TECHNOLOGICAL INTENSITY (a)

TABLE 1

	1995		2001	
	SPAIN	ENLARGEMENT COUNTRIES	SPAIN	ENLARGEMENT COUNTRIES
TOTAL MANUFACTURING	0.94	0.80	0.96	0.98
HIGH-TECHNOLOGY INDUSTRIES	0.96	0.82	1.03	1.26
Aircraft	0.89	0.52	1.35	0.84
Pharmaceuticals	0.62	0.76	0.69	0.71
Office machinery and computers	1.22	0.77	1.44	1.16
Communication equipment and apparatus	0.97	0.87	1.02	1.39
Medical, precision and optical instruments	1.02	0.78	1.01	0.86
MEDIUM-HIGH TECHNOLOGY INDUSTRIES	0.87	0.76	0.90	0.96
Machinery and electrical equipment	0.89	0.78	0.94	1.01
Motor vehicles	0.85	0.85	0.86	1.09
Chemicals (except pharmaceuticals)	0.91	0.83	1.02	0.87
Railway and other transport equipment	1.03	0.63	1.11	0.92
Machinery and equipment n.e.c.	0.89	0.60	0.91	0.69
MEDIUM-LOW TECHNOLOGY INDUSTRIES	0.98	0.77	0.98	0.84
Boats	0.90	0.79	1.01	0.94
Rubber and plastic products	1.02	0.71	0.98	0.83
Refined petroleum products and coke	1.12	0.94	1.10	0.92
Other non-metallic mineral products	0.88	0.77	0.91	0.84
Basic metals and fabricated metal products	0.99	0.77	0.98	0.82
LOW-TECHNOLOGY INDUSTRIES	1.08	0.85	1.06	0.94
Food products, beverages and tobacco	1.02	0.87	1.01	0.94
Textiles and textile products, leather and leather products	1.22	0.99	1.19	1.10
Wood and wood products, paper publishing and printing	0.94	0.70	0.95	0.77
Other manufactures	1.12	0.66	1.08	0.85

SOURCES: Banco de España based on Eurostat COMEXT data.

a. The enlargement countries do not include Cyprus or Malta. Ratios.

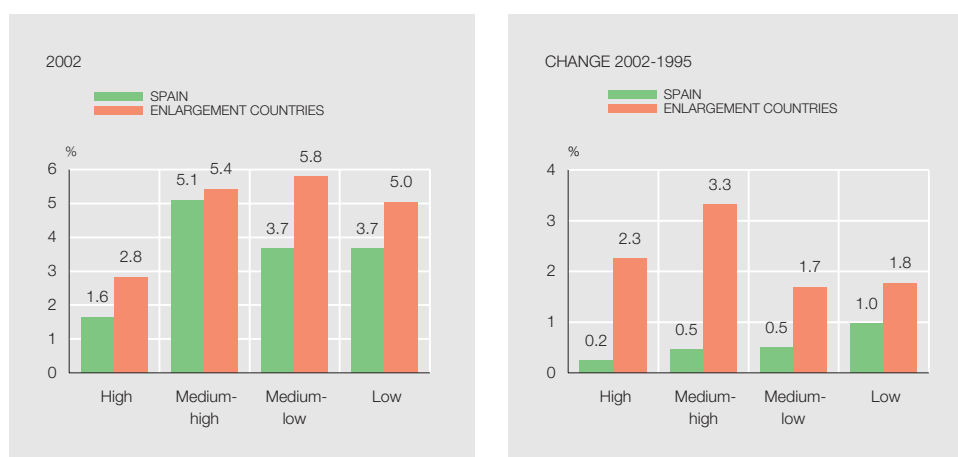
that reflect losses of price competitiveness and those that may be associated with quality improvements.

Despite these limitations, the application of this methodology to the Spanish economy is relevant, not to obtain established facts so much as to highlight those trends that need to be assessed. In particular, this paper analyses the ratios of the unit values of exports to the European market of the candidate countries, on one hand, and of Spain, on the other, to the unit values of the total imports of the EU countries.

The results obtained by comparing the unit values of Spanish exports to the EU-15 market with those of the rest of the suppliers of this market show that, in general, the quality of Spanish exports, so approximated, is slightly lower than that of the total imports of this area. This conclusion has to be qualified, however, since the results across the different industries and the trends in export shares are seen to be highly disparate (see Table 1 and Chart 5). Thus, in industries with a lower technological content, the combination of higher relative prices with increases in market share could indicate that Spanish exports are of higher quality than those of other EU suppliers. By contrast, in the medium-high technology industries, where the Spanish pattern of export specialisation is focused, the lower export prices, together with the stabilisation of export shares, may

**EXPORT SHARES OF SPAIN AND THE ENLARGEMENT COUNTRIES
IN THE EU-15 BY TECHNOLOGICAL INTENSITY (a)**

CHART 5



SOURCES: Banco de España based on Eurostat COMEXT data.

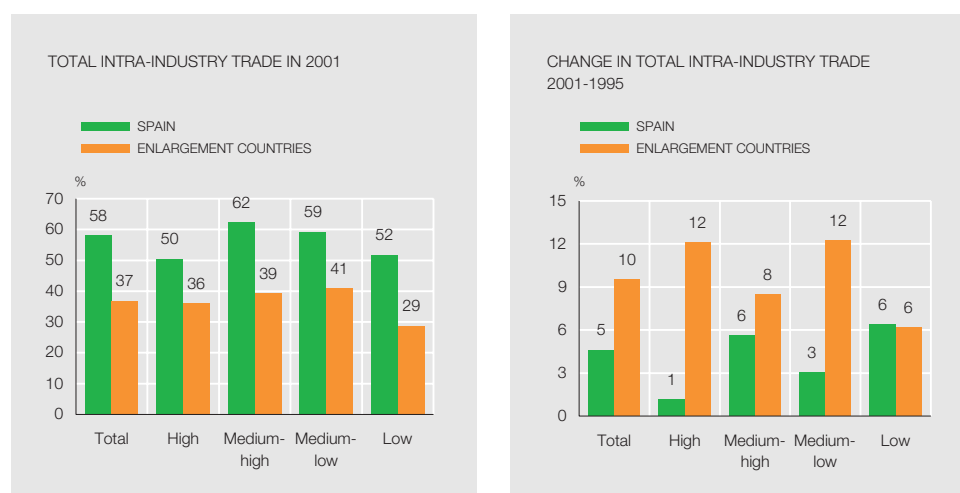
a. The enlargement countries do not include Cyprus or Malta. The percentage of EU-15 imports that come from Spain and from the enlargement countries.

reflect the presence of lower levels of quality. In high-technology industries, the low level of innovation and the difficulty they have increasing their presence in international markets suggests that, in this case, the level of relative prices does not reflect differences in quality.

Since 1995, the enlargement countries have significantly reduced the negative differentials in their relative export prices, both with respect to Spain and to the rest of the EU suppliers. Price increases have been very significant in the high and medium-high technology industries, while in the labour-intensive industries their price levels remain low. The fact that this increase in export prices has been accompanied by a notable improvement in their export shares in the European market in all industries and, especially, in those with a high and medium-high technological content suggests that underlying the process there has been an improvement in the quality of production⁶.

In addition to price levels, the analysis of intra-industrial trade in Spain's and the enlargement countries' trade with the EU-15 may provide further information on the ability of the firms of these two areas to establish competitive strategies based on improvements in the quality of their products [see Gordo and Martín (1996) and Martín et al. (2002)]. As is well known, intra-industrial trade consists of the simultaneous exchange of differentiated products belonging to the same sector or industry. The differentiation of the products may be horizontal in nature, when it is based on design differences or on the creation of brands, or vertical in nature, when products differing in quality are exchanged, sometimes as a result of differences in the technological capacity of the countries concerned.

6. In this respect, the information offered by the Vienna Institute for International Economic Studies (WIIW) on the changes in unit labour costs and in productivity in the various industrial sectors in some of these countries reveals that the productivity increases recorded by the new members are concentrated especially in those activities with a higher technological content, characterised by a high presence of foreign capital. This has enabled unit labour costs in this type of industry to improve in recent years. Meanwhile, the results obtained coincide with those of Landesmann (2003) and Havlik et al. (2001) who, using a similar procedure, found some convergence in the price levels of these countries towards those of the other suppliers of the EU during the period 1995-1999; moreover, according to the results of these authors, the convergence was especially significant in more technology-intensive products, where the gap was completely eliminated.



SOURCES: Banco de España based on Eurostat COMEXT data.

a. The enlargement countries do not include either Cyprus or Malta. This indicator is obtained from the industrial trade indicator estimated at the 6-digit level applying the expression: $1 - \text{abs}((x-m)/(x+m))$.

Charts 6 and 7 present the results of the analysis of the characteristics of the intra-industrial trade of Spain and the enlargement countries with the EU-15⁷. As can be seen, the enlargement countries' intra-industrial trade with the EU-15 represents 37% of all their trade, so that their trade is mainly inter-industrial in nature, reflecting the differences that still exist in the degree of development of these two areas and in their respective factor endowments. That said, the share of intra-industrial trade in the trade of these countries with the EU-15 is increasing notably, being especially significant in certain medium- and high-technology industries, in which multinational firms have a stronger presence.

At the same time, most intra-industrial trade consists of the exchange of vertically differentiated products, the quality of the products which they export to the EU-15 being inferior to that of the products that they import from this area. However, in high-technology sectors and in transport equipment, the quality of the sales of these countries (approximated by the increases in unit values) must have improved notably, and in some sectors may even exceed that of products imported from the EU.

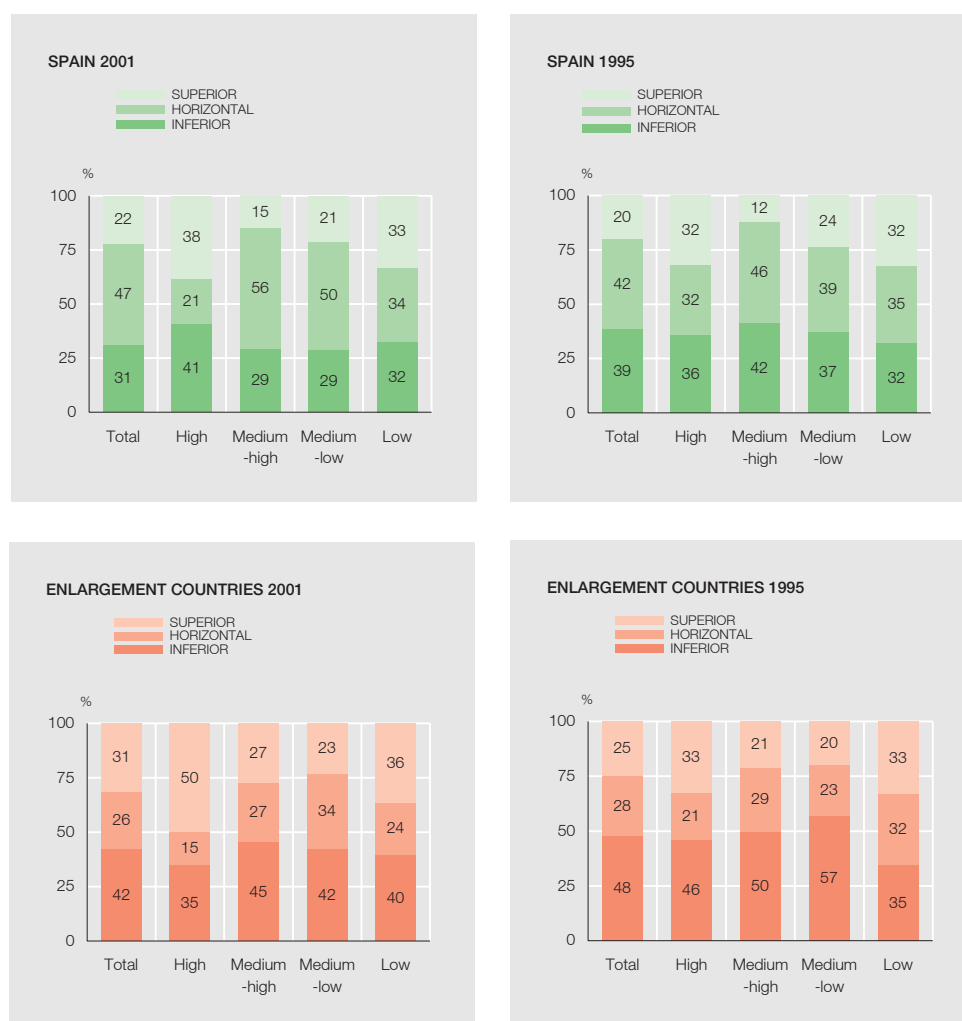
In the case of the Spanish economy, intra-industrial trade with the EU-15 represents 58% of total trade. Exchanges of a vertical nature also predominate here, except in the motor vehicles industry. Moreover, the quality of the products exported by the Spanish economy is

7. The importance of total intra-industrial trade is measured using the Grubel-Lloyd index, which is defined as

$$\left[1 - \text{abs} \frac{x_i - m_i}{x_i + m_i} \right] 100$$

The values of this index range from 0, when there is no intra-industrial trade, to 100, in the event

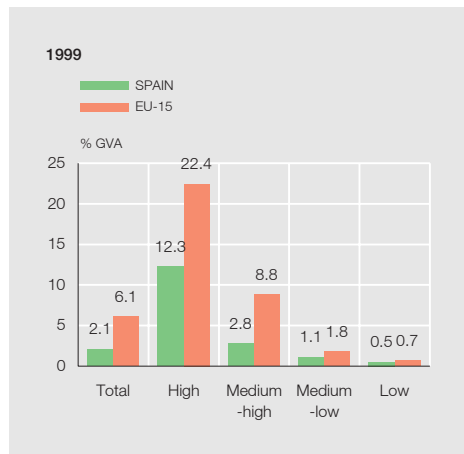
that all trade is intra-industrial in nature. To analyse how much of this trade consists of exchanges of products differentiated vertically and horizontally, the procedure established by Greenaway, Hine and Millneer has been followed. This is based on the differences in export and import unit values, which are used again to approximate the prices and the quality of the products. Intra-industrial trade is considered to be horizontal (vertical) in nature if the export unit values differ by less (more) than 15% from the import unit values. Within the trade of a vertical nature, it is important to distinguish that proportion in which the exports of Spain or of the enlargement countries have a higher quality than the imports from the EU (when the export unit values are more than 15% higher than the import ones) and that proportion in which Spain or the enlargement countries export inferior quality varieties (when the export unit values are more than 15% lower than the import ones)



SOURCES: Banco de España based on Eurostat COMEXT data.

The enlargement countries do not include Cyprus or Malta. This chart shows the percentage distribution of industrial trade according to the quality of the products sold which is approximated using export and import unit values. Vertical, superior (inferior) quality intra-industry trade is that in which the unit value of the exports to the EU-15 is 15% higher (lower) than the unit value of the imports from the EU-15. Intra-industry trade is horizontal if the differences between the unit values come within the 15% limit.

inferior to that of the imports from the EU in most activities, excluding the labour-intensive sectors, and no significant changes are discerned during the period analysed. In contrast with what seems to be occurring in the enlargement countries, the Spanish economy runs the risk of specialising in the lower quality segments of the high and medium-high technology industries, while its quality levels are higher in labour-intensive industries. This is consistent with the information supplied by the analysis of the innovative capacity of the Spanish economy. As seen in Chart 8, the gap between the intensity of innovation, approximated by R&D expenditure, in Spain and in the EU-15 is especially significant in the high and medium-high technology industrial sectors (in particular, in motor vehicles), where the Spanish economy's R&D expenditure represents 2.6% of the value added of this industry, as against 16.1% in the EU on average. This, among other factors, may help to explain the difficulty these industries have increasing their presence in the Spanish productive structure and in international markets.



SOURCE: OECD

a. Calculated on the basis of current price series.

Conclusions

The results presented in this article show an increase, in recent years, in the similarities between the patterns of industrial specialisation and the structures of comparative advantages and disadvantages of the Spanish economy and of the enlargement countries. The competitive pressures arising from the new Member States are not, however, concentrated in the traditional more labour-intensive industries, which are declining in relative importance in most of these countries, in line with what has happened in the Spanish economy. On the contrary, the enlargement countries are developing a growing specialisation in medium-high technology industries and, in particular, transport equipment, a circumstance that is especially relevant for the Spanish economy, since these industries are the most dynamic areas of our industrial structure, representing more than one third of Spanish sales to European markets.

The existence of highly qualified labour at a lower cost than on average in the EU has been a factor attracting foreign capital towards this type of industry. At the same time, the presence of multinationals has enabled the productive capital of these countries to increase, since they constitute a vehicle for the transmission of technological and business know-how, which has brought about a notable improvement in productive efficiency, allowing these countries to specialise in high-quality segments of production.

These transformations involve certain risks for the Spanish economy. On one hand, the reorientation of these economies towards high-technology industries may entail a challenge for the necessary development of these industries within Spain's industrial structure; they generate a large part of the technological progress that is transmitted to the rest of the productive sectors, and they display higher growth of international demand. On the other hand, in the medium-high technology industries, where the pattern of productive and commercial specialisation of the Spanish industry is concentrated, the pressure of competition may be greater, since the enlargement countries are displaying a growing capacity to produce in the higher quality segments of these industries, assisted, no doubt, by the presence of multinationals. It is in these sectors, moreover, that the Spanish economy's innovation gap relative to the most advanced EU countries is widest. Finally, in medium-low and low technology industries, the specialisation of Spain in higher-quality segments compared with the enlargement countries may be reducing competitive pressures.

In short, enlargement involves a challenge for the whole of Spanish industry; it highlights the need for improvements in productive efficiency, providing incentives for the development of more innovative technologies that allow the competitive advantages arising from the qualitative differentiation of products to be increased.

22.6.2004

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