
Spanish export market share in the past decade

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1. INTRODUCTION

The launch of the Single Market and the realignments of the peseta between 1992 and 1995 boosted Spanish goods exports, against the background of progressively strengthening world trade, to very high growth rates. During the 1993-97 period, exports advanced at an average rate of over 13% in real terms, whereby their share in world trade rose by 0.4 pp (0.9 pp in the EU market), while the share of Spain's real GDP in global output diminished slightly (see Chart 1). In the following six years, however, export buoyancy has moderated, giving rise to a real average growth rate of exports of 5.7%, which has only allowed their share in world trade to stabilise. This performance in the last few years contrasts with the expansionary cycle seen by the Spanish economy in this period (Spanish GDP gained weight in world output) and with the export strength of other areas, such as South-East Asia, and central and eastern Europe (1), the countries in this latter region being in the process of joining the EU.

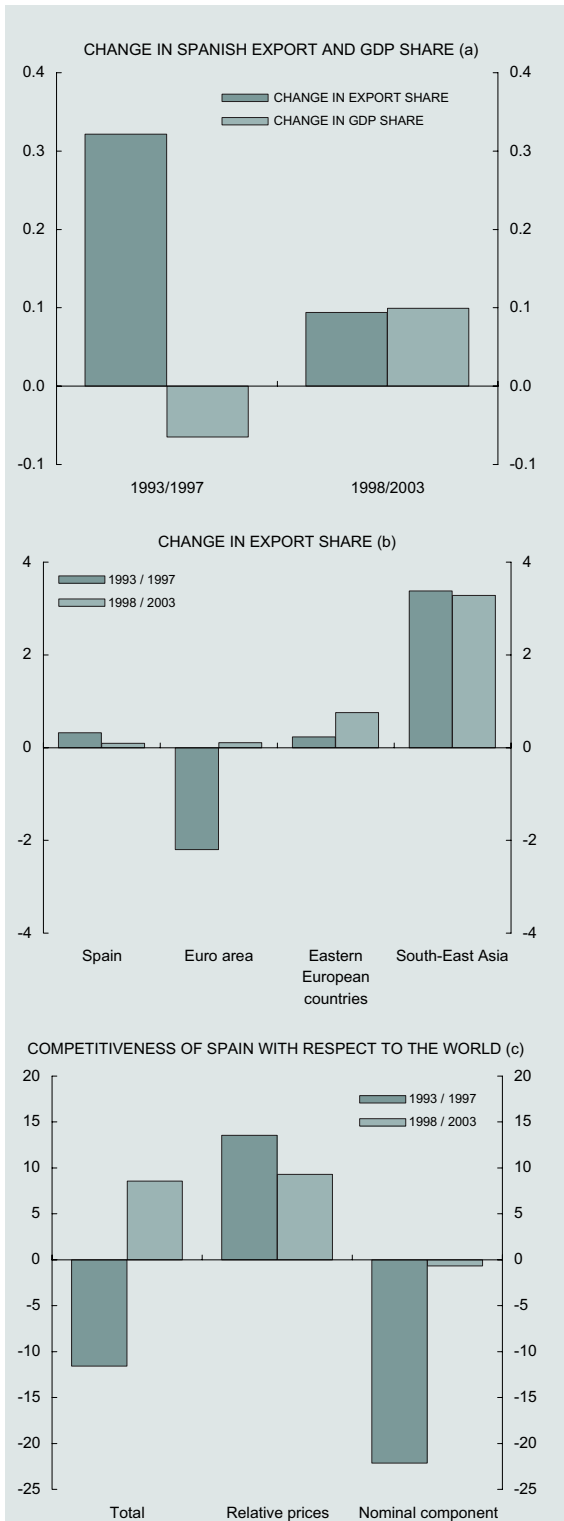
Although the price competitiveness of Spanish exports partly explains their lower buoyancy in recent times (this measure of competitiveness worsened between 1998 and 2003), other factors, such as those relating to the pattern of trade specialisation and to changes in world demand for the various products, may have also been important.

Two recently published studies – one in the Economic bulletin entitled «Comparative analysis of export demand for manufactures in the euro area countries» by Buisán and Caballero (2003), and one in the *Boletín económico* entitled «La industria manufacturera española en el contexto europeo (Spanish manufacturing industry in the European context)» by Gordo, Gil and Pérez (2003) – explored these factors and their effect on the performance of Spanish exports in recent years. The first of them estimates behavioural relationships for the exports of euro area countries and points out the significant disparity in the export responses of the various countries to changes in their fundamental determinants. The price elasticity of manufacturing exports is higher in Spain than in the other countries, which could be related to the export pattern of the economy, characterised by a

(1) In the case of the eastern European countries, another factor to be assessed is the rise in their export share taking account of their low weight in world GDP.

CHART 1

Spanish export shares and competitiveness



Sources: IMF and OECD.
 (a) In real terms.
 (b) Calculated as a percentage of world exports.
 (c) Measured using goods export prices. Positive values indicate loss of competitiveness and negative values indicate gain in competitiveness.

greater presence of traditional manufactures and a lower relative weight of higher technology products. The second study analyses the pattern of productive and trade specialisation of the EU countries and reports the existence of differences of some importance between the productive structures of these countries. Although these differences have tended to grow moderately, Spain's productive (and trade) structure has gradually become more characteristic of the average in the European markets.

The present study focuses on analysing how the pattern of trade specialisation influences the aggregate behaviour of Spanish exports, and seeks to assess the extent to which this pattern has varied in response to changing international demand. It also explores the possible existence of specific competitive factors that may have been responsible for differences in the behaviour of Spanish exports. These questions are addressed using shift-share analysis, which enables the change in a variable (Spanish manufacturing exports) to be broken down into components and its behaviour to be assessed as a function of a reference variable, which in this case is the export market. The analysis was conducted using the disaggregation of external trade by branch of activity and technological intensity (see classification in annex to this paper) which, due to limitations in data coverage, made it necessary to restrict our research to nominal trade flows of manufactured goods with the EU. However, the exercise is representative in that manufactured goods account for 89% of total goods exports, of which 70% are to the EU. Chart 2 shows how the behaviour of the share of manufactured goods in the EU reasonably approximates the behaviour of the share of total exports in world trade.

The next section analyses the change in share. Then follows an examination of the behaviour of Spanish manufacturing exports in nominal terms between 1993 and 2002 (2), disaggregated by technological intensity, and an analysis of the various factors (specialisation and competitive advantage) that have contributed to their growth. Finally some conclusions are drawn.

2. SHIFT-SHARE ANALYSIS.

Shift-share analysis enables the growth of a regional and/or sectoral economic variable in a period of time to be broken down into additive,

(2) The last year for which disaggregated information is available on the manufacturing imports of the main EU countries. Imports of Ireland, Portugal, Denmark, Greece and Spain not included [data source: STAN (OECD)].

analytically interpretable factors, using for this purpose a rule or element of comparison which is usually given by the aggregate growth of that same variable. The interest in this tool, which is applied for descriptive rather than explanatory purposes, lies in the fact that it combines simplicity of approach and execution with an ability to identify the factors responsible for differences in behaviour, particularly those reflecting idiosyncratic comparative advantages or disadvantages.

This technique has been much used in the area of economic geography and in sectoral studies since 1960. A detailed description of it may be found in Loveridge and Selting (1997), where, in addition to reviewing the literature and areas of application (3), the characteristics of the *classical model* and of the various formulations derived from that first model are assessed. The macroeconomic aggregates most frequently analysed by the shift-share technique have been employment and labour productivity. Exports have also been analysed in numerous papers, including most notably Gazel and Schwer (1997) and, more recently, Coughlin and Pollard (2001).

As pointed out above, the present study applies this tool to analyse Spanish exports of manufactured goods to the EU, disaggregated by technological intensity, using as a reference variable the imports of manufactured goods by the area. The formulation of the shift-share model used in this study breaks down the change in the share of Spanish exports in the EU market – proxied by the growth differential between Spanish exports of manufactured goods to the EU (g) and total EU imports of manufactured goods (g^{eu}) – as the sum of three factors

$$g - g^{eu} = \sum_i \omega_i * (g_i^{eu} - g^{eu}) + \sum_i \omega_i^{eu} (g_i - g_i^{eu}) + \sum_i (\omega_i - \omega_i^{eu}) * (g_i - g_i^{eu}) \quad [1]$$

Where the subscript i denotes the branch's technological intensity (high, medium-high, medium-low and low); g_i is the annual growth (or the annual average growth for a number of years) of Spanish exports in branch i ; g_i^{eu} is the annual growth of EU imports in branch i ; ω_i denotes the weight of branch i in Spanish exports in the initial year; and ω_i^{eu} denotes the weight of branch i in EU imports in the initial year. Each of the three factors is analytically interpretable:

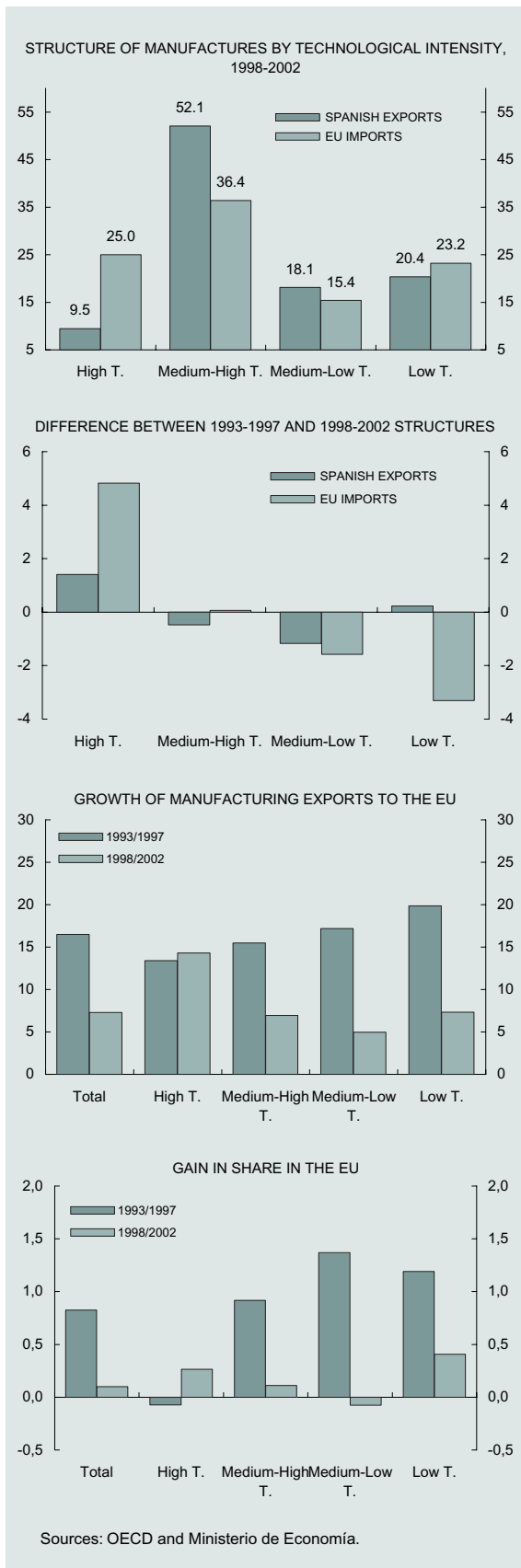
(3) As described in Loveridge and Selting, this technique has been used in prediction, spatial and strategic planning studies and in assessment of economic policies. Although the Spanish bibliography is scant, shift-share analysis has been applied in a study of services in Spain by Cuadrado and Río Gómez (1993), of productivity by Villaverde Castro (1996) and of tourism by Marín Carrillo (2002).



— The first is the sum of the growth differentials between EU imports in each branch and total imports of manufactured goods from the EU, weighted by the structure of Spanish exports. Therefore, this term measures the effect on the export share deriving from the relationship between the pattern of specialisation (4) of Spanish exports and the intensity of relative demand in each branch. This component is called the demand intensity factor.

(4) The term “specialisation” is used in this article to refer to the structure by technological intensity, whether of Spanish exports or EU imports. The term relative specialisation refers to the comparison of these two specialisation structures.

CHART 3

Manufacturing exports to the EU, by technological intensity grouping


— The second factor is the sum of the growth differentials between Spanish exports in each branch and EU imports in the same branch, weighted by the structure of EU imports. Therefore, this factor evaluates the effect on export share of the ability (or lack thereof) of Spanish exports in each branch to grow at a higher rate than their market; i.e. their competitive advantage or disadvantage. To isolate the pure competitive advantage effect, the weight used is the structure of EU imports. This component is called the competitive advantage factor.

— The third factor, which is a second-order factor, is given by the sum of the differences between the weight of each branch in Spanish exports and in EU imports, multiplied by the growth differential between the two. This factor combines elements of specialisation and of competitive advantage or disadvantage: it will be positive if exports are relatively specialised in the branches in which there is a competitive advantage (and negative if they are specialised in the branches in which there is a competitive disadvantage). This residual component is known in the literature as the location factor.

The following analysis assesses the growth of EU manufactured goods exports as a function of these three factors.

3. SPANISH EXPORTS, BY TECHNOLOGICAL INTENSITY, IN THE LAST DECADE.

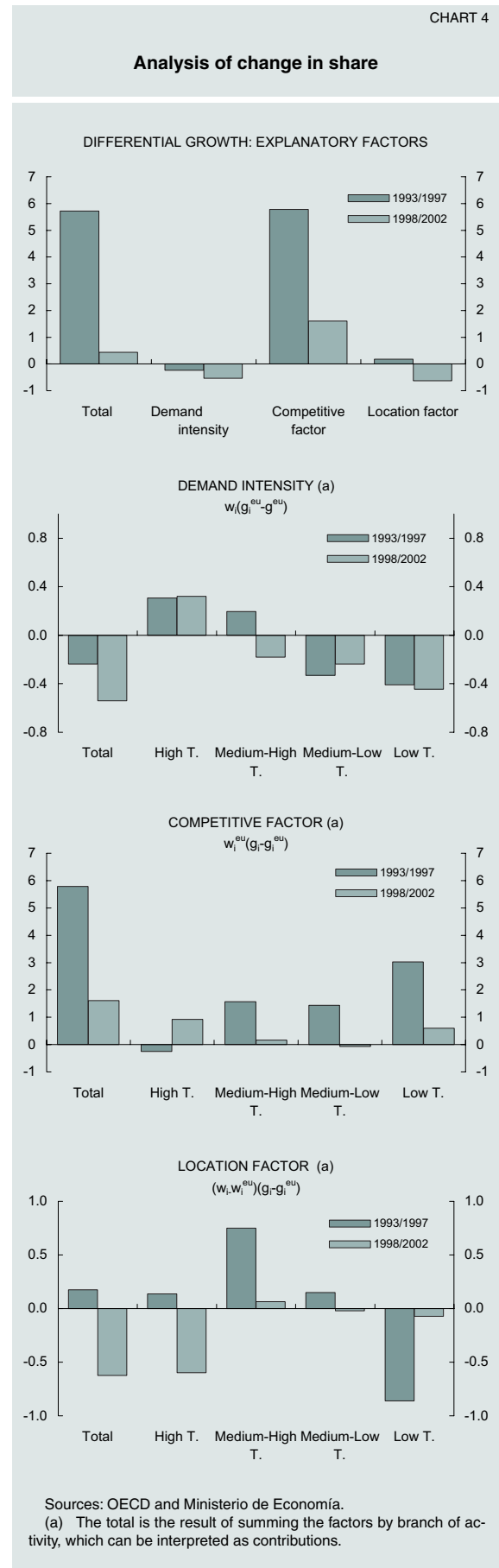
As seen in Chart 2, from 1993 to 1997 the market share of Spanish exports grew continuously in real terms, driven by the changes in the competitive environment and the trade and financial openness of the Spanish economy after joining the EU and by the exceptional gain in competitiveness derived from the peseta devaluation in the early 1990s. However, from 1997-1998 onwards the share tended to stabilise because, as the process of the Spanish economy's integration in the EU reached increasing levels of maturity, exports tended to grow at the same rate as the EU market. This behaviour was ratified following Spain's membership of the euro area and the irrevocable fixation of the exchange rate against the euro. In nominal terms, the export share has moved more erratically: it showed a sharp downturn in 2000 due to rising oil prices and the appreciation of the US dollar, after which it subsequently recovered to the 1998 level, and by 2003 it had seen a further slight improvement to stand above 2%.

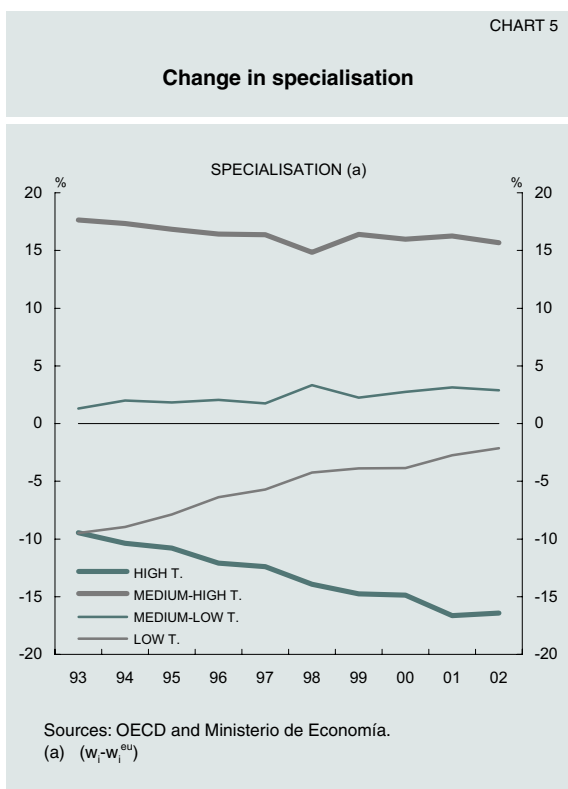
Moving down to a lower level of aggregation and comparing the behaviour of manufacturing

exports by branch of technological intensity, notable differences of behaviour are discernable between the two periods in question. As shown by the two upper panels of Chart 3, Spanish manufacturing exports are specialised in products with a medium-high technological intensity (particularly motor vehicles) and, secondarily, in low technology products. Both groups more or less maintained their relative weight in the export structure in the two periods analysed, while the exports of high technology sectors increased their share in the total at the expense of the medium-low technology sectors. The relative weight of medium-high technology products in EU manufacturing imports is notably lower than in Spanish exports, although they also predominate in the latter. The high technology branches are next in importance and their relative weight has increased significantly in the last five years, in contrast to the medium-low and low technology branches, which have a much lower share in this trade structure. There have been shifts in both trade structures in the same direction in the second period, but with differing intensity: in EU manufacturing imports, the share of the sectors with high technological requirements has increased more, while the weight of medium-low and low technology products has decreased more. In any event, it should be taken into account that here we are comparing the pattern of specialisation of Spanish manufacturing exports with the structure (or pattern of specialisation) of the market to which they are directed, rather than with the export specialisation of the EU countries.

Chart 3 shows that behaviour in the period 1993-1997 differed from that in 1998-2002 and that there was a change in the pattern of Spanish exports to the EU. In the first period, the most expansionary exports were low technology goods, with nominal growth of around 20%. In subsequent years, export sales in high technology branches showed the highest growth rates, higher even than in the previous period. Hence the loss of buoyancy of exports was concentrated in medium and low technology goods. However, from 1998 to 2002 exports continued to show slightly faster growth than the EU, with the sole exception of the medium-low technology branches, as reflected in a fall in their market share. The shares of the other branches increased, although almost inappreciably.

The breakdown of the growth of manufacturing exports into the factors identified in Section 2 and the contributions by branch of technological intensity to the various factors are shown in Chart 4. In the period 1993-1997, the growth differential between Spanish exports and EU imports was, on average, nearly 6 pp, while in 1998-2002 this differential decreased signifi-





cantly, as reflected by the course of the export share. This higher growth of manufacturing exports resulted from uneven contributions by the three aforementioned factors, as can be seen in the top panel of Chart 4. The demand intensity factor made a negative contribution to the aggregate export growth differential, which became more pronounced in the second period; by contrast, the competitive factor assisted the higher export growth, especially in the years 1993-1997, since its impact decreased appreciably in subsequent years, and the location factor (which reflects the interaction between specialisation and competitive advantage) made a slightly positive contribution in the first period, which turned negative in the second period.

A detailed analysis of each of these factors helps to identify the main features of manufacturing export behaviour in the period analysed and enables the assessment of a number of elements that could have a bearing on future behaviour. The second panel of Chart 4 shows the contributions of the various branches to the demand intensity factor. The sign of contributions by the various branches is given by the intensity of their international demand (higher or lower growth than that of the global market) and the value of the contribution reflects the weight of these branches in Spanish exports (see also Table 1). The negative sign of the total effect reflects the fact that Spanish exports are relatively specialised in the less buoyant branches of demand. The intensity of international demand

limited the growth of export sales especially between 1998 and 2002, when this factor changed sign in the medium-high technology branches, the demand for which became relatively less buoyant. Only the intensity of demand for products with high technological requirements – which account for 9.5% of total Spanish manufacturing exports – continued to exert a positive impact, which increased slightly in the second period when the market for these products grew nearly 4 pp more quickly than aggregate demand. By contrast, the growth of exports in the other branches was held back by the relative weakness of demand for them.

The third panel of Chart 4 shows how the competitive advantage of Spanish manufacturing exports (their ability to grow faster than the market) contributed positively to their differing growth in the two periods analysed, although the positive contribution of this factor decreased significantly in the second of them. Although the competitive capacity of the high technology branches, which in the first five-year period had shown a certain disadvantage, i.e. slower growth than that of their market, improved slightly in the second period, the other branches saw a very significant decline in their competitive advantage. In the first few years, the large competitive advantage enjoyed by the medium and low technology branches was based mainly on favourable price differentials achieved partly through exchange realignments in the early 1990s. This competitive advantage has been progressively absorbed in a setting of growing trade globalisation and enlargement of the European Economic Area, so its contribution to export growth in more recent years has been much lower.

Finally, the effect of location (a residual effect, the positive or negative nature of which depends on the way in which competitive advantage and specialisation in each branch interact) changed sign in the second period as shown in the bottom panel of Chart 4 and in the last two columns of Table 1. The change from a positive aggregate contribution in the first period to a negative one in the second period was due mainly to the lower contribution to the location effect of exports of medium-high intensity goods: although this contribution remained positive (since Spanish trade is relatively specialised in these goods, in which moreover it has a competitive advantage), its value decreased considerably. In addition, in the second period the other branches made negative contributions to the location effect: in the case of the most high-tech goods, and also in that of more traditional goods, this was because Spanish sales of manufactured goods are relatively less specialised in these products, despite which they grew

TABLE 1

**Structure and differential growth rates of
nominal manufacturing exports to the EU**

	Structure		Rates			Signs (a)	
	Spanish exports	EU imports	$g_i - g^{eu}$	$g_i^{eu} - g^{eu}$	$g_i - g_i^{eu}$	$g_i > g_i^{eu}$	$w_i > w_i^{eu}$
			1 = 2 + 3	2	3	4	5
Average 1993-1997							
TOTAL	100.0	100.0	5.7	-0.2	6.0		
High technology	8.0	20.2	2.7	3.8	-1.1	-	-
Medium-high technology	52.6	36.3	4.8	0.4	4.4	+	+
Medium-low technology	19.3	17.0	6.6	-1.7	8.3	+	+
Low technology	20.1	26.5	9.1	-2.1	11.1	+	-
Average 1998-2002							
TOTAL	100.0	100.0	0.4	-0.5	1.0		
High technology	9.5	25.0	7.5	3.9	3.7	+	-
Medium-high technology	52.1	36.4	0.1	-0.3	0.5	+	+
Medium-low technology	18.1	15.4	-1.6	-1.2	-0.4	-	+
Low technology	20.4	23.2	0.4	-2.2	2.6	+	-

Sources: OECD and Ministerio de Economía.
(a) Signs of location factor components.

faster than those of the EU; in the case of goods from medium-low technology branches, the negative sign was due to a slight comparative disadvantage, despite a certain degree of trade specialisation in these branches.

Chart 5 illustrates in greater detail how the pattern of specialisation of Spanish manufacturing exports has changed in comparison with that of EU imports during the decade analysed. It shows that the relative specialisation in medium-high technology branches and, to a lesser extent, in medium-low technology branches has remained high and stable during the years analysed, while the weight of exports of more traditional goods and those with higher technological requirements has been lower than that of these goods in the EU market. However, it can be seen that the relative weight of exports of low technology goods has been approaching that which these goods have in the EU market, while in the case of technologically more advanced products the negative gap has tended to widen. Considering that high technology goods have a higher intensity of demand, the prolongation of these trends in Spanish trade specialisation could have a notable adverse effect on the future growth of manufacturing exports.

4. CONCLUSIONS

The share of Spanish exports in world trade shows two clearly differentiated periods of behaviour in the last decade: from 1993 to 1997

the market share showed notable growth in real terms, while from 1998 to 2003 it stagnated. Measured in nominal terms, the market share follows a more erratic path, since the growth in the first few years is followed up by a decline from 1998 to 2000 and a subsequent recovery to levels somewhat higher than in 1998. This study uses shift-share analysis to assess the factors that may explain this behaviour of Spanish export share. In particular, it analyses how the pattern of trade specialisation may have influenced this behaviour or to what extent it can be attributed to other factors, denoted collectively as «competitive advantage». Owing to limitations on the availability of disaggregated data, the analysis was restricted to exports of Spanish manufactured goods to the EU between 1993 and 2002, disaggregated by technological intensity, taking as a reference the behaviour of EU imports of manufactured goods.

The analysis shows that, as the factors that drove the export surge in the first few years (the creation of trade derived from economic integration in the EU and the depreciation of the peseta in the early 1990s) progressively weakened, the more permanent idiosyncratic factors have not been sufficient to maintain that difference in growth rate (5). The slowdown in exports from

(5) In 2003, which had to be excluded from the analysis due to lack of EU data, Spanish exports expanded notably. This led to slight growth in their nominal share, while the share in real terms held at around the 1998 level. In the classification by technological intensity, the most buoyant group of exports was medium technology goods.

1998 onwards affected all components, with the exception of sales of products with higher technological requirements, which grew at a faster rate than in the initial period. Despite this, in the second period all branches except those of medium-low technology made modest gains in market share.

This study isolates the factors that have contributed to the difference between Spanish export growth and that of the market. It breaks them down into a first factor which depends on the structure of trade specialisation among branches of differing technological intensity and on the intensity of international demand for each, a second factor which measures competitive advantage or disadvantage, i.e. the ability (or lack thereof) of exports to grow more quickly than the demand for them, and a third, location-based factor which depends on the interaction between specialisation and competitive advantage.

The analysis shows that the pattern of specialisation held back the growth of manufacturing exports to the EU in the period as a whole, because the structure of Spanish exports was dominated by the branches with less buoyant international demand. This factor was offset by the notable competitive advantage shown by Spanish exports in the first few years, although this advantage decreased appreciably in the period 1998-2002. The loss of competitive capacity in medium technology products in recent years largely explains the stagnation of the overall export share. Finally, the location effect, which reflects the extent to which the relative specialisation of exports coincides with their comparative advantage, turned negative in the second period. This was because in these latter years the competitive advantage of the branches with relatively higher trade specialisation (medium-high technology) declined notably, while export buoyancy was greatest in those with a higher technological content in which export specialisation is relatively low.

However, despite the recent buoyancy of sales of high technology goods, their weight in Spanish exports has increased by much less it has in the EU market; by contrast, the relative specialisation in medium technology branches has remained high during the decade, despite the progressive decrease in their competitive advantage. In short, the pattern of relative specialisation shown by Spanish exports may give rise to problems regarding both the pattern of comparative advantage and the intensity of international demand in the various branches. From this standpoint, it seems that the pattern of productive and trade specialisation of the

Spanish economy should be based to a larger extent on industries with a higher technological content, which enjoy stronger demand. However, although the pattern of specialisation is a major determinant of export behaviour, exports also depend on the productive efficiency of the various industries, whatever their technological content. In this respect, all the factors that determine the competitive position of the more traditional export activities, which continue to have a significant presence in Spain's productive and trade structure, have to be strengthened. In the current world, these factors take the form of improvements in product quality and design, in order to maintain a strong position in international markets.

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ANNEX

TRADE CLASSIFICATION
BY TECHNOLOGICAL INTENSITY

Based on the ISIC REV2 classification, which refers to the Spanish CNAE-93 (*Clasificación Nacional de Actividades Económicas* – National Classification of Economic Activities), the OECD defined a grouping of manufacturing industry branches according to the degree of technological intensity applied in production. To prepare this classification, the industries of 13 member countries were ordered on the basis of research and development (R&D) ex-

penditure in the period 1991-1997, assessed using two indicators: a) R&D expenditure as a proportion of production and b) R&D expenditure as a proportion of value added. The branches thus ordered are grouped into four categories: high technological intensity branches, medium-high technological intensity branches, medium-low technological intensity branches and low technological intensity branches. The following table sets forth the CNAE branches included in each of the technological intensity categories. For information purposes, the table also shows the weight of each of them in Spanish manufacturing exports to the EU and in total EU manufacturing imports, on 2002 data.

TABLE A1

Spanish foreign trade by technological intensity

	CNAE-93 division	Structure: Year 2002		
		Spain		EU (a)
		Total manufacturing exports	Manufacturing exports to the EU (a)	Manufacturing imports from the EU (a)
High technology industries		10.5	10.4	25.2
Aircraft and spacecraft	353	1.6	1.6	4.0
Pharmaceuticals	244	3.3	3.6	5.2
Office, accounting and computing machines	30	1.1	0.6	6.1
Radio, television and communications equipment	32	3.2	3.5	6.3
Medical, precision and optical equipment	33	1.3	1.1	3.6
Medium-high technology industries		44.9	50.7	36.3
Electrical machinery and apparatus, n.e.c.	31	3.8	3.8	4.1
Motor vehicles, trailers and semi-trailers	34	24.8	32.8	13.2
Chemicals excluding pharmaceuticals	24 excl. 244	6.5	5.3	9.6
Railway equipment and transport equipment, n.e.c.	352, 354 and 355	1.0	1.1	8.7
Machinery and equipment	29	8.8	7.7	0.6
Medium-low technology industries		20.9	17.7	15.4
Coke, refined petroleum products and nuclear fuel	23	2.5	0.9	2.9
Rubber and plastic products	25	5.6	5.9	3.0
Other non-metallic mineral products	26	3.6	2.6	1.4
Building and repairing of ships and boats	351	1.0	0.4	0.2
Basic metals	27	4.5	4.6	5.2
Fabricated metal products, except machinery and equipment	28	3.6	3.2	2.6
Low technology industries		23.8	21.2	23.1
Manufacturing, n.e.c. and recycling	36 and 37	3.0	2.3	3.4
Wood, pulp, paper, paper products, printing and publishing	20, 21 and 22	4.2	3.8	4.8
Food products, beverages and tobacco	15 and 16	8.5	8.4	7.0
Textiles, textile products, leather and footwear	17, 18 and 19	8.1	6.7	7.9

Sources: OECD and Ministerio de Economía.

(a) Excluding Denmark, Greece, Ireland and Portugal.