

The Internationalisation of Spanish Firms*

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This version: December 2012

Abstract

This paper shows that the variation in the world export share and the internationalisation process that the Spanish economy has experienced since the establishment of EMU have been determined by a broad set of factors that go beyond the evolution of international relative prices. Firms' decisions on factor inputs (company size, investment in physical capital, quality of human capital, or R&D expenditure and technology adoption) and on market and financial strategies (product diversification, reliance on non-banking finance or expansion via outward foreign direct investment) have shaped the internationalisation process. Given the variety of determinants, good economic policy is likely to be multidimensional and have a dual objective: to improve the functioning of the markets for factor inputs (capital and labour markets, access to finance and to new production technologies and innovations) and to foster competition in the markets for goods and services.

Keywords: price competitiveness, world export shares, exporting firms.

JEL: D22; F14.

1. Introduction

The Spanish economy is undergoing a significant structural adjustment process in which the internationalisation of its firms has become crucial for a number of reasons. On one hand, as long as the adjustment process continues, domestic demand cannot be the driver of economic growth. In the run-up decade to the 2008 financial crisis, the Spanish economy devoted a large proportion of its factor inputs to non-tradable sectors (primarily residential investment). Growth in domestic demand largely outstripped growth in aggregate supply, and the excess demand situation was met with increased imports -favoured by easy access to liquidity at historically low financing costs- while the current account deficit deteriorated. Economic recovery requires a movement in the opposite direction: a rapid and effective reallocation of factor inputs from those sectors that have already carried out most of the adjustment (i.e.

* We would like to thank Miguel Cardoso and Juan Ramón García-López for their comments and suggestions, and Mercedes Nogal for her assistance. Financial support received from the CICYT grant ECO2011-29050 is gratefully acknowledged.

construction and related services), or that are currently adjusting (i.e. part of the financial sector and the public administration), to sectors with higher potential output growth. Competing in foreign markets -via exports- and in domestic markets -via import substitution- would raise the contribution of net exports to growth, thus leading the recovery in investment, employment, and, eventually, private consumption. On the other hand, the Spanish economy has accumulated a large volume of gross external debt (170% of GDP in the second quarter of 2012) and has reached a negative net international investment position (NIIP) of around 90% of GDP.² To correct these large external imbalances, the economy necessitates persistent current account surpluses, and one desirable way to achieve them is by improving the international competitiveness of its firms.

There are Spanish companies with a proven ability to compete abroad that could lead the process of factor reallocation. A dual economy such as Spain's offers several examples of business excellence on an international level, which helps explain the resilience of Spanish exports during the crisis. Immediate challenges, however, include eliminating the institutional barriers that may prevent the efficient reallocation of factor inputs across sectors of production and setting out the right incentives to encourage the natural transition of firms to internationalisation. Given the uncertainties that have plagued financial markets for years now, especially in Europe, addressing these challenges is a necessary condition for economic recovery, albeit not a sufficient one.

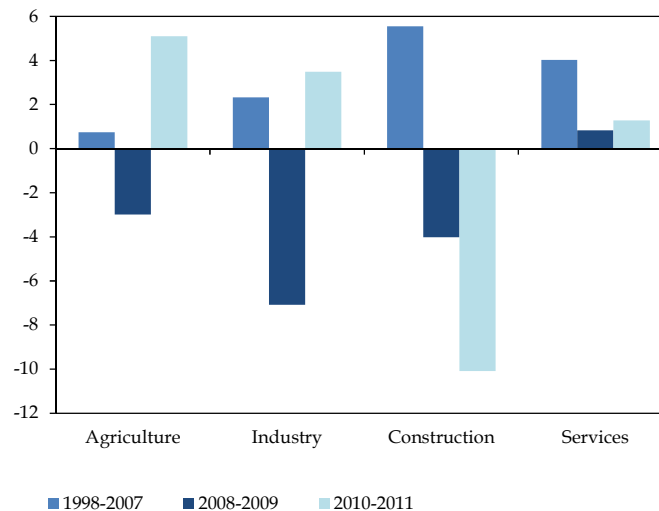
This paper explores the factors that have characterised the internationalisation process of Spanish firms and the underlying features to success in foreign markets. In the light of the evidence, the paper examines the economic policies that may encourage the transition of non-exporting firms and of newly-created firms to internationalisation in the years to come. From a macroeconomic perspective, Section 2 looks at the behaviour of Spanish exports and their pattern of growth since the establishment of EMU. Section 3 analyses the factors behind the export market participation of Spanish firms over a time span of twenty years. We find that firms' decisions regarding factor inputs and market and financial strategies have had important feedback effects on the internationalisation process, leading to the emergence of larger, more productive firms with an increased presence in international markets. Finally, Section 4 concludes.

² In the context of highly leveraged economies, large capital flows, and macroeconomic instability, some authors prefer to focus the analysis on gross external debt instead of the NIIP, see, for example, Forbes and Warnock (2011), Obstfeld (2012), Alberola *et al.* (2012) and Santos (2012).

2. Spain's internationalisation from a macroeconomic perspective

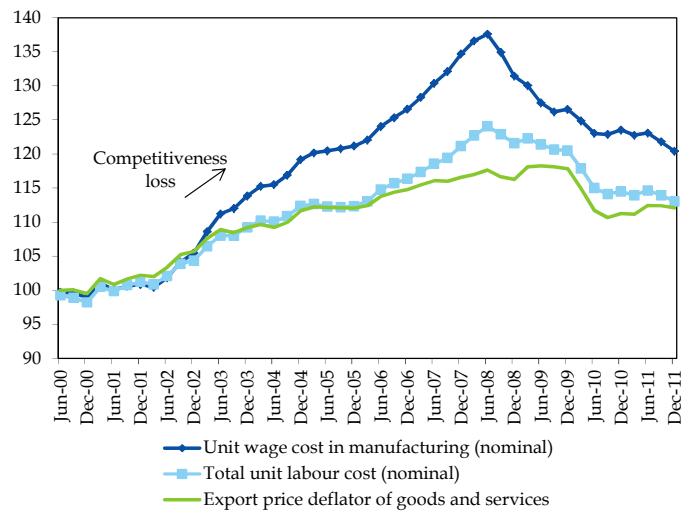
At the end of the 1990s, and in parallel to a wave of globalisation, the Spanish economy showed signs of an incipient change in its sectoral growth pattern. With the adoption of the euro, the expectations of low interest rates and the disappearance of country-specific risks were consolidated, facilitating the economy's access to external finance. Macroeconomic stability promoted growth in the construction sector and in related services (Figure 1), favoured by tax breaks on home purchases, the widespread perception that property prices were rigid downwards, and demographic and population changes. Economic growth during the period 1998-2007 relied on employment expansion in low-productivity sectors and, especially, in non-tradable sectors.

Figure 1: *Gross value added at basic prices by industry, average annual growth in three subperiods.*
(Source: Authors' calculations based on INE)



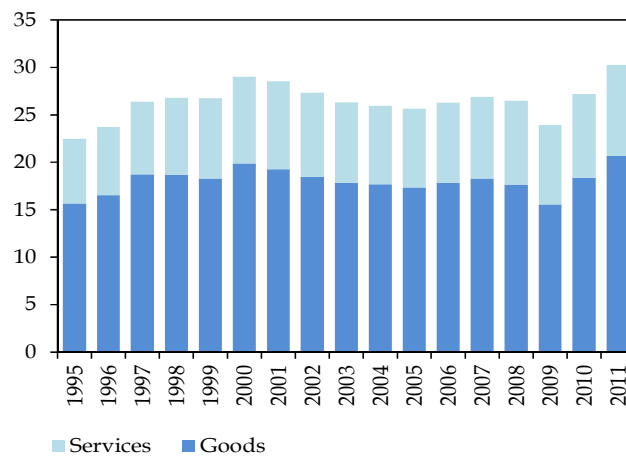
The strong cyclical expansion of investment, consumption and imports was financed by an unprecedented increase in private external debt, reaching a level that could be hardly sustained in the medium to long run. Both nominal wage growth -usually indexed to past inflation rather than to productivity- and the growth in profit margins explain the positive inflation differential that persisted between Spain and EMU countries in the first ten years of the euro. The evolution of international relative prices led to the well-known loss of competitiveness of the Spanish economy, which exceeded 20% in terms of unit labour costs (ULCs) (Figure 2).

Figure 2: Real effective exchange rates, alternative deflators compared to the rest of 36 industrialised countries, (1Q2000=100). (Source: European Commission)



However, despite the fact that an increasing volume of economic resources were required to meet domestic demand, the contribution of exports to GDP remained relatively stable (Figure 3). In 2007, just before the economic crisis unfolded, exports of goods and services represented 26.9% of GDP, up slightly from 26.8% in 1999. Figure 3 illustrates how after the Great Trade Collapse of 2008-2009, Spanish exports grew much faster than GDP, and faster than in the period prior to the crisis. As a result, the contribution of exports to economic activity rose considerably. To the extent that Spain’s recent export performance is underpinned by the structural decision of a large number of firms to turn to international trade, it becomes more likely that the current account adjustment currently underway is of a permanent nature.

Figure 3: Exports of goods and services as a % of nominal GDP, 1995-2011. (Source: Authors’ calculations based on INE)

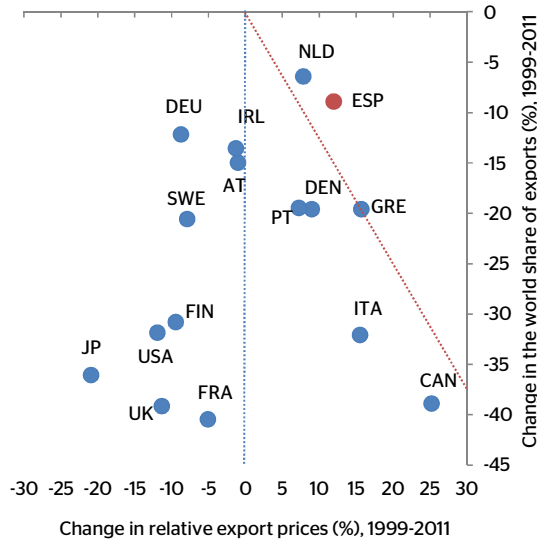


Since the establishment of the euro, Spanish exporters have been successful in containing the loss of export share in world markets that several advanced economies have experienced as a result of globalisation and the subsequent gains of export share by many emerging countries. From 1999 until 2011, Spain lost 8.9% of its export share, a relatively modest figure if compared to the record of other large producers: France, -40.5%; UK, -39.2%; Italy, -32.1%; USA, -31.9%; and, more modestly, Germany, -12.2%. This positive feature is not well known, and is typically overshadowed by the dismal evolution of competitiveness indicators based on international relative prices.

Figure 2 showed that Spain's price competitiveness substantially deteriorated in the run-up to the 2008 financial crisis, reflecting a large shift of resources towards non-tradable sectors. The combined evidence of a modest market share loss, on one hand, and a sizeable real effective exchange rate appreciation, on the other, has been referred to as the "Spanish paradox" (e.g. Antràs *et al.*, 2010, and Crespo-Rodríguez *et al.*, 2012). The literature has provided an explanation of this paradox by looking into firm level data. In fact, large Spanish firms experienced both lower unit labour cost growth and higher export growth than the rest (Antràs *et al.*, 2010), yet this differential performance is not reflected in aggregate price indicators due to aggregation and dispersion bias (Altomonte *et al.*, 2012). To the extent that the size of exporting firms is much larger than that of non-exporting firms, this can explain why the appreciation of export prices has been much less intense than that of relative unit labour costs (Figure 1).

Figure 4 summarises two results relevant to the export performance of Western European economies, Canada, the U.S. and Japan between 1999 and 2011. In the horizontal axis of this figure, we have represented the variation of export prices from 1999 to 2011, relative to 36 industrialised economies, and in the vertical axis the variation of export market shares over the same period. The first result is that there is no clear cross-country relationship between variations in relative export prices and variations in export market shares. In fact, price competitiveness gains are positively correlated with market share losses, albeit the correlation coefficient is low (0.22) and not statistically significant. This evidence does not imply that relative prices are not relevant for export market shares, but that non-price determinants have been more important during this period and have more than compensated the effects of export prices.

Figure 4: Change in the world share of exports and in relative export prices, goods and services, 1999-2011. (Source: Authors' calculations based on European Commission and WTO)



From an analytical viewpoint, the variation of the export market share of a country, $\Delta(ex - ex^w)$, can be decomposed into the variation of the international relative price, $\Delta(p^x - p^w)$, and the variation of non-price determinants, Δs^x , as given by the following expression:

$$\Delta(ex_t - ex_t^w) = \Delta s_t^x - \sigma \Delta(p_t^x - p_t^w), \quad (1)$$

where σ denotes the price elasticity of exports.³ The red line with negative slope depicted in Figure 4 captures the values of the market share variation that can be entirely attributed to the corresponding movements in international relative prices (as a result, $\Delta s^x = 0$) under the assumption of a price elasticity of exports equal to -1.25.⁴ That is, the export share loss

³ In open economy models, the demand for a country's exports is typically expressed as:

$$EX_t = S_t^x \left(\frac{P_t^x}{P_t^w} \right)^{-\sigma} EX_t^w,$$

where P^x is the price level of exported goods, P^w is the price level of competitors' goods in world markets, σ is the price elasticity of exports, EX^w is the world's demand for exports, and S^x is a time-varying variable that gathers all the factors that are relevant to the export market share different from relative prices. By taking logs (lower case letters) and first differences in the above expression, we obtain equation (1).

⁴ For EMU countries, Ratto, Werner and Veld (2009) estimate a price elasticity of exports equal to -1.25. This is a very similar estimate to the one reported in Boscá *et al.* (2011) for Spain (-1.30) but slightly below the range estimated in Adolfson *et al.* (2008). Notice that, for the ease of comparison, we are assuming the same elasticity for all countries in the sample, as represented by the slope of the red line depicted in Figure 4. Although elasticities may differ across countries -due to, e.g., compositional differences in exporting

experienced by Greece since joining EMU can be entirely explained by the behaviour of its price competitiveness. However, for a country located on a parallel line to the red one, the evolution of other non-price factors becomes relevant to explain export share variation, i.e. Δs^x is either positive or negative. The evidence presented in the figure thus suggests that the evolution of non-price determinants has been more important than movements in international relative prices to explain market share variation among advanced economies. Germany, France, the U.K. and the U.S. experienced similar depreciation rates but very different market share performances, from the 12% export market share loss of Germany to the 40% loss of France. Table 1 summarises this evidence numerically.

Table 1: *Decomposition of the variation of export market shares for goods and services, contributions, 1999-2011.*

	Market share	Relative prices	Non-price factors
<i>Netherlands</i>	-6.4	-9.8	3.4
<i>Spain</i>	-8.9	-14.9	6.0
<i>Germany</i>	-12.2	10.9	-23.1
<i>Ireland</i>	-13.6	1.6	-15.2
<i>Austria</i>	-15.0	1.2	-16.2
<i>Portugal</i>	-19.5	-9.1	-10.4
<i>Denmark</i>	-19.6	-11.3	-8.3
<i>Greece</i>	-19.6	-19.6	0.0
<i>Sweden</i>	-20.6	9.8	-30.4
<i>Finland</i>	-30.8	11.8	-42.6
<i>USA</i>	-31.9	14.9	-46.7
<i>Italy</i>	-32.1	-19.4	-12.7
<i>Japan</i>	-36.1	26.1	-62.2
<i>Canada</i>	-38.9	-31.5	-7.4
<i>UK</i>	-39.2	14.1	-53.3
<i>France</i>	-40.5	6.3	-46.8

Note: Non-price factors are calculated as a residual.

Source: Authors' calculations.

The second result that emerges from Figure 2 is that, given the appreciation and depreciation rates recorded in the sample, Spain displayed the most favourable evolution of the non-price determinants of export market shares (amounting to 6pp).⁵ If Spain had experience the real effective exchange rate depreciation of, say, Germany, its export market share would

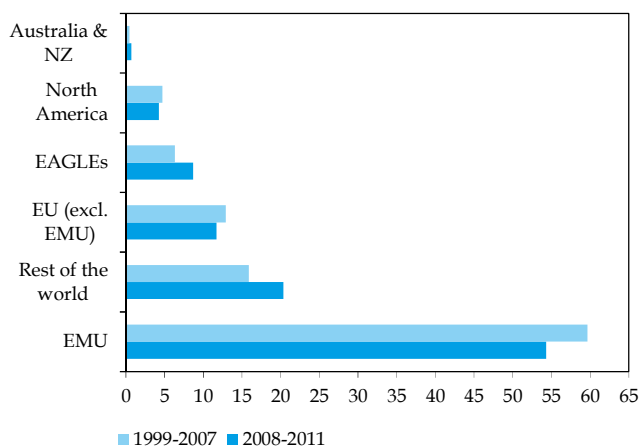
baskets -, we do not expect that the differences in elasticities can explain a large part of the observed cross-country variability of export share variation, especially for the countries that combine real exchange rate depreciation with export share loss.

⁵ For the case of Spain, notice that using the real effective exchange appreciation based on ULCs (Figure 2) would increase the importance of residual factors in explaining export market share variation.

have increased 20 percentage points (equivalent to 6 per cent of Spanish GDP). In the next section, we argue that a number of factors, largely ascribed to the realm of the firm's strategic decision-making, have shaped Spain's internationalisation process and export share performance. Ultimately, these factors underpin the evolution of the non-price determinants of market share variation and thus provide an explanation to the so-called "Spanish paradox".

Despite the fact that the pre-crisis sectoral growth pattern did not favour export growth, at least it did not prevent Spain's from building up a solid base of exporting firms that differentiated their goods and services in international markets. This base is essential to explain the good performance of exports during the worst stages of the crisis. In particular, the recovery of goods exports has affected a large number of industries. Furthermore, the pattern of geographical diversification that characterised the pre-crisis period has shifted towards an increased presence in other markets (Figure 5), such as the emerging and growth-leading economies (EAGLEs). From the viewpoint of industrialised countries, the growing demand from emerging economies provides a unique opportunity for firms to adapt their products and penetrate markets with rising per capita income levels and a middle class of hundreds of millions of people.

Figure 5: *Composition of goods exports by main geographical destination area, in %.*
(Source: Authors' calculations based on Datacomex)

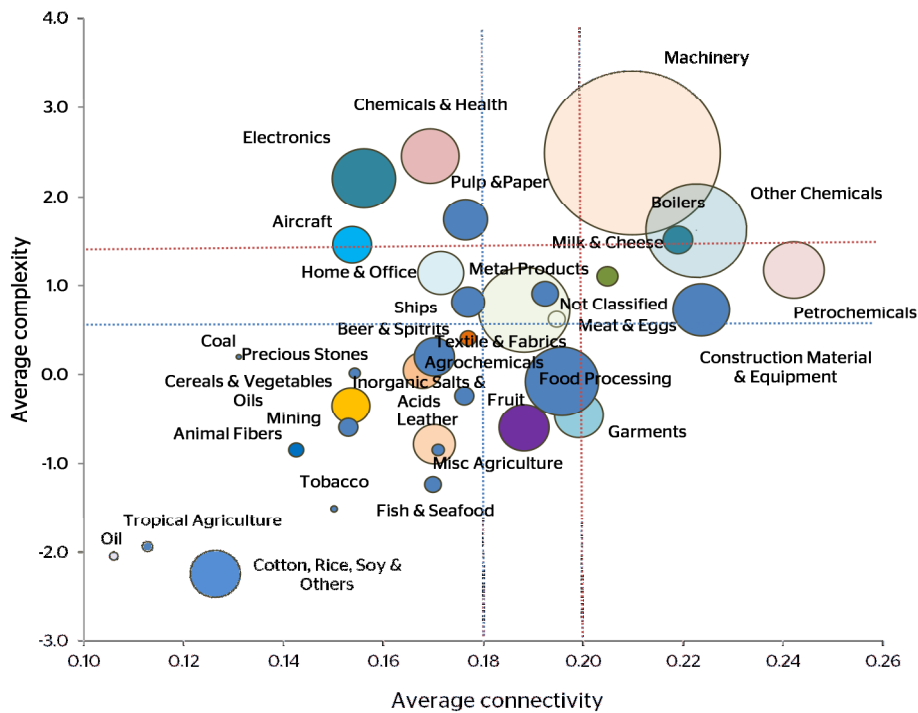


The economic recovery and the medium- to long-term growth prospects of the Spanish economy depend upon the efficient reallocation of resources towards those sectors that are more competitive internationally and have a higher potential output growth. In this context, Spain has the advantage of being one of the economies with the most diversified export industry in the world, according to both product variety and the number of export destination countries (Hausmann *et al.*, 2011). Using the methodology developed by these authors, Figure 6

shows Spain's average domestic distribution of exports by sector in the period 1999-2011 according to their levels of global complexity and connectivity. A sector's complexity index is higher the lower the number of countries capable of making the sector's goods and the higher the extent of product diversification of those countries. Sectoral proximity or connectivity is a measure of the average distance of a sector to each of the products that are exported globally. The higher the connectivity, the greater a sector's ability to extend exports to other sectors that may use its productive knowledge. Accordingly, countries with the highest international advantage in terms of product diversification will have a domestic distribution of exports geared towards more complex and more connected sectors. The red and blue lines in Figure 6 display, respectively, Spain's and the world's weighted averages of complexity and connectivity. Spain is above the global average in both indicators. The average complexity of Spanish exports (1.32) is more than double that of global exports (0.57), whereas its average industry connectivity (0.2) is more than 10% above the global average (0.18). Among the best performing industries, in terms of complexity and connectivity, we find sectors with a high weight in Spain's domestic exports such as machinery (33%), other chemical products (11%) and other metallic products (8.9%).

Figure 6: Complexity, connectivity and domestic distribution of goods exports by sector 1999-2011.

(Source: Authors' calculations based on Hausmann *et al.* (2011) and Datacomex)



Given that Spain's world export share in services (3.4% in 2011) is higher than in goods (1.7% in 2011), and that most of the country's large global firms are in the services industry, the results of replicating Figure 6 for services would probably be even more favourable.

3. Spain's internationalisation from a firm-level perspective

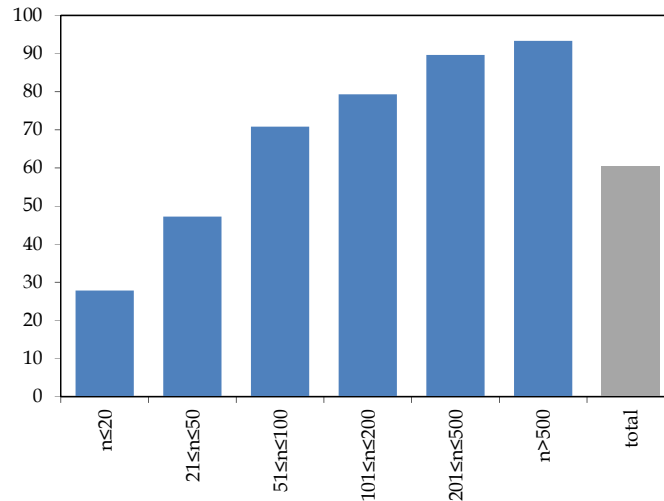
The recent economic literature has shown that the behaviour of aggregate exports is determined at the microeconomic level by both, the number of exporting firms relative to the total number of firms (*extensive margin*) and the value of exports relative to the total sales of exporting firms (*intensive margin*). Identifying the features that have influenced Spain's export performance in recent decades is key to understand the resilience of exports during the crisis, assess the potential role for exports as a engine of medium- to long-term growth, and learn the challenges that the economy may face to correct its external imbalances.

According to the Bank of Spain (2011) database, the economy has a relatively small number of exporting firms. In particular, only 12% of Spanish firms exported goods and 9% exported services -other than tourism- in the 2001-2011 period. Furthermore, the level of concentration is considerable: 1 percent of the firms with the largest export volumes accounted for 67 percent of all exports while 10 percent of the firms accounted for 93 percent.

Two factors explain the low share of exporting firms. Firstly, Spanish firms are excessively atomised, i.e., the total number of firms is high compared to the size of the economy. Thus, the problem is not so much that there are few exporters -although there is ample margin for increasing the number- but rather that there are too many small firms that cannot export. Secondly, we find the *selection effect* into exporting. The selection effect implies that only those firms that surpass a certain productivity threshold are able to sunk the fixed costs associated with entering a new market and survive the competitive pressures (Melitz, 2003). International empirical evidence has found substantial intra-industry heterogeneity in firms' productivity (Syverson, 2004, Hsieh and Klenow, 2009). Furthermore, the productivity threshold that selects a firm into exporting is well above average productivity, whether the latter is measured as the average productivity across firms in the economy or the within-industry productivity average (Altomonte et al., 2012). Therefore, any analysis of the selection effect needs to consider intra-industry heterogeneity, addressing the factors that may raise the number of firms capable of surpassing the within-industry productivity threshold and operate internationally.

Possibly, one of the factors that has attracted most of the attention in the firms and trade literature is firm size.⁶ Using data from the Spanish *Survey on Firms Strategies* (ESEE) in the manufacturing sector, conducted annually by the SEPI Foundation, Figure 7 illustrates the positive relationship between export propensity and firm size that is present in the sample.

Figure 7: *Percentage of exporters by firm size, average 1990-2010.*
(Source: Authors' calculations based on ESEE)



Note: n refers to the number of employees

This result suggests that larger firms have higher labour productivity than smaller firms. Using industry data from the OECD (2008) for 2005, Table 2 shows that Spanish firms with more than 250 employees have 65% higher labour productivity than the average, whereas the labour productivity of the smallest firms is approximately half the average. Other countries display productivity differences across firm size categories, albeit the range of variation is smaller than in the Spanish case. Assuming that the productivity differences reported in Table 2 can be extrapolated to the rest of the Spanish economy, and taking aggregate labour productivity data comparable among countries, it follows that Spain's lower aggregate comparative labour productivity level is partly explained by the higher share of Spanish employment in small- and medium-sized enterprises (compositional effect) and that Spain's large firms are as productive as their U.S. counterparts.

⁶ Under certain assumptions on firm distribution, the literature has found that the exports of large firms can be used as a good proxy of aggregate exports (Di Giovanni and Levchenko, 2010), reflecting the importance of firm size in recent literature.

Table 2: *Labour productivity in industry by firm size, 2005, as a percentage of average (=100)*

	1-9	10-19	20-49	50-249	250+
France	59.1	73.3	81	86	126
Germany	49.8	58.1	74.3	88.7	122.5
Italy	54	81.6	99	122.1	146.2
Spain	53.4	67.7	77.6	101.4	165.5
UK	74.5	74.4	81.4	90.1	122
USA	54.1	4.8	53.8	68.3	129.8

Source: OECD (2008).

For the US (2003), the groups are 1-9, 10-19, 20-99, 50-199, 100-499 and 500+.

Albeit size is a relevant feature for firm's internationalisation, it is not the only one (Navaretti et al., 2010). Firms with the right characteristics in terms of innovation, availability of alternative financing channels, human resources and management, and ownership structures are able to grow and become successful internationally (Altomonte et al., 2012). Once we analyse a broad set of variables, the empirical results indicate that, on average, exporting firms share a set of distinctive features, more competitiveness-friendly, if compared to non-exporting firms. Apart from being substantially larger, Table 3 shows that exporters have higher real productivity and physical capital stock per employee, rely more on skilled labour and are more likely to invest in R&D and adopt foreign technology. On average, roughly 80% of the firms reporting either product or process innovations in the year were also exporters during the year.

With regard to ownership structure, a major differentiating factor between exporters and non-exporters refers to the presence of foreign capital in Spanish manufacturing. According to the ESEE database, the foreign participation rate in exporting firms is on average nine times higher than that of non-exporting firms (26.3% versus 3.1%). On the other hand, the larger market share enjoyed by exporters is explained by less productive firms exiting the market after trade liberalisation (Bernard and Jensen, 1999, Trefler, 2004, Corcos et al., 2012).

Table 3: *Firms' characteristics in the Spanish manufacturing industry: exporters vs. non-exporters, average 1990-2010*

(median of the distribution)	Exporters	Non-exporters
Size (a)	167	21
Productivity (value added per employee) (b)	33.2	20.2
Productivity (output per employee) (b)	104.7	48.8
Physical capital per employee (b)	31.4	12.3
Innovation:		
High-skilled labour (%) (c)	3.6	0
White collar workers (%)	28.6	21.4
R&D and technology adoption (d)	24	0
Ownership structure:		
Foreign capital participation* (%) (e)	26.3	3.1
Market competition:		
Market share in main market* (%)	14.3	7.9
Finance:		
Long-term debt over own resources (f)	2.8	5.8
Real average cost of long-term debt (%) (f)	4	4.8
Temporary employment rate (%)	9.3	12.9

Notes: Employment, productivity, physical capital, competition and finance data begin in 1991; (a) average number of employees during the year; (b) calculated using the perpetual inventory method, in volume and thousands of euros per employee; (c) refers to engineering and university graduates, as percentage of total employees; (d) R&D spending and imports of technology services, in thousands of euros; (e) as a share of the firm's equity; (f) debt with financial institutions; * the statistic used for the analysis is the average.

Source: Authors' calculations based on ESEE.

As for how firms finance their productive activity, the evidence provided in Table 3 indicates that exporting firms rely less on long-term debt with financial institutions and, on average, have a lower real cost of long-term finance. Finally, the data show a higher temporary employment rate among non-exporting firms.

An intra-industry analysis of the characteristics associated to exporting firms vis-à-vis non-exporting ones supports the conclusion reached at the aggregate level. Furthermore, the evidence presented in Table 4 shows that there is substantial within-industry heterogeneity. For example, in at least five industries, exporters and non-exporters show a difference in median size of more than 200 employees. Likewise, the productivity (measured as real production per employee) of exporters in half the industries is twice or even three times the productivity of firms that do not export in the corresponding industry.

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Table 4: Firms' characteristics by manufacturing sector: exporters vs. non-exporters, average 1990-2010

(calculations based on the median of the distribution)	Size	Productivity (based on VA)	Productivity (based on output)	K stock per employee	High-skilled workers	White collar workers
	<i>Difference</i>	<i>Ratio</i>	<i>Ratio</i>	<i>Ratio</i>	<i>Difference</i>	<i>Difference</i>
Meat industry	154	1.4	1.7	1.9	2.7	2.7
Food and tobacco products	201	1.8	3.2	2.9	3.7	-4.7
Beverages	-72	1.3	1.4	1.3	3.7	-2.0
Textiles and apparel	88	1.7	2.5	2.9	1.7	10.6
Leather and footwear	9	1.3	2.0	2.2	0	5.9
Timber industry	54	1.3	1.3	1.8	1.3	1.3
Paper industry	157	1.9	2.0	1.9	4.3	2.8
Graphic design	31	1.5	1.6	2.0	2.5	3.9
Chemicals and pharmaceuticals	243	1.9	1.9	2.6	2.8	7.1
Rubber and plastic products	115	1.7	2.2	2.3	3.8	6.1
Non-metallic mineral products	190	1.3	1.2	1.6	3.0	1.1
Ferrous and non-ferrous metals	270	2.0	3.0	4.2	2.4	7.4
Metallic products	86	1.6	2.3	2.7	2.9	3.8
Agricultural and industrial machinery	87	1.6	2.0	2.2	4.2	14.1
Computers, electronics and optics	174	1.3	1.3	3.5	4.5	14.7
Machinery and electrical material	220	1.5	1.9	3.3	3.9	8.8
Motor vehicles	293	1.8	2.2	4.2	3.2	7.8
Other transport materials	192	1.9	2.7	3.6	4.0	10.7
Furniture industry	22	1.4	1.5	1.8	1.7	4.2
Other manufacturing industries	26	1.2	1.7	1.9	1.7	4.7

	R&D and adoption	Foreign ownership	Market share	Ratio of long- term debt	Cost of long- term debt	Temporary rate
	<i>Difference</i>	<i>Ratio</i>	<i>Ratio</i>	<i>Difference</i>	<i>Difference</i>	<i>Ratio</i>
Meat industry	0	1.8	0.9	-4.6	-1	0.8
Food and tobacco products	17	7.3	1.7	2.0	0	0.9
Beverages	9	2.7	0.7	6.0	-2	1.0
Textiles and apparel	0	10.5	3.1	2.9	-1	0.5
Leather and footwear	0	2.0	2.2	4.3	0	1.0
Timber industry	0	70.7	2.2	1.2	0	0.9
Paper industry	0	6.8	2.8	-0.7	0	0.9
Graphic design	0	5.3	1.6	0.1	-1	1.0
Chemicals and pharmaceuticals	579	3.5	2.2	0.0	-1	0.9
Rubber and plastic products	14	13.7	2.3	-8.2	-1	0.6
Non-metallic mineral products	0	6.1	1.3	-2.0	-1	0.9
Ferrous and non-ferrous metals	112	5.6	1.7	-12.1	0	0.7
Metallic products	0	11.1	2.3	-7.1	0	0.7
Agricultural and industrial machinery	99	10.9	2.0	-3.2	-1	0.6
Computers, electronics and optics	487	4.6	1.5	1.0	-1	0.6
Machinery and electrical material	188	6.9	1.6	-1.9	-1	0.4
Motor vehicles	387	6.0	1.4	-1.6	1	0.9
Other transport materials	224	19.0	1.0	-0.5	-1	0.3
Furniture industry	0	32.1	2.1	-1.0	-1	1.0
Other manufacturing industries	0	4.1	2.1	-6.1	-1	1.3

Notes: See Table 3 for a definition of the variables and the units of measure. Sectoral classification based on CNAE-09.

Source: Authors' calculations based on ESEE.

Next, we carry out a formal analysis of the potential effect of each firm-level variable on export propensity.⁷ Identifying the determinants that increase the probability of exporting is crucial for at least two reasons, first, to evaluate the ongoing internationalisation process that the Spanish economy embarked on when it joined the common market and, second, to shape the economic policies that may foster this process. In line with the recent empirical literature on the determinants of exports (Greenaway et al., 2007, Berman and Héricourt, 2010, Minetti and Zhu, 2011), we estimate a probit model on the probability of exporting by firm i in year t . The reduced-form equation is as follows:

$$Export_{it} = \alpha + X'_{kit} \beta_k + \mu_{jt} + \varphi_{reg} + u_{it}, \quad (2)$$

where $Export_{it}$ is a dummy variable equal to 1 if the firm exported in year t and 0 otherwise; X'_{kit} is a vector of k control variables; μ_{jt} is an industry×year interaction variable that captures the potential differential effect of the economic cycle on each industry j ; φ_{reg} is an artificial regional variable that captures the unobserved heterogeneity of having the first establishment in a specific region; and u_{it} is a random error of standard normal distribution. The probit model is estimated by maximum likelihood for the whole sample.

Table 5 provides the estimation results of equation (2) after comparing alternative specifications and deleting those regressors that are found insignificant. The qualitative results of this first approximation to export propensity indicate that the probability of exporting increases with firm size, real capital stock per employee, R&D expenditure and technology adoption, the share of skilled labour, market competition and foreign ownership. In addition, the probability of exporting is higher if the firm reports product innovations or diversifies production to more than one product during the year. Conversely, the probability of exporting decreases with the ratio of long-term debt to equity, in line with the recent literature that emphasizes the importance of a firm's financial health in order to face the fixed costs associated with entry in export markets (Manova, 2008, Berman and Héricourt, 2010, Chor and Manova, 2012, Altomonte et al., 2012).

⁷ The following analysis focuses on the determinants of the exporting probability for the whole sample, therefore, it is not focused on the transition probability from being a non-exporter, in $t=0$, to become an exporter, in $t=1$.

Table 5: *Export propensity of Spanish manufacturing firms, average 1991-2010*

	Coefficients	Marginal effects
Size (a)	0.396*** -0.022	0.050*** -0.003
Physical capital per employee (a)	0.146*** -0.021	0.018*** -0.003
R&D and technology adoption (a)	0.043*** -0.013	0.005*** -0.002
White collar workers (b)	0.427*** -0.123	0.054*** -0.015
Market share (b)	-0.408*** -0.091	-0.052*** -0.012
Foreign ownership (b)	0.343*** -0.057	0.043*** -0.007
Long-term bank debt ratio	-0.004* -0.002	-0.001*** 0
Product innovation (c)	0.159*** -0.039	0.020*** -0.005
Product diversification (d)	-0.135*** -0.051	-0.017*** -0.007
<i>Pro memoria:</i>		
Number of observations	10376	
Pseudo R2	0.25	
Wald chi2(45)	1427.4	
Prob > chi2	0.000	

Notes: (a) in logs; (b) in unitary terms; (c) dummy = 1 if the firm reports product innovations in the year and 0 otherwise; (d) dummy = 1 if the firm does not diversify its production, i.e. it reports a single 3-digit product in CNAE-09, and 0 if the firm diversifies production, i.e. it reports more than one 3-digit product in CNAE-09. Robust standard errors in parentheses.

* indicates 10% significance, ** indicates 5% significance, and *** indicates 1% significance.

Marginal effects evaluated at the mean. Sample period: 1991-2010.

Source: Authors' calculations based on ESEE.

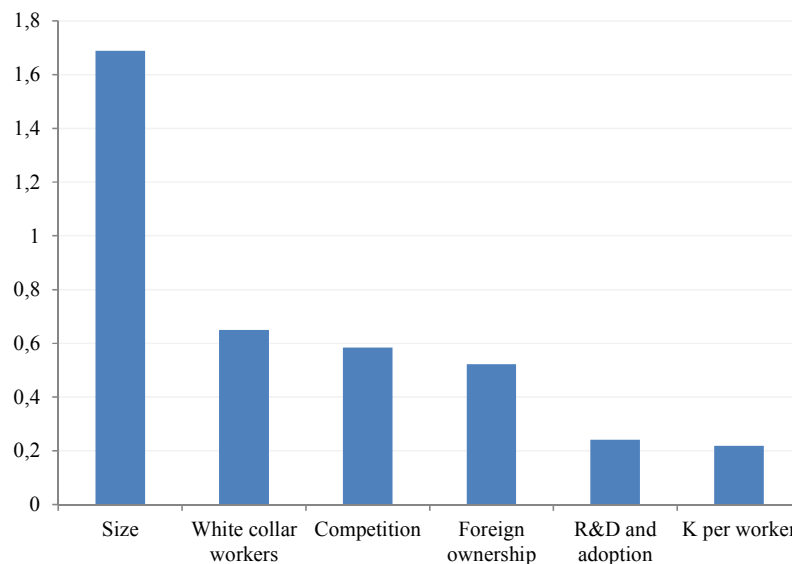
In line with the literature, the results shown in Table 5 suggest that a 1% increase in firm size increases the probability of exporting by 5%.⁸ Likewise, a 1% increase in real capital stock per employee raises the probability of exporting by 1.8%. Achieving product innovation in the year increases the probability of exporting by 2 percentage points while diversifying

⁸ Greenway et al. (2007) and Minetti and Zhu (2011) find a positive effect of firm size on the export propensity of a sample of firms in the UK and Italy, respectively.

production raises it by 1.7 percentage points, suggesting the importance of firm’s strategy in fostering internationalisation.

Using the estimates presented in Table 5, Figure 8 summarises the results of a number of simulation exercises on the probability of exporting after an increase in each of the main determinants from their corresponding median (or average, if appropriate) sample values. Thus, an increase of 10 employees in the median firm size (specifically, from 50 to 60 employees) would increase the probability of exporting by 1.69%. Similarly, an increase of 10 percentage points in the median of white collar workers would increase the probability of exporting by 0.65%.

Figure 8: *Impact on the probability of exporting of exogenous changes in each variable, in %*
(Source: Authors’ calculations based on ESEE)



Note: In each simulation, the rest of regressors are evaluated at their respective mean value.

A similar quantitative effect is obtained from an increase in product market competition, induced by a 10 percentage points decrease in average market share, and from an increase in foreign ownership, induced by a 10 percentage point increase in the average share of foreign ownership. In addition, raising average expenditure on R&D and technology adoption by 50% would increase the probability of exporting by 0.24%, while increasing the median stock of capital per employee by 10% would have a similar effect. Bearing in mind that all these figures are orientative –e.g. they do not consider how the extra expenditure on R&D would be distributed across firms in the sample and, therefore, the potential differential effect on the

probability of exporting- we can conclude that size stands out as a relevant variable for firms when deciding to pursue an internationalisation strategy. Together with size, investment in capital stock per employee and expenditure on R&D and technology adoption are the factors that the firm may decide upon with no *ex ante* limit, beyond what is dictated by optimal decision-making.

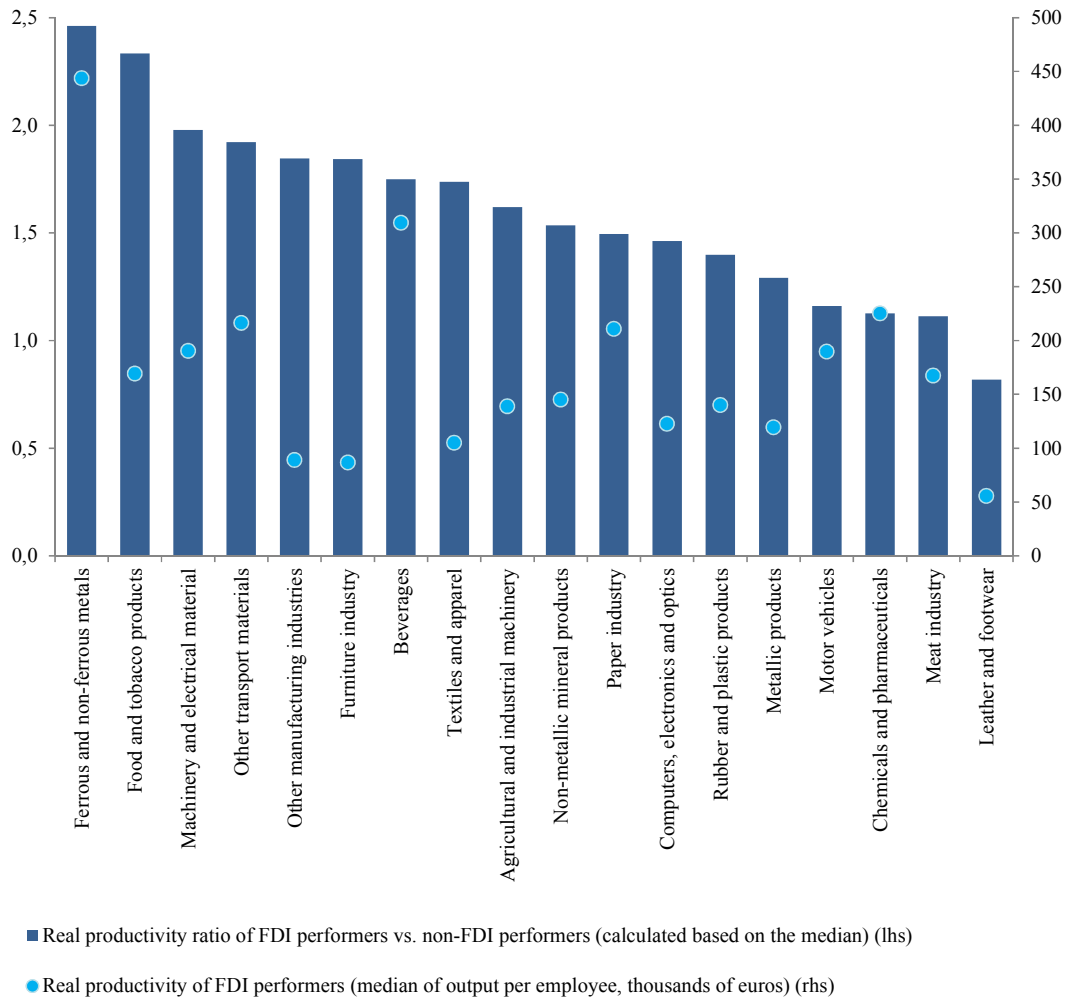
Having explored the main determinants of the *extensive margin* of exports at the firm level, we shift the focus to the more sophisticated form of internationalisation: outward foreign direct investment (FDI). For a sample of manufacturing firms of seven European economies, Altomonte et al. (2012) conclude that there is a stronger positive correlation between total factor productivity (TFP) and FDI than between TFP and other simpler forms of internationalisation, such as exporting or importing. This observation suggests that firms undertaking FDI show an ideal set of features, e.g. higher productivity, making internationalisation a stable and successful process.

Thus, it becomes relevant to explore the characteristics of those firms that undertake outward FDI and that are at the forefront of internationalisation. The ESEE provides annual data on outward FDI since 2000 with a category variable indicating whether the firm owns a share of any other firm located abroad. On average, 13.3% of firms reported ownership of a foreign firm. Furthermore, 97% of the firms reporting ownership of a foreign firm were also exporters in the year, although only 20.1% of exporting firms reported outward FDI.

Figure 9 presents a ranking of industries within manufacturing that is established according to the ratio of productivities of those firms that perform outward FDI and those firms that do not perform outward FDI. The ranking intends to identify those industries in which the internationalisation strategy via FDI is closely correlated with firm performance in terms of higher productivity. In Figure 9, ferrous and non-ferrous metals stand out for both, the large difference in productivity between FDI performers and non-FDI performers and the level of industry productivity. Many sectors show a productivity ratio well above 1 while only one sector -leather and footwear- show a ratio lower than 1.

Figure 9: Industry ranking of FDI performers vs. non-FDI performers: ratios and value of real productivity, 2000-2010

(Source: Authors' calculations based on ESEE)



Note: The classification excludes Graphic design and the Timber industry due to lack of data.

Finally, Table 6 provides a summary of the characteristics of those firms that perform outward FDI compared to those that do not. It is worth noting the differences in median size and R&D and technology adoption spending, two variables that *ex ante* could be considered relevant in explaining the decision to own a foreign firm. The main conclusion to be drawn from the evidence provided in Table 6 is that there is a large degree of within-industry heterogeneity between FDI performers and non-FDI performers. Firms that pursue internationalisation through FDI tend to show higher values of those indicators associated to competitiveness.

Table 9: *Firms' characteristics by manufacturing sector: FDI performers vs. non-FDI performers, average 1990-2010*

(calculations based on the median of the distribution)	Size	Productivity (based on VA)	Productivity (based on output)	K stock per employee	High-skilled workers	White collar workers
	<i>Difference</i>	<i>Ratio</i>	<i>Ratio</i>	<i>Ratio</i>	<i>Difference</i>	<i>Difference</i>
Meat industry	454	1.4	1.1	1.6	2.4	6.2
Food and tobacco products	438	1.8	2.3	2.1	4.5	7.6
Beverages	358	1.4	1.7	0.8	-0.2	-1.9
Textiles and apparel	258	1.6	1.7	3.0	3.2	9.9
Leather and footwear	25	1.1	0.8	0.6	6	2.8
Timber industry	69			2.0	4.0	-2.5
Paper industry	274	1.6	1.5	1.6	1.5	7.1
Graphic design	291			0.9	6.8	21.2
Chemicals and pharmaceuticals	219	1.5	1.1	1.0	1.9	7.2
Rubber and plastic products	222	1.3	1.4	1.4	1.5	6.9
Non-metallic mineral products	477	1.7	1.5	2.7	3.2	8.7
Ferrous and non-ferrous metals	225	1.8	2.5	1.5	1.5	3.2
Metallic products	226	1.3	1.3	2.3	2.5	3.5
Agricultural and industrial machine	194	1.3	1.6	1.6	1.8	8.8
Computers, electronics and optics	192	1.1	1.5	1.1	7.0	24.2
Machinery and electrical material	376	1.4	2.0	1.8	2.0	4.1
Motor vehicles	241	1.1	1.2	1.5	2.9	4.2
Other transport materials	1412	1.5	1.9	2.0	7.3	26.0
Furniture industry	416	1.9	1.8	2.2	5.1	14.2
Other manufacturing industries	363	1.3	1.8	1.8	-0.6	3.3

	R&D and adoption	Foreign ownership	Market share	Ratio of long- term debt	Cost of long- term debt	Temporary rate
	<i>Difference</i>	<i>Ratio</i>	<i>Ratio</i>	<i>Difference</i>	<i>Difference</i>	<i>Ratio</i>
Meat industry	346	2.4	2.0	0.1	-1	2.0
Food and tobacco products	350	3.3	2.3	1.3	-1	0.7
Beverages	343	1.4	1.2	10.9	0	1.6
Textiles and apparel	234	6.9	3.6	8.0	-1	1.5
Leather and footwear	57	10.5	1.3	10.8	-1	0.5
Timber industry	0	8.7	1.7	-2.1	-2	0.9
Paper industry	234	2.4	2.5	-4.9	0	1.2
Graphic design	0	6.0	2.4	-11.9	-1	2.1
Chemicals and pharmaceuticals	1149	0.7	1.5	0.0	1	2.0
Rubber and plastic products	379	1.7	3.1	-3.4	0	1.1
Non-metallic mineral products	447	4.6	2.1	-1.3	-1	1.2
Ferrous and non-ferrous metals	707	1.9	2.0	-5.5	-1	1.2
Metallic products	333	4.1	2.1	-5.4	0	1.1
Agricultural and industrial machine	629	2.4	1.8	-2.2	0	1.8
Computers, electronics and optics	1556	1.3	1.0	2.9	-1	1.6
Machinery and electrical material	546	1.4	2.3	0.0	-1	1.7
Motor vehicles	1802	1.6	1.2	2.3	0	1.3
Other transport materials	19237	3.5	0.7	-2.0	-1	1.2
Furniture industry	346	7.0	2.1	9.0	-2	0.8
Other manufacturing industries	30	1.2	1.6	-3.2	-2	

Notes: See Table 3 for a definition of the variables and the units of measure. Sectoral classification based on CNAE-09.

Source: Authors' calculations based on ESEE.

In summary, a number of factors, largely ascribed to the realm of the firm's strategic decision-making, have shaped Spain's internationalisation process over the last two decades. On the one hand, we find factors related to company size, investment in capital stock, skilled

labour intensity, R&D spending and technology adoption. On the other, we find decisions pertaining to market strategy and finance, such as product innovation, product diversification, and the reliance on alternative sources to long-term financing, including foreign ownership. On balance, the benign combination of all these factors has produced important feedback effects, underpinning the relatively good performance of the Spanish export market share, the strong recovery of exports during the financial crisis, and the inroads made into emerging markets with new and differentiated products. Ultimately, they provide an explanation to the so-called Spanish paradox.

4. Conclusions

This paper explores the characteristics of the internationalisation process of Spanish firms and the key to their success in foreign markets. It also addresses the set of economic policies that may promote and facilitate internationalisation over the coming years.

Evidence suggests that, since joining EMU in 1999 until 2011, Spain's share of world exports in goods and services fell only slightly -by 8.9%- despite the rapid growth of China, India and several other emerging economies in global trade. Meanwhile, other industrialised nations saw their world export shares fall by 20% to 40%. Broadly speaking, there is no clear cross-country relationship between variations in relative export prices and variations in export market shares. In fact, price competitiveness gains are positively correlated with market share losses, albeit the correlation coefficient is low (0.22) and not statistically significant. This evidence does not imply that relative prices are not relevant for export market shares, but that non-price determinants have been more important during this period and have more than compensated the effects of export prices. If Spain had experience the real effective exchange rate depreciation of, say, Germany, its export market share would have increased 20 percentage points (equivalent to 6 per cent of Spanish GDP).

The good relative performance of Spain's export market share coincides with increased export diversification both in terms of destination markets -towards emerging and growth-leading economies (EAGLEs)- and production -towards sectors that are more complex and with a greater ability to extend exporting to other sectors that may use its productive knowledge. In both features, the industry composition of Spanish exports is above the global average.

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intensity, R&D spending and technology adoption. On the other, we find decisions pertaining to market strategy and finance, such as product innovation, product diversification, and the reliance on alternative sources to long-term financing, including foreign ownership. On balance, the benign combination of all these factors has produced important feedback effects, underpinning the relatively good performance of the Spanish export market share, the strong recovery of exports during the financial crisis, and the inroads made into emerging markets with new and differentiated products.

Finally, the diversity of the determinants of a firm's internationalisation process requires economic policy to be multidimensional, at the micro and the macroeconomic level. The institutional framework of an advanced economy is shaped to improve the environment in which firms operate. This aim would help both exporters and non-exporters on two fronts: the market for inputs (labour and capital markets, access to new technologies and production innovations) and the market for goods and services (improved competition).

References

- Adolfson, M., Laséen, S., Lindé, J. and Villani, M. (2008), "Bayesian Estimation of an Open Economy DSGE Model with Incomplete Pass-through," *Journal of International Economics*, 72, 481-511.
- Alberola, E., Erce, A. and Serena J.M. (2012), "International Reserves and Gross Capital Flows Dynamics during Financial Stress", Documento de Trabajo Banco de España No. 1211.
- Altomonte, C., Aquilante, T. and Ottaviano, G.I.P. (2012), "The Trigger of Competitiveness – The EFIGE Cross Country Report", Bruegel Blueprint Series, Vol. XVII.
- Antràs, P., Segura-Cayuela, R. and Rodríguez-Rodríguez, D. (2010), "Firms in International Trade (with an Application to Spain)", SERIEs Invited Lecture at the XXXV Simposio de la Asociación Española de Economía.
- Banco de España (2011), "La Competitividad de la Economía Española", Informe Anual.
- Berman, N. and Héricourt, J. (2010), "Financial Factors and the Margins of Trade: Evidence from Cross-Country Firm-Level Data", *Journal of Development Economics*, Vol. 93, pág: 206-217.
- Bernard, A.B. and Jensen, J.B. (1999), "Exceptional Exporter Performance: Cause, Effect, or Both?", *Journal of International Economics*, Vol. 47, pág: 1-25.
- Boscá, J.E., R. Doménech, J. Ferri and J. Varela (2011), *The Spanish Economy: A General Equilibrium Perspective*. Palgrave MacMillan.

- Boscá, J.E., Doménech, R. and Ferri, J. (2012), "Fiscal Devaluations in EMU", Economic Research Department BBVA Working Paper Series No. 1211.
- Comin, D., Trumbull, C. and Yang, K. (2011), "Fraunhofer: Innovation in Germany", Harvard Business School Note, 9-711-022.
- Corcos, G., Del Gatto, M., Mion, G. and Ottaviano, G. (2012), "Productivity and Firm Selection: Quantifying the 'New' Gains from Trade", *Economic Journal*, Vol. 122, pág: 754-798.
- Chor, D. and Manova, K. (2012), "Off the Cliff and Back: Credit Conditions and International Trade during the Global Financial Crisis", *Journal of International Economics*, Vol. 87, pág: 117-133.
- de Mooij, R. and Keen, M. (2012), "Fiscal Devaluations and Fiscal Consolidation: The VAT in Troubled Times" in A. Alesina and F. Giavazzi (eds.), *Fiscal Policy after the Financial Crisis*. University of Chicago Press (forthcoming).
- Di Giovanni, J. and Levchenko, A. (2010), "Firm Entry, Trade, and Welfare in Zipf's World", NBER Working Paper 16313.
- Farhi, E., Gopinath, G. and Itskhoki, O. (2011), "Fiscal Devaluations", NBER Working Paper 17662.
- Forbes, K.J. and Warnock, F.E. (2011), "Capital Flow Waves: Surges, Stops, Flight, and Retrenchment", NBER Working Paper No. 17351.
- Greenaway, D., Guariglia, A. and Kneller, R. (2007), "Financial Factors and Exporting Decisions", *Journal of International Economics*, Vol. 73, pág: 377-395.
- Hausmann, R., Hidalgo, C.A., Bustos, S., Coscia, M., Chung, S., Jiménez, J., Simoes, A. and Yildirim, M.A. (2011), *The Atlas of Economic Complexity: Mapping Paths to Prosperity*. Cambridge, MA.
- Hauser, H. (2010), *The Current and Future Role of Technology and Innovation Centres in the UK*. Report to the Department for Business Innovation & Skills.
- Hsieh, C.T. and Klenow, P.J. (2009), "Misallocation and Manufacturing TFP in China and India", *The Quarterly Journal of Economics*, Vol. 124, pág: 1403-1448.
- Manova, K. (2008), "Credit Constraints, Equity Market Liberalizations and International Trade", *Journal of International Economics*, Vol. 76, pág: 33-47.
- Melitz, M.J. (2003), "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity", *Econometrica*, Vol. 71, pág: 1695-1725.
- Minetti, R. and Zhu, S.C. (2011), "Credit Constraints and Firm Export: Microeconomic Evidence from Italy", *Journal of International Economics*, Vol. 83, pág: 109-125.

- Navaretti, G.B., Schivardi, F., Altomonte, C., Horgos, D. and Maggioni, D. (2010), "The Global Operations of European Firms", Second EFIGE Policy Report.
- OECD (2008): *OECD Compendium of Productivity Indicators*. OECD.
- Obstfeld, M. (2012), "Financial Flows, Financial Crises, and Global Imbalances", *Journal of International Money and Finance*, Vol. 31, pág: 469-480.
- Ratto, M., Werner, R. and Veld, J. (2009), "QUEST III: An Estimated Open-Economy DSGE Model of the Euro Area with Fiscal and Monetary Policy", *Economic Modelling*, Vol. 26, pág: 222-233.
- Rodríguez Crespo, A., Pérez-Quirós, G. and Segura Cayuela, R. (2012), "Competitiveness Indicators: The Importance of an Efficient Allocation of Resources", *Economic Bulletin* (January), Bank of Spain.
- Santos, T. (2012), "El Parón Súbito y la Renacionalización del Riesgo Español", en FEDEA blog (<http://www.fedeablogs.net/economia/?p=22847>).
- Syverson, C. (2004), "Market Structure and Productivity: A Concrete Example", *Journal of Political Economy*, Vol. 112, pág: 1181-1222.
- Trefler, D. (2004), "The Long and Short of the Canada-U.S. Free Trade Agreement", *American Economic Review*, Vol. 94, pág: 870-895.