Relationship between Firm Size and Export Performance: An Exploratory Analysis

Tatiana M. C. Monteiro - tatiana.monteiro@millenniumbcp.pt, Millenium BCP - Portugal
Maria do Rosário A. Moreira - mrosario@fep.up.pt, University of Porto – Portugal
Paulo S. A. Sousa - paulus@fep.up.pt, University of Porto - Portugal

Abstract: The positive relationship between firm size and export behaviour is often considered certain. However, the vast number of studies in this area shows discrepancies in the findings: the majority of them confirm a positive and statistically significant relationship, some studies found no significant relationship and others suggested a negative association between firm size and export performance. This study attempts to clarify these conflicting findings in the export marketing literature by empirically examining the impact of firm size on export performance, by using different proxies for the variable 'firm size' and diverse indicators for the 'export performance' variable.

The main aim of this study is to contribute to a better understanding of the relationship between firm size and export performance using a sample of Portuguese firms, of different industries, to explicitly control for possible sectorial factors influencing the relationship in analysis. We found that using the same sample of companies, if we vary the proxies used to measure the Firm size determinant, even fixing the Export performance proxy we have opposite signals of the impact of the determinant in the export performance.

We expect that our findings open a research clue about the existing inconsistencies around firm size and export performance and provide export policy makers with information on which determinants are more important to improve export performance.

Keywords: Export Performance; Firm size; Determinants.

JEL Codes: F10; F12; F23; L25; M31

1. Introduction

Internationalization is a way for firms to survive, succeed (Majocchi et al., 2005) and promote their economic growth (Archarungroj and Hoshino, 1998). Export seems a viable opportunity for all kind of firms, as a simple and quick way to access foreign markets.

Extant literature analyzes the relationship between firm size and export performance but the empirical findings appear to be contradictory (Majocchi et al., 2005). Competitive advantages can be found in both, large and small firms (Moen, 1999). Firm size can affect export behaviour in the search for economies of scale and to spread common expenses over expanded markets (Majocchi et al., 2005).

On the other hand, competitiveness of small firms, more based on product quality, e.g., and their flexibility to enter and exit foreign markets (Bonaccorsi, 1992) provide a negative relationship.

Some authors consider there exist some inconsistencies in the results derived from the lack of an indicator measuring the international experience of firms and the impact of geographical diversity on export performance (Majocchi et al., 2005). The use of different measurements for size, like the number of employees or the sales level of the firm (Archarungroj and Hoshino, 1998) can also lead to discrepancies in results.

The main aim of this paper is to contribute to a better understanding of the relationship between export performance, measured using different proxies (percentage of exports to sales or export intensity, export growth, export profit level, export market share) and size of the firm, measured through several indicators (the sales level, the number of employers, the sales/employers ratio, the investment level in R&D). In fact, despite a growing number of empirical studies (Verwaal and Donkers 2001; Gabbitas and Gretton, 2003; Kalafsky 2004; Majocchi et al., 2005; Pla-Barber and Alegre, 2007), the question of the relationship between these variables is not clearly established.

In order to fulfill our objective, we begin by doing an exhaustive literature review in order to learn more about similar studies, about the determinants of export performance, and the impact of firm size.

This paper is organized as follow: besides this introduction, we review, in Section 2 the relevant literature on internationalization issues, on the determinants of export performance, on the impact of firm size and at last we review the similar studies and the relationship between firm size and export performance. After, in Section 3, we briefly describe the methodology and data gathering of the similar studies and we describe the procedures to be undertaken. Finally, in Section 4 we present the results obtained.

2. Relationship between Firm Size and Export Performance: a Literature Review

In this section, a literature review on the topics regarding firm size and export performance is done: the main internationalization modes and theories are presented and discussed, the determinants of export performance and the impact of firm size and firm size measures are examined and, subsequently, similar studies on the relationship between firm size and export performance are presented.

2.1 Internationalization Issues

Welch et al. (2007), classified the foreign operation methods as contractual, exporting or investment modes. In contractual modes are included franchising, licensing, subcontracting and alliances. Exports can be indirect, direct through an agent or distributor, and through a subsidiary or sales office. Investment modes (FDI) are the most powerful way of entering in foreign market and the control level varies from minority share, to 50/50, to majority share or 100% owned.

Trade is the most ancient method of foreign operation, by exporting and importing goods and services to and from different countries.

Exporting is a low risk and an inexpensive mode of entry in foreign markets and permits, therefore, to be fitted simultaneously in a larger number of markets. The main disadvantages are additional transport costs, distribution and marketing costs and, depending on the country, additional financial and legal risks. Some costs vary with the volume exported but others not. Some fixed costs can be recovered if the firm does not succeed internationally but the same cannot be told about the sunk costs (Gabbitas and Gretton, 2003). Fixed costs associated with entry are an important factor in the decision to export. If exports become a success some activities may be internalized.

The Uppsala internationalization process model, developed by Johanson and Wiedersheim-Paul (1975) and Johanson and Vahlne (1977), view internationalization as a multilateral network development process in which the firm invest resources and gradually acquires knowledge about foreign markets. Knowledge and learning coupled with a growing market commitment and trust create opportunity development. Firm tends to gradually increase its level of involvement in a specific foreign market. It is a gradual approach to internationalization that assumes four developmental stages: sporadic exports, exports through an agent, commercial subsidiary and productive subsidiary. The stages assume an incremental resource commitment and cumulative experience about the market. Another feature of the model is that firms tend to internationalize to markets where the psychic distance is lower. Some factors difficult knowledge about foreign markets, as culture, language and education level. The "establishment chain" is incremental, starts in neighboring markets and subsequently moves in terms of psychic distance (Johanson and Vahlne, 2009).

Using this logic, firms will look for growth opportunities in the domestic market first. When the market becomes limited they choose to either stagnate or diversify their geographic market. By the time a firm begins exporting, but smaller firms will grow in the domestic market first (Calof, 1994).

Rather that evolving through a series of international stages, as is thought to be the case for many firms, science-based firms are likely to encounter international pressures much earlier in their existence. In a highly globalized industry once a new product is developed there is an international demand waiting for it (Pla-Barber and Alegre, 2007). Most of the firms that started exporting a short time after establishment are small with technologically sophisticated products. This phenomena is called "International New Ventures", "Born Global" or "High-Technology Start-Ups" (Moen, 1999).

Wolff and Pett (2000) defend that small firms do not need always to progress through stages but the types of resources available determine their competitive pattern.

According with the resource based view, each firm gathers a set of resources and competencies that give them competitive advantages, especially if they are valuable, rare, cannot be imitated and is explored by the organization.

Other Theories of Internationalization explain the system of the firms in the choice for internationalization modes and processes.

The Internalization Theory of Buckley & Casson (1976) with the contribution of the Transaction Cost Theory of Hennart (1982), states that multinational enterprises exist when firms are more efficient than the markets in the organization of international economic activities. It is more likely to happen in imperfect markets with high transaction costs, information, negotiation and control costs, which generate incentives to internalize. So, the internalization theory is based on the assumption that transaction costs are high in foreign activities and this increases the incentive to internalize such activities by direct production abroad rather than via market transactions or licensing.

Dunning's (1980) approach to internationalization consists of an attempt to analyze the decisions in terms of ownership, locational and internalization (OLI) advantages. Associating countries features (relative advantages, location) with intrinsic elements of firms (competitive advantages) attempts to explain the international strategy of the firm. Exporting is the adopted strategy when only exist the ownership advantage, related to competitive advantages of the firm. When ownership and location advantages are present, firms can choose for licensing or franchising. FDI is only an option when the three conditions get together.

2.2 Determinants of export performance

Despite the internationalization theories, exporting represents a viable strategic option for firms to internationalize and has remained the most chosen mode of entry in foreign markets (Sousa et al., 2008).

In some studies there is the assumption that export per se is sufficient to impute success to a firm and there is a dichotomy between exporters and non exporters firms. However, other studies consider the dimension of success by position a firm's export performance. (Aaby and Slater, 1989)

Different motivations to export and several determinants of export performance dictate the dimension of export success of a firm.

Moen (1999) analyzed the export motives of Norwegian firms and the most important were the proactive motivations, such as profit potential in export markets, and risk reduction by the need to reduce dependence on the home market.

Schlegelmilch and Crook (1988) also mentioned that the primary motive for exporting is a saturated home market and the resulting concern of senior management regarding decreasing domestic sales. For a small country as Portugal, exporting can be a way to overcome the small domestic market.

Superior export performance is of vital interest to three major groups: public policy makers, business managers and marketing researchers (Katsikeas et al., 2000) and so there has be paid considerable attention to the determinants of export performance.

Zou and Stan (1998) and Sousa et al. (2008) review and synthesize the extant literature on the determinants of export performance that is considered fragmented, diverse and inconsistent.

Based on the resource-based theory and on the contingency theory the authors classify the determinants into internal and external, and also into controllable and non-controllable. This framework is a broader overview of export performance compared with other studies on the determinants, synthesized in Table 1, Table 2 and Table 3.

Table 1: Firm-level determinants of export intensity from Schlegelmilch and Crook (1988)

Management expectations	Attitudes towards risk, to foreigners and the perceived significance of marketing
Market variables	Location, transport costs
Differential advantages and resources of the firm	R&D activity, uniqueness of the product, managers' language skills
Firm demographics	Firm size, product life-cycle, domestic sales growth

Table 2: Firm-level export performance assessment from Katsikeas et al. (2000)

Managerial factors	Demographic, experiential, attitudinal, behavioural characteristics of the decision maker
Organizational factors	Demographic aspects, operating elements, resource characteristics and objectives of the firm
Environmental factors	External factors shaping domestic and foreign environment beyond the control of organizations

Managerial factors, organizational factors and environmental factors affect export performance and form the complex international business environment (Katsikeas et al., 2000).

Table 3: Firm-level determinants of export performance from Nazar and Saleem (2009)

Management characteristics	Attitudinal characteristics, skill based characteristics and behavioural characteristics
Firm's characteristics	Firm size, technology level, foreign contacts and networking, knowledge
Export marketing strategic capabilities	Utilization of international marketing research, segmentation and targeting and product capabilities

Internal: Management characteristics

Most studies consider that export performance is under the control of the firm and its management (internal and controllable factors). In this case a good or poor export performance should be attributed to management's work (Zou and Stan, 1998.).

Management attitudinal determinants that affect the export performance of the firms are management's international orientation, management's export commitment, management's perceived export advantages and barriers of exporting, management perception toward competitiveness and management's customer orientation.

Management skill based determinants of export performance are export experience, foreign language proficiency and education level (Nazar and Saleem, 2009).

Internal: Firms characteristics

Some authors verify that firm size is has a positive direct influence on export performance (Calof, 1994; Majocchi et al., 2005; Williams, 2011) but this determinant is further explored in the next point. Firm size has also an indirect impact by allowing the construction of foreign networking relationships. The results of Babakus et al. (2006) study show that firms with foreign ties have better export performance. Mais and Amal (2011) consider that the inclusion in networks may play an important role in reducing costs of export activities, mainly by accelerating such processes via knowledge sharing. Grandinetti and Mason (2012) also defends positive effects of networking in export performance through other international modes, such as FDI or joint ventures, by the creation and sharing of information and knowledge with foreign partners.

The technology profile is also a structural factor of the firm that would affect positively export performance in the case of science-based firms (Pla-Barber and Alegre, 2007) and firms with high "research effort" tend to export a high proportion of their output (Kumar and Siddharthan, 1994). It was also investigated if the age of the firm impacts on its ability to export. The resource-based view of venture internationalization predicts that older firms will be better able to build an international basis because they generally have a larger stock of resources than younger firms. Age also means learning and knowledge (Williams, 2011).

Internal: International marketing strategy

In a global and competitive world factors related to export marketing strategy are frequently cited as important determinants of export performance. The capabilities to adapt marketing mix, product, price, promotion and distribution, can be a good strategy for firms when entering in foreign markets.

An appropriate "fit" between strategy and the context where firms operate can lead to superior export performance than the only adoption of marketing strategy standardization or adaptation (Sousa et al., 2008).

External

The institutional framework exerts influence on the firm's mode of entry to the international market and in the strategy adopted in each country. Firms located in countries with greater openness to foreign markets, with sophisticated domestic demand and efficient support agencies, tend to perceive themselves as more qualified to enter demanding markets or to deploy bolder strategies in international activities (Mais and Amal, 2011).

Many nations have developed public programs to stimulate and assist small firms in an international markets engagement for reasons linked to economic growth, employment and balance of payments. However, the stimulating programs should pay careful attention to the competitive advantage profile of the firms (Moen, 1999).

Based in Zou and Stan (1998) and Sousa et al. (2008) revisions of literature on the determinants of export performance, we built Table 4 which contains the determinats that will be analysed in this paper.

Table 4: Determinants of Export Performance

Internal	Management characteristics	Attitudinal	Perceptions about export barriers, about export advantages Export commitment, International orientation
		Skill based	Language proficiency, Education level International experience
	Firm characteristics	Firm Size	Nº of employees, Sales volume, Sales employees ratio Investment level in R&D
		Technology level	R&D
		Foreign contacts and networking	Labor and supplier market (domestic networking) Costumer market and capital market (foreign networking)
		Knowledge	
		Age	Number of years in business
		International experience	Number of years in exporting
		Location	Information centers
	Export marketing strategy	Marketing mix	Product, Promotion, Price adaptation and Channel adaptation
		Product capabilities	Uniqueness of the product, Distribution, After sales service
External	Foreign market characteristics	Culture	Cultural similarity
		Governmental regulations	Legal and Political
		Market competitiveness	Economic similarity, channel accessibility
	Domestic market characteristics	Export assistance	Institutions
		Environmental hostility	National export policy, currency

Based on Zou and Stan (1998) and Sousa et al. (2008)

Recent studies of determinants

Sousa et al (2008) notice the appearance of market orientation as a new key determinant of export performance, which still is in an early stage of development. Market oriented firms are those which try to create superior value for buyers and superior performance for the business. Export market orientation is positively related to the export performance because firms identify and respond to customer needs and will be able to satisfy them better than other competitors.

Some authors find that FDI of firms exert a positive influence on export performance by acquiring useful resources in proprietary investments, partnerships and supply relationships (Grandinetti and Mason, 2012). Multinational corporations can overcome fixed costs, through product fragmentation and presence of production facilities in different countries, and can indirectly promote locally firms to export, i.e. export spillovers through information externalities, demonstration, and imitation and competition (Jongwanich, 2010).

2.3 Firm Size

Sometimes the source of competitive advantage can arise within the firm (Gabbitas and Gretton, 2003). Considering organizational resources, that can be proxy by firm size, there are non-imitable managerial abilities that transform financial and physical resources into competences (entry barriers). In this perspective firm size has impact on export performance (Majocchi et al., 2005).

Many researchers hypothesize that small firms export a lower share of their sales because of factors as limited resources, scale economies and high risk perception in international activity (Bonaccorsi, 1992).

The effect of economies of scale can explain the increment of international competitiveness. Larger firms can lower average production costs (cost per unit of output) as output increases, and have lower average unit costs than 'smaller' firms. They can also intend for economies of scope being more efficient in the production of a number of different, usually related, products or activities than it is for a number of firms to produce the products or engage in the activities separately (Gabbitas and Gretton, 2003).

Larger firms can also take advantage because of the importance of R&D expenditure, risk taking abilities and possible price discriminatory behavior (Patibandla, 1995).

However, firm size does not guarantee increased export intensity. Above a certain size firms may switch to foreign direct investment. Firms with high export intensities can lower total costs and avoid trade restricting interventions by foreign governments (Schlegelmilch and Crook, 1988).

Other studies defend that economies of scale are not as important when compared with competitive strategies such as product quality and innovation (Kalafsky, 2004). Small firms may also be able to realize economies of scale when they specialize in exports and develop export relationships of significant size, that can benefit from economies of scale of transaction costs and therefore have higher export intensities (Verwaal and Donkers, 2002).

Smaller firms should not be considered less competitive, they have different competitive advantages. The competitive advantages of smaller firms are linked to product uniqueness or technologically sophisticated niche products and, on the other hand, they are less competitive than larger firms in terms of marketing (Moen, 1999). Factors such as innovation and R&D are important for success in exporting but the role of these factors differ between industries (Wagner, 2001). Smaller firms can also succeed internationally if they develop comprehensive relationships with their trade partners, and take strategies such as developing products for these markets (Kalafsky, 2004).

Verwaal and Donkers (2002) in their study use the size of the export relation as a main predictor of export intensity, regardless of the size of the firm. Smaller firms are seen as being quicker and more flexible than the larger ones due to structural simplicity, and therefore that efficient adaptation can provide them a competitive advantage in responding to the specific requirements of foreign buyers when export relation size increases.

Babakus et al. (2006) used firm size as a control variable in their study about export performance, because it is a measure of firm's resource base, can confound relationships established and may influence the level of interactions and cooperation among firms. So the model is constructed with the control variable firm size (measured by the number of employees) to delineate better the relationships proposed.

Firm size can be measured by different proxies: number of employees, sales volume, sales employees' ratio, assets, investment level in R&D.

Sousa et al. (2008) point out the geographic factor for firm size in different studies: the meaning of the terms 'small', 'medium' and 'large' varies greatly in an international context.

2.4 Relationship between Firm Size and Export Performance

When we are studying the relationship between firm size and export performance special attention must be taken to the proxies used to measure the variables in different samples.

Export performance can be measured in several ways, depending on the author and study we are considering. In Table 5 we include several proxies used in various researches for measuting the export performance..

Table 5: Proxies of export performance

Export intensity	Exports as a percentage of total sales or export sales ratio	Archarungroj & Hoshino (1998)
Export earnings ratio	Percentage of earnings derived from exports	
Export growth	Whether the firms' exports had increased in the previous 12 months	
Expected export growth	CEO's forecast of export growth in the next 12 months	
Export experience	Number of years the firm has been in the export business	
Export market coverage	Number of countries the firm is exporting to	
Propensity to export	Whether firms are exporters, level of export sales (using nine size categories), and the year they first started exporting	Calof (1994)
Export profitability	4 item subjective measure: perceived export profitability, development in export share compared to competitor, development in market share in export markets and the overall rating if the company export performance	Moen (1999)

Table 6 presents some of the similar studies about the relationship considered in which different proxies of firm size and export performance were used and different results were obtained.

Archarungroj & Hoshino (1998) conclude that the number of employees may not be a good indicator of firm size since there are only significant differences in export intensity and export earnings ratio among firms when the sales volume is used as the size variable. On the other hand, Majocchi et al (2005) find a highly significant relationship between firm size and export intensity, when size is measured by number of employees.

However Nazar and Saleem (2009) conclude that firm size has positive effect on export performance if measured in terms of total sales and has negative effects are found on export profits if measured by number of employees a firm have.

Moen (1999) find that firm size and export intensity is not significantly related. Pla-Barber and Alegre (2007) find that firm size is not a preponderant factor for the internationalization of biotech firms and prior research had generally focused on manufacturing industries without taking into account the implications of dealing with heterogeneous technology profiles.

Using a representative sample of Spanish manufacturing firms, Esteve-Pérez et al. (2011) conclude that the threshold size to enter Eurozone markets has been reduced as a result of the introduction of the euro. The introduction of the euro has weakened the role of firm size in the decision to export to the Eurozone and, moreover, the change in the proportion of exports to the European Union is negatively related to firm size.

Kumar and Siddharthan (1994) explain that the mixed findings result from the non-linearity of the relationship between firm size and export performance. Large oligopolistic firms enjoying protected access to domestic market are generally less compelled to export and therefore an inverted-U shaped relationship is possible. Schlegelmilch and Crook (1988) found a non-linear relationship in their study what is explained by the fact that above a certain size, firms may switch to foreign direct investment instead of export operations.

Mixed results may also arise from samples including firms from many sectors, using different measures for firm size and also from the size variable being itself moderated by other variables, such as product cycle, maturity or industrial concentration (Sousa et al., 2008).

Calof (1994) stresses that differences in measurement, geography, firm size, and industry explain why results in similar studies have been inconsistent, and these differences make direct comparisons of the results difficult.

Table 6: Similar studies

Similar Studies	Proxies **used for Firm Size**	Proxies **used for Export Performance**	**Other variables for export performance**	**Results**
Archarungroj & Hoshino (1998)	Sales volume	Export intensity		-
		Export earnings ratio		-
		Export growth		0
		Expected export growth		0
		Export experience		+
		Export market coverage		0
			Export attitudes (profit, risk and cost compared to domestic market)	-
	Number of employees	Export intensity		0
		Export earnings ratio		0
		Export growth		0
		Expected export growth		0
		Export experience		+
		Export market coverage		+
			Export attitudes (profit, risk and cost compared to domestic market)	0
Bonaccorsi (1992)	Number of employees	Export intensity		?
Calof (1994)	Sales volume	Propensity to export		+
	Number of employees			+
			Export markets	+
Esteve-Pérez et al. (2011)	Number of employees	Propensity to export		-
Gabbitas & Gretton (2003)	Sales volume Number of employees Total assets	Export intensity		nss
Kalafsky (2004)	Number of employees	Export intensity		0
Majocchi et al. (2005)	Number of employees	Export intensity		+
			Age of the firm	+
Moen (1999)	Annual turnover Number of employees	Export intensity Export profitability Export growth	Competitive advantages Export motives	nss
Pla-Barber & Alegre (2007)	Sales volume Number of employees	Export intensity		nss
Schlegelmilch & Crook(1988)	Number of employees	Export intensity		+ NL
			Differential advantages/ resources Perceived attractiveness of location	
			Managerial attitudes	0
Verwaal& Donkers(2001)	Sales volume	Export intensity		+ NL
			Export relation size	+
Williams (2011)	Number of employees	Export propensity		+

NL: non linear; nss: not statistically significant

3. Methodological considerations

In this section we start to make a brief review on the methodology used in the similar studies, then we describe the procedures adopted in our study to collect information about exporting firms.

3.1 Similar studies: a brief review

The relationship between size and export behavior is explored by diverse theoretical studies. The results differ but the methodology does not diverge much, as can be observed in the following table (Table 7).

Table 7 : Methodological review of similar studies

Author	Year	Country	Industrial Sector	Method of analysis	Sample Size	Response Rate (%)	Statistical Analysis
Archarungroj & Hoshino	1998	Thailand	Multiple industries	Questionnaire	86	22,9	Anova Kruskall-Wallis Spearman
Kalafsky	2004	USA	Machine Tool		82	36	Anova Spearman
Moen	1999	Norway	Multiple industries		335	23	Factor analysis Anova
Pla-Barber & Alegre	2007	France	Biotechnology		121	55	SEM
Schlegelmilch & Crook	1988	UK	Mechanical engineering		130	26	Regression
Williams	2011	Jamaica	Multiple industries		92	15	Regression
Bonaccorsi	1992	Italy	Multiple industries	Survey	-	-	Anova Kruskall-Wallis
Calof	1994	Canada	Multiple industries		-	-	Anova Spearman
Esteve-Pérez *et al*	2011	Spain	Multiple industries		798	-	Regression
Gabbitas & Gretton,	2003	Australia	Multiple industries		1500	-	
Majocchi *et al.*	2005	Italy	Multiple industries		142	-	
Verwaal & Donkers	2001	Netherlands	Multiple industries		642	21,5	

Similar studies took place in developed countries from Europe and North America, with the exception of Australia, Jamaica and Thailand, and between 1992 and 2011. Most of them take multiple industries to test the relationship between firm size and export performance.

Information is collected from questionnaire, data bases, or both, survey.

Of the selected studies, the sample population varies considerably among themselves. Only one study has a sample of 1500 companies, the rest is below this value. All of them do a quantitative analysis.

We make a descriptive analysis in order to observe the relationship between the variables in Portuguese firms, using different proxies to measure the export performance (percentage of exports to sales or export intensity, export sales growth, export market coverage) and size of the firm (the sales level, the number of employees, the sales employees ratio, the investment level in R&D). We collect information in a statistical data base and companies' information through questionnaires, as most of the authors did in their studies.

3.2 Procedures

Questionnaire is the chosen method to obtain the perceptions of the international manager about the internationalization process of the firm and some characteristics of the firm that cannot be obtained through data base.

The data base selected is SABI - Bureau van Dijk, which contains accounting information, and other, from 20.000 Portuguese companies in a period of 10 years.

Questionnaire items were adapted from the determinants of export literature. It was sent by email to the 300 largest companies from SABI, ranked by turnover according to latest available year, 2011, and classified as industry, regarding economic activity (NACE Ver. 2 Primária 10 a 32).

The relationship between export performance and each one of its determinants is better explored by questionnaire. It is important to characterize Portuguese firms with regard to the determinants of exports, to characterize human resources of firms, and their view on the importance of certain economic and social factors that affect exports.

Table 8 summarizes the determinants considered in the literature as well as the measurement variable and the sources of data collection.

Table 8: Determinants of export performance

			Measurement of the variable	**Source**
Internal	Management characteristics	Attitudinal	5 points scale: risk and cost perceptions	Quest #14 #15
			5 points scale: profit and others perceptions	Quest #16 #17
		Skill based	Number of employees that speak a foreign language	Quest #4
			Number of employees with bachelor, MBA…	Quest. #3.1 #3.2 #3.3 #3.4
			Number of employees that had worked abroad	Quest #5
	Firm characteristics	Firm Size	Number of employees	Quest #3
			Sales volume	SABI
			Sales employees ratio	SABI
			Investment level in R&D	SABI
		Technology level	R&D	SABI
		Foreign contacts and networking	5 points scale: importance of domestic network	Quest #18
			5 points scale: importance of foreign network	Quest #19
		Age	Number of years in business	SABI
		International experience	Binary: exporter since the beginning or not; number of years exporting; number of markets	Quest #6 #7 #9
	Export marketing strategy	Marketing mix	5 points scale: product adaptation	Quest #21
			5 points scale: promotion adaptation	Quest #22
			Binary: choose a local distributer or not	Quest#8
			Binary: price is different in each country or not	Quest #23
External	Foreign market characteristics	Culture	6 options about cultural similarity	Quest #10
		Governmental regulations	5 points scale: importance of legal and political factors	Quest #11
		Market competitiveness	5 points scale: importance of local infrastructure	Quest #12
	Domestic market characteristics	Export assistance	5 points scale: run frequency to organizations to support exports	Quest #20
		Environmental hostility	5 points scale: importance of the competitiveness	Quest #13

The questionnaire was sent by e-mail in Portuguese, introduced with the description of our research project and the structure of the questions set (a copy of the questionnaire is available in the Appendix section). The use of email allowed us to solve any problem concerning the questionnaire quickly and to carry out a follow-up on the sample. A total of 20 responses were received but only 19 are valid and used in the analysis.

4. Firm size and Export Performance: data analysis and results

In this section we make a descriptive analysis on the information obtained through questionnaire and data base. In the analysis we follow the structure of Table 8, about the determinants of export performance.

We start by describing the sample obtained, the management characteristics of export performance, then the firm characteristics followed by the presentaiton of the export marketing strategy , the foreign and the domestic market characteristics. In the final part of this section, we analyze the determinants of both, firm size and export performance, and the impact of using different proxies to test their relationship.

4.1 Sample analysis

We obtained a sample of 19 firms, representing 6,3% of the population. The sample size constitutes a limitation of this study.

Most of the firms that respond to the questionnaire are from the manufacturing sector; only 3 are from the construction sector and other 3 from a non specified sector ("Other").

In average, the firms have 268 employees and present 44.708 thousand Euros as sales volume. In our analysis we divide the firms in groups: above the average number of employees, below the average number of employees, and above the average sales volume and below the average sales volume.

4.2 Management characteristics

We start to characterize the attitudinal determinants of export performance. The firms of our sample have in average high risk, cost and profit perceptions about operating abroad.

When we consider the group of firms with sales volume higher than average, they present higher risk and profit perception than the ones lower the average. The cost perception is higher for firms lower than average but the difference is not very relevant.

We get similar results considering number of employees. Firms with number of employees lower than average have higher risk and cost perception than the ones above the average. But profit perception is higher for firms with the number of employees above the average.

14 firms consider the increase of sales volume as the major advantage of export (74%) but also the diversification of customers and markets (63%) is chosen for 12 firms.

When we analyze the responses through groups, the main advantages for "lower than average" groups, considering sales volume or number of employees, continues to be the increase of sales and diversification of customers and markets.

For "higher than average" firms of sales volume all of them see the increase of sales volume as an advantage of export. But in this group, another advantage appear to be significant the raise of income from operations, especially when considering the number of employees.

Skill based characteristics show us that only 19% of the total employees speak a foreign language and the number of persons with language proficiency is higher in the groups "lower than average" considering sales volume and number of employees.

The majority of employees have done only elementary/basic school in all groups of firms considered.

The results in the groups "lower than average" in sales volume or number of employees are better than in "higher than average" so we cannot consider education level as a strong determinant of export performance in this sample.

Only 5% of the total employees had worked abroad and again, groups of "lower than average" of the two proxies present better results than "higher than average" groups (see Table 9).

Table 9: Management characteristics

Attitudinal	All firms	Sales volume		Number of employees	
Average of 5 points scale		lower than average	higher than average	lower than average	higher than average
Risk perception	2,84	2,79	3,00	3,00	2,67
Cost perception	3,63	3,64	3,60	3,70	3,56
Profit perception	3,53	3,43	3,80	3,40	3,67
Number of firms (%)					
Higher sales volume	74%	64%	100%	60%	89%
Higher income from operations / sales company	53%	50%	60%	30%	67%
Personal satisfaction of managers	0%	0%	0%	0%	0%
Diversification of customers / markets	63%	64%	60%	80%	44%
Other export perceptions	11%	7%	20%	0%	22%
Skill based					
Number of employees (%)					
Speak a foreign language	19%	22%	18%	32%	16%
Had work abroad	5%	7%	3%	5%	6%
MBA/Master/Post graduate	2%	3%	2%	4%	2%
Bachelor	10%	10%	11%	14%	9%
High school	18%	23%	15%	33%	14%
Elementary/basic school	41%	38%	49%	37%	44%

4.3 Firm characteristics

Investment level in R&D is in average of 4067 thousand euros. However, there are some extreme values what condition the division of this characteristic through "lower than average" and "higher than average" of sales volume or number of employees. The first group gather the two really high values of investment level in R&D hence the disparity of values in the categories.

Foreign contacts and networking have some importance for the firms of our sample. The importance of domestic network is higher in the groups "lower than average" of sales volume and number of employees and the foreign network is considered more important for both groups "higher than average" (see Table 10)

About international experience the groups "lower than average" are exporting for a superior number of years and more than half of the firms are exporters since the beginning of the activity.

However, "higher than average" firms from both groups are exporting for a superior number of markets than the "lower than average" export.

Table 10: Firm characteristics

		Sales volume		Number of employees	
Investment level in R&D	All firms	lower than average	higher than average	lower than average	higher than average
(thousand euros)	4 067	5 397,00	75,25	7 113,22	149,43
Foreign contacts and networking					
Average of 5 points scale					
Importance of domestic network	3,05	3,07	3,00	3,30	2,78
Importance of foreign network	2,89	2,86	3,00	2,70	3,11
Number of years in business	44	51	25	50	37
International experience					
Number of years exporting	34	39	19	39	28
Exporter since the beggining	58%	57%	60%	60%	56%
Number of markets	27	23	37	22	32

4.4 Export marketing strategy

Product adaptation has relevant importance for all firms. "Lower than average" firms, considering sales volume and number and employees, attribute more importance to promotion and price adaptation than "higher than average firms".

"Lower than average" firms typically rely on a local distributor in the country of destination (see Table 11).

Table 11: Marketing Mix

	All firms	Sales volume		Number of employees	
Average of 5 points scale		lower than average	higher than average	lower than average	higher than average
Product adaptation	3,37	3,29	3,60	3,60	3,11
Promotion adaptation	2,79	2,93	2,40	3,30	2,22
Price adaptation	84%	86%	80%	100%	67%
Choose a local distributer	47%	57%	20%	60%	33%

4.5 Foreign market characteristics

Most of the firms of our sample start to export to countries geographically closer and with language very different from Portuguese.

The geographic factor is the most relevant is all groups follow by language differences and cultural similarity (Table 12). We note that firms "higher than average" considering sales volume or the number of employees do not go to very distant countries when they start exporting.

The firms do not give a relevant importance to legal and political factors. "Lower than average" firms attribute more importance to local infrastructure than "higher than average" firms, in both groups sales volume and number of employees.

4.6 Domestic market characteristics

Firms of our sample attribute moderated importance to domestic market characteristics. "Higher than average" firms resort more often to organizations of exporting support (as Embassies) than do the "lower than average" ones (Table 13).

The competitiveness in the domestic market is considered an important factor in the decision to internationalize.

"Higher than average" firms attribute more importance to competitiveness in domestic market and the difference to the "lower than average firms" is bigger when we are considering sales volume.

Table 12: Foreign market characteristics

		Sales volume		Number of employees	
Number of firms (%)	All firms	lower than average	higher than average	lower than average	higher than average
Geographically closer	57,89%	50,00%	80,00%	60,00%	55,56%
Culturally closer	31,58%	35,71%	20,00%	40,00%	22,22%
With similar language	26,32%	21,43%	20,00%	30,00%	11,11%
Geographically very distant	5,26%	7,14%	0,00%	10,00%	0,00%
Totally different in terms of culture	15,79%	7,14%	20,00%	10,00%	11,11%
With language very different from Portuguese	36,84%	42,86%	20,00%	30,00%	44,44%
Average of 5 points scale					
Importance of legal and political factors	2,32	2,36	2,20	2,20	2,44
Importance of local infrastructure	3,11	3,21	2,80	3,20	3,00

Table 13: Domestic market characteristics

		Sales volume		Number of employees	
Average of 5 points scale	All firms	lower than average	higher than average	lower than average	higher than average
Run frequency to organizations to support exports	2,79	2,71	3,00	2,60	3,00
Importance of the competitiveness	3,21	3,07	3,60	3,10	3,33

4.7 Relationship between firm size and export performance using different proxies

To contribute to a better understanding of the relationship between firm size and export performance we use different proxies to measure both. Varying the proxies used the results also vary.

When we measure firm size with sales volume the relationship is only positive for export market coverage. Export intensity and export growth are negatively related to firm size.

Using the number of employees a positive relationship is found with export intensity, export growth and export market coverage.

With sales employees ratio the results are the opposite, a negative relationship with all the measures of export performance.

The use of investment level in R&D as a proxy of firm size results in a positive relationship with export intensity, growth and market coverage.

We can conclude that using the same sample (the same companies), if we vary the proxies used to measure the Firm size determinant, even fixing the Export performance proxy (analysing each column of Table 14, one at a time), we have opposite signals of the impact of the determinant in the export performance. If we analyse the rest of the table in the same way, we can conclude that different ways of measuring the firm size results in different impacts in export performance whatever it is measured by the Export intensity, Export growth or Export market coverage.

In a similar analysis, if we fix now the proxy used to measure the Firm size and analyse what happens when we vary the Export Performance proxy, we can see that, the conclusion about the signal (impact of one on the other) is more consistent but, also, with some contradiction (when we use Sales volume proxy to measure the Firm size).

Although these results can only be analysed in an exploratory perspective (due to the sample size), we can clearly see that the inconsistencies observed in the literature since long ago among studies (authors that argue that the size has, definitively, a positive impact on the results of the exportation – e.g. Nazar and Saleem (2009), Calof (1994) Majocchi et al. (2005) – and authors that found a negative relation – e.g. Archarungroj & Hoshino (1998)) could result from the use of different measures to the same determinate.

Table 14: The relationship between firm size and export performance using different proxies

			Export Performance Proxies		
			Export intensity = Exports/Total sales	Export growth =(export sales n - export sales n-1)/export sales n-1	Export market coverage = number of export markets
Firm Size Proxies	Sales volume (x1000 euros)	Companies with lower than average	58,2%	24,25%	23
		Companies with higher than average	57,9%	14,85%	37
		Signal (+ size => + performance)	-	-	+
	Number of employees	Companies with lower than average	49,8%	19,84%	22
		Companies with higher than average	67,5%	23,92%	32
		Signal (+ size => + performance)	+	+	+
	Sales employees ratio	Companies with lower than average	61,8%	24,54%	29
		Companies with higher than average	38,6%	7,02%	15
		Signal (+ size => + performance)	-	-	-
	Investment level in R&D (x1000 euros)	Companies with lower than average	54,5%	19,72%	26
		Companies with higher than average	68,5%	27,51%	29
		Signal (+ size => + performance)	+	+	+

Conclusion

Nowadays, internationalization seems a viable opportunity for all kind of firms (small and large companies), as a simple and quick way to access foreign markets. Extant literature analyses the relationship between firm size and export performance but the empirical findings appear to be contradictory.

The main purpose of this research was to contribute to a better understanding of the relationship between export performance, measured using different proxies (percentage of exports to sales or export intensity, export growth, export profit level, export market share) and size of the firm, measured through several indicators (the sales level, the number of employers, the sales/employers ratio, the investment level in R&D).

In order to fulfill our objective, we began by doing an exhaustive literature review and, then, we analyse results of a questionnaire survey sent to a sample of Portuguese different industries' firms in order to conclude about the relationship between firm size and export performance We found that if we vary the proxies used to measure the Firm size determinant, even fixing the export performance proxies we have opposite signals of the impact of the determinant in the export performance.

The main limitation of this study was the low number of answers we have. Is inhibited us to study the significance of the impacts using different proxies. For future work, we suggest using companies of different countries in order to analyse the possible impact of regions on the relationship.

References

Aaby, N. E. & S. F. Slater, 1989. Management Influences on Export Performance: A Review of the Empirical Literature 1978-1988. *International Marketing Review*, 6, 7-26.

Archarungroj, P. & Y. Hoshino, 1998. The Impact of Firm Size on Export Performance and Attitudes: An Empirical Study on Thailand Exporters. *Japanese Journal of Administrative Science*, 12, 79-88.

Babakus, E., U. Yavas, & A. Haahti, 2006. Perceived Uncertainty, Networking and Export Performance - A study of Nordic SMEs. *European Business Review*, 18, 4-13.

Bonaccorsi, A. 1992. On the Relationship between Firm Size and Export Intensity. *Journal of International Business Studies*, 23, 605-635.

Buckley, P. J., & M. Casson, (1976). The future of the multinational enterprise (Vol. 1). London: Macmillan.

Calof, J. L. 1994. The Relationship Between Firm Size And Export Behaviour Revisited. *Journal of International Business Studies*, 25, 367-387.

Dunning, J. H. (1980). Toward an eclectic theory of international production: some empirical tests. Journal of International Business Studies, 11(1), 9-31.

Esteve-Pérez, S., S. Gil-Parejay, R. Llorca-Vivero, & J. A. Martínez-Serrano, 2011. The impact of the euro on firm export behaviour: does firm size matter? *Oxford Economic Papers*, 63, 355–374.

Gabbitas, O. & P. Gretton, 2003. Firm Size and Export Performance: Some Empirical Evidence. *Productivity Commission Staff Research Paper*.

Grandinetti, R. & M. C. Mason, 2012. Internationalization modes other than exporting: The missing determinant of export performance. *European Business Review*, 24, 236-254.

Hennart, J. F. (1982). A theory of multinational enterprise (pp. 5-6). Ann Arbor: University of Michigan Press.

Ietto-Gillies, Grazia (2005), *Transnational Corporations and International Production*, Edward Elgar

Johanson, J. & J. E. Vahlne, 2009. The Uppsala internationalization process model revisited: From liability of foreignness to liability of outsidership.6 *Journal of International Business Studies*, 40, 1411-1431.

Johanson, J., & F. Wiedersheim-Paul, (1975). The internationalization of the firm—four swedish cases 1. *Journal of Management Studies*, 12(3), 305-323.

Jongwanich, J., 2010. Determinants of export performance in East and Southeast Asia. *World Economy*, 33, 20-41.

Kalafsky, R. V., 2004. Export activity and firm size: an examination of the machine tool sector. *Journal of Small Business and Enterprise Development*, 11, 159-165.

Katsikeas, C. S., L. C. Leonidou & N. A. Morgan, 2000. Firm-level Export Performance Assessment: Review, Evaluation, and Development. *Journal of the Academy of Marketing Science*, 28, 493.

Kumar, N. & N. S. Siddharthan, 1994. Technology, firm size and export behaviour in developing countries: the case of Indian enterprises. *Journal of Development Studies*, 31, 289-309.

Mais, I. & M. Amal, 2011. Determinants of Export Performance: An Institutional Approach. *Latin American Business Review*, 12, 281-307.

Majocchi, A., E. Bacchiocchi & U. Mayrhofer, 2005. Firm size, business experience and export intensity in SMEs: A longitudinal approach to complex relationships. *International Business Review*, 14, 719-738.

Moen, O. 1999. The relationship between firm size, competitive advantages and export performance revisited. *International Small Business Journal*, 18, 53-72.

Nazar, M. S. & H. M. N. Saleem, 2009. Firm-Level Determinants Of Export Performance. *International Business & Economics Research Journal*, 8.

Patibandla, M. 1995. Firm size and export behaviour: an Indian case study. *Journal of Development Studies*, 31, 868-882.

Pla-Barber, j. & J. Alegre, 2007. Analysing the link between export intensity, innovation and firm size in a science-based industry. *International Business Review*, 16, 275-293.

Schlegelmilch, B. B. & J. N. Crook, 1988. Firm-level Determinants of Export Intensity. *Managerial and Decision Economics*, 9, 291-300.

Sousa, C. M. P., F. J. Martínez-López, & F. Coelho, 2008. The determinants of export performance: A review of the research in the literature between 1998 and 2005. *International Journal of Management Reviews*, 10, 343-374.

Verwaal, E. & B. Donkers, 2001. Firm Size And Export Intensity: A Transaction Costs And Resource-Based Perspective.

Verwaal, E. & B. Donkers, 2002. Firm Size and Export Intensity: Solving an Empirical Puzzle. *Journal of International Business Studies*, 33, 603-613.

Wagner, J. 2001. A Note on the Firm Size – Export Relationship. *Small Business Economics*, 17, 229-237.

Welch, L., G. Benito & B. Petersen, (2007), *Foreign Operation Methods: Theory, Analysis, Strategy*, Edward Publishing, Part II

Williams, D. A. 2011. Impact of firm size and age on the export behaviour of small locally owned firms: Fresh insights. *Journal of International Entrepreneurship*, 9, 152-174.

Wolff, J. A. & T. L. Pett, 2000. Internationalization of small firms: An examination of export competitive patterns, firm size, and export performance. *Journal of Small Business Management*, 38, 34-47.

Zou, S. & S. Stan, 1998. The determinants of export performance: A review of the empirical literature between 1987 and 1997. *International Marketing Review*, 15, 333-356.

Annex – Survey (condensed)

This survey aims at researching the determinants of export performance.

We highlight the character of confidentiality with which all data will be processed. By answering this questionnaire remember that we are only interested in your opinion, so there is no right or wrong answers.

The questionnaire consists of 23 questions. Only the first request some data with the rest of the company's rapid response (yes / no scale or agreement), and is divided into 2 pages.

General Information

1. Name of the company; 2. Activity of the company; 3. Number of employees;

Human Resources Characterization

3.1. Number of employees with MBA; 3.2. Number of employees with graduate course; 3.3. Number of employees with undergraduate course.

4. How many employees speak/dominate one foreign language

5. How many employees have already worked in a foreign country

Export characteristics

6. How many years is your company exporting? 7. To how many countries?

8. When exporting, do you usually use distributors in the country? (Yesy/No)

9. The company was always exporting (since the foundation)? Does it “borned global”? (Yes/No)

10. When you started exporting, you begin by (you can select more than one option): Geographically close countries; Culturally close countries; With similar language; Geographically very distant; Totally different in terms of culture; With very different language

11. The laws/regulations/incentives/... of that country(ies) were important for choosing this market? (1-5 scale)

12. The existing infrastructure/facilities inside that country, were decisive for the choice (market)? (1-5 sacale)
13. Do you consider that the competitive pressure of the domestic market was an important factor in the decision of internationalization? (1-5 scale)

Perception about the foreign market

14. How do you perceive the RISK of operating internationally? (1-5 scale)

15. How do you perceive the COST of operating internationally? (1-5 scale)

16. How do you perceive the FINANCIAL RETURN/PROFIT of operating internationally? (1-5 scale)

17. Of the following, which do you consider that are the greatest advantages of selling abroad? (you can select more than one option): Higher sales volume; Higher income from operations / sales of the company; Managers’ self satisfaction; Customers / markets’ diversification; Other:___________

18. Do you think that your internal networks, such as employees and suppliers, are an important source of information of the foreign market? (1-5 scale)
19. Do you think that your external networks, such as capital market, are an important source of information of the foreign market?(1-5 scale)
20. Do you usually use the support of organizations such as Embassies, Other organization, ...? (1-5 scale)
21. Concerning your exporting products, there is some kind of adaptation of it to the export market (the packaging or the product itself, ...)? (1-5 scale)
22. And the type of advertising / promotion that you have in your company differs depending on the target market? (1-5 scale)

23. Finally, the delivery price (excluding the shipping cost and other fees associated with exporting) differs from country to country? (Yes/No)

Thank you for your cooperation!