

THE
INTERNATIONALIZATION
PROFILES OF PORTUGUESE
SMEs

PEDRO OLIVEIRA ¹
AURORA A.C. TEIXEIRA ²

¹ FACULDADE DE ENGENHARIA, UNIVERSIDADE DO PORTO

² CEF.UP, FACULDADE DE ECONOMIA, UNIVERSIDADE DO PORTO,
INESC PORTO, OBEGEF

U. PORTO

FEP FACULDADE DE ECONOMIA
UNIVERSIDADE DO PORTO

The internationalization profiles of Portuguese SMEs

Pedro Oliveira

Faculdade de Engenharia, Universidade do
Porto

Aurora A. C. Teixeira*

CEF.UP, Faculdade de Economia, Universidade do
Porto; INESC Porto; OBEGEF

Abstract

Given the (increasing) view point that firms' internationalization strategy is the unique path to overcome the Portuguese dismissal economic growth, the present paper offers a comprehensive picture of the internationalization behavior of Portuguese SME, constituting therefore an important tool for political action. On the basis of the literature review and the factorial and cluster analyses performed, we propose three main segmentation criteria, one ('Whole encompassing segmentation': *Experienced Medium Low-Tech firms; Low skill, Low-Tech firms; Young High-Tech firms*) based on language skills, SME business experience, foreign market dependency, introduction of organizational innovation, exporting to 'High income countries' and education level of executive teams. The second segmentation proposal ('Intermediate segmentation': *Young small-sized firms; Young micro-sized firms; Mature small-sized firms; Young medium-sized firms; Mature medium-sized firms; Foreign equity firms; Highly productive firms*) has as criteria the firm size, the SME export intensity and industry. The last segmentation proposal ('Parsimonious segmentation': *Medium-sized firms; Small-sized manufacturing firms; Micro-sized firms; Non-manufacturing small-sized firms; Export active small-sized firms; Potential exporters; Promising exporters firms*) is based on SME size, business experience, foreign capital presence, and average productivity. Given the need for a parsimonious segmentation criterion, we convey that the most adequate segmentation criterion is the one combining SME size, export intensity and industry. This restricted number of criteria does not, however, affect the quality of the proposed SME segmentation, and has the advantage of being stastically adequate and user/cost friendly.

Keywords: Internationalization performance determinants, Portugal, Segmentation, SME.

* Author for correspondence: ateixeira@fep.up.pt; Faculdade de Economia do Porto, Rua Dr Roberto Frias, 4200-464 Porto, Portugal.

1. Introduction

The internationalization of a firm can be explained as “the process of increasing involvement in international operations” (Welch and Luostarinen, 1988, cited in Mejri and Umemoto, 2010: 36). This is of capital importance since the ability of a business or nation to generate export earnings is often seen as a key indicator of competitiveness and the ability to generate wealth (Roper and Love, 2002).

Traditional frameworks that explain firms’ internationalization were formulated already two or three decades ago. At that time there were higher barriers for entering foreign markets and the internationalization was a ‘luxury’ of the largest and strongest firms (Saarenketo et al., 2004). Meanwhile, the Small and Medium Enterprises (SME) internationalization theme won a larger visibility (Ruzzier et al., 2006), after the prominent role of the literature on mature Multinational Enterprises (MNEs), reflecting the fact that several countries, particularly those experiencing balance of payment deficits, have attempted to increase the international activities of their SME in order to boost economic growth, cut unemployment and create potential mini-MNEs in the future (Ruzzier et al., 2006). Moreover, several studies (see Delgado, 2002, for a review), provide evidence that export-oriented firms are closer to the efficiency frontier than non-exporters.

Given the nature of today’s marketplace, SME are increasingly facing similar international problems as those of larger firms (Ruzzier et al., 2006). For many SME, especially those operating in high- technology and manufacturing sectors, it is no longer possible to act in the marketplace without taking into account the risks and opportunities presented by foreign and/or global competition (Ruzzier et al., 2006).

A successful business implementation at international markets requires a variety of resources by the SME and MNE to overpass the difficulties and grab potential export opportunities (Wilkinson and Brouters, 2006). According with the resource based approaches (Mejri and Umemoto, 2010), SME frequently lack necessary internal resources, know-how, and information about foreign markets (Acs et al., 1997). Unsurprisingly, many SME are still reticent of exporting because their lack of resources and expertise are not suited to such a risk venture (Pinho and Martins, 2010). To overpass these limitations and inadequate information about foreign markets, it is argued that SME should choose partners who possess such knowledge (Inkpen and Beamish, 1997), and this includes national agencies for export promotion.

In the most recent times, the quest of SME internationalization has been elevated in Portugal to national strategic priority (Portuguese Ministers Council resolution n° 3/2010) to be pursued if the Portuguese Government wants to solve the Portuguese commercial deficit, and Portuguese dismissal economic growth (Portugal – Governo, 2010). AICEP is one of the Portuguese organizations responsible to give support to the Portuguese government in achieving this goal. At the Export Summit (February 8, 2011) the public authorities stressed the ambition to reach a 40% export/GDP ratio until 2013, in line with EU27 average.¹

The search for new approaches to boost Portuguese exports demands therefore the need for knowing better the final user (i.e., SME), which can be achieved through the development of marketing techniques associated to ICT infrastructure. More specifically, it can be accomplished through the segmentation of SME, that is, to get to know formally, through statistical techniques, their characteristics and profiles in terms of internationalization. Thus, the present research aims to characterize Portuguese SME, with the intention of point out the main characteristics and respective indicators of the Portuguese SME internationalization behavior. These indicators would be useful to develop a taxonomy that allows knowing better these SME, building segments of firms and, consequently, to provide services more in line with these segments' needs (Verhoef et al., 2010).

The present paper is organized as follows. In the next section we review the literature, focusing on evaluating the determinants associated with each theory. Section 3 describes the methodology followed to define the taxonomy, and the corresponding segmentation, of Portuguese SME according to several dimensions derived from the literature review. In Section 4 the empirical results are detailed and the segmentation proposal put forward. Finally, in Conclusions, the main contributions of the present study are highlighted.

2. Firms' internationalization determinants and proxies. A literature review

The stage models (e.g. Bilkey and Tesar, 1977; Johanson and Vahlne, 1977; Weidersheim-Paul et al., 1978; Cavusgil, 1980; Reid, 1981; Czinkota, 1982) have been used as a basis for segmenting the firms reflecting their characteristics in the different internationalization stages (Fischer and Reuber, 2003): pre-export stage, initial export stage, and advanced export stage.

Nevertheless, and recalling Leonidou et al. (1996) and Andersen (1993), these stage models have been criticized by their lack of theoretical rigor and by the fact that they did not predict

¹ Congress of Portuguese Export program as well the main conclusion available in <http://www.revista.portugalglobal.pt/AICEP/PortugalGlobal/Revista31/>

the behavior of “Born-Global” firms (Saarenketo et al., 2004). Yet, such critics do not invalidate the stage models criteria; rather they emphasize the need to supplement these criteria with other elements in order to produce a more robust SME segmentation (Fischer and Reuber, 2003). These elements are associated to the internationalization theories reviewed earlier, which present different determinants and, consequently, proxies.

An analysis of the literature on internalization (cf. Table 1) indicates two ways to operationalize the intangible factors such as cost reduction and high degree of control of the firms’ subsidiaries, which are often variables difficult to measure due to its intrinsic intangibility. Specifically, Malone and Rose (2006) employed the market-to-book ratio to proxy for the presence of internalized assets. However, in the case of SME, this procedure/proxy is difficult to implement. A viable alternative is to use Hollenstein’s (2005) ‘rough’ proxies: firm dimension and firm propensity to co-operate with other firms. Accordingly, Hollenstein (2005) takes for granted that large firms and those that cooperate in larger extent are in better position to reduce transaction costs through internalizing some of the external market relationships.

According with Galán and González-Benito (2001), the Eclectic Paradigm is an attempt to integrate internalization factors, and all other determinants factors of FDI, such as location of investments and FDI as internationalization form. Thus, internalization literature was integrated in this paradigm, preserving the proxies identified above. Yet, the Eclectic paradigm (also known as OLI Paradigm) is determined also by more two groups of advantages such as ownership advantages, concerning the firms’ resources, and by location advantages related with the selection of a location to FDI. This has led to the rise of empirical studies testing those hypotheses/advantages systematically (Galán and González-Benito, 2001; Faeth, 2009).

Mutinelli and Piscitello (1998) argued that international business experience has an important role as ownership advantage in SME in order to minimize the uncertainty inherent to the internationalization process. These scholars stressed that once the first experience of internationalization is made, the firm starts a learning process in “going abroad”. The proxies used to measure this variable were: i) the number of years since the establishment of a given parent company’s first foreign direct investment ii) the number of foreign subsidiaries of the parent company already operating when the current entry is made. Morschett (2006) have used three different but interrelated indicators for measure this variable. The internationalization experience was measured by the number of years a company has been in

this specific foreign market, the number of years since the company has been internationally active (in general), and the percentage of turnover realized outside the home country. International experience is seen by Saarenketo et al. (2004) as a mode to increase the organizational capabilities, and in their study, the referred variable was operationalized, similarly to Morschett (2006), by measuring the time passed from the establishment of the firm to the start of international operations.

The background of the top management team is generally regarded as a key factor influencing SME survival and development (Lu and Beamish, 2001; Fischer and Reuber, 2003; Ruzzier et al., 2006; Stoian et al., 2010), and considered as a source of ownership advantage. It has been measured by a set of proxies, namely average level and type of education of the members of the management team, as well as their age average (Ping, 2010), and number of years of experience in the concrete business or sector (Westhead et al., 2001; Malone and Rose, 2006).

Technology also represents one of the firm's main resources of competitive advantages (Stoian et al., 2010), and prior research developed various indicators to this variable: the number of engineers in the total of firm employees (Teixeira and Tavares-Lehmann, 2007), R&D intensity (Mutinelli and Piscitello, 1998; Lu and Beamish, 2001), performing R&D (Hollenstein, 2005), and percentage of skilled workers with reference to the total number of employees (Mutinelli and Piscitello, 1998).

Regarding the location advantages associated to the OLI paradigm, the literature indicates factors such as market size, market dynamic, local tax policy and other variables to be considered when choosing a location to perform FDI (Billington, 1999; Faeth 2009). Nevertheless, in our study this dimension is not focused in the same line as previous studies given that our main concern is not to understand FDI determinants rather the characteristics of or the determinants of SME internationalizing process based mainly on exports. Thus, we only take into account the type of markets SME target for exporting (high income/developed markets; medium income markets; emerging markets; low income markets).

The monopolistic advantage theory is the last referred theory focusing on MNE on the literature review performed by Ruzzier et al. (2006). According to these scholars, a MNE exist because a firm has unique sources of superiority over foreign firms in their markets. This superior skill is based on the ownership advantages of the firm. Baumann (197, cited in Faeth, 2009) argued that research intensity and skill intensity were the variables to measure the firm unique advantages and he measured it through the differences of R&D expenditure between

the firm's origin country and the country that received the firm's investment, and also through the differences of human capital input between the firm's origin country and the country that received the firm's investment. However, in our study it is not possible to analyze or observe these differences between markets since it is a multi-firm and multi-country study.

The Uppsala model approach, included in the Stage models, describes the internationalization path as an incremental learning process through which a company accumulates and integrates the knowledge acquired in foreign markets (Johanson and Vahlne, 1977, 2009; Ruzzier et al., 2006). This learning process is influenced by cultural distance (psychic-distance) between firm's country and the host country (Johanson and Vahlne, 1977). Hofstede (1980) developed a framework with four factors of the cultural dimension to proxy the psychic-distance, whereas the U-model's authors used more straightforward indicators such as the differences of language, education, business practices, culture and industrial development between the firm's home country and the investment host country to measure this factor.

The firm export commitment stands as another important determinant of internationalization process of SME for the U-model approach (Johanson and Vahlne 1977; Czinkota 1982; Cavusgil and Naor 1987; Leonidou et al. 1996). The literature reviewed defend precisely that if a firm is committed to exporting, it dedicates firm resources in proportion to the significance of exporting activity (Stoian et al., 2010). For proxying the presence of resources dedicated to export Johanson and Vahlne (1977) analyzed the development and production of goods for separate markets, and evaluated the size of foreign investment size in marketing, R&D and human resources. Czinkota (1982) stressed that the commitment to export markets is greater the more employees are committed exclusively to exporting activity. Cavusgil and Naor (1987) assumed that foreign market visits might also reflect firms' commitment to export.

The market knowledge is other determinant of U-model. Its gradual acquisition, integration and use by the firm will increase sequentially the corresponding market commitment. According to early studies, this variable can be operationalized by measuring: the length of export experience, the foreign market experience and the employees experience in the foreign market (Johanson and Vahlne 1977); market information requested to EPA or industrial associations, personal contacts with executives of other firms, through export agents (Cavusgil and Naor, 1987).

The innovation-related model describes the internationalization process as stages evolutionary and each stage development is considered as an innovation for the firm (Gankema et al. 2000). This model was operationalized by Gankema et al. (2000) using the ratio of export sales to total sales, with the resulting ratio representing the extent/stage to which a firm is involved in exporting. Other authors have measured the intensity of internationalization like Saarenketo et al. (2004) who used indicators such as percentage of the company's customers that are foreign, number of foreign partners, number of countries where the company is involved and international share of revenues. Complementarily, Wilkinson and Brouthers (2006) evaluated satisfaction with firm export performance of American managers through a group of 4 proxies. Managers were asked to rate their satisfaction (in a 10-point scale) to dimensions as sales growth in foreign markets, overseas market share, number of countries exporting to and overall export performance. Other example reviewed is the work of Lu and Beamish (2001) that measures the level of export activities using export intensity and foreign investment activities via number of FDI in which the parent firm had a 10 percent or greater equity share and the number of countries in which the firm had FDI.

In 2009, Johanson and Vahlne reviewed the Uppsala model in light of new developments regarding business networking (cf., Network Approaches), and consequent influence of the partners on the knowledge gathering, and the choice of the entry mode in foreign markets. The influence of network relationships on the internationalization process of SME was studied in detail by Coviello and Munro (1997), presenting the relevance of a MNE partnership for a SME's entry mode choice. Among studied variables, Coviello and Munro, (1997) created proxies to evaluate the dependency of partnership and other market actors which included: percentage of sales attributed to network partners, number of partnerships with MNE outside domestic market, the financial control by partner, markets entered and mode of entry used. These authors found that successful New Zealand-based software firms actively were involved with international networks, which were fostered by a MNE partnership; they further found that these firms outsourced many market development activities to network partners.

Other type of alliance (joint-ventures) was studied by Lu and et al. (2001), who presented the importance of partners with local knowledge to overcome SME lack of capabilities or resources when the firm moves to foreign markets. Hoang and Antoncic (2003) performed a critical literature review in this area, from which we stand out Smeltzer et al.'s (1991) work that found evidence that an entrepreneur, who normally resorts to business plans, develops

more networks contacts and the information collected is of higher quality. Another work cited by Hoang and Antoncic (2003) is the study from Cooper et al. (1991) that found positive evidence between the age and management experience of an entrepreneur and the gathering of helpful information to start of a business. Further, the education level of entrepreneur had a positive effect on the use of professional advisors (Cooper et al., 1991).

Base on existing models, a resource-based perspective on internationalization is currently emerging (Andersen and Kheam, 1998; Ruzzier et al., 2006; Stoian et al., 2010). Accordingly, the internal resources and firm capabilities must be developed, exploited and adapted to the (foreign) market in such way that creates a sustainable competitive advantage for the firm (Andersen and Kheam, 1998). Thus, the ownership resources assume an important role on the approach of internationalization strategy. Cavusgil and Naor (1987) studied the unique firm advantages with the objective to find a positive relation with competitive advantage with export involvement and expansion. This variable was measured through indicators such as number of employees, share of total sales, technology classification of the firm products, and also through perceived firm strengths at level of product (quality, price), technology (capability to develop new products, patents held by the company), network (national network middleman), and, finally, management (marketing, finances, production and planning). Hollenstein (2005) used productivity and firm size variables with the intention to evaluate the resources and capabilities which are not able to explicitly specify. Productivity is measured as the value added per employee and firm size by number of employees. Lu and Beamish (2001) included two measures to account for the proprietary content of a SME's assets. The first gauged the level of propriety content in technological assets (R&D as percent of sales), and the second in marketing assets (advertising as percent of sales).

Regarding also the export involvement's dimension, Wilkinson and Brouthers (2006) include two additional measures of respondents' satisfaction with the firm resources: technological resources - technological leadership, technological innovation, learning about technology and start-of-art processes in manufacturing - which the respondents rated four variables related to technology in a 10-point scale (1, strongly disagree to 10, strongly agree) to evaluate if these factors were the source of firm competitive advantage; unused resources allocated for export purposes - production capacity, marketing staff, management time and capital – with each variable coded 1 if unused resources were present, and then summed up to produce the composite variable representing the number of different kinds of unused resources available to a firm.

Table 1: Variables of the SME internationalization process

Theories	Determinants	Variables	Questions/ Data collected	Author (date)		
Theories focusing on MNE	Internalization theory (Industry, region, nation and firm specific factors)	Costs reduction High degree of control of the firm' subsidiaries	Number of employees and its square (in 1000)	Hollenstein(2005)		
			R&D co-operation			
	The transaction cost approach	Know-how or reputation of the firm (horizontal internalization) Internalization advantages		Measure through the intangible assets of the firm	Galán and González-Benito (2001)	
					Malone and Rose(2006) Faeth(2009)	
	The eclectic paradigm	Business and internationalization experience		Time passed from establishment of the company to the start of international operations	Saarenketo et al. (2004)	
				Number of years since the installation of the first subsidiary through FDI	Mutinelli and Piscitello (1998)	
				Number of foreign subsidiaries that already labored when a new FDI is made		
		Management experience and capacity		The number of years a company has been in this specific foreign market	Morschett (2006)	
				The number of years since the company has been internationally active		
				Firms turnover from international business		
		Ownership advantages		Number of years of experience on the concrete business or on concrete management team sector	Malone and Rose (2006)	
				Education average level	Ping (2010)	
				Education heterogeneity of the team members		
		The eclectic paradigm	Technology skills		Age average of the team members	Mutinelli and Piscitello (1998)
					Ratio of research and development expenditure to total sales of the industry where the foreign unit operates	
Technology skills				Percentage of skilled workers with reference to the total number of employees in the industry of the foreign unit	Teixeira and Tavares-Lehmann (2007)	
				R&D intensity		
Location advantages			Performing R&D	Hollenstein (2005)		
			Market dimension	GDP	Billington(1999) Faeth(2009)	
			Market dynamic	Business located in an urban area	Westhead et al. (2001)	
				Population Density	Billington(1999)	
			Infrastructures	The level of infrastructure is measured by the Telephone lines/GDP	Azémar et al.(2007)	
				Total annual public expenditure transport and communications	Billington (1999)	
Availability of raw materials		Population Density	Billington(1999)			
Monopolistic advantage theory	Production differentiation Managerial expertise New technology	Research intensity	Differences in R&D expenditure between firm's origin country and FDI host country	Baumann (1975, cited in Faeth, 2009)		
		Skill intensity	Differences in human capital input between firm's origin country and FDI host country			

(...)

	Theories	Determinants	Variables	Questions/ Data collected	Author (date)
Stage models	Uppsala internationalization models (U-models)	Commitment, Knowledge	Psychic-distance (culture)	Hofstede's four factor framework of cultural dimension	Hofstede, (1980)
			Market commitment	Differences of language, education, business practices, culture and industrial development between firm's home country and investment host country	Johanson and Vahlne, (1977)
				Product foreign adaption degree	
				Foreign Investment size (Marketing, R&D, HR, etc.)	
			Which is the percentage of annual budget dedicated to Foreign markets?	Cavusgil and Naor(1987)	
	Average number of overseas trips annually.				
	Market knowledge	Human resources committed to exporting	Czinkota (cited in Leonidou et al. 1996)		
		Proximity from the information intermediates: US Dep. of Commerce; State government agencies; Industry associations.			
		Export agents		Cavusgil and Naor (1987)	
		Personal contacts with executives of other firms			
Length of export experience					
Innovation-related models (I-models)	Firm specific and managerial factors	Internationalization degree	Foreign Market experience	Saarenketo et al. (2004)	
			Personnel experience on the firm and on the foreign market		
			Export sales / Total sales		
			Percentage of company's customers that are foreign		
			Number of foreign partners		
Network approaches	Commitment and knowledge exchange between the firm and its counterparts	Entrepreneurs' Intellectual and Social Capital	Number of countries where the company is involve;	Wilkinson and Brouthers (2006)	
			International share revenues		
			Perception of the firm satisfactory level of:		
			Sales growth in foreign markets;		
			Overseas market share;		
Network approaches	Commitment and knowledge exchange between the firm and its counterparts	Dependency of Partnership and others market actors	Number of countries exporting to;	Lu and Beamish(2001)	
			Overall export performance.		
			Export intensity		
			The number of FDIs in which the parent firm had a 10 percent or greater equity share		
			The number of countries in which the firm had FDIs		
Network approaches	Commitment and knowledge exchange between the firm and its counterparts	Entrepreneurs' Intellectual and Social Capital	Age	Cooper et al. (1991, cited in Hoang and Antoncic 2003)	
			Management experience		
			Education level		
			Use of business plan		
			Percentage of sales attributed to a network partner		Smeltzer et al. (1991, cited in Hoang and Antoncic, 2003)
Number of partnerships with MNE outside domestic market					
Financial control by Partner					
Network approaches	Commitment and knowledge exchange between the firm and its counterparts	Dependency of Partnership and others market actors	Markets entered	Coviello and Munro, (1997)	
			Modes of entry used		

(...)

Theories	Determinants	Variables	Questions/ Data collected	Author (date)
Resource Based approaches	Export involvement and expansion → Firm's sustainable competitive advantage	Human Capital	Number of engineers employees by total employees Number of employees with 12 or more years of formal schooling by total employees	Teixeira and Tavares-Lehmann (2007)
		Perceived product firm strengths	Quality of products; Price of products; (responding executive assessed the firm's strength relative competitors in this respect in a 5 point-scale: 1, great weakness to 5, great strength)	
		Perceived management expertise firm strengths	Marketing; Finances; Production; Planning (responding executive assessed the firm's strength relative competitors in this respect in a 5 point-scale: 1, great weakness to 5, great strength)	
		Perceived technology firm strengths	Technology classification of the firms products Capability to develop new products; Patents held by the company; (responding executive assessed the firm's strength relative competitors in this respect in a 5 point-scale: 1, great weakness to 5, great strength)	Cavusgil and Naor, (1987)
		Perceived network firm strengths	National network middleman (responding executive assessed the firm's strength relative competitors in this respect in a 5 point-scale: 1, great weakness to 5, great strength)	
		Technological resources	The number of Superior Course degree employees on the firm R&D expenditure The respondents rated the firm technology resources as a firm competitive advantage on a 10-point scale (1, strongly disagree to 10, strongly agree): Technological leadership; Technological innovation; Learning about technology; State-of-the art processes in manufacturing.	Hollenstein, (2005)
		Availability of unused resources to allocate to export	Dummy equal to 1, if there is unused resources related to: Production capacity; Marketing staffs; Management time; Capital.	Wilkinson and Brouters, (2006)
		Not explicitly measurable resources	GVA per employees; Number of employees The level of propriety content in technology assets (R&D as percent of sales) and marketing assets (advertising as percent of sales)	Hollenstein (2005) Lu and Beamish, (2001)
		Entrepreneurs management experience, education level and competencies	Age; Level of education; Place of university education Knowledge of Foreign language (e.g. Spanish and German) Perceived risks of exporting Perceived profits from exporting	Cavusgil and Naor, (1987)
		International Entrepreneurship	Entrepreneur's characteristics and experience as firm's sustainable competitive advantage	General human capital
Management know-how	Age of the founder Founder held a managerial position for last employer prior to start-up Habitual founder with previous business ownership experience			Westhead et al., 2001
Industry-specific know-how	Two or more shareholders or partners in the business Business started in the same industry as last employer			
Ability to acquire financial capital	Received financial invest. during last financial year from banks or institutions			

Source: Authors' elaboration.

Managerial factors, in this particular associated to entrepreneur's characteristics, are single out by the International Entrepreneurship approach. To Alvarez and Busenitz (2001) entrepreneurs are the source of the firm competitive advantage. Indeed, according to this literature, entrepreneurs and top management play an important role in defining and conducting a strategy for firm (Cavusgil and Naor, 1987; Alvarez and Busenitz, 2001; Westhead et al., 2001). These decisions are influenced by the skills, competencies, experience, contacts network and all type of resources of the entrepreneurs becoming the entrepreneur itself firm's own resources. Cavusgil and Naor (1987) measured the characteristics of managers by using variable such as the type of education, knowledge of foreign languages, international orientation, growth aspirations, risk-taking preferences and "open mindedness" due to its relation to export marketing activity. The proxies used were: age of manager, education level of manager, place of college education, and the knowledge of Spanish and/or German. To evaluate the perceived risk and profits of exporting, the authors asked respondents to rate in a 5-point scale (1=much less than domestic to 5=much more than domestic) both dimensions.

Other variable dimensions of the entrepreneurial approach were put forward by Westhead et al. (2001) who studied the influence of founders' characteristics in the internationalization of SME. These authors analyzed four categories of human and financial capital: general human capital resources, the founder management know-how, the founder specific industry know-how and his ability to obtain financial resources. Regarding the general human capital, this variable was measured via entrepreneur's education level and gender, as well the nationality of parents of the founder. The management know-how variable was operationalized as follows: whether the occupational status of parents during founder's childhood was a business owner, age of the founder, founder held a managerial or professional position for last employer prior to start-up, habitual founder with previous business ownership experience and two or more shareholders or partners in the business. The last two dimensions were measured by past work of the entrepreneur and firm investments received, respectively.

3. Methodological underpinnings

3.1. Description of the questionnaire and the operationalization of the proxies

The best form to collect primary information regarding the firms and their internationalization processes is through a direct questionnaire (Cavusgil and Naor, 1987; Simões and Castro., 2000; Westhead et al., 2001; Fischer and Reuber, 2003; Hollenstein 2005).

The questionnaire was ministered online through LimeSurvey Platform.² After comparing the pro and con of using an online survey or a post survey, we choose the online tool due to the advantages presented to the survey respondents as well for the researcher itself. Specifically to the respondents, this survey method is quicker to access, since we can deliver the survey by e-mail or through a web link. Additionally, this particular online tool permit saving a survey that is incomplete and not submitted, allowing to the respondent open the survey latter in the state it was left to finalize and submit. Moreover, it is more user-friendly due to the features of the software/tool in terms of alerts and assistance given. For the researcher this online platform is a good option since allows building complex survey without losing the usability and attractiveness, important factors to stimulus the response to the survey. Aside from online surveys being more eco-friendly and cheaper (comparing with the tons of paper and cartridges needed to implement a post survey), online surveys make the collection of data and the analysis process a more efficient and cost-effective process.

However, according to Kaplowitz et al. (2004), the response rates for e-mail and web surveys may not match those of other survey methods, mainly due to two reasons. One explanation is the fact the normally a web survey receives less time and attention by the survey developer than a normal mail (e.g., personalization, pre contact letter, follow-up postcards, and incentives), and the second explanation is related to the delivery of the web survey to the respondents which can face problems such as internet security options and/or the survey e-mail is classified as “junk mail” or “spam”.

In building the questionnaire we balanced between the robustness of the information to be collected and the dimension of the questionnaire, trying to implement a relatively condensed questionnaire aiming at reaching a reasonable response rate. Indeed, as several authors noted (e.g., Andersen, 1993; Hollenstein et al., 2005; Teixeira and Tavares-Lehmann, 2007), a non-compulsory questionnaire is normally plagued by a low response rate, particularly in studies targeting SME.

Based on the literature review, performed in Section 2, we built a questionnaire which is composed by 4 groups of questions. The first group seeks to identify the firm, the responsible person for filling the questionnaire, as well her/his telephone or e-mail contact. In the second group it is characterized the top management team of the firm. As referred in Chapter 1, the SME top management team should receive a special attention due to the huge potential impact

²Limeservice is the official limesurvey hosting platform and was the software-as-service used to create, develop and run our survey (more information in www.limeservice.com)

it has on the strategy adopted and established by the firm (Lu and Beamish, 2001; Fischer and Reuber, 2003; Ruzzier et al., 2006; Stoian et al., 2010). We choose, in line with Mutinelli and Piscitello (1998), Westhead et al. (2001) and Ping (2010), the education level of the management team,³ as well education heterogeneity and international business experience as proxies to investigate the management experience and capabilities of Portuguese SME. The question group ends with proxy to measure the commitment of resources to exporting through the number of average trips to foreign markets made annually by each member of the executive team.

Simões and Castro (2002) argued that firm's characteristics alone may not be enough for explaining an internationalization option strategy and Johanson and Vahlne (2009) argued that the knowledge and commitment to an external market, as well the firm network, defines the internationalization process of any SME. Thus, the third group of questions characterizes the internationalization process of the Portuguese SME. The first question of this group clarifies whether the company is already internationalized or it intends to be in the short-term. Moreover, for each group of firms (internationalized and intending to internationalize) it was asked the number of countries (Saarenketo et al., 2004; Stoian et al., 2010) with which it maintains (or intends to) commercial relations, the market entry mode, number of subsidiaries (Lu and Beamish, 2001), all seeking to measure the firm's internationalization degree and evaluate the market diversification through the economy ranking by income (International Finance Corporation - World Bank Group). In this group, we also measured, in line with Johanson and Vahlne (1977), service and product specifications for external markets as proxy to the resource commitment to foreign markets, as well the number of employees exclusively dedicated to external markets (Czinkota, 1982 cited in Leonidou et al., 1996).

This third group of questions ends with proxies to measure the Portuguese SME networks such as number of partnerships with MNE, SME and S&T organizations in foreign markets and dependency of them (Coviello and Munro 1997; Lu and Beamish, 2001), as well the use of business plans in the decisions related to external markets (Smeltzer et al. 1991).

The fourth part of the questionnaire aims at characterizing the resources and capabilities of the respondent firms and to complement the analysis to the firm export performance. It contains questions regarding firm's economic and financial performance,⁴ year of

³Top management team was identified at four job post levels: CEO/President, Sales Responsible/Director, Financial Responsible/Director and Production Responsible/Director.

⁴ The Financial data were asked in average of three years (2008-2010)

establishment, the number of employees, and industry. In order to assess firm's technological skills, we also asked the number of engineers and employees with tertiary education degrees. To conclude this last group there were questions related to Research & Development and Innovation (R&D+I) according to the Manual of Oslo (2005). The focus on firm innovation have an important role once many scholars defended that stronger product development capabilities generally lead to more committed forms of international involvement (Simões and Castro, 2002; Cassiman et al., 2010) mainly because firms participating in international markets are exposed to more intensive competition (Delgado et al., 2002).

The operationalization of the above mentioned variables is described in Table 2.

3.2. Target population and data collection process

The target population for the present study is the Portuguese SME. We used AICEP database to create a list of domestic SME that contacted the agency and use(d) the agency's services.

This database contained 6764 potential contacts/SME, distributed by all Portuguese regions and industries, which were (by April 2011) internationalized or intended to in a short term.

Concerning the industry,⁵ our population is largely constituted by 'Manufacturing' industries (52%), and wholesale and retail trade firms (23.9%), however even with this clear imbalance, the database have firms from all sectors (Table 4). In terms of location, and having as territorial reference unit the NUTS III,⁶ we observe (Figure 5 – left map) that the regions that involve more firms are Grande Porto (23.3%), Grande Lisboa (15.1%), Ave (10.1%) and Baixo Vouga (7.3%), but all regions have firms in the database, including Portuguese islands, Madeira and Açores.

The data gathering process was laborious and divided in three parts/stages. The first stage (7th to 18th of March 2011) involved a pilot test resorting to five randomly selected SME from the database. The purpose was to evaluate the predisposition of the SME's top management team in answering the questionnaire, to evaluate the (lack of) clarity of questions, and to discover possible "bugs" in the online survey before its massive launch through the electronic platform. In parallel, contacts were established with the AICEP's Board of Directors in order to gather their official support in the process. Basílio Horta, AICEP's President wrote a

⁵ Classification was made according the CAE codes, revision 3 stated in Diário da República, 2ª Série nº 92 – 14th May 2007.

⁶ NUTS are the Portuguese Statistics Territorial Units which designates the statistics sub regions that divides the Portuguese Territory, in accordance with Regulation (EC) N° 1059/2003 of the European Parliament and the Council of 26 May 2003. Regulation established a Nomenclature of Territorial Units for Statistics (NUTS).

personal letter calling for the participation of SME. The second phase occurred between 22nd March 2011 and 14th of April 2011. In this phase, the first (massive) email calls for SME participation was made through AICEP SME's accounting managers. The email was addressed to SME's CEO or other board members of SME's administrations, accompanied with AICEP President's letter. A first reminder was sent 8 days after and a second 15 days after the questionnaire was firstly dispatch.

During this process there were email delivering problems with 536 SME failing to receive the messages. Thus, the initial target population was reduced to 6228 SME. In the end of the second phase 1313 complete questionnaires were received.

After a "quality control" procedure to check the consistence and thoroughness of answers, the number of valid questionnaires declined to 813. Three main reasons explain this reduction: 1) 290 questionnaires which presented a GVA variable equal to zero were disregarded; 2) 174 questionnaires presented inconsistence information about the starting of international operations and about the foreign operations itself 3) 25 firms with size above 250 employees were not considered as they fell off the categorization of SME,⁷ and 4) 8 firms that stated that they operate only in the Portuguese market and do not intend in a near future to internationalize were also discarded.

Finally, the data gathering process proceeded to a third phase. This phase consisted in personal and direct contact, via e-mail and by phone with some respondent SME in order to clarify some of their answers. This permitted to recover 99 questionnaires.

In the end of the whole process it was gathered 912 valid questionnaires, which corresponded to an effective response rate of 14.7%. Taking into account the characteristics and dimension of the target population, we might consider this response rate reasonable (Simões and Castro, 2002).

⁷ Cf. SME definition of the European Commission – Enterprise and Industry (in <http://ec.europa.eu>).

3.2. Brief description of the sample and the corresponding representativeness

The sample of 912 firms employs 38296 workers, which means that in our sample the firm's average size is 42 employees. Using the EU's SME definition, our sample encompasses 239 (26.2%) Micro, 414 (45.4%) Small, and 259 (28.4%) Medium-sized firms.

The majority of the respondent firms belong to the 'Manufacturing' Industry (54.4%), what does not surprise since it corresponds to the Portuguese Export standards (Simões and Castro, 2000; Caiado, 2008). Notwithstanding, the sample (Table 3) evidence a balanced distribution among sectors, comprising the Secondary (57.9%), Tertiary (39.6%) and Primary which encompasses 2.4% of the total firms considered (section A + section B).

Table 2: SME population according to industry

Industry (CAE, REV 3)	Population		Sample	
	Frequency	%	Frequency	%
Section A - Agriculture, Animal Husbandry, Hunting, Forestry and Fishing	156	2.5	19	2.1
Section C - Manufacturing	3239	52.0	500	54.8
Section F - Construction	268	4.3	24	2.6
Section G – Wholesale and Retail Trade, Repair of motor vehicle and motorcycles	1488	23.9	173	19.0
Section J – Activities of Information and Communication	137	2.2	46	5.0
Section M – Consulting, Scientific and Technical Activities	691	11.1	115	12.6
Others sections (B,D,E,H,I,K,L,N,P,Q,R,S)	249	4.0	35	3.9

Source: Calculation based on AICEP database, March-April 2011.

Notes: Calculations were made according with CAE codes, revision 3, stated in Diário da República, 2ª Série nº 92 – 14th May 2007

Section C is composed by many industries, being in our sample the most represented Food (4.7%), Beverages (4.4%), Textiles (4.5%), Clothing (5.7%), Manufacture of metal products, except machinery and equipment (6.3%), Manufacture of Machinery and equipment (4.5%), and Manufacture of Furniture and Mattresses (3.4%). Section F and section G are the only sections in which the representativeness is slight below comparing to the relative weight of these sections in population. Summarizing, we can state that our sample is fairly representative of the population in what industries/sector is concerned.

In the Figure 1 (right map) is observable the distribution of the sample firms by geographic zone (NUTS III). The most represented regions are Grande Porto (21.1%), Grande Lisboa (19.1%), Ave (8.4%) and Baixo Vouga (7.7%). When compared the population of the region of Ave and region of Dão-Lafões we unfold that Ave rose color passed to golden color and Dão-Lafões green color passed to blue, thus these regions are slight underrepresented. In contrast, the regions of Pinhal Litoral and Baixo Vouga had more weight in the sample than in population (Pinhal Litoral e Baixo Vouga yellow color passed to golden color). Despite these

minor differences, we might once again argue that also in terms of geographical distribution our sample represents well the population. Summing up, the representativeness of the sample in terms of both region and sector is guaranteed.

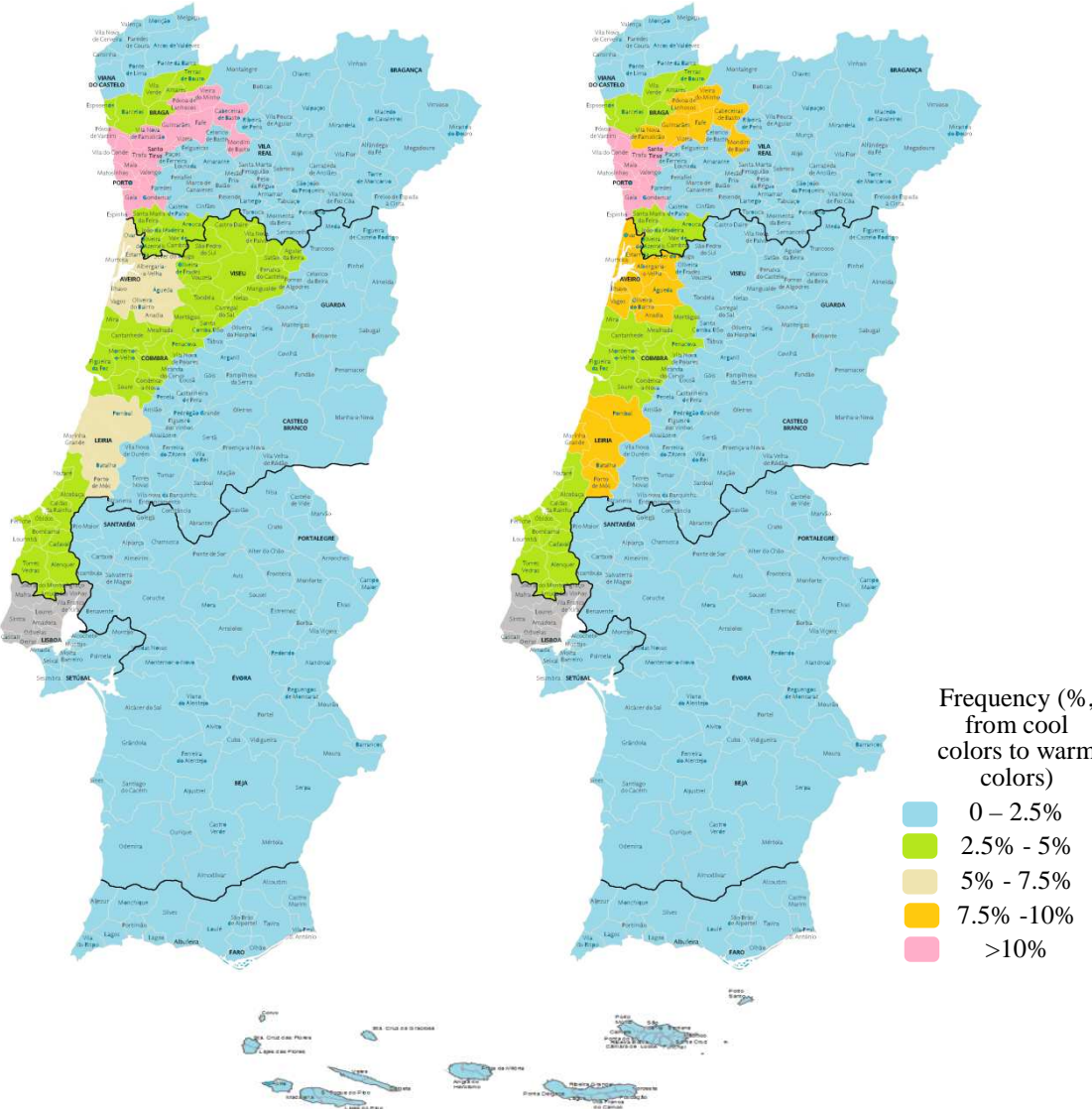


Figure 1: SME population (left) and sample (right) by location
Source: Calculation based on AICEP database, March-April 2011

4. Empirical results

4.1. Descriptive Analysis: general overview

The sample of the study is composed by 912 firms employing a total of 38296 individuals, i.e., with an average of 42 employees per firm. According to the EU’s SME definition, our sample encompasses 239 Micro (26.2%), 414 Small (45.4%) and 259 Medium (28.4%) sized firms.

The firms' establishment year occurred, on average, in the year 1989 (3 years after Portugal joining EU) with 60.9% of the firms being founded after the mentioned year, i.e. presenting less than 22 years of business experience. Regarding the younger firms, our sample is constituted by 28.2% of start-ups,⁸ which is quite different of the 52.2% value got in MSST (2003, cited in Teixeira and Tavares-Lehmann, 2007). However we can conjecture that the majority of younger firms are not natural born-global and only look for AICEP support in a more advanced life stage.

The most representative segment is the internationalized firms with 773 SME (84.8%) and 139 (15.2%) were not internationalized SME. Regarding this latter group, and as explained before, all firms have the intention to be internationalized in a short-term, and the comparison of this group with the group of internationalized firms is very valuable since it enables the identification of internationalization factors. For the overall sample, the mean for firm's international experience is 13 years, being the internationalization path already followed by 33.1% of the firms before the year of 1998.

Regarding the SME executive team, data shows that 18.0% of the firms do not have a commercial/exporter director/responsible. Nevertheless, 47.5% of the firms' executive team has at least three members with a tertiary degree or higher,⁹ and 52.5% from these latter firms has some diversity of tertiary degrees.¹⁰ Moreover, the teams analyzed show reasonable experience in international business, with 44.3% of the members owning 10 years or more of experience in international markets.

The relation between international success and firm human capital was other aspect examined, being collected information regarding employees' education level. The human capital was analyzed in light of various ratios and the sample features that on average a firm has 34% of tertiary degree employees from which 20% are engineers, and 43% of the total employees are foreign language speakers. An important note is that 5.7% of the firms sample does not have any employee with a tertiary degree.

The R&D investment variable indicates that 522 (57.2%) of the respondent firms performs R&D investments, of which 274 (30.0%) firms share the R&D with a partner/business

⁸ According with Teixeira and Tavares-Lehmann (2007), start-up concept is vague. Normally concerns a business at initial stage of life, and the concept operationalization decided for this study is from Almeida et al. (2003, cited in Teixeira and Tavares-Lehmann, 2007), which considers start-up a firm with 10 years or less.

⁹ Referred as Post graduation, Master, PhD.

¹⁰ Referred as Engineering, Economics/Management, Advocacy, Humanities and Other Course.

associate. Notwithstanding, in terms of R&D intensity,¹¹ the majority (75.6%) of the companies belongs to the segment 'Low-Tech' or 'Medium Low-Tech'.¹² In contrast, 4.8% of the firms present quite high values for the R&D intensity, superior to 20%.

Our respondent firms are therefore less R&D intensity than the ones surveyed in Teixeira and Tavares-Lehmann (2007) and Caiado (2008). These authors got to the segment 'Low-Tech' and 'Medium Low-Tech' 72.1% and 69.3%, respectively, and for the group of firms with R&D intensity superior to 20%, 5.7% and 6.8%, respectively. It is important to recall that Teixeira and Tavares-Lehmann's (2007) focus 'innovative' Portuguese firms and Caiado (2008) firms that were involved in Official Trade Visits, which might explain the differences between these studies and ours. Ten years ago, Simões and Castro (2000) found that only 1.99% of the internationalized Portuguese firms invested more than 5% in R&D. This might reflect some changes/evolution in firms' attitude towards R&D and innovation related issues.

Due to SME's characteristics, it is expectable that some of these firms do not invest in R&D. Yet, they still might have innovation concerns and investments. This is corroborated by the data collected, according to which 68.4% of the firms did affirm that, for the period 2008-2010, introduced at least one product innovation, 68.0% introduced processes innovation, 64.6% made organizational innovations and, finally, 60.1% introduced marketing innovation.

Our firms present relatively high productivity levels, when comparing to the national average (19 thousand € for the group of SME).¹³ Indeed, the mean value of the productivity, i.e. the GVA per employee for the sample firms is of about 35 thousand €, ranging from a minimum of 0 € in the new established firms and 160 thousand € maximum (for a firm from the Beverages Industry).

Using the classification of the World Bank and FSTE Group of GNI, we observe that 59.0% of the respondent firms export goods/services to countries with a 'high income', 7.2% export to countries from the rank 'upper-middle income', 22.0% export to 'lower-middle income countries' and, finally, 8.1% of the firms export to 'low income countries'. For the group of

¹¹ We used the OECD R&D intensity classification of a four-position model (Jacobson et al., 2003). This classification is applied in micro basis, i.e., is applied to a firm level what is much more rigorous than OECD R&D intensity classification of economic activity sector.

¹² According with OECD R&D intensity classification, a firm is classified as Low-Tech firms or Medium Low-Tech firm if the firm's R&D intensity value is below 0.9% and 3% respectively.

¹³ Data from national average was gathered from INE, and the GVA per employee calculations for SME firms was based on the year of 2009.

countries considered ‘advanced emerging markets’ and ‘secondary emerging markets’, there are 14.5% and 14.7% firms respectively, exporting to these groups of countries.¹⁴

Regarding the resource compel to internationalization, we observe that firms in the sample are quite committed to internationalization. Indeed, more than half of them (56.0%) produce goods/services specifically to external markets, 73.4% of the firms have employees in exclusive regime to internationalization firms activities, and 36.3% of the executive members voyage to external markets at least 4 times a year.

Resorting to Gankema et al.’s (2000) stage model, we managed to depict the internationalization stages of the firms’ sample (see Figure 2).

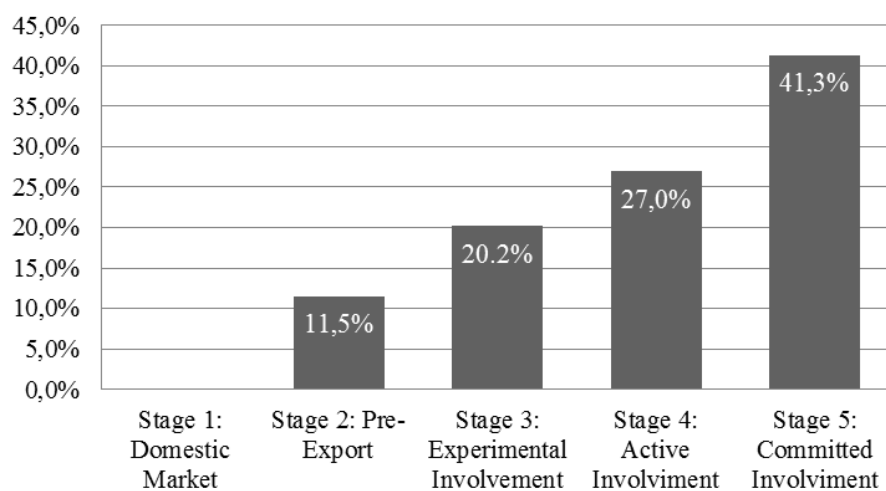


Figure 2: Internationalization stage of the respondent firms

Source: Calculation based on direct survey, March-April 2011.

From the evidence in Figure 6 we observe that substantial shares of respondent firms are highly committed to internationalization. Only one third of the firms are at the stage of pre-export (11.5%) or starting export in a small basis (experimental involvement stage) (20.2%). About 70% of the firms are active involved in export (27.0%) or already committed with external market (41.3%, which is the most representative segment). Thus, we are in presence of a majority of firms that already took the strategic decision to move into internationalization.

In Europe, Spain and France are the most important markets for the Portuguese exports, followed by Germany (Table 4). Outside Europe, important markets are Angola, Brazil, and the USA. The average number of foreign subsidiaries detained by the firms sample is 0.5, consequence of the majority (77.2%) of the firms not having any foreign subsidiary.

¹⁴ FTSE distinguishes between Advanced and Secondary Emerging market on the basis of their national income and the development of their market infrastructure. The FTSE country classification is in Appendix C.

The use of business plan or market studies to support internationalization decisions by respondent teams' executive teams is not frequent - only 18.4% uses it frequently or always and 33.3% of the firms admit that never used them to support the internationalization decisions.

Table 3: Main countries/markets for firm respondents

1st market		2nd Market		3rd Market	
Country	%	Country	%	Country	%
Spain	22.90	France	11.34	Spain	6.65
Angola	11.23	Spain	9.71	France	6.65
France	10.69	Angola	6.43	UK	5.78
Germany	5.89	Germany	4.80	Germany	5.23
Brazil	3.49	UK	4.03	Brazil	4.25
UK	3.82	USA	3.60	Angola	3.82
USA	3.27	Switzerland	3.49	Italy	2.94
Netherlands	2.51	Mozambique	3.16	USA	2.84
Switzerland	1.74	Italy	2.94	Cape Verde	2.84
Morocco	1.53	Brazil	2.94	Mozambique	2.40

Note: Grey areas identify non-European countries.

Source: Calculation based on direct survey, March-April 2011

Another relevant aspect concerning the presence of SME in the foreign markets is its network of partnerships. In this study the respondents (773 internationalized firms) answered, that whenever they have a partner (70.9% of the firms), they normally privilege SME instead of MNE or Scientific, Technological organizations like universities or R&D institutes.

Table 4: Firms' sample partnerships/cooperation

Number of partnerships	With MNE (%)	With SME (%)	With I&D Org. (%)
0	67.7	37.0	89.0
1	10.7	15.4	5.3
2	8.8	11.1	3.4
3	4.7	6.9	1.0
4	1.9	4.0	0.3
≥5	4.0	19.3	0.8
Number (% of total firms)	250 (32.3%)	487 (63.0%)	85 (11.0%)

Source: Calculation based on direct survey, March-April 2011

Note: For the calculations was considered only 773 internationalized firms only because these firms have effectively partnerships presently.

The partnerships of Portuguese firms with other SME are frequent, and can be explained due to the need to merge forces and resources to increase the possibilities of success and better performances. The partnerships with MNE might be the gateway to a foreign market (Coviello and Munro, 2000), however only 33.3% of the respondent firms' sample bet on this type of partnership. Finally, the partnership with Scientific, Technological organizations seems to be undeveloped among the firms in the sample, showing a lack of propensity to open innovation, which could constitute a promising path for SME to overpass the lack of resources and increase their competitiveness (Vrande et al., 2009).

The most frequently cited mode of entry into foreign markets is export with 78.4% of the firms choosing exportation as the way to start commercial relations with foreign markets. Still 15% of the firms have made a direct investment on the external market through acquisition or Greenfield investment, 9.5% have made Joint-Ventures to entry in a certain market, and 7% have decided initiated commercial relations through licenses (franchise, licensing, etc.). The prominence of exports is in line with the evidence gathered 10 years ago by Simões and Castro (2000). It is interesting to note that some firms (7.5%) evidence more complex paths in terms of entry modes by implementing both exports and FDI modes, depending of the foreign markets.

Portuguese firms privilege Spanish market regardless the entry or operation mode, which it is understandable mainly by geographical reasons (Leonidou et al., 2007). To the main European countries, Portuguese SME normally opt for exporting. In contrast, for countries like Brazil or Mozambique there is a relatively higher incidence of more direct investment modes (e.g., subsidiaries, joint-ventures). Licensing is more ‘preferable’ in the case of China, Russia and Israel.

Table 5: Main countries of destination of FDI, Joint-Ventures, Exportation and Licensing

Subsidiaries		Joint-Ventures		Exportation		Licensing	
Country	%	Country	%	Country	%	Country	%
Spain	3.93	Angola	2.29	Spain	35.27	Spain	1.74
Brazil	3.38	Brazil	1.96	France	29.24	Angola	1.53
Angola	3.16	Spain	1.85	Germany	21.03	Brazil	1.42
Mozambique	1.96	Mozambique	1.09	Angola	17.63	France	0.76
Cape Verde	1.31	Morocco	0.76	UK	15.44	USA	0.65
France	1.31	Cape Verde	0.76	USA	10.73	UK	0.55
UK	0.98	France	0.65	Italy	10.41	China	0.55
Morocco	0.55	Algeria	0.65	Brazil	10.08	Russia	0.44
Poland	0.55	Italy	0.44	Netherlands	9.09	Israel	0.44
Germany	0.55	Germany	0.33	Belgium	8.11	Mozambique	0.44

Source: Calculation based on direct survey, *March-April 2011*

Most of the surveyed firms are Portuguese owned – 94% have the majority of capital owned by Portuguese stakeholders. Only a meager percentage of firms (3.1%, i.e., 53 firms) have foreign capital superior to 10% of its Social Capital. In this last group, it is included 16 enterprises with 99% of the Social Capital detained by foreign entities. This is understandable since the firms which depend from foreign entities normally are subsidiaries and do not look for AICEP support.

4.2. Differences between groups of firms by certain key dimensions

In existing research several criteria have been used and combined to characterize internationalized SME or to measure their export performance. These criteria can be classified into three main categories: Internationalization dimensions such as internationalization commitment (Stoian et al., 2011) and countries of export/FDI destiny (Stoian et al., 2011), technological competencies dimensions, namely the intensity of R&D activities (Golovko and Valentini, 2011), and firms' demographics traits such as size (Hollenstein, 2005), industry (Stoian et al., 2010), region (Gil et al. 2008) and distribution of the social capital, namely the percentage of foreign owned capital (Mutinelli and Piscitello, 1998).

Thus, in order to properly characterize and become acquainted with the main international related trait of Portuguese SME, in what follows we analyse the respondent SME by uncovering their (statistical) significant differences in terms of the above mentioned categories and dimensions: internationalization commitment and destiny countries; technological/innovation competencies; and firms' demographic traits (size, industry, region, and the percentage of foreign vs domestic owned capital).

Internationalization commitment

Considering the overall respondent sample, about 84.8% of the firms are internationalized, being distributed by different export stage. Based the non-parametric test of Kruskal-Wallis, it was observed that the different internationalization stages differ statistically in terms of all analyzed variables ($p\text{-value} < 0.10$), showing important differences in terms of firm size, internationalization experience, resources committed to foreign markets, number of countries reached and, quite expectedly, dependence of foreign markets (Table A1, in Appendix).

Firms that are more committed to internationalization employ on average about 52 persons. In contrast, firms in the pre-export stage are substantially smaller employing about 19 employees. As expected, the higher the export stage the higher are the resources committed to internationalization, the higher the international business experience, and the greater the dependence on external markets and partners in these foreign markets. On average the firms at the committed stage export to 11 countries, being nevertheless their exports quite concentrated – indeed, the sales for the 3 main foreign markets represents 66.7% of the total sales. The business experience and the international experience of the firms seem to be an important factor to internationalization since across internationalization stages these values are increasing, supporting the stage models approach (Johanson and Vahlne, 1977).

Additionally, recent literature argues that exports produce learning effects (Silva et al., 2010c) which tend to be better captured the higher the firms' foreign markets knowledge and experience. Regarding the technological skills related with the human capital, we observe that pre-export firms have higher values than any other stage. Notwithstanding, they present lower values than the remaining firms for the introduction of innovations.

Concerning productivity, we found that the most productive firms are those in the pre-export stage (49.1 thousand €), followed by committed stage firms (40.5 thousand €), active involvement stage firms (27.4 thousand €), and, finally, experimental involvement firms (25.8 thousand €). We can theorize that are potential good exporters at pre-export stage. Moreover, we can speculate that pre-export productive firms when go into foreign markets face a need for increased resources, which might reduce their profit margins. These margins tend to evolve positively as soon as the firms become further involved in internationalization. This might be the reason we observe a fall in the value of productivity from the pre-export stage to the experimental involvement stage, which is then increased with export intensity, recovering in these latter stages the high values of GVA per employee. Another thesis is defended by López (2009, cited in Silva et al., 2010b), who proposed the idea that , in developing countries, 'self-select' to exports may be a conscious process by which some firms increase their productivity with the aim of becoming exporters.

Regarding the firms' resource commitment with internationalization, the results demonstrate that the higher the firms' export intensity, the greater the resources they commit to internationalization. Additionally, we observe that pre-export firms present some reasonable resource commitment, which might predict that they are preparing to engage in internationalization activities. Last note is concerned with the number of partnership of the respondent firms. The evidence indicates that the number of partnership of the respondent firms tends to increase with export intensity. More specifically, the number of MNE partnership in the pre-export stage is 0.76, for an experimental involvement is 0.80, in the case of active involvement stage firm is 0.87, and the higher values are observed in the committed involvement stage firms with 1.22 partnership with MNE per firm.

Destiny countries

Based the non-parametric test of Kruskal-Wallis (cf. Table A2, in Appendix), we realize that Portuguese SME might differ significantly according with type of foreign market chosen for exporting, although not all results are conclusive.

The size of a firm is normally higher when the firm exports to 'lower-middle', 'upper-middle', and 'high income countries' or for 'secondary emerging markets'. In the particular case of 'upper-middle income countries' and 'secondary emerging countries', we found a firm average size of 63 employees and 56.9 employees respectively, being these the firms with larger size.

Analyzing the business and internationalization experience dimension, on average the SME that export are more experienced but we do not find any relevant differences between the different markets. Nonetheless, we found that the executive team internationalization experience is higher for SME that are exporting to 'secondary emerging markets'.

An important pattern found at the level of the executive team regards the education level and its diversity that is especially high for firms that decided to export for 'upper-middle income countries' and 'secondary emerging countries'. Additionally the same firms present high values of the ratio of Engineers for total employees, with 23.6% and 20.8% respectively, only overpassed by firms exporting to 'advanced emerging markets' (26.9%).

Concerning productivity (i.e., GVA per employee), the most productive SME are the ones that export to 'secondary emerging markets' (37.8 thousand €), and for 'low income countries' (35 thousand €).

According with the results, we might have a pattern for the choice of lower income markets, with SME that export to 'low-income countries', in average also export to 'lower-middle countries' and the inverse is also true. The SME with greater market diversification seem to be the SME that export for 'upper-middle countries', presenting balanced mean values for 'lower-middle income', and 'advanced emerging 'as well' secondary emerging markets'

The most export intensive firms are firms that export to 'upper-middle income countries' (45.9% of export intensity), to 'high income' (45.8% of export intensity) and for 'secondary emerging countries' (47.2% of export intensity). The lesser export intensive firms are the ones that export to 'low and lower-middle income countries' (29.2% and 30.0% of export intensity respectively). Other evidence of internationalization degree is the number of foreign markets in which a firm is active. This variable differs too upon income market, showing that firms that export to 'upper-middle countries' are present in 12.5 countries might confirm the theory that these firms are more market diversified as stated previous paragraph. Firms exporting to 'secondary emerging markets' presents also an average presence in 12.5 countries.

Regarding the firms' resource commitment with internationalization, the results demonstrate that the once more that 'upper-middle income' and 'high income countries' have greater resources commitment as do also 'secondary emerging markets'.

The last significant information at Table 9 regards SME that export to 'upper-middle countries', showing that these firms besides exporting, they make foreign direct investment.

R&D intensity

Considering the overall respondent sample, the firms are distributed according with R&D intensity with 537 (58.9%) being classified as 'Low-Tech firms', 152 (16.7%) as 'Medium Low-Tech' firms, 60 (6.6%) as 'Medium High-Tech' firms, and 163 (17.9%) as 'High-Tech' firms. Golovko and Valentini (2011) defend that innovation and exports positively reinforce each other and are complementary. These scholars recall in their work, the positive relation between exporting and the probability of innovating and also that firm's export activity is positively associated with an increase in its number of product innovations.

Based on the non-parametric test of Kruskal-Wallis, it was observed that the distinct dimensions differ statistically in terms of all analyzed variables ($p\text{-value} < 0.10$), except for GVA per employee ($p\text{-value} = 0.106$), which marginally accepts the null hypothesis of similar means.

The first insight of Table A3 (in Appendix) is that the size of the SME analyzed is inversely proportional to the R&D intensity and that 'Medium High-Tech', and especially 'High-Tech' firms, are younger and less experience (in terms of business and internationalization) than 'Low-Tech' and 'Medium Low-Tech' firms. The latter referred firms present higher values for business and internationalization experience.

The 'High-Tech' firms' executive team shows a lack of international experience, which contrast with the high international experience of the executive teams of the 'Medium Low-Tech' firms. Additionally, we found that 'High-Tech' firms present a slightly inferior number of commercial heads/directors. However, the 'Medium Low-Tech' firms show lower values of R&D intensity (1.7%) compared to the 'High-Tech' firms, which present a ratio almost 9 times higher (17.2%) and lower human capital potential. Nevertheless, we found that 'Medium Low-Tech' firms innovate as much as 'High-Tech' firms, even showing higher values for process (84% vs 77%), organizational (72 vs 71%) and marketing innovations (78 vs 70%), being at the back only in product innovations (86 vs. 90%).

This latter fact, according with Silva et al. (2010c), might be related with the high export intensity of ‘Medium Low-Tech’ firms, since exporting positively affects product and process innovation, mainly if firms export to ‘High income countries’.

‘Medium Low-Tech’ firms are the most export committed firms to internationalization, selling 43.2% of their sales to foreign markets, being present in about 11 countries. ‘Low-Tech’ firms exports 36.4% of their sales and are present in about 8 countries. Finally, ‘High-Tech’ firms exports 36.8% of their total sales and are present in 9 countries.

About the SME network, the most relevant information is related with the number of partnership with S&T organizations that is proportionally related with R&D intensity: 75% of the ‘High Tech’ firms stated that they establish partnerships with these entities which stands in sharp contrast with the corresponding figure for ‘Low Tech’ firms, 8%.

Finally, we observe that the combination of modes of entry (export and FDI) decreases with R&D intensity group of firms.

Size

Recall that the overall respondent sample encompasses 239 (26.2%) Micro, 414 (45.4%) Small and 259 (28.4%) Medium-sized firms.

The international business literature considers plausible that larger firms possess more resources which allows a better internationalization approach, directing more efforts to export activities (Stoian et al., 2010). However, the firm size relationship with internationalization success is not unanimous (Stoian et al., 2010), with the born-global firms being the evidence that small size of firms is not in itself an obstacle to a successful internationalization.

Based the non-parametric test of Kruskal-Wallis (cf. Table A4, in Appendix),¹⁵ we observe that, excluding entrepreneurs’ intellectual and social capital (p -value=0.531), SME differ in a significant way in all dimensions of internationalization determinants.

Although the differences in mean values are as expected, showing that the medium-sized firms have larger export intensity than micro and small firms. The number of countries follows the same array with medium-sized firm presenting a mean of 12.1 countries, 7.9 countries for the small-firms and the lowest value for micro-firms with 5.4 countries. Moreover, important differences exist in business and internationalization experience, with

¹⁵ The non-parametric Kruskal-Wallis test is based on the null hypothesis and tests if the sample comes from population with the same distribution. It serves to assess whether there is evidence of statically significant differences in the mean values of analyzed variables (Maroco, 2010).

medium-sized firms presenting higher experience and higher levels of resources committed to internationalization than micro and small firms.

The most productive firms in our sample are quite small (Micro). Specifically, on average, Micro firms present a mean of 46 thousand € per employee whereas the value for the Medium-sized group is 26 thousand € per employee. In terms of technological competencies we observe a mixed pattern. Indeed, in one side, innovation related proxies convey the image that larger firms (that is, Medium-sized) are more dynamic in terms of introducing product, process and organizational innovations than their smaller counterparts (i.e., Micro). In the other side, the ratios of engineers and tertiary degree employees are substantially higher in the case of Micro as to compare to Medium firms.

Concerning the type of markets SME targeting for exporting, data evidence interesting patterns with micro-firms positioning themselves in the advanced emerging markets whereas ‘upper-middle’, ‘high’ and ‘secondary advanced markets’ are target mainly by Medium-sized firms.

Finally, the results indicates that the number of partnerships agreed by Portuguese SME are once again proportional to firms’ size, being the medium-sized firms more linked with other organizations at foreign markets. The same evidence is true also for firms that export and at the same time are engaged with FDI, with medium-sized firms showing a higher mean value (11%).

Summarizing, the size of the firm might indicate the resources available to internationalization. Moreover, as Lederman et al. (2006) defended, in terms of the EPA’s policy it might be important to focus the attention on the medium-sized firms, which have the potential to export, but are not yet exporting, since these firms have better basis (resources) to be successful on internationalization activities.

Industry

Using the Portuguese system for industry classification¹⁶ (CAE REV3 – *Código de Actividade Económica*), we proceed with non-parametric test of Kruskal-Wallis (cf. Table A5, in Appendix).

¹⁶ In order to simplify the reading of the industries classification, we will use abreviations for each industrial sections (e.g. Section A – Agriculture, hunting, forestry and fishing is denominated by Agriculture).

The size of the firms differs by industry, with the 'Wholesale and Retail Trade' industry showing the lowest value (19 employees), and 'Manufacturing' industry and 'Construction' the highest values (55 and 51 employees, respectively).

According with prior data, it is expectable to observe higher values of business and internationalization experience for 'Manufacturing' firms as this industry is traditionally the most committed with internationalization. In fact, the firms from these industry presents the higher values of business experience (0.53), internationalization experience (0.49), and the most experienced executive team for internationalization activities (0.58). In the opposite side, stand firms from the 'Information services' and 'Consulting services'. The firms from 'Construction' sector also show reduced internationalization experience, presenting a very low value of 0.04. This might indicates that 'Construction' firms only recently started to approach foreign markets, reflecting the slowdown in the construction sector at the domestic market.

Regarding R&D intensity we found differences among the different economic sectors with 'Information services' and 'Consulting services' firms presenting the higher values (20.5% and 7.5% respectively), which contrast with the lowest values of 'Construction' firms (1.1%). Despite the relative low value of R&D intensity (2.0%) of 'Manufacturing' firms, these present the second higher value for the introduction of innovations, just behind firms from 'Information services' firms. This latter sector appears to be the most technologically led sector of the Portuguese economy (the corresponding values of human capital reinforce this idea).

Concerning the type of market targeted for exporting, we found that firms from 'Agriculture' sector and 'Manufacturing' firms are strongly directed to 'high income countries' (0.87 and 0.80, respectively), and in the opposite pattern stands 'Consturction' firms with an average of 0.18.

The calculations indicate that the different industries differ statistically in terms of export intensity ($p\text{-value} < 0.01$).

Industries belonging to 'Manufacturing' Sector - mainly Textile, Clothing, Leather, Wood, Manufacture of other mineral products other than metal, Manufacture of metallic products, Hardware Manufacture, Electric Equipment Manufacture, Equipment and Machinery Manufacture and finally Vehicles Manufacture - presenting the highest percentage (above 40.0%) of firms with high export intensity ('Committed involvement'), which contrast with

‘Information Services’ (19.0%, but still in ‘Active involvement’ stage) and ‘Construction’ firms (20.5%). Regarding the number of countries, it is observable the same pattern with ‘Manufacturing’ firms showing an average number of presence of foreign countries of 10, which again contrast with ‘Construction’ firms whose presence in foreign markets encompasses 4 countries and ‘Information services’ firms presented in about 5 countries.

In terms of S&T partnerships, we observe major differences with the ‘Agriculture’ and ‘Construction’ firms without any partnership, ‘Manufacturing’, ‘Wholesale and Retail trade’ and ‘Information services’ firms presenting values between 0.16 and 0.22, and ‘Consulting services’ firms leading the partnerships with S&T organizations (0.65).

Concluding the industry analysis, the data collected shows that there are different options/modes of internationalization among the different industries. For instance, industries from ‘Agriculture’ sector almost exclusively export (0.93), ‘Manufacturing’ and ‘Wholesale and Retail Trade’ firms presents lower values (0.80 and 0.72 respectively), and firms from the Sectors of ‘Construction’, ‘Information services’, and ‘Consulting services’ present much lower values, which indicates that these firms use different operations modes than only exporting.

Region

Excluding Gross Value Added per employee (p-value=0.893), SME differ by location/region in a significant way in all the other variables (Table A6, in Appendix).¹⁷

Regarding the size of the firms, SME located in the North (46 employees), Center (42 employees), and Lisbon (40 employees) are, on average, larger than those from other regions, and more experienced in terms of business and internationalization.

Lisbon is region where are located the firms with higher technological-related ratios (31.5% engineers, 51.4% tertiary degrees employees, and 63.8% foreign language speakers’ employees). In terms of introduction of product innovations, the firms from the region of Lisbon presents similar values to the firms from North and Center regions (0.66, 0.71, 0.69 and respectively).

Regarding the type of markets SME targeting for exporting, mostly we found that Algarve region as well as Northern firms focus largely on ‘high income countries’ (88% and 77% respectively). Firms from Lisbon seem to be the less focus on the cited group of countries

¹⁷ The values for R.A. Açores and R.A. Madeira should be analyzed with some caution due to the small number of firms present in the sample.

(55%). These latter firms, together with firms located in Algarve and Center regions show, compared to their Northern counterparts, tend to export more to ‘low income countries’ (15 %, 13% and 12% vs. 6%, respectively).

Corroborating the data discussed in Section 3, we observe that firms from Littoral North, Littoral Center and Lisbon are more committed to internationalization than any other firms located in the remaining Portuguese regions. Analyzing the export intensity, we found that the most export intensive firms are placed in the North (42.0%), followed by Center (36.1%), and Lisbon (34.3%). Moreover, firms located in such regions have a larger amount of resources devoted to internationalization activities.

SME located in Lisbon present the lowest values for the variable “Exclusively exports” (55%), with all other Portuguese regions showing values between 72% and 76%, meaning that the firms located in these latter regions have in exports their preferred mode of operations in foreign markets.

Social Capital

The vast majority of the respondent firms (93.9%) are ‘domestic’ firms, that is, with strictly Portuguese capital. Only 53 of the respondent firms (3.8% of the total) have a share of foreign capital superior to 10% of the Social Capital.¹⁸ In this latter group are included a negligible number (16) of firms with 99% of the Social Capital owned by foreign entities. This is understandable since the firms which depend from foreign entities normally are subsidiaries and do not look for AICEP’ support.

Analyzing the Social Capital of the sample firms, using Kruskal-Wallis test (cf. Table A7, in Appendix), is visible that exist statistical differences ($p\text{-value} < 0.01$) for exports intensity, business and internationalization experience, technological competencies, resources commitment to international activities and firms’ partnerships.

In our sample, almost all firms with foreign capital are internationalized (96%), a value slightly higher than for firms with Portuguese capital (86%). The values of internationalization experience and executive team internationalization experience follows this trend with firms with foreign capital presenting 47% and 57% respectively, and firms with Portuguese capital showing values of 32% and 44% respectively.

¹⁸ In order to simplify the reading, we will refer to firms with 10% or more of foreign capital as firms with foreign capital, and the remaining firms will be denominated as Portuguese firms.

On the other hand, R&D intensity in firms with foreign capital is lower than in firms with Portuguese capital. A possible explanation for this fact might be related to the larger number of partnership foreign firms establish with S&T organizations ($p < 0.10$), externalizing their R&D activities and/or the fact that R&D operations usually are performed by the headquarters and not the subsidiary. Concerning the foreign language speakers employees, firms with foreign capital presents higher value than Portuguese firms ($52.3\% > 42.7\%$), and we believe that this fact is related to the need of firms' employee to interact with foreign entities which posses the part of the firm social capital (eg firm headquarters in case of being a subsidiary or foreign partners). The firms with 10% of Social Capital in the hands of foreign entities present, on average, higher values for export intensity (53.0% comparing with 36.9% of domestic firms), committing more resources to foreign markets. Firms with foreign capital appear to be better interrelated with other organizations, and show a higher propensity to direct its sales to 'low income countries' than those owned by national capital. It seems too that 'Foreign owned firms' tend, to a larger extent than domestic ones, to internationalize via exporting and FDI investments.

Summarizing all the results analyzed resorting to the non-parametric Kruskal-Wallis test (see Table 7), we concluded that the size of the firms, firms' export intensity and the firm sector of activity/Industry convey the major (significant) differences between SME. Consequently, these dimensions should constitute important criteria for the Portuguese SME segmentation. Moreover, these criteria could be complemented by the other dimension such as Foreign Social Capital, which albeit of the less significance regarding the internationalization determinants, constitute a relevant policy related dimension. Due to table size constraints, 'Destiny country' column is referred to only to 'High income countries' in order to reflect the most important targeted exporting market of Portuguese SME.

4.3. Factorial analysis

As the variables included in this research have been previously studied and related to corresponding constructs, confirmatory analysis procedures were conducted in order to asses construct dimensionality and to condense and summarize the information related to several determinants, as presented in Table A8 (in Appendix). KMO tests were utilized for revealing the correlation degree among the items considered, given the value of 0.761, which, according with Maroco (2010), is the KMO medium recommended value for factor analysis. Next, principal components analyses, with varimax rotation, were conducted and factors with eigenvalues greater the 1 were extracted.

Table 6: Summary of the SME characteristics influences on SME internationalization activities (according with executed Kruskal-Wallis test).

Proxies	Size	R&D intensity	Destiny country	Export intensity	Industry	Location (NUTS II)	Social Capital
Number of firm employees	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	-
Cooperation in R&D (Yes=1)	● ● ●	● ● ●	-	-	● ● ●	-	-
Business experience (firms in business at more than 22 years=1)	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	●	-
Firms that are internationalized (Yes=1)	● ● ●	● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ●
Internationalization experience (internationalized firms at more than 13 years=1)	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ●	● ●
Commercial or Export Director (Yes=1)	● ● ●	● ●	-	● ● ●	● ● ●	-	-
International experience of the management team - the average experience in internationalization of the management team is of 10 or more years (Yes=1)	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	●
Education level of the management team - Three out of the four member of the management team have tertiary degree (Yes=1)	● ● ●	● ● ●	-	● ●	● ● ●	●	-
Diversity of management capabilities - the management team includes individuals from 2 or more distinct courses (Yes=1)	● ● ●	● ● ●	● ●	● ●	●	-	-
Engineers in total employees	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	-
R&D intensity	-	● ● ●	-	-	● ● ●	-	●
Employees with tertiary degree in total employees	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	-
Foreign language speakers' employees	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	●
The firms made a product innovation in the last 3 years	● ●	● ● ●	-	-	● ● ●	●	-
The firms made a process innovation in the last 3 years	● ● ●	● ● ●	-	●	● ● ●	-	-
The firms made an organizational innovation in the last 3 years	● ● ●	● ●	-	● ●	-	-	-
The firms made a marketing innovation in the last 3 years	-	● ● ●	-	●	-	-	-
Gross Value added per employee	● ● ●	-	● ●	● ● ●	-	-	-
Low Income Countries*	-	-	● ● ●	● ● ●	-	● ●	● ●
Lower-middle income countries*	-	-	-	● ● ●	-	-	-
Upper-middle income countries*	● ●	-	-	● ● ●	●	-	-
High income countries*	●	-	-	● ●	● ● ●	● ● ●	-
Advanced emerging market*	●	● ●	● ● ●	● ●	-	-	-
Secondary emerging market*	●	-	● ● ●	●	-	-	-
Development and production of goods and services to specific foreign markets (Yes=1)*	-	● ● ●	-	● ● ●	-	●	●
Employees exclusively dedicated to internationalization activities (Yes=1)*	● ● ●	● ●	-	● ● ●	-	● ● ●	-
The management team makes, on average, 4 or more trips to foreign markets (Yes=1)	● ● ●	● ● ●	● ● ●	● ● ●	●	-	● ●
Export intensity	● ● ●	●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
Number of foreign markets/countries*	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	-	-
Turnover associated to the three main foreign markets*	-	-	-	● ● ●	● ● ●	● ●	● ● ●
Number of foreign subsidiaries*	● ● ●	● ● ●	● ● ●	-	● ● ●	-	-
Use of business plan by the executive team*	-	● ● ●	● ●	●	● ●	●	-
Number of partnership with large firms*	● ● ●	● ● ●	-	● ●	-	-	-
Number of partnership with other (SME) firms*	-	● ● ●	-	-	-	-	●
Number of partnership with S&T organizations*	● ●	● ● ●	-	-	● ● ●	-	●
Turnover associated to the network partners*	-	● ● ●	-	● ● ●	-	●	● ● ●
Exclusively exports (Yes=1)*	-	● ● ●	● ● ●	● ●	● ● ●	● ● ●	-
Exports + FDI (Yes=1)*	● ●	● ● ●	-	-	-	-	● ● ●

Source: Calculation based on direct survey, March-April 2011

Note: * In this case the calculations were made according with the 773 firms that are internationalized in order to avoid bias.

Legend:

● Poorly Significant (p-value<0.1)

● ● Significant (p-value<0.05)

● ● ● Highly significant (p-value<0.01)

Thus, factor scores were calculated, the new dimensions were interpreted and further used in the analysis. In this way, we could concentrate the variables introduced in factor analysis procedures into 11 resulting dimensions: 'Human capital' and 'Firm size and experience', 'Firm export commitment', 'Innovation', 'Sophisticated markets', 'Executive team resources', 'Firm network', 'R&D', 'Emerging markets', 'Poor markets', 'Foreign capital exchange', and, finally, 'Value added'.

The first eigenvalue reflects the importance of human capital and the firm experience for the internationalization activities. These two dimensions are clearly opposed, but related, since internationalized Portuguese SME seems to be older, and consequently experienced and larger. On the other side, we found younger, not internationalized SME,¹⁹ the majority of which start-up, with high human capital resources. This eigenvalue presents the higher variance of all factor analysis: 12.7%.

Firms' export commitment is other important dimension (second eigenvalue, variance of 8.7%) that can characterize a SME's internationalization path, mainly through firm's export intensity, since the foreign dependence is intrinsically linked to it.

The third eigenvalue explains 6.4% of the variance, and is related to the introduction of innovations in the firm, being another feature to consider when reviewing the SME internationalization potential.

Firms that choose to export as a unique and preferred mode of internationalization (no FDI), according with the fourth eigenvalue (variance of 5.5%), do it mainly to the sophisticated countries/markets. This relation is aligned with prior results and was firstly commented at the Section 4.2.

The executive team resources is the fifth eigenvalue, since relates the executive team skills with firm resources committed to internationalization (number of executive team trips to foreign markets and presence of Commercial director). This eigenvalue explains 4.8% of the variance, and at this point the first five eigenvalues explains a 41.7% cumulative variance.

The factor analysis grouped the SME networks in the foreign markets in the 6th eigenvalue. As already observed in the prior empirical analysis and in the literature review, this result confirms that the firms' presence in foreign markets might be related to the firms' network in those countries.

¹⁹ SME not internationalized, but looking for EPA support being present in the study sample.

The variables related with R&D, such as R&D intensity, R&D cooperation and the firms' partnership with S&T organizations constitutes the seventh eigenvalue. In this case R&D activities look like as the common denominator what it seems reasonable.

Regarding the eighth eigenvalue, it gathered the firms which exports to 'Upper-middle income country' and to 'Secondary emerging market'. It seems that the SME market targeted for exporting when is an 'Upper-middle income country', probably the SME exports too to 'Secondary emerging market' and vice-versa. A similar relationship is observed in the 9th eigenvalue, with SME exporting to the lower income countries (i.e. 'Low' and 'Lower-middle income countries').

The penultimate eigenvalue links the presence of foreign capital in the SME social capital structure and the SME select to export and engage on FDI as the chosen mode of internationalization. After all prior research, we venture to say that SME firms with foreign capital might be in an advanced internationalization stage (more complex stage) than their Portuguese counterparts.

Finally, we named the last eigenvalue as 'Value added' due to the relation that a high GVA per employee seems to have with the installation of subsidiaries in the foreign markets.

The resulting dimensions explain 57.2% of the variance, and might constitute the criteria for segmentation of Portuguese SME, reinforcing/complementing the Kruskal-Wallis test performed in the previous section.

4.4. Segments of Portuguese SME: a cluster analysis

In this last section, we resort to cluster analysis to develop segments of SME based on the reviewed determinants of SME internationalization. The aim is to imposing on research data a structure and to develop firms' segments consistent with our prior empirical research.

Thus, based on the factorial analysis performed in the previous section, but aiming to avoid the huge costs related to information gathering and management on the part of AICEP, we device a parsimonious solution, using the minimum necessary criteria to segment AICEP's clients SME.

This restricted number of criteria does not, however, affect the quality of the proposed SME segmentation. We therefore present distinct final solutions, which enables us to choose the most adequate ones from a statistically and user/cost friendly view point.

Segmentation Proposal 1: Whole encompassing segmentation

According with the previous factorial analysis, we found that language skills, SME age, foreign markets dependency, introduction of organizational innovation, exporting to high income countries and the education level of executive teams are important and different dimensions to consider as possible segmentation criteria. Reminding the factorial analysis results, these variables belong to the first five eigenvalues, which in turn explains 41.7% of the total variance.

According with cluster quality analysis, this segmentation model is of fair quality (Figure 3), and for these criteria, the SME should be distributed in three clusters, with the largest cluster encompassing 348 (38.2%) firms and the smallest 254 (27.9%) firms.

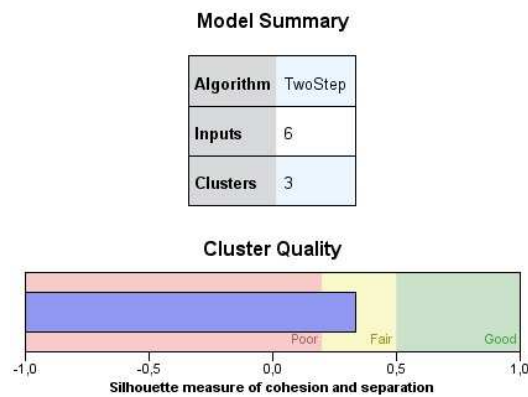


Figure 3: Model's goodness of fit for Segmentation Proposal 1

Source: Calculation based on direct survey, March-April 2011

Note: Model summary image extracted from SPSS.

The most important inputs for these clusters are 'business experience' (i.e., SME age) (with importance = 1.00), followed by the 'education level of executive team' (with importance = 0.62), and 'language skills' (with importance = 0.14). Concerning the remaining criteria the importance is between 0.02 ('High income countries') and 0.00 ('Foreign market dependency').

We named the largest cluster (38.2% of the firms) of '*Experienced Medium Low-Tech firms*' since all 357 firms in the cluster have 22 years of business experience or more, but present the lower average of foreign language speakers in the firm (24.1%), and on average 51.0% of the firm executive team has at least three members with a tertiary degree.

The second largest cluster with 301 (34.0%) firms encompasses younger firms than the firms from first cluster with very low value of business experience (3.0%). However, the distinctive characteristic is related with the executive team. The characteristic is that all cluster's firms does not present any executive team with more than 2 members with tertiary degree. Due to

this characteristic we named the cluster of ‘*Low skill, Low-Tech firms*’. Notwithstanding the cluster’s firms presents on average 51.4% foreign language speakers employees.

The 254 (27.9%) firms, those constitute the smallest cluster, are the younger firms of the segmentation. Concerning the executive team, this cluster is composed by firm owning at least three executive members with a tertiary degree and presents the higher rate of foreign language speakers: 59.4%. We named this cluster of ‘*Young High-Tech firms*’.

Table 7: Whole encompassing segmentation proposal – characteristics of the clusters’ SME

	<i>Experienced Medium Low-Tech firms</i> (#357)	<i>Low skill, Low-Tech firms</i> (#301)	<i>Young High-Tech firms</i> (#254)
SME age (% of firms with a number of years in business >22 years)	100.0	3.0	0.0
Education level of executive teams (% of the firm executive team has at least three members with a tertiary degree)	51.0	0.0	100.0
Language skills (% foreign language speakers on the firm)	24.1	51.4	59.4
High income countries (% of the firms that chosen ‘High income countries’ for exporting)	70.0	49.0	57.0
Introduction of organizational innovation (% of firm that introduced an organizational innovation in the last 3 years)	68.0	57.0	69.0
Foreign markets dependency (% of the firm’s turnover associated to foreign markets)	42.6	35.8	38.4

Note: In the Appendix E we present the SPSS cluster output of this segmentation proposal.

Segmentation Proposal 2: Intermediate segmentation proposal

Existing research, namely Espanhol (2007, cited in Silva et al., 2010b), refers that firms’ size, age, social capital and productivity are features that explain firm export status. Supporting this content, our empirical results corroborate that these same dimensions are a valid criteria for firms’ segmentation. Consequently, we performed a cluster analysis having these features as segmentation criteria.

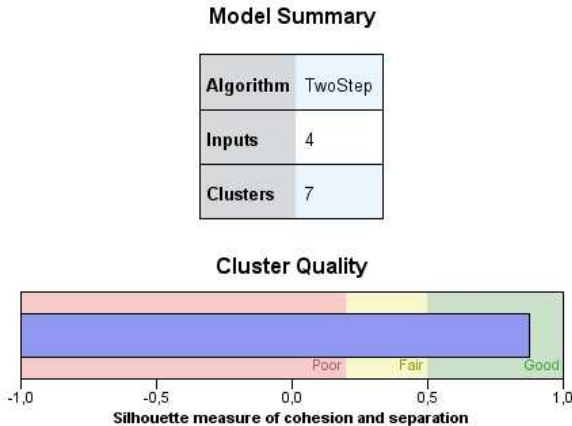


Figure 4: Model’s goodness of fit for Segmentation Proposal 2

Source: Calculation based on direct survey, March-April 2011

Note: Model summary extracted from SPSS.

The model stretches that for the inputs SME size, age, structure of social capital, and productivity, we should segment SME firms in seven clusters, resulting in one good quality segmentation (cf. Figure 4).

The most important input on these segmentation are the size and business experience (age) (both with importance=1.00), followed by social capital structure with an importance of 0.60 and least important is the input productivity with importance of 0.18.

The size of the largest cluster is of 222 (24.3%) firms. These firms are from small-size, and more than 90% of their social capital structure is held by Portuguese entities. Concerning the GVA per employee this cluster presents on average 27.7 thousand €. But the distinguish feature of the cluster is the business experience held by the firms, which is quite low (none of the firms detains 22 years or more of experience). We named this cluster of ‘*Young small-sized firms*’.

Table 8: Intermediate segmentation proposal – characteristics of the clusters’ SME

Cluster (n° firms)	Size*	Age (% of firms with a number of years in business >22 years)	Social Capital (% of firms with 10% or more of its social capital owned by foreign entities)	Productivity (GVA per employee, thousand €)
<i>Young small-sized firms</i> (#222)	Small-sized firms	0.0	0.0	27.7
<i>Young micro-sized firms</i> (#203)	Micro-sized firms	0.0	0.0	23.7
<i>Mature small-sized firms</i> (#164)	Small-sized firms	100.0	0.0	31.4
<i>Young medium-sized firms</i> (#88)	Medium-sized firms	0.0	0.0	28.9
<i>Mature medium-sized firms</i> (#156)	Medium-sized firms	100.0	0.0	24.7
<i>Foreign equity firms</i> (#51)	All sizes firms	43.0	100.0	26.4
<i>Highly productive firms</i> (#28)	Micro and Small-sized firms	54.0	7.1	288.8

Legend: * According with EU SME categorization: Micro, Small and Medium-sized firms.

Note: In the Appendix F we present the SPSS cluster output of this segmentation proposal.

The second largest cluster has 203 (22.3%) firms, being all micro-sized firms. Similarly to the last described cluster, more than 90% of social capital structure of the firms is held by Portuguese entities too, as well all firms present less of 22 years of business experience. An additionally feature of this cluster is the average of 23.7 thousand € of GVA per employee shown by the firms cluster. We named this cluster of ‘*Young micro-sized firms*’.

The next cluster to be described is constituted by 164 (18.0%) firms, and it is similar to the ‘*Young small-sized firms*’ cluster. The main difference is related with business experience and in this cluster the firms shown large business experience. Consequently, we named this cluster

of *mature small-sized firms*. The other difference is related with GVA per employee, with this cluster presenting a higher average of about 31.4 thousand €.

The medium-sized firms are distributed in two similar clusters: the *young medium-sized firms* and the *mature medium-sized firms*. The cluster of *young medium-sized firms* is formed by 88 (9.6%) firms, and the cluster of *mature medium-sized firms* has 156 (17.1%) firms, and both firms' clusters are held by Portuguese entities. The other important distinguish feature is the average GVA per employee values that is higher in the *young medium-sized firms* (28.9 thousand € > 24.7 thousand €).

The second smallest cluster has 51 (5.6%) firms, and we named of *foreign equity firms* due to unique feature of this cluster: is the only that all firms have foreign capital in their social capital structure. Regarding the other inputs they do not assume special importance. Consequently we found in this cluster SME from all sizes, less experienced and with larger experience, and, on average, the GVA per employee is about 26.4 thousand €.

The size of smallest cluster is 28 (3.1%) firms. This small cluster is formed by the elite firms in terms of productivity. The average value of GVA per employee is about 288.8 thousand €, thus we named *highly productive firms* cluster. The other important input in this cluster is the size of the firms, but this feature might by more a precondition than a criteria. We are referring to the micro and small-size of the cluster firms, and also to the fact that smaller firms are better able to present higher ratios such as GVA per employee than medium-sized firms.

Despite the logical and good quality of the present segmentation, one of its major problems is the absence of an export indicator. If we analyse the different clusters, we are not able to know concretely whether the firms export or not, and which is its export commitment stage. Consequently, this intermediate segmentation proposal might not be of great help for AICEP in terms of devising adequate services to SME according to these latter's internationalization stage.²⁰

Segmentation Proposal 3: Parsimonious segmentation

As referred earlier, the first (whole encompassing) segmentation proposal may not be easy to implement/operate due to the difficulties in establishing the cluster where we should put a given firm. Specifically, we underlined that the self description of the model is hard because the variables do not outline clearly the firms' characteristics in each cluster. The previous

²⁰ A possible solution to overcome this weakness could be the inclusion of an additional criterion regarding the export performance, such as export intensity, number of foreign markets, foreign markets dependency. However all cluster analyses performed with this add, resulted in poor quality segmentation.

(intermediate) segmentation proposal, despite its good quality of adjustment, does not include a variable on the internationalization stage of firms. Thus, we put forward here an alternative, parsimonious, segmentation proposals consistent with previous empirical analysis based on the Kruskal-Wallis tests and the factorial analysis.

We have found (cf. Table 10) that SME size, export intensity and industry are highly significant and complementary characteristics/dimensions. Additionally, these firms' characteristics are easily gathered.

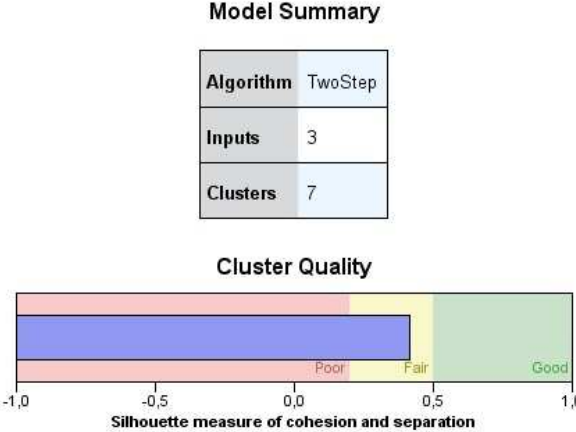


Figure 5: Model's goodness of fit for Segmentation Proposal 3
 Source: Calculation based on direct survey, March-April 2011
 Note: Model summary extracted from SPSS.

According with the cluster quality analysis this segmentation proposal is of fair quality (Figure 5), resulting in seven clusters of SME. The most important inputs in these cluster are the size and export intensity (both with importance=1.00), followed by industry classification with an importance of 0.21.

The largest cluster is formed only by medium-sized firms in a total of 209 (22.9%) firms, with the SME size characteristic assuming as the most important input in this cluster. Thus, we named this cluster as *Medium-sized firms cluster*. Additionally, we found the medium-sized firms in almost all involvement stages of export intensity²¹ (i.e. 'Committed', 'Active involvement', and 'Pre-export' stage) with exception of firms in the 'Experimental involvement' stage. Concerning the industry, this input is not discriminant in this cluster and we found all type of industries in this cluster (exception to Agriculture sector perhaps because there are no medium-sized firm in the sample in one of these stages of internationalization).

We called *Small-sized manufacturing firms cluster*, to the second largest group of firms (156 firms, representing 17.1% of the firms' sample). As the cluster name implies, this group of

²¹ We continue to use the Gankema et al., (2000) export intensity model.

firms is formed only by small-sized firms, being this input the most important of this cluster. Regarding the export intensity stages, the cluster firms are distributed just by ‘Experimental’ and ‘Committed involvement’ stages. Although the industry input low importance, in this cluster we found that input is differentiator and there are just small-sized firms from the ‘Manufacturing’ industry.

Table 9: Parsimonious segmentation proposal – characteristics of the clusters’ SME

Cluster (n° firms)	Size*	Export intensity**	Industry***
<i>Medium-sized firms</i> (#209)	Medium-sized firms	Pre-export Active involvement Committed Involvement	All
<i>Small-sized manufacturing firms</i> (#156)	Small-sized firms	Experimental involvement Committed involvement	Manufacturing firms
<i>Micro-sized firms</i> (#139)	Micro-sized firms	Pre-export Active involvement Committed Involvement	All, except Construction and Information and Communication activities
<i>Export active small-sized firms</i> (#103)	Small-sized firms	Active involvement	Manufacturing firms Wholesale and retail trade Consulting, Technical and Scientific Activities
<i>Potential exporters</i> (#93)	Micro-sized firms	Pre-export	Construction and Information and Communication activities
	Small-sized firms		All
<i>Promising exporters firms</i> (#89)	Micro-sized firms	Experimental involvement	Manufacturing
	Medium-sized firms		All
<i>Non-manufacturing small-sized firms</i> (#123)	Micro-sized firms	Experimental involvement Active involvement Committed involvement	All, except manufacturing firms
		Experimental involvement Committed involvement	All, except manufacturing firms
	Small-sized firms	Active involvement	All, except Manufacturing, Wholesale and Retail Trade, and Consulting, Technical and Scientific firms

*Legend:** According with EU SME categorization: Micro, Small and Medium-sized firms; ** According with the stages of the innovation-model presented by Gankema et al. (2000): Domestic-Market (however there is no firm in the sample at this stage), Pre-export, Experimental involvement, Active involvement and Committed involvement; *** According with CAE codes, revision 3.

Note: In the Appendix G we present the SPSS cluster output of this segmentation proposal.

The third largest cluster has 139 (15.2%) micro-sized firms, being the last cluster where the firm size is the most important input cluster. We call it *Micro-sized firms cluster*. This cluster share some similarities with the cluster of *Medium-sized firms*, because we found in this cluster the firms in the ‘Committed’, ‘Active involvement’, and ‘Pre-export stage’. However the industry input assumes a distinctive role in the cluster, since we found all type of industries, except from the ‘Construction sector’, and also ‘Information and Communication activities’ firms.

The next cluster description is of the *Export Active Small-sized firms*. As the cluster name says, this cluster is formed by 103 (11.3%) small-sized firms that are precisely in the ‘Active

involvement' stage. The export intensity input assumes the role of cluster distinctive characteristic (please compare with cluster of *Small-sized firms*). Concerning the industry, we found in the cluster firms from the 'Manufacturing' industry, as well from the Service sector as 'Wholesale and Retail Trade' firms and 'Consulting, Technical and Scientific Activities' firms.

From the cluster analysis resulted a group that we named *Potential exporters*, as the cluster is formed only by 'pre-export' stage firms. The cluster has 93 (10.2%) firms, being one of the smallest clusters. Here we found firms from small size and apparently from all industry sector, and additionally we found micro-sized firms from 'Manufacturing' industry.

The smallest cluster resulted from the cluster analysis has 89 (9.8%) firms. This is a kind of elite group, with most *Promising export firms*, because is composed by firms that are 'Experimental involvement stage' and also are micro-size or medium-size. In our view, these two features together are very valuable, because in the micro-size firms we might be in presence of 'born-globals', and in the case of medium-sized firms, these firms have a larger export potential, due to easier access to the resources needed to a successful internationalization and consequent expansion. Once again the industry input does not seem to be distinguishing cluster feature.

The last cluster to be described has 123 (13.5%) firms, and is the most complex segment. In this cluster the industry input assumes the main role, being the opposite of cluster *Small-sized manufacturing firms*. Thus, we found in this cluster firms from all industries, except from 'Manufacturing' industries. Due to this particularity, we named it of *Non-manufacturind small-sized firms*. Albeit the cluster name this group have two important details: also includes micro-sized firms but in a small proportion (6.5%), and also not include small-sized firms that are in the active involvement stage from 'Wholesale and Retail Trade' and 'Consulting, Technical and Scientific activities' firms (because those firms are already in the cluster *Export Active small-sized firms*).

4. Conclusions

This paper aimed to develop a Portuguese SME segmentation according with their internationalization profile. Achieving this goal allowed a better understanding of Portuguese SME needs and would expectedly help the development and improvement of the AICEP's services offer.

The data gathered on SME enabled to depict the Portuguese SME internationalization panorama, by simultaneously analyzing the SME internationalization determinants and to explore the relationship between internationalization performance of Portuguese SME and its characteristics such as size, R&D intensity, export intensity, export country destiny, region, and industry as well the distribution of the social capital structure (foreign versus domestic).

The research was carried out using empirical data from Portugal, where the issue of internationalization is growing in importance given the Portuguese economy context. Additionally, and despite the high quality existing works on the Portuguese SME internationalization topic (Simões and Castro, 2000; Simões and Crespo, 2002; Pinho and Martins, 2010; Silva et al., 2010a, b, c), the theoretical and empirical importance of the issue of internationalization advises further investigation on the subject.

The empirical data was gathered through direct survey to 6228 SME registered in AICEP database, being collected 912 valid questionnaires, which corresponded to an effective response rate of 14.7%. Taking into account the characteristics and size of the target population, we might consider this response rate reasonable (Simões and Crespo, 2002).

From the empirical analysis carried out, whose results were presented in previous chapters, it is possible to identify a set of conclusions. We confirmed that Portuguese SME stand at different stages of internationalization and each stage have peculiar and singular characteristics. Moreover, the Portuguese SME itself presents different physiognomies which must be taken into account.

The most internationalized sector is the 'Manufacturing' industry. The firms' technological profile, which is more committed with internationalization is from the 'Medium Low-Tech' type. Despite the designation, these 'Medium Low-Tech' firms present reasonable amount of innovation introduction. Another important characteristic observed in the most internationalized Portuguese SME is the high experience of the firms and from their executive teams in terms of both business and internationalization experience. In addition to these characteristics, we found that about 70% of the SME, which seek for AICEP services, are actively or committed with internationalization. Moreover, firms with the higher number of foreign markets presences, have more developed and diversified partnership's networks.

Besides this generic profiling of the typical internationalized Portuguese SME, we found that 'High-Tech' firms are a large group of firms seeking internationalization. The empirical results suggest that these firms might have structural/organizational problems that might

constraint their internationalization process, at least comparing with most successful internationalized firms from the sample. We refer to the lower internationalization experience of the executive team, as well the absence of Export Markets/ Commercial director/head in these firms.

The Kruskal-Wallis tests performed indicated that firms' size, firms' export intensity, and firm's industry are the major (significance) discriminating factors between SME. Consequently, these dimensions might be important criteria to achieve rigorous and high quality SME segmentation. Additionally, we performed a factorial analysis in order to shorten the number of variables related with the surveyed internationalization determinants so that could be used as a practical SME segmentation criterion.

Supported in factor analysis results, we performed several cluster analyses in order to present a meaningful, easy to implement, and easy to manage segmentation of AICEP's SME clients. Such segmentation intent to avoid huge costs and to be resilience to new processes. Consequently, we plan for a parsimonious solution, characterized by high (statistical) quality and scientific rigor using the minimum necessary criteria

After analyzing several cluster results, we concluded that size, export intensity and industry/sector of activity were the best segmentation proposal due to the high significant and complementary of the criteria. Additionally, such firms' characteristics might be easily gathered. This segmentation resulted in 7 clusters, which were named followed the most important inputs of each cluster: Medium-sized firms, Small-sized manufacturing firms, Micro-sized firms, Export Active Small-sized firms, Potential exporters, Promising export firms, and Non-manufacturing small-sized firms.

References

- Acs, Z.; Randall, M.; Shaver, J.; Yeung, B. (1997), "The Internationalization of Small and Medium-sized enterprises: A policy Perspective", *Small Business Economics*, 9(1): 7-20.
- Acs, Z.; Randall, M.; Yeung, B. (2001), "Entrepreneurship, globalization, and public policy", *Journal of International Management*, 7 (3): 235–251.
- Alvarez, S.; Busenitz, L. (2001), "The Entrepreneurship of Resource-based theory", *Journal of Management*, 27(1): 755-775.

- Andersen, O. (1993), "On the internationalization process of firms: A critical analysis", *Journal of International Business Studies*, 24 (2): 209-231.
- Andersen, O.; Kheam L.S. (1998), "Resource-based theory and international growth strategies: an exploratory study", *International Business Review*, 7 (2): 163–184.
- Billington, N. (1999), "The location of foreign direct investment: an empirical analysis", *Applied Economics*, 31 (1): 65-76.
- Calderón, H.; Fayós, T.; Cervera, A. (2005), "A Model for valuation of government export promotion policies: an empirical analysis in the Spanish context from a market oriented perspective", *International Review on Public and Non Profit Marketing*, 2 (2): 34-49.
- Cassiman, N.; Golovko, E.; Martínez-Ros, E. (2010), "Innovation, exports and productivity", *International Journal of Industrial Organization*, 28 (1): 372-376.
- Cavusgil, S.; Naor, J. (1987), "Firm and Management Characteristics as Discriminators of Export Marketing Activity", *Journal of Business Research*, 15 (1): 221-235.
- Coviello N.; Munro H. (1997), "Network Relationships and the Internationalization Process of Small Software Firms", *International Business Review*, 6 (4): 361-386.
- Delgado M.; Fariñas, J.; Ruano, S. (2002), "Firm productivity and export markets: a non-parametric approach", *Journal of International Economics*, 57 (1): 397-422.
- Doorn, J.; Lemon, K.; Mittal, V.; Nass, S.; Pick, D.; Pirner, P.; Verhoef, P. (2010), "Customer Engagement Behavior: Theoretical Foundations and Research Directions", *Journal of Service Research*, 13 (3): 253-266.
- Dunning, J. (1988), "The Eclectic Paradigm of International production: A restatement and some possible extensions", *Journal of International Business Studies*, 19 (1): 1-31.
- Faeth, I. (2009), "Determinants of Foreign Direct Investment – A tale of nine theoretical models", *Journal of Economic Surveys* 23 (1): 165-196.
- Fischer, E.; Reuber, A. (2003), "Targeting Export support to SME: Owners' International Experience as a Segmentation Basis", *Small Business Economics* 20 (1): 69-82
- Galán. J.; González-Benito, J. (2001), "Determinants factors of foreign direct investment: some empirical evidence", *European Business Review* 13 (5): 269-278.

- Gankema, H.; Snuif, H.; Zwart, P. (2000), "The internationalization process of small and medium-sized enterprises: An evaluation of stage theory", *Journal of Small Business Management*, 38 (4): 15-27.
- Gil, S., Llorca, R.; Martínez Serrano, J. (2008), "Measuring the impact of regional export promotion: The Spanish case", *Papers in Regional Science* 87 (1): 139-146.
- Gillespie, K.; Riddle, L. (2004), "Export promotion organization emergence and development: A call to research", *International Marketing Review*, 21 (4-5): 462-473.
- Golovko, E.; Valentini, G., (2011), "Exploring the complementary between innovation and export for SMEs' growth", *Journal of International Business Studies*, 42 (1): 362-380.
- Hirsch-Kreinsen, H.; Jacobson, D.; Laestadius, S.; Smith, K. (2003), "Low-Tech Industries and the Knowledge Economy: State of the Art and Research Challenges", *STEP Report series* 200316.
- Hitt, M.; Ireland, R.; Hoskisson R. (2005), *Strategic Management – Competiveness and Globalization*, 6^a Edition, Versailles, KY: Thomson South-Western.
- Hoang, H.; Antoncic, B. (2001), "Network-based research in entrepreneurship: A critical review", *Journal of Business Venturing*, 18 (2): 165-187.
- Hollenstein, H. (2005), "Determinants of International Activities: Are SME different?", *Small Business Economics*, 24 (1): 431-450.
- Inkpen, A.; and Beamish, P. (1997), "Knowledge, Bargaining Power, and the instability of international joint ventures", *Academy of Management Review*, 22 (1): 177-202.
- Lederman, D.; Olarreaga, M.; Payton, L. (2006), *Export Promotion Agencies: What works and what doesn't*, World Bank, Washington DC, USA.
- Leonidou, L.; Katsikeas. C. (1996), "The export development process: An integrative review of empirical models", *Journal of International Business Studies*, 27 (3): 517-551.
- Leonidou, L.; Katsikeas. C.; Palihawadana D.; Spyropoulou S. (2007), "An analytical review of the factors stimulating smaller firms to export – Implications for policy-makers", *International Marketing Review*, 24 (6): 735-770.

- Lu, J.; Beamish, P. (2001), "The internationalization and performance of SME", *Strategic Management Journal*, 22 (6-7): 565-586.
- Johanson, J.; Vahlne, J. (1977), "The Internationalization process of the firm – a model of knowledge development and increasing foreign market commitments", *Journal of International Business studies*, 8 (1): 23-32.
- Johanson, J.; Vahlne, J. (2009), "The Uppsala internationalization process model revisited: From Liability of foreignness to liability of outsidership", *Journal of International Business Studies*, 40 (9): 1411-1431.
- Kaplowitz, M.; Hadlock, T.; Levine, R. (2004), "A comparison of web and mail survey response rates", *Public Opinion Quarterly*, 68 (1): 94-101.
- Malone C.; Rose L. (2006), "Intangible assets and firm diversification", *International Journal of Managerial Finance*, 2 (2): 136-153.
- Nahapiet, J.; Ghoshal, S. (1998), "Social capital, intellectual capital and the organizational advantage", *Academy of Management Review*, 23 (2): 242-266.
- OECD (2005), *Oslo Manual. Guidelines for collecting and interpreting innovation data*, 3rd Edition, European Commission, OECD, 2005.
- Ping, Z. (2010), "Research on relationship between top management team pay gap and corporate technology innovation", International Conference on E-Business and E-Government, GuangZhou, China.
- Pinho, J.; Martins, L. (2010), "Exporting barriers: Insights from Portuguese small and medium-sized exporters and non-exporters", *Journal International Entrepreneurship*, 8 (3): 254–272.
- Roper, S.; Love, J. (2002), "Innovation and export performance: evidence from the UK and German manufacturing plants", *Research Policy*, 31 (7): 1087-1102.
- Ruzzier, M.; Hisrich, R.; Antoncic, B. (2006), "SME internationalization research: Past, present, and future", *Journal of Small Business and Enterprise Development*, 13 (4): 476-497.
- Saarenketo, S.; Puumalainen, K.; Kuivalainen, O.; Kylaheiko, K. (2004), "Dynamic knowledge-related learning processes in internationalizing high-tech SME", *International Journal of Production Economics*, 89 (3): 363-378.

- Shamsuddoha, A.; Ali, M.; Ndubisi, N. (2009), "Impact of government export assistance on internationalization of SME from developing nations", *Journal of Enterprise Information Management*, 22 (4): 408-422.
- Silva, A.; Africano A.P.; Afonso, O. (2010a), "Economic performance and international trade engagement: The case of Portuguese manufacturing firms", *FEP Working Papers n° 369*, Faculdade de Economia, Universidade do Porto.
- Silva, A.; Africano A.P.; Afonso, O. (2010b), "Do Portuguese manufacturing firms self select to exports?", *FEP working papers n° 371*, Faculdade de Economia, Universidade do Porto.
- Silva, A.; Africano A.P.; Afonso, O. (2010c), "Do Portuguese manufacturing firms learn by exporting?", *FEP working papers n° 373*, Faculdade de Economia, Universidade do Porto.
- Simões, V.C.; Crespo, N. (2002), "The Internationalization pattern of medium sized firms: in search of explanatory factors", *Paper prepared for presentation at the 28th EIBA Conference*, Athens, Greece.
- Simões, V.C.; Castro, A. (2000), "A internacionalização das empresas portuguesas: uma perspectiva genérica", *Seminário Económico e GEPE – Gabinete de Estudos e Prospectiva Económica do Ministério da Economia*, Lisboa, Portugal.
- Sommer, L. (2010), "Internationalization processes of small and medium-sized enterprises - a matter of attitude?", *Journal International Entrepreneurship*, 8 (3): 288–317.
- Teixeira, A.A.C.; Tavares-Lehmann, A.T. (2007), *Investimento Directo Estrangeiro, Capital Humano e Inovação: uma aplicação ao caso português*, Grupo Editorial Vida Económica, Porto, Portugal.
- Vrande, V.; Jong, J.; Vanhaverbeke, W.; Rochemont, M. (2009), "Open innovation in SME: Trends, motives and management challenges", *Technovation*, 29 (1): 423-437.
- Verhoef, P.; Reinartz, W.; Krafft M. (2010), "Customer Engagement as a New Perspective in Customer Management", *Journal of Service Research*, 13 (3): 247-252.
- Wilkinson, T.; Brouthers, L. (2006), "Trade promotion and SME export performance", *International Business Review*, 15 (3): 233-252.

Table A1: Differences in means between export intensity (Non parametric Kruskal Wallis Test)

Variables	Proxies	Pre-export (105 firms)	Experiment al invol. (184 firms)	Active invol. (246 firms)	Committed invol. (377 firms)	Kruskal Wallis test (p-value)
Cost reduction; High control degree of firm's subsidiaries;	Number of firm employees	18.53	34.88	42.36	51.76	0.000
	Cooperation in R&D (Yes=1)	0.26	0.28	0.31	0.32	0.559
Business and internationalization experience	Business experience (firms in business at more than 22 years=1)	0.16	0.39	0.41	0.44	0.000
	Firms that are internationalized (Yes=1)	0.16	0.78	0.97	0.99	0.000
	Internationalization experience (internationalized firms at more than 13 years=1)	0.00	0.19	0.29	0.52	0.000
Management Experience and Capabilities (including of the Entrepreneur)	Commercial or Export Director (Yes=1)	0.70	0.85	0.85	0.82	0.004
	International experience of the management team - the average experience in internationalization of the management team is of 10 or more years (Yes=1)	0.10	0.30	0.39	0.64	0.000
	Education level of the management team - Three out of the four member of the management team have tertiary degree (Yes=1)	0.37	0.46	0.54	0.47	0.037
	Diversity of management capabilities - the management team includes individuals from 2 or more distinct courses (e.g., Engineering and Economics) (Yes=1)	0.41	0.53	0.58	0.52	0.040
Technological competencies	Engineers in total employees (%)	29.1	20.0	21.0	16.0	0.002
	R&D intensity (%)	7.3	3.3	2.8	3.6	0.627
	Employees with tertiary degree in total employees (%)	51.2	33.9	36.6	27.6	0.000
	Foreign language speakers' employees (%)	62.2	41.6	44.7	37.8	0.000
	The firms made a product innovation in the last 3 years (Yes=1)	0.62	0.71	0.72	0.67	0.193
	The firms made a process innovation in the last 3 years (Yes=1)	0.58	0.65	0.72	0.70	0.062
	The firms made an organizational innovation in the last 3 years (Yes=1)	0.58	0.70	0.69	0.61	0.040
	The firms made a marketing innovation in the last 3 years (Yes=1)	0.55	0.67	0.61	0.57	0.093
Not explicitly measurable resources	Gross Value added per employee (thousand€)	49.1	25.8	27.4	40.5	0.002
	Low Income Countries*	0.24	0.18	0.09	0.06	0.000
Type of markets SME target for exporting	Lower-middle income countries*	0.35	0.36	0.35	0.16	0.000
	Upper-middle income countries*	0.00	0.03	0.12	0.09	0.009
	High income countries*	0.47	0.63	0.71	0.72	0.034
	Advanced emerging market*	0.24	0.15	0.23	0.14	0.022
	Secondary emerging market*	0.18	0.1	0.2	0.18	0.064
Resource commitment and knowledge about foreign markets	Development and production of goods and services to specific foreign markets (Yes=1)*	0.71	0.48	0.51	0.63	0.003
	Employees exclusively dedicated to internationalization activities (Yes=1)*	0.65	0.55	0.68	0.83	0.000
	The management team makes, on average, 4 or more trips to foreign markets (Yes=1)	0.11	0.22	0.38	0.49	0.000
Internationalization degree	Export intensity (%)	0.0	4.3	21.6	75.3	0.000
	Number of foreign markets/countries*	3.41	5.28	6.82	11.43	0.000
	Turnover associated to three main foreign markets* (%)	10.4	20.1	32.0	66.7	0.000
	Number of foreign subsidiaries*	0.47	0.38	0.35	0.45	0.434
Entrepreneurs' intellectual and social capital	Use of business plan by the executive team*	0.35	0.15	0.19	0.15	0.099
	Number of partnership with large firms*	0.76	0.80	0.87	1.22	0.048
Dependency of Partnerships and others market actors	Number of partnership with other (SME) firms*	2.18	3.24	4.46	4.75	0.560
	Number of partnership with S&T organizations*	0.18	0.17	0.23	0.30	0.300
	Turnover associated to the network partners* (%)	5.2	6.7	17.4	40.5	0.000
	Exclusively exports (Yes=1)*	0.41	0.73	0.69	0.72	0.046
	Exports + FDI (Yes=1)*	0.06	0.10	0.10	0.07	0.583

Source: Calculation based on direct survey, March-April 2011

Note: * In this case the calculations were made according with the 773 firms that are internationalized in order to avoid bias.

Table A2: Differences in means between countries income (Non parametric Kruskal Wallis Test)

Variables	Proxies	Low Income		Lower-middle income		Upper-middle income		High Income		Advanced emerging market		Secondary emerging market	
		no	yes	no	yes	no	yes	no	yes	no	yes	no	yes
Cost reduction; High control degree of firm's subsidiaries;	Number of firm employees	42.3	38.3	41.2	44.8	40.4	63.0	32.9	48.3	42.3	40.1	39.4	56.9
	Cooperation in R&D (Yes=1)	0.30	0.30	0.29	0.32	0.29	0.45	0.29	0.31	0.29	0.37	0.29	0.34
Business and internationalization experience	Business experience (firms in business at more than 22 years=1)	0.39	0.46	0.36	0.49	0.36	0.49	0.30	0.45	0.40	0.36	0.38	0.48
	Firms that are internationalized (Yes=1)	0.83	1	0.80	1	0.84	1	0.63	1	0.82	1	0.82	1
	Internationalization experience (internationalized firms at more than 13 years=1)	0.33	0.36	0.33	0.35	0.32	0.42	0.18	0.44	0.32	0.38	0.31	0.48
Management Experience and Capabilities (including of the Entrepreneur)	Commercial or Export Director (Yes=1)	0.81	0.89	0.80	.89	0.82	0.85	0.80	0.84	0.81	0.86	0.81	0.87
	International experience of the management team - the average experience in internationalization of the management team is of 10 or more years (Yes=1)	0.45	0.38	0.44	0.46	0.44	0.45	0.44	0.45	0.44	0.46	0.42	0.57
	Education level of the management team - Three out of the four member of the management team have tertiary degree (Yes=1)	0.47	0.47	0.45	0.55	0.46	0.64	0.46	0.49	0.46	0.57	0.46	0.57
	Diversity of management capabilities - the management team includes individuals from 2 or more distinct courses (e.g., Engineering and Economics) (Yes=1)	0.52	0.61	0.50	0.53	0.51	0.67	0.48	0.55	0.52	0.53	0.51	0.64
	Engineers in total employees (%)	19.4	22.2	20.2	17.9	19.4	23.6	25.1	15.9	18.4	26.9	19.5	20.8
Technological competencies	R&D intensity (%)	4.0	1.6	4.2	2.0	3.9	2.7	4.5	3.3	3.7	4.3	4.0	2.7
	Employees with tertiary degree in total employees (%)	33.7	37.6	35.0	30.6	34.1	32.9	43.2	27.6	33.2	38.8	34.5	31.0
	Foreign language speakers' employees (%)	43.3	42.6	44.5	38.7	43.0	45.7	52.3	36.9	42.1	49.9	43.6	40.9
	The firms made a product innovation in the last 3 years (Yes=1)	0.68	0.72	0.67	0.75	0.67	0.82	0.66	0.70	0.67	0.76	0.68	0.72
	The firms made a process innovation in the last 3 years (Yes=1)	0.68	0.69	0.67	0.72	0.67	0.79	0.66	0.70	0.67	0.73	0.67	0.74
	The firms made an organizational innovation in the last 3 years (Yes=1)	0.64	0.66	0.63	0.69	0.64	0.76	0.63	0.65	0.64	0.65	0.64	0.67
	The firms made a marketing innovation in the last 3 years (Yes=1)	0.60	0.64	0.59	0.66	0.60	0.62	0.59	0.61	0.59	0.67	0.60	0.59
Not explicitly measurable resources	Gross Value added per employee (thousand€)	35.0	35.0	35.6	33.1	35.3	31.3	36.4	34.1	36.0	29.2	34.5	37.8
	Low Income Countries*	0	1	0.03	0.28	0.09	0.14	0.15	0.07	0.10	0.09	0.09	0.14
Type of markets SME target for exporting	Lower-middle income countries*	0.21	0.76	0	1	0.24	0.42	0.27	0.25	0.25	0.33	0.23	0.41
	Upper-middle income countries*	0.08	0.12	0.07	0.14	0	1	0.07	0.09	0.07	0.17	0.05	0.23
	High income countries*	0.71	0.53	0.7	0.68	0.69	0.74	0	1	0.66	0.89	0.66	0.86
	Advanced emerging market*	0.17	0.16	0.16	0.21	0.16	0.33	0.06	0.22	0	1	0.15	0.28
	Secondary emerging market*	0.16	0.26	0.14	0.27	0.15	0.47	0.08	0.21	0.15	0.28	0	1
	Development and production of goods and services to specific foreign markets (Yes=1)*	0.56	0.59	0.56	0.57	0.55	0.68	0.58	0.56	0.57	0.52	0.55	0.63
Resource commitment and knowledge about foreign markets	Employees exclusively dedicated to internationalization activities (Yes=1)*	0.72	0.76	0.74	0.68	0.73	0.74	0.73	0.72	0.74	0.67	0.73	0.72
	The management team makes, on average, 4 or more trips to foreign markets (Yes=1)	0.36	0.39	0.35	0.40	0.35	0.55	0.30	0.41	0.35	0.44	0.34	0.51
	Export intensity (%)	38.6	29.2	40.0	30.0	37.2	45.9	26.3	45.8	37.8	37.6	36.2	47.2
Internationalization degree	Number of foreign markets/countries*	8.9	6.4	8.9	8.0	8.3	12.5	6.8	9.5	8.3	10.5	7.9	12.5
	Turnover associated to the three main foreign markets* (%)	47.4	34.4	49.3	37.1	46.0	46.9	45.2	46.5	47.9	37.7	46.4	44.9
	Number of foreign subsidiaries*	0.39	0.57	0.4	0.44	0.37	0.85	0.58	0.33	0.42	0.33	0.37	0.58
Entrepreneurs' intellectual and social capital	Use of Business plan by the executive team*	0.17	0.19	0.16	0.18	0.16	0.26	0.22	0.15	0.17	0.16	0.16	0.20
	Number of partnership with large firms*	1.06	0.73	1.06	0.94	1.04	0.89	1.09	0.99	1.00	1.16	0.97	1.31
Dependency of Partnerships and others market actors	Number of partnership with other (SME) firms*	4.25	4.99	4.22	4.62	4.34	4.12	3.83	4.54	4.22	4.84	4.27	4.60
	Number of partnership with S&T organizations*	0.27	0.11	0.28	0.19	0.25	0.33	0.32	0.22	0.24	0.31	0.26	0.24
	Turnover associated to the network partners* (%)	26.9	20.9	28.6	19.9	26.3	26.7	27.1	26.0	26.9	23.5	26.9	23.5
	Exclusively exports (Yes=1)*	0.71	0.69	0.71	0.70	0.72	0.55	0.52	0.79	0.69	0.77	0.71	0.70
	Exports + FDI (Yes=1)*	0.08	0.12	0.08	0.12	0.08	0.18	0.90	0.90	0.09	0.10	0.08	0.13

Source: Calculation based on direct survey, March-April 2011

Note: * In this case the calculations were made according with the 773 firms that are internationalized in order to avoid bias.

Table 10: Differences in means between R&D intensity groups (Non parametric Kruskal Wallis Test)

Variables	Proxies	Low-tech (537 firms)	Medium low-tech (152 firms)	Medium high-tech (60 firms)	High-tech (163 firms)	Kruskal Wallis test (p-value)
Cost reduction; High control degree of firm's subsidiaries;	Number of firm employees	41.5	54.93	37.35	33.27	0.000
	Cooperation in R&D (Yes=1)	0.12	0.58	0.50	0.56	0.000
Business and internationalization experience	Business experience (firms in business at more than 22 years=1)	0.44	0.47	0.32	0.20	0.000
	Firms that are internationalized (Yes=1)	0.85	0.92	0.80	0.80	0.014
	Internationalization experience (internationalized firms at more than 13 years=1)	0.34	0.45	0.30	0.20	0.000
	Commercial or Export Director (Yes=1)	0.83	0.86	0.87	0.74	0.016
Management Experience and Capabilities (including of the Entrepreneur)	International experience of the management team - the average experience in internationalization of the management team is of 10 or more years (Yes=1)	0.44	0.55	0.43	0.36	0.009
	Education level of the management team - Three out of the four member of the management team have tertiary degree (Yes=1)	0.40	0.57	0.62	0.60	0.000
	Diversity of management capabilities - the management team includes individuals from 2 or more distinct courses (e.g., Engineering and Economics) (Yes=1)	0.48	0.63	0.68	0.51	0.001
	Engineers in total employees (%)	12.4	16.1	24.2	45.3	0.000
Technological competencies	R&D intensity (%)	0.1	1.7	4.0	17.7	0.000
	Employees with tertiary degree in total employees (%)	27.7	27.2	39.1	59.5	0.000
	Foreign language speakers' employees (%)	36.0	38.5	48.2	69.5	0.000
	The firms made a product innovation in the last 3 years (Yes=1)	0.56	0.86	0.80	0.90	0.000
	The firms made a process innovation in the last 3 years (Yes=1)	0.59	0.84	0.80	0.77	0.000
	The firms made an organizational innovation in the last 3 years (Yes=1)	0.61	0.72	0.65	0.71	0.016
	The firms made a marketing innovation in the last 3 years (Yes=1)	0.51	0.78	0.68	0.70	0.000
Not explicitly measurable resources	Gross Value added per employee (thousand€)	32.1	37.1	25.4	46.4	0.106
	Low Income Countries*	0.10	0.10	0.15	0.05	0.240
Type of markets SME target for exporting	Lower-middle income countries*	0.26	0.28	0.33	0.21	0.328
	Upper-middle income countries*	0.07	0.11	0.15	0.10	0.159
	High income countries*	0.71	0.68	0.65	0.69	0.784
	Advanced emerging market*	0.14	0.17	0.25	0.24	0.032
	Secondary emerging market*	0.16	0.19	0.19	0.21	0.483
Resource commitment and knowledge about foreign markets	Development and production of goods and services to specific foreign markets (Yes=1)*	0.51	0.64	0.71	0.62	0.005
	Employees exclusively dedicated to internationalization activities (Yes=1)*	0.69	0.81	0.83	0.73	0.016
	The management team makes, on average, 4 or more trips to foreign markets (Yes=1)	0.29	0.53	0.45	0.42	0.000
	Export intensity (%)	36.4	43.2	39.8	36.8	0.053
Internationalization degree	Number of foreign markets/countries*	7.61	11.23	10.60	9.04	0.000
	Turnover associated to three main foreign markets* (%)	45.9	45.9	50.4	45.5	0.807
	Number of foreign subsidiaries*	0.28	0.69	0.69	0.44	0.004
Entrepreneurs' intellectual and social capital	Use of business plan by the executive team*	0.13	0.19	0.33	0.22	0.001
	Number of partnership with large firms*	0.87	1.20	1.15	1.35	0.001
Dependency of Partnerships and others market actors	Number of partnership with other (SME) firms*	3.76	5.88	4.50	4.55	0.006
	Number of partnership with S&T organizations*	0.08	0.30	0.46	0.75	0.000
	Turnover associated to the network partners* (%)	23.2	29.3	34.2	31.2	0.000
	Exclusively exports (Yes=1)*	0.76	0.65	0.60	0.62	0.001
	Exports + FDI (Yes=1)*	0.09	0.15	0.06	0.03	0.006

Source: Calculation based on direct survey, March-April 2011

Note: * In this case the calculations were made according with the 773 firms that are internationalized in order to avoid bias.

Table A4: Differences in means between groups of firm size (Non parametric Kruskal-Wallis Test)

Variables	Proxies	Micro (239 firms)	Small (414 firms)	Medium (259 firms)	Kruskal Wallis test (p-value)
Cost reduction; High control degree of firm's subsidiaries;	Number of firm employees	4.81	24.64	104.04	0.000
	Cooperation in R&D (Yes=1)	0.23	0.30	0.37	0.005
Business and internationalization experience	Business experience (firms in business at more than 22 years=1)	0.06	0.43	0.64	0.000
	Firms that are internationalized (Yes=1)	0.72	0.86	0.95	0.000
	Internationalization experience (internationalized firms at more than 13 years=1)	0.10	0.31	0.57	0.000
Management Experience and Capabilities (including of the Entrepreneur)	Commercial or Export Director (Yes=1)	0.66	0.86	0.90	0.000
	International experience of the management team - the average experience in internationalization of the management team is of 10 or more years (Yes=1)	0.20	0.45	0.66	0.000
	Education level of the management team - Three out of the four member of the management team have tertiary degree (Yes=1)	0.33	0.47	0.63	0.000
	Diversity of management capabilities - the management team includes individuals from 2 or more distinct courses (e.g., Engineering and Economics) (Yes=1)	0.35	0.53	0.68	0.000
Technological competencies	Engineers in total employees (%)	31.8	17.5	11.8	0.001
	R&D intensity (%)	6.6	3.2	2.0	0.415
	Employees with tertiary degree in total employees (%)	58.3	29.7	18.6	0.000
	Foreign language speakers' employees (%)	72.4	38.5	23.8	0.000
	The firms made a product innovation in the last 3 years (Yes=1)	0.62	0.69	0.73	0.036
	The firms made a process innovation in the last 3 years (Yes=1)	0.58	0.68	0.78	0.000
	The firms made an organizational innovation in the last 3 years (Yes=1)	0.51	0.7	0.69	0.000
Not explicitly measurable resources	The firms made a marketing innovation in the last 3 years (Yes=1)	0.57	0.61	0.61	0.586
	Gross Value added per employee (thousand€)	46.5	33.8	26.4	0.001
Type of markets SME target for exporting	Low income countries*	0.07	0.12	0.08	0.129
	Lower-middle income countries*	0.23	0.28	0.26	0.470
	Upper-middle income countries*	0.06	0.07	0.13	0.021
	High income countries*	0.65	0.68	0.74	0.096
	Advanced emerging market*	0.23	0.16	0.14	0.067
	Secondary emerging market*	0.15	0.16	0.22	0.072
Resource commitment and knowledge about foreign markets	Development and production of goods and services to specific foreign markets (Yes=1)*	0.54	0.56	0.58	0.692
	Employees exclusively dedicated to internationalization activities (Yes=1)*	0.65	0.71	0.80	0.003
	The management team makes, on average, 4 or more trips to foreign markets (Yes=1)	0.18	0.36	0.53	0.000
Internationalization degree	Export intensity (%)	32.7	36.5	44.6	0.000
	Number of foreign markets/countries*	5.43	7.88	12.13	0.000
	Turnover associated to the three main foreign markets* (%)	49.2	44.5	46.4	0.365
	Number of foreign subsidiaries*	0.20	0.29	0.72	0.000
Entrepreneurs' intellectual and social capital	Use of business plan by the executive team*	0.16	0.16	0.19	0.531
Dependency of Partnerships and others market actors	Number of partnership with large firms*	0.69	0.77	1.62	0.000
	Number of partnership with other (SME) firms*	2.6	4.53	5.23	0.279
	Number of partnership with S&T organizations*	0.19	0.26	0.29	0.022
	Turnover associated to the network partners* (%)	28.8	25.4	25.9	0.799
	Exclusively exports (Yes=1)*	0.73	0.72	0.66	0.203
	Exports + FDI (Yes=1)*	0.03	0.10	0.11	0.019

Source: Calculation based on direct survey, March-April 2011

Note: * In this case the calculations were made according with the 773 firms that are internationalized in order to avoid bias.

Table A5: Differences in means between industries (Non parametric Kruskal Wallis Test)

Variables	Proxies	Agricul. 19 firms	Manuf. 500 firms	Constr. 24 firms	Wholesale 173 firms	Informat ion ser. 46 firms	Consult. ser. 115 firms	Kruskal Wallis test (p-value)
Cost reduction; High control degree of firm's subsidiaries;	Number of firm employees	20.26	55.36	51.21	19.12	30.02	28.92	0.000
	Cooperation in R&D (Yes=1)	0.26	0.3	0.25	0.21	0.35	0.41	0.010
Business and internationalization experience	Business experience (firms in business at more than 22 years=1)	0.37	0.53	0.33	0.26	0.11	0.12	0.000
	Firms that are internationalized (Yes=1)	0.79	0.9	0.71	0.81	0.7	0.78	0.000
	Internationalization experience (internationalized firms at more than 13 years=1)	0.21	0.49	0.04	0.17	0.07	0.10	0.000
Management Experience and Capabilities (including of the Entrepreneur)	Commercial or Export Director (Yes=1)	0.63	0.87	0.92	0.84	0.78	0.68	0.000
	International experience of the management team - the average experience in internationalization of the management team is of 10 or more years (Yes=1)	0.16	0.58	0.37	0.37	0.13	0.16	0.000
	Education level of the management team - Three out of the four member of the management team have tertiary degree (Yes=1)	0.32	0.48	0.54	0.37	0.7	0.55	0.001
	Diversity of management capabilities - the management team includes individuals from 2 or more distinct courses (e.g., Engineering and Economics) (Yes=1)	0.58	0.56	0.54	0.42	0.52	0.55	0.052
Technological competencies	Engineers in total employees (%)	8.1	9.6	17.7	18.5	62.6	46.8	0.000
	R&D intensity (%)	2.3	2.0	1.1	2.6	20.4	7.5	0.000
	Employees with tertiary degree in total employees (%)	30.3	17.5	25.2	42.0	81.4	71.5	0.000
	Foreign language speakers' employees (%)	33.9	24.3	34.4	56.8	89.0	82.8	0.000
	The firms made a product innovation in the last 3 years (Yes=1)	0.47	0.73	0.50	0.60	0.93	0.62	0.000
	The firms made a process innovation in the last 3 years (Yes=1)	0.68	0.72	0.58	0.54	0.85	0.65	0.000
	The firms made an organizational innovation in the last 3 years (Yes=1)	0.47	0.66	0.67	0.61	0.70	0.66	0.518
	The firms made a marketing innovation in the last 3 years (Yes=1)	0.58	0.58	0.50	0.66	0.65	0.61	0.442
Not explicitly measurable resources	Gross Value added per employee (thousand€)	20.9	30.7	33.9	49.9	26.1	31.1	0.446
Type of markets SME target for exporting	Low Income Countries*	0.00	0.09	0.06	0.14	0.16	0.10	0.301
	Lower-middle income countries*	0.27	0.25	0.24	0.35	0.31	0.20	0.147
	Upper-middle income countries*	0.00	0.10	0.06	0.03	0.13	0.12	0.068
	High income countries*	0.87	0.80	0.18	0.64	0.47	0.47	0.000
	Advanced emerging market*	0.20	0.16	0.00	0.17	0.25	0.21	0.304
	Secondary emerging market*	0.27	0.19	0.12	0.16	0.09	0.16	0.597
Resource commitment and knowledge about foreign markets	Development and production of goods and services to specific foreign markets (Yes=1)*	0.53	0.60	0.71	0.54	0.50	0.49	0.267
	Employees exclusively dedicated to internationalization activities (Yes=1)*	0.53	0.72	0.71	0.79	0.59	0.74	0.113
	The management team makes, on average, 4 or more trips to foreign markets (Yes=1)	0.16	0.40	0.42	0.31	0.35	0.32	0.057
Internationalization degree	Export intensity (%)	25.6	44.7	20.5	32.4	19.0	31.1	0.000
	Number of foreign markets/countries*	7.67	10.41	4.24	7.01	5.19	5.42	0.000
	Turnover associated to three main foreign markets* (%)	36.0	50.1	35.4	42.4	32.0	41.2	0.001
	Number of foreign subsidiaries*	0.07	0.34	1.06	0.26	0.31	0.90	0.000
Entrepreneurs' intellectual and social capital	Use of business plan by the executive team*	0.13	0.14	0.12	0.18	0.22	0.29	0.038
Dependency of Partnerships and others market actors	Number of partnership with large firms*	0.73	1.13	1.00	0.79	0.97	1.12	0.465
	Number of partnership with other (SME) firms*	5.47	4.82	2.35	4.26	2.72	2.84	0.427
	Number of partnership with S&T organizations*	0.00	0.22	0.00	0.18	0.16	0.65	0.000
	Turnover associated to the network partners* (%)	24.4	27.1	20.6	27.7	19.4	28.2	0.538
	Exclusively exports (Yes=1)*	0.93	0.80	0.41	0.72	0.41	0.35	0.000
	Exports + FDI (Yes=1)*	0.00	0.08	0.06	0.14	0.00	0.11	0.113

Source: Calculation based on direct survey, March-April 2011

Note: * In this case the calculations were made according with the 773 firms that are internationalized in order to avoid bias.

Table A6: Differences in means between regions (Non parametric Kruskal Wallis Test)

Variables	Proxies	North (381 firms)	Center (292 firms)	Lisbon (185 firms)	Alentejo (35 firms)	Algarve (13 firms)	Azores isl. (2 firms)	Madeira isl. (4 firms)	Kruskal Wallis test (p-value)	
Cost reduction; High control degree of firm's subsidiaries;	Number of firm employees	46.36	41.84	40.05	16.17	25.23	9.5	23.25	0.000	
	Cooperation in R&D (Yes=1)	0.32	0.27	0.34	0.17	0.23	0.50	0.00	0.172	
Business and internationalization experience	Business experience (firms in business at more than 22 years=1)	0.39	0.43	0.37	0.17	0.31	0.00	0.50	0.082	
	Firms that are internationalized (Yes=1)	0.89	0.83	0.83	0.71	0.62	1.00	0.75	0.006	
	Internationalization experience (internationalized firms at more than 13 years=1)	0.37	0.35	0.28	0.14	0.15	0.00	0.25	0.026	
Management Experience and Capabilities (including of the Entrepreneur)	Commercial or Export Director (Yes=1)	0.83	0.84	0.79	0.74	0.69	1.00	0.75	0.464	
	International experience of the management team - the average experience in internationalization of the management team is of 10 or more years (Yes=1)	0.49	0.48	0.36	0.23	0.31	0.00	0.50	0.005	
	Education level of the management team - Three out of the four member of the management team have tertiary degree (Yes=1)	0.46	0.42	0.58	0.43	0.54	0.50	0.50	0.051	
	Diversity of management capabilities - the management team includes individuals from 2 or more distinct courses (e.g., Engineering and Economics) (Yes=1)	0.49	0.51	0.58	0.57	0.62	1.00	1.00	0.100	
	Engineers in total employees (%)	15.7	16.0	31.5	28.8	28.5	11.5	17.6	0.000	
	R&D intensity (%)	3.5	3.2	5.1	4.3	4.6	57.4	0.0	0.314	
	Employees with tertiary degree in total employees (%)	28.1	28.4	51.4	45.4	48.5	32.1	59.3	0.000	
Technological competencies	Foreign language speakers' employees (%)	35.8	37.0	63.8	59.8	60.3	28.2	57.0	0.000	
	The firms made a product innovation in the last 3 years (Yes=1)	0.71	0.69	0.66	0.57	0.46	0.00	0.75	0.086	
	The firms made a process innovation in the last 3 years (Yes=1)	0.69	0.69	0.66	0.69	0.46	0.50	0.50	0.613	
	The firms made an organizational innovation in the last 3 years (Yes=1)	0.66	0.62	0.68	0.49	0.62	1.00	0.75	0.304	
	The firms made a marketing innovation in the last 3 years (Yes=1)	0.61	0.59	0.61	0.54	0.54	1.00	0.50	0.873	
	Not explicitly measurable resources	Gross Value added per employee (thousand€)	31.7	41.1	31.4	27.8	36.7	10.9	147.4	0.893
		Low Income Countries*	0.06	0.12	0.15	0.08	0.13	0.50	0.00	0.010
Lower-middle income countries*		0.24	0.25	0.31	0.24	0.38	0.00	0.33	0.741	
Type of markets SME target for exporting	Upper-middle income countries*	0.09	0.07	0.12	0.04	0.00	0.00	0.00	0.653	
	High income countries*	0.77	0.69	0.55	0.60	0.88	0.50	0.33	0.000	
	Advanced emerging market*	0.17	0.17	0.16	0.32	0.13	0.00	0.00	0.499	
Resource commitment and knowledge about foreign markets	Secondary emerging market*	0.18	0.18	0.17	0.16	0.00	0.00	0.00	0.821	
	Development and production of goods and services to specific foreign markets (Yes=1)*	0.56	0.61	0.54	0.32	0.38	0.50	1.00	0.062	
	Employees exclusively dedicated to internationalization activities (Yes=1)*	0.75	0.71	0.77	0.40	0.38	0.50	0.75	0.001	
Internationalization degree	The management team makes, on average, 4 or more trips to foreign markets (Yes=1)	0.40	0.34	0.36	0.29	0.15	0.50	0.50	0.357	
	Export intensity (%)	42.0	36.1	34.3	24.7	28.8	25.9	71.9	0.003	
	Number of foreign markets/countries*	9.08	8.52	8.29	7.68	6.88	4.00	15.33	0.578	
	Turnover associated to three main foreign markets* (%)	46.8	48.1	43.7	32.5	36.4	25.5	94.2	0.045	
Entrepreneurs' intellectual and social capital	Number of foreign subsidiaries*	0.36	0.31	0.71	0.20	0.13	0.00	0.00	0.290	
	Use of business plan by the executive team*	0.17	0.11	0.23	0.20	0.25	0.00	0.33	0.067	
Dependency of Partnerships and others market actors	Number of partnership with large firms*	0.97	1.04	1.22	0.76	0.13	0.00	1.00	0.397	
	Number of partnership with other (SME) firms*	4.41	3.9	4.82	4.92	3.25	0.50	3.67	0.176	
	Number of partnership with S&T organizations*	0.17	0.24	0.49	0.16	0.00	0.00	0.00	0.662	
	Turnover associated to network partners* (%)	25.3	26.4	27.8	25.9	18.6	17.0	94.0	0.072	
	Exclusively exports (Yes=1)*	0.74	0.76	0.56	0.72	0.75	0.50	0.33	0.001	
	Exports + FDI (Yes=1)*	0.09	0.09	0.10	0.00	0.13	0.00	0.00	0.734	

Source: Calculation based on direct survey, March-April 2011

Note: * In this case the calculations were made according with the 773 firms that are internationalized in order to avoid bias.

Table A7: Differences in means between Social Capital (Non parametric Kruskal Wallis Test)

Variables	Proxies	Firm w/ 90% or more of Portuguese capital (859 firms)	Firm w/ 10% or more of foreign capital (53 firms)	Kruskal Wallis test (p-value)
Cost reduction; High control degree of firm's subsidiaries;	Number of firm employees	41.93	42.96	0.662
	Cooperation in R&D (Yes=1)	0.30	0.28	0.776
Business and internationalization experience	Business experience (firms in business at more than 22 years=1)	0.39	0.42	0.716
	Firms that are internationalized (Yes=1)	0.84	0.96	0.017
	Internationalization experience (internationalized firms at more than 13 years=1)	0.32	0.47	0.025
	Commercial or Export Director (Yes=1)	0.82	0.79	0.588
Management Experience and Capabilities (including of the Entrepreneur)	International experience of the management team - the average experience in internationalization of the management team is of 10 or more years (Yes=1)	0.44	0.57	0.063
	Education level of the management team - Three out of the four member of the management team have tertiary degree (Yes=1)	0.47	0.58	0.980
	Diversity of management capabilities - the management team includes individuals from 2 or more distinct courses (e.g., Engineering and Economics) (Yes=1)	0.52	0.68	0.210
	Engineers in total employees (%)	19.6	20.6	0.557
Technological competencies	R&D intensity (%)	3.9	2.0	0.095
	Employees with tertiary degree in total employees (%)	33.8	37.9	0.346
	Foreign language speakers' employees (%)	42.7	52.3	0.060
	The firms made a product innovation in the last 3 years (Yes=1)	0.68	0.70	0.823
	The firms made a process innovation in the last 3 years (Yes=1)	0.68	0.66	0.755
	The firms made an organizational innovation in the last 3 years (Yes=1)	0.65	0.62	0.716
	The firms made a marketing innovation in the last 3 years (Yes=1)	0.60	0.62	0.739
Not explicitly measurable resources	Gross Value added per employee (thousand€)	34.5	42.6	0.473
	Low Income Countries*	0.09	0.18	0.043
Type of markets SME target for exporting	Lower-middle income countries*	0.26	0.20	0.282
	Upper-middle income countries*	0.09	0.08	0.854
	High income countries*	0.69	0.75	0.430
	Advanced emerging market*	0.17	0.12	0.297
	Secondary emerging market*	0.18	0.12	0.277
Resource commitment and knowledge about foreign markets	Development and production of goods and services to specific foreign markets (Yes=1)*	0.56	0.69	0.072
	Employees exclusively dedicated to internationalization activities (Yes=1)*	0.72	0.80	0.202
	The management team makes, on average, 4 or more trips to foreign markets (Yes=1)	0.35	0.51	0.022
Internationalization degree	Export intensity (%)	36.9	53.0	0.001
	Number of foreign markets/countries*	8.63	9.59	0.328
	Turnover associated to three main foreign markets* (%)	45.1	61.2	0.001
Entrepreneurs' intellectual and social capital	Number of foreign subsidiaries*	0.38	0.82	0.422
	Use of business plan by the executive team*	0.17	0.18	0.870
Dependency of Partnerships and others market actors	Number of partnership with large firms*	1.02	1.16	0.213
	Number of partnership with other (SME) firms*	4.28	4.92	0.071
	Number of partnership with S&T organizations*	0.24	0.49	0.096
	Turnover associated to the network partners* (%)	24.8	48.0	0.000
	Exclusively exports (Yes=1)*	0.71	0.61	0.110
	Exports + FDI (Yes=1)*	0.08	0.25	0.000

Source: Calculation based on direct survey, March-April 2011

Note: * In this case the calculations were made according with the 773 firms that are internationalized in order to avoid bias.

Table A8: Factorial Analysis results

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Foreign language speakers' employees	-0.822										
Employees with tertiary degree in total employees	-0.812										
Engineers in total employees	-0.675						0.461				
Business experience	0.663										
Number of firm employees	0.595				0.315						
Internationalization experience	0.574										
International experience of the management team	0.455	0.380									
Turnover associated to three main foreign markets		0.818									
Export intensity		0.813									
Turnover associated to the network partners		0.566				0.460					
Employees exclusively dedicated to internationalization activities		0.413									
The firms made an organizational innovation in the last 3 years			0.763								
The firms made a process innovation in the last 3 years			0.754								
The firms made a marketing innovation in the last 3 years			0.735								
The firms made a product innovation in the last 3 years			0.668				0.339				
High income countries				0.691							
Exclusively exports				0.653						-	0.385
Firms that are internationalized		0.388		0.651							
Secondary emerging market				0.502				0.357			
Use of business plan by the executive team				-0.328							
Education level of the management team					0.778						
Diversity of management capabilities					0.707						
Commercial or Export Director					0.584		-0.316				
The management team makes, on average, 4 or more trips to foreign markets											
Number of partnership with other (SME) firms		0.321			0.416						
Number of partnership with large firms						0.751					
Number of foreign markets/countries	0.325					0.609					
R&D intensity							0.531				
Cooperation in R&D							0.646				
Number of partnership with S&T organizations							0.557				
Upper-middle income countries								0.44			
Secondary emerging market								0.711			
Low Income Countries								0.657			
Lower-middle income countries									0.838		
Exports + FDI										0.744	
10% of Social Capital is foreign										0.654	
Gross Value added per employee											0.737
Number of foreign subsidiaries											0.589
Development and production of goods and services to specific foreign markets											-0.357
Variance (%)	12.7	8.7	6.4	5.5	4.8	3.7	3.6	3.3	2.9	2.8	2.8

Factors: (1) Human capital and firm size and experience; (2) Firm export commitment; (3) Innovation; (4) Sophisticated markets; (5) Executive team resources; (6) Firm network; (7) R&D; (8) Emerging markets; (9) Poor markets; (10) Foreign capital exchange; (11) Value added.

Source: Calculation based on direct survey, March-April 2011

Recent FEP Working Papers

Nº 438	Joana Filipa Lourenço Garcia, Francisco Vitorino da Silva Martins and Elísio Fernando Moreira Brandão, " <u>The Impact of Working Capital Management upon Companies' Profitability: Evidence from European Companies</u> ", November 2011
Nº 437	Marta Rodrigues Monteiro, Elísio Fernando Moreira Brandão and Francisco Vitorino da Silva Martins, " <u>A Panel Data Econometric Study of Corporate Tax Revenue in European Union: Structural, Cyclical Business and Institutional Determinants</u> ", November 2011
Nº 436	João Rebelo Barbosa and Rui Henrique Alves, " <u>Divergent competitiveness in the eurozone and the optimum currency area theory</u> ", November 2011
Nº 435	Álvaro Almeida and José Pedro Figue, " <u>Evaluating Hospital Efficiency Adjusting for Quality Indicators: an Application to Portuguese NHS Hospitals</u> ", November 2011
Nº 434	Octávio Figueiredo, Paulo Guimarães and Douglas Woodward, " <u>Firm-Worker Matching in Industrial Clusters</u> ", October 2011
Nº 433	Susana Assunção, Rosa Forte and Aurora A.C. Teixeira, " <u>Location Determinants of FDI: a Literature Review</u> ", October 2011
Nº 432	António Brandão, Luís Guimarães and Carlos Seixas, " <u>The Relationship between Trigger Price and Punishment Period in Green and Porter (1984) Game made Endogenous</u> ", October 2011
Nº 431	Argentino Pessoa, " <u>The Cluster Policy Paradox: Externalities vs. Comparative Advantages</u> ", October 2011
Nº 430	Susana Assunção, Aurora A.C. Teixeira and Rosa Forte, " <u>Do Countries' Endowments of Non-renewable Energy Resources Matter For FDI Attraction? A Cross-country Econometric Analysis</u> ", October 2011
Nº 429	Óscar Afonso and Armando Silva, " <u>Non-scale endogenous growth effects of subsidies for exporters</u> ", September 2011
Nº 428	Mariana Dias and Aurora A.C. Teixeira, " <u>Geopolítica e International Business: uma tentativa de síntese e proposta de enquadramento teórico para aplicação prática</u> ", September 2011
Nº 427	Carina Silva and Aurora A.C. Teixeira, " <u>Empreendedorismo político local em Portugal. Uma análise exploratória</u> ", September 2011
Nº 426	Marta Couto and Aurora A.C. Teixeira, " <u>Festivais de Música de Verão em Portugal: determinantes da participação e a identificação dos seus patrocinadores</u> ", September 2011
Nº 425	Luis Carvalho and Aurora A.C. Teixeira, " <u>Where are the poor in International Economics?</u> ", September 2011
Nº 424	Maria Inês Veloso Ferreira and Aurora A.C. Teixeira, " <u>Organizational Characteristics and Performance of Export Promotion Agencies: Portugal and Ireland compared</u> ", September 2011
Nº 423	Pedro Cosme Costa Vieira, " <u>Está na hora de Portugal sair da Zona Euro</u> ", September 2011
Nº 422	Márcia Daniela Barbosa Oliveira and João Gama, " <u>How we got Here? A Methodology to Study the Evolution of Economies</u> ", July 2011
Nº 421	Vitor M. Carvalho and Manuel M. F. Martins, " <u>Macroeconomic effects of fiscal consolidations in a DSGE model for the Euro Area: does composition matter?</u> ", July 2011
Nº 420	Duarte Leite, Pedro Campos and Isabel Mota, " <u>Computational Results on Membership in R&D Cooperation Networks: To Be or Not To Be in a Research Joint Venture</u> ", July 2011
Nº 419	Sandra T. Silva, Isabel Mota and Filipe Grilo, " <u>The Use of Game Theory in Regional Economics: a quantitative retrospective</u> ", June 2011
Nº 418	Marisa R. Ferreira, Teresa Proença and João F. Proença, " <u>An Empirical Analysis about Motivations among Hospital Volunteers</u> ", June 2011
Nº 417	Marlene Grande and Aurora A.C. Teixeira, " <u>Corruption and Multinational Companies' Entry Modes. Do Linguistic and Historical Ties Matter?</u> ", June 2011
Nº 416	Aurora A.C. Teixeira, " <u>Mapping the (In)visible College(s) in the Field of Entrepreneurship</u> ", June 2011
Nº 415	Liliana Fernandes, Américo Mendes and Aurora A.C. Teixeira, " <u>A weighted multidimensional index of child well-being which incorporates children's individual</u>

	perceptions ", June 2011
Nº 414	Gonçalo Faria and João Correia-da-Silva, " A Closed-Form Solution for Options with Ambiguity about Stochastic Volatility ", May 2011
Nº 413	Abel L. Costa Fernandes and Paulo R. Mota, " The Roots of the Eurozone Sovereign Debt Crisis: PIGS vs Non-PIGS ", May 2011
Nº 412	Goretti Nunes, Isabel Mota and Pedro Campos, " Policentrismo Funcional em Portugal: Uma avaliação ", May 2011
Nº 411	Ricardo Biscaia and Isabel Mota, " Models of Spatial Competition: a Critical Review ", May 2011
Nº 410	Paula Sarmento, " The Effects of Vertical Separation and Access Price Regulation on Investment Incentives ", April 2011
Nº 409	Ester Gomes da Silva, " Portugal and Spain: catching up and falling behind. A comparative analysis of productivity trends and their causes, 1980-2007 ", April 2011
Nº 408	José Pedro Figue, " Endogenous Response to the 'Network Tax' ", March 2011
Nº 407	Susana Silva, Isabel Soares and Carlos Pinho, " The impact of renewable energy sources on economic growth and CO2 emissions - a SVAR approach ", March 2011
Nº 406	Elena Sochirca and Sandra Tavares Silva, " Efficient redistribution policy: an analysis focused on the quality of institutions and public education ", March 2011
Nº 405	Pedro Campos, Pavel Brazdil and Isabel Mota, " Comparing Strategies of Collaborative Networks for R&D: an agent-based study ", March 2011
Nº 404	Adelaide Figueiredo, Fernanda Figueiredo, Natália P. Monteiro and Odd Rune Straume, " Restructuring in privatised firms: a Statis approach ", February 2011
Nº 403	Cláudia M. F. Pereira Lopes, António Cerqueira and Elísio Brandão, " The financial reporting quality effect on European firm performance ", February 2011
Nº 402	Armando Silva, " Financial constraints and exports: evidence from Portuguese manufacturing firms ", February 2011
Nº 401	Elena Sochirca, Óscar Afonso and Pedro Mazeda Gil, " Directed technological change with costly investment and complementarities, and the skill premium ", January 2011
Nº 400	Joana Afonso, Isabel Mota and Sandra Tavares Silva, " Micro credit and Territory - Portugal as a case study ", January 2011
Nº 399	Gonçalo Faria and João Correia-da-Silva, " The Price of Risk and Ambiguity in an Intertemporal General Equilibrium Model of Asset Prices ", January 2011
Nº 398	Mário Alexandre Patrício Martins da Silva, " A Model of Innovation and Learning with Involuntary Spillovers and absorptive capacity ", January 2011
Nº 397	Fernando Governo and Aurora A.C. Teixeira, " Marketing and technology sophistication as hidden weapons for fostering the demand for 'art house' cinema films: a cross country analysis ", January 2011
Nº 396	Liliana Fernandes, Américo Mendes and Aurora A.C. Teixeira, " A review essay on child well-being measurement: uncovering the paths for future research ", December 2010
Nº 395	David Nascimento and Aurora A.C. Teixeira, " Recent trends in the economics of innovation literature through the lens of Industrial and Corporate Change ", December 2010
Nº 394	António Brandão, João Correia-da-Silva and Joana Pinho, " Spatial competition between shopping centers ", December 2010
Nº 393	Susana Silva, Isabel Soares and Óscar Afonso, " E3 Models Revisited ", December 2010
Nº 392	Catarina Roseira, Carlos Brito and Stephan C. Henneberg, " Innovation-based Nets as Collective Actors: A Heterarchization Case Study from the Automotive Industry ", November 2010
Nº 391	Li Shu and Aurora A.C. Teixeira, " The level of human capital in innovative firms located in China. Is foreign capital relevant ", November 2010

Editor: Sandra Silva (sandras@fep.up.pt)

Download available at:

<http://www.fep.up.pt/investigacao/workingpapers/>

also in <http://ideas.repec.org/PaperSeries.html>

www.fep.up.pt

FACULDADE DE ECONOMIA DA UNIVERSIDADE DO PORTO

Rua Dr. Roberto Frias, 4200-464 Porto | Tel. 225 571 100

Tel. 225571100 | www.fep.up.pt