Chapter 3

DRIVERS OF SME INTERNATIONALISATION

Small and medium-sized enterprises (SMEs) represent the backbone of the European economy. In the EU, SMEs comprise 99 per cent of all firms and about 60 per cent of total output in the business enterprise sector[24]. However, SMEs are less likely to enter international markets compared to larger firms suggesting that they face particular disadvantages competing outside their domestic markets. At the same time SMEs are less competitive than their larger counterparts with lower levels of productivity and innovation activities.

Advances in ICT and logistics systems, deregulation of markets, reduced trade barriers, new forms of international financial transfer options, and the establishment of the EU Single Market have reduced the costs of exporting and given SMEs opportunities to enter foreign markets. SMEs tend to enter foreign markets primarily as exporters since doing so requires little capital investment and is therefore less risky. Indirect exports through intermediaries also play a role. This type of exporting is regarded as the least risky entry mode. Foreign direct investment, meanwhile, is considered the second-most important mode of internationalisation[25]. Other forms of internationalisation, such as non-equity contractual modes, are rarely seen in manufacturing and business services. Franchising and licensing, on the other hand, are dominant foreign entry modes in retail, accommodation, and restaurants, where exports do not play a role.

However, not all SMEs face the same opportunities to internationalise their production. Internationalisation strategies differ systematically according to inherent firm characteristics such as initial productivity, skill intensity, innovation activities, and management characteristics. The related literature suggests that internationally active SMEs are generally more productive and more innovative and employ a larger share of skilled workers. That said, there is little evidence available on how these relationships vary across industries and different groups of SMEs (i.e. micro enterprises versus larger SMEs). Similarly, there is little evidence as to whether these differences vary across destination markets.

The factors influencing the internationalisation decisions of SMEs can be divided into two groups: internal firm-specific factors and external factors. Firm-specific factors include firm size, labour productivity, skill intensity, innovation activities, and foreign ownership. External factors consist of home-country characteristics such as export promotion programmes, costs and time involved in exporting, and transport costs; and host-country characteristics such as tariffs, regulations, political risk factors, and geographical and cultural distance.

To the extent that internationalisation is an important strategy used by SMEs to enhance their competitiveness and growth performance, it is clearly important to develop an understanding of the reasons underlying firms' outward internationalisation activities, both in terms of their mode choices and how intensively they engage in them. Such insights can be used to inform policymakers as they continue to develop schemes that best promote SME internationalisation in Europe.

This chapter provides new empirical evidence on the degree and modes of internationalisation of European SMEs using internationally comparable data. It highlights the trends, determinants, and impacts of SME internationalisation while distinguishing between different internationalisation modes, such as exporting and outward FDI activities. In particular, it

[24] Figures are based on Structural Business Statistics 2010. In line with the European Commission recommendation (2003/361/EC), small and medium-sized enterprises (SMEs) are defined as firms with less than 250 employees. Within this categorisation, small firms are those with less than 50 employees, microenterprises less than 10 employees, and medium-sized firms between 50 and 250 employees. The European Commission also definition includes alternative references to annual turnover and balance sheet totals by size class.

[25] Internationalisation modes are described in the first section of this chapter and analysed in subsequent sections. In the context of the EU, SME internationalisation refers to transnational activities outside the EU although intra- and extra-EU distinctions are made where appropriate.

investigates the firm characteristics and key drivers that influence the internationalisation of SMEs. For instance, these firms' export participation varies widely by firm size, industry affiliation, firm age, and destination market. Possible factors influencing the export decisions of SMEs include the initial level of labour productivity, innovation activities, foreign ownership, and geographical location, as well as home- and host-country factors (e.g. business climate conditions and export regulations). Furthermore, it provides evidence on the benefits of internationalisation in terms of firm growth. In addition, the chapter places special emphasis on the internationalisation activities of micro enterprises.

Little is known about the export participation of micro enterprises[26] and their primary export destinations. Several data sources are used to describe internationalisation activities of European SMEs across industries, time, and destination markets[27]. A set of policy conclusions is then developed based on the empirical results.

Section 3.1 provides the theoretical background with an overview of the different internationalisation modes and provides a brief survey of the empirical literature. Section 3.2 investigates the trends, patterns, and sectoral breakdown of SME internationalisation, focusing primarily on SME exporting, the main destination markets and, to a lesser extent, on outward FDI activities. Section 3.3 provides a detailed empirical analysis of the drivers of internationalisation while distinguishing between internal and external factors. Section 3.4 then provides a detailed analysis of the effects of exporting on SME performance while Section 3.5 presents the broader policy dimension.

3.1. SME INTERNATIONALISATION RESEARCH

Internationalisation is a key factor in SME performance in terms of productivity, profitability, innovation, and growth. At the same time, firm size, innovation, and performance are key determinants of SME internationalisation choices and their success in foreign markets. In other words, only the best firms can bear the higher fixed costs of international operations. The costs and the characteristics that enable SMEs to overcome these elements are examined below.

3.1.1. Modes and stages of internationalisation

Possible modes of entry into international markets include direct and indirect exports via a domestic intermediary, non-equity contractual modes (for example, licensing, franchising, and management contracts; subcontracting, long-term contracts and offshoring), and equity-based modes. The latter include foreign direct investment (in the form of both greenfield investment and mergers and acquisitions, or M&As) and other forms of international involvement (such as joint ventures).

Since SMEs face higher resource constraints in terms of financing, information, and management capacity – as well as external barriers such as market imperfections and regulations – they tend to resort more often to forms of internationalisation that require less commitment. This explains why exporting is still the most frequent type of international activity (Welch et al. 2007). For similar reasons, SMEs choose contractual arrangements more often than large firms and prefer minority stakes to full ownership (Nakos et al., 2002).

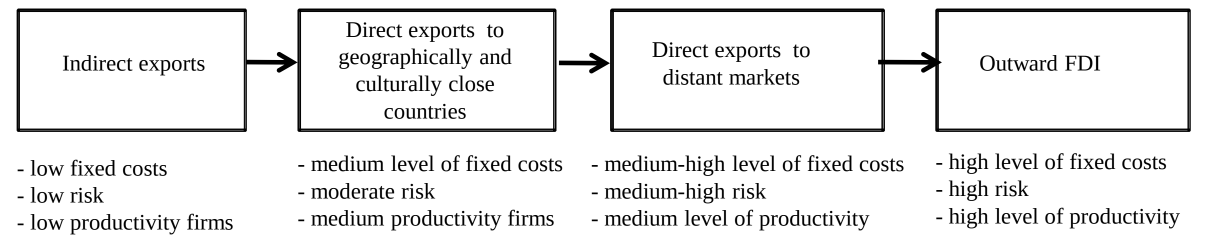
There are two major views of the internationalisation process of SMEs. The first perspective sees internationalisation as a gradual, learning progression from the domestic market in question to foreign operations, often referred to as the "Uppsala model" after Johanson and Vahlne (1977). The second perspective argues that an SME can be born global, meaning that it can be international right from its foundation. Previous literature suggests that SMEs in mature industries are more likely to follow a gradual approach to internationalisation. The "born-global" approach, on the other hand, is more common in technology-intensive firms (Armario et al., 2008).

The gradual approach to SME internationalisation results from incremental decisions (Figure 3.1). SMEs usually start to internationalise by means of ad hoc exporting through domestic intermediaries (indirect exports) before eventually engaging with foreign agents. Indirect exporting is commonly regarded as the least risky entry mode. As sales grow, domestic agents are replaced by their own foreign sales organisations (another aspect of the Uppsala model). Ultimately, rising sales enable firms to begin establishing a production unit abroad. At this stage, complex outward internationalisation activities are often undertaken, including exporting, FDI, and offshoring; followed at the same time, these different internationalisation strategies are complementary to each other. Another feature of this type of gradual internationalisation process is that SMEs start to export to countries that are in close proximity to their respective countries of origin. Close proximity can be defined in several ways; in this context, it includes geographical distance; cultural factors, such as a common language or a former colonial relationship; and political and economic factors. After some time, companies expand their activities to more distant markets. Within the gradual approach, the internationalisation decision is limited by two main

[26] Note that micro firms with less than 10 employees account for the majority of firms in the European Union with a share of 94 percent of the 24 million firms in 2010 (Eurostat New Cronos).

[27] Previous studies on internationalisation of SMEs using comparable data can be found in OECD (2013).

Figure 3.1: Stages of the internationalisation process of SMEs



factors: firms' resources and information problems. To minimise risk, firms choose foreign markets with less uncertainty. It should be noted that the gradual approach to SME internationalisation implicitly assumes that exports and FDI are substitutes.

However, it is likely that exports and FDI are complementary (Markusen, 1997). This suggests that SMEs may start to export and open up a foreign affiliate at the same time. The born-global approach, meanwhile, involves technology-intensive firms entering a number of foreign markets at the same time. These firms exhibit the innovativeness necessary to succeed in international markets.

3.1.2. Productivity and internationalisation of SMEs

Serving a foreign market, either through exports, foreign production, or contractual modes, is an opportunity for SMEs[28], but one that comes with costs. In particular, firms engaging in international activities face both variable and fixed, often sunk, costs. These costs act as barriers to internationalisation by preventing some firms from making profits in international markets. Only the best firms can extract a profit from their international operations once they have borne the cost of doing business abroad. It is then rational for only a few firms (those achieving higher performance *ex ante*) to bear the cost of internationalisation. It is likely that exporting involves some sunk costs – due to the need to acquire information on foreign markets and find suitable contacts for selling products abroad – and substantial variable (transport) costs, while foreign production entails higher fixed (and sunk) and lower variable costs. As can be seen in Figure 3.1, this encourages the best performers to become multinationals; the intermediate performers to become exporters; and the worst performers to focus on their domestic markets, serving foreign markets through indirect exports, or end their business endeavours. This idea, formalised by Melitz (2003) echoes the much older idea put forward by Hymer (1960), who suggests that firms operating in foreign markets need to overcome some liability of foreignness. Therefore, only firms that have certain market power can do business abroad, which mainly comes from possessing proprietary assets (such as patents, or, more generally, firm expertise) that enable them to achieve superior performance, which Dunning (1970) describes as ownership advantages. For SMEs, these costs of doing business abroad can be a major obstacle. In particular, the presence of the fixed costs of internationalisation affects the profitability of international operations more for smaller firms than for larger ones.

A large number of studies have investigated the extent to which higher productivity explains firms' internationalisation decisions. A robust finding in these studies is that more productive firms are more likely to export (see Greenaway and Kneller, 2007 and Wagner, 2007 for surveys). This fact has also been confirmed in studies based on internationally comparable firm-level data (ISGEP, 2008; Mayer and Ottaviano, 2007). Particularly interesting is the fact that the productivity premium of exporting is larger for SMEs, while large exporting firms are not always more productive. This is consistent with the idea that larger firms are in a better position to bear the sunk costs of exporting, while only very productive SMEs are able to engage in exporting. In general, the relationship between productivity and exporting goes in both directions, which makes it difficult to draw conclusions about causality. The two way relationship between exports and productivity is usually referred to the "selection hypothesis" (Bernard and Jensen, 1999; and Bernard and Wagner, 1997) versus the "learning-by-doing" hypothesis (Clerides, Lach and Tybout, 1998). By and large the evidence is in favour of the selection of more productive firms into exporting (Wagner, 2007).

Castellani and Zanfei (2007) find evidence that companies with the highest international involvement, namely firms with production activities abroad, are characterised by the highest productivity premiums, greatest R&D efforts, and best innovative performance. In line with the idea that foreign production entails higher fixed costs than exporting, there is evidence that the productivity of firms that are about to engage in FDI is higher than that of future exporters.[29] While evidence on the role of

[28] A review of the factors that affect internationalisation decisions of SMEs can be found in Leonidou (2004) and Leonidou et al (2007).

[29] See, among others, Barba Navaretti et al. (2010), for France and Italy; Arnold and Hussinger (2010) for Germany.

productivity in the internationalisation choices of SMEs is scarcer, the findings of Hollenstein (2005) for a large sample of Swiss SMEs suggest that labour productivity is more important as a determinant of initiating foreign production than of exporting.

The role of trade intermediaries can also be motivated by the theoretical model of Melitz (2003). The largest firms choose a direct distribution channel to reach foreign consumers themselves (Blum et al, 2010). Less productive firms opt for intermediation by pairing up with large trading firms to export indirectly. Ahn et al. (2011) find that the fixed cost of selling to an intermediary in a firm's own country is lower than the fixed cost of exporting directly. This leads to a sorting process in which the most productive firms export directly, less productive firms export through intermediaries, and the least productive active firms sell only on their respective domestic markets. This is confirmed using data from the Business Environment and Enterprise Performance Survey (BEEPS) for Eastern European countries (McCann 2013). In another finding consistent with this theoretical framework, Abel-Koch (2013) reveals that the propensity of indirect exporting decreases with firm size, while direct exporting becomes more important as firms get larger. In fact, indirect exporters are mostly small firms that are not profitable enough to cover the high fixed costs of building their own distribution networks abroad. Overall, the literature suggests that intermediaries play an important role in facilitating entry into foreign markets, as well as in export discovery and the experimentation of firms with uncertain profit horizons on their exports.

3.1.3. Internationalisation and firm growth

The link between export participation and firm growth and/or performance has been studied for quite some time. Since the seminal work of Bernard and Jensen (1999) on a large sample of US firms, the literature has found a consistently positive effect of exporting activities on firm employment and sales. Results based on European firm-level data shows that exporting activity has a positive causal effect on firms' employment and/or sales growth (see, among others, Wagner 2002 for Germany and Serti and Tomasi 2008 for Italy). Furthermore, there is also evidence that commencing production activities abroad (or offshoring) has a positive causal effect on sales and the value added by domestic activities.[30] In the case of SMEs, Lu and Beamish (2006) find that while the effect of exporting and FDI on profitability is mixed, internationalisation unequivocally boosts firm growth. Sapienza et al. (2006) show that early internationalisers are more likely to grow rapidly than older entrants because of the "learning advantages of newness". Golovko and Valentini (2011) introduce the hypothesis that innovation and exporting are complementary strategies for SME growth. Participating in export markets can help firms learn, thereby enhancing their innovation performance. At the same time, firms can enter new geographical markets with novel and better products which makes their exports more successful and also improves the quality – and consequently increases the sales – of the products they offer domestically. In broad terms, the effect of innovation activities on firm growth rates is higher for firms that also engage in exports, and vice versa.

3.1.4. Drivers of and barriers to internationalisation

The barriers and other factors that influence SMEs are typically divided into internal and external factors. The former are those associated with influences in the "corporate environment of the firm", while the latter originate in the "firm's domestic or foreign external environment" (Leonidou 2004; Leonidou et al. 2007). Figure 3.2 provides a synthetic overview of the drivers of internationalisation. In addition to internal and external factors, those of an operational or informational nature are often considered. Operational barriers occur within the process of exporting, while informational barriers are linked to identifying, selecting and contacting international markets.

Internal factors

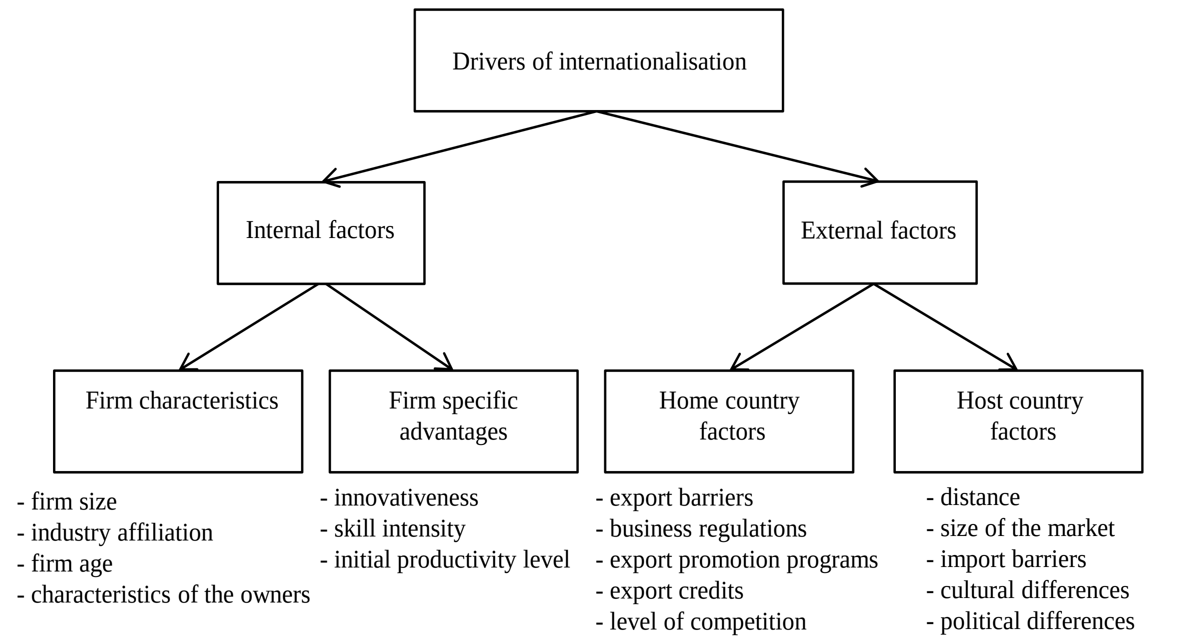
Internal factors include human resources and managerial knowledge, technological innovations, ICT capacity, and firm size. Previous empirical evidence shows very clearly that larger firms are more likely to export and also exhibit better export performance (see e.g. Wagner 2001; and Harris and Li 2009). However, there are differences between manufacturing and service SMEs. A possible explanation of the negative dependence of exporting on firm size is that SMEs – and especially micro enterprises – have lower resource capacities in terms of financing, knowledge, and managerial experience.

Human resources and related expertise

Inadequate managerial knowledge is often considered a major barrier to exporting (OECD 2009). The corresponding management factors include level of international experience, foreign language proficiency, scope of vision, and market knowledge. According to Leonidou et al. (2007), these skills are mainly related to three proactive drivers: special managerial interest/motivation, utilisation of special managerial talent/skills/time, and management trips overseas. In addition, not only management factors, but the general lack of qualified human resources is also regarded as a main internal export barrier.

[30] See, for example, Wagner (2011) for Germany; Hijzen et al. (2011) and Barba Navaretti et al. (2010) for France.

Figure 3.2: Drivers the internationalisation process of SMEs



Studies based on European SMEs show that foreign language proficiency and international experience are important drivers of internationalisation (Castellani and Zanfei 2002 and 2004; Dow and Larimo 2009; Fernandez-Ortiz and Lombardo 2009; Herrmann and Datta 2006; Nakos and Brouthers 2002). In contrast, management trips overseas are regarded as the least influential factor in decisions to internationalise (Leonidou et al. 2007; Fillis 2008). Managers' demographic attributes (age, educational level) and personalities/subjective characteristics (attitude towards risk, perception of costs/benefits, commitment) can also affect these decisions. Serra et al. (2012) find that manager education is a key determinant of the propensity to export.

Technological innovation

In addition to the initial level of productivity and human resources, innovation activities are generally identified as the other main determinant of internationalisation. Successful product innovations in particular are a prerequisite of doing well in international markets. However, the evidence of other indicators of innovation activities is less clear. There is also a relatively broad consensus that firms that introduce product innovations are *ex post* more likely to export. For instance, using Community Innovation Survey (CIS) data for two time periods in Belgium, Van Beveren and Vandenbussche (2010) find that Belgian firms self-select into innovation in anticipation of export market entry rather than that technological innovations drive entry to the export market. This indicates that firms start exporting after successful introduction of new products and production processes.[31] Based on SMEs in the UK, Añón Higón and Driffield (2010) find that exporting businesses are also characterised by high levels of both process and product innovation. Using matching CIS data for the UK, Criscuolo et al. (2010) show that globally engaged firms (multinational firms and exporters) do generate more innovation output and use more knowledge input. However, there appears to be a two-way relationship between exporting and technological innovation: export entry or export intensity are likely to boost technological innovation, and successful innovation is likely to lead to higher exports. For instance, Love and Ganotakis (2013) analyse the effect of exporting on the subsequent innovation performance of a sample of high-tech SMEs based in the UK. They find that exporting subsequently helps high-tech SMEs innovate. For Spanish firms, Esteve-Perez and Rodriguez (2013) show that engaging in export activities increases a firm's chances of also engaging in R&D activities, which in turn makes the firm's export activities more likely to succeed. Siedschlag and Zhang (2014) find that in Ireland, foreign ownership and engagement in exporting are positively linked to innovation output over and above other firm characteristics such as size and industry affiliation.

ICT capacity

Technological advances like the internet have reduced the costs of exporting and led to new opportunities for SMEs to extend their business into

[31] See, also among others, Basile (2001) for Italy; Roper and Love (2002) for the UK; Cassiman and Golovko (2011) for Spain.

global markets. However, it is not only online sales that directly contribute to exports through the use of ICT; internet technology has also been increasingly integrated into marketing activities. Having a website is important because it attracts potential customers from abroad and makes it possible to place an international order. The internet can be an alternative to a physical market presence and traditional market intermediaries in establishing direct customer contacts (Lohrke et al. 2006) and providing better customer service and support. Additionally, the internet facilitates information gathering on competitors, specific markets, and above all, customers (Borges et al. 2009). Overall, the use of the internet may reduce the costs of entering foreign markets and the per-unit cost of exporting once a market presence is established.

Empirical evidence on the role of ICT in trade is scarce, being based mainly on aggregate country-level data rather than on firm-level data. (Freund and Weinhold 2004). Firm-level studies show that that online activities affect export sales (Bennett 1997), emphasizing how internet technology is used (Morgan-Thomas and Bridgewater 2004) and that ICT – in combination with offline strategies – drives export performance (Sinkovics et al. 2013). Previous literature finds that ICT-intensive firms perform better and internationalise faster and more extensively than less ICT-intensive firms (Aspelund and Moen 2004). Morgan-Thomas and Jones (2009) show that firms with fast-growing exports rely heavily on ICT. Morgan-Thomas (2009) distinguishes among different types of online capabilities, and the empirical results show that the key benefit of internationalising lies in supporting customer relationships rather than in online sales. Further, separate research on the use of eBay sales data from five countries explains how this platform has opened up export markets to SMEs at lower costs (Martens 2013).

External factors: home- and host-country factors

The characteristics of home and host markets, as well as the policies of governments at home and abroad, are drivers of international engagement. These characteristics include gravity factors (geographical and cultural distance, size of the domestic and host markets), business and export regulations in the home and host markets, including tax considerations, and quality of transport infrastructure. Surveys among European SMEs reveal that SME export decisions are primarily motivated by the growth and size of the host market in question, combined with a small domestic market size (see Crick 2007b). Home-country characteristics include business and export regulations and export promotion programmes. The lack of domestic governmental assistance/incentives and unfavourable domestic rules and regulations in general (e.g. costs of starting a business) and export regulations in particular can be severe barriers to internationalisation (Leonidou 1995). Export regulations increase the costs of exporting. These costs to export include documents (fillings of export declarations and supporting documents), administrative fees for customs clearance and technical inspection, customs brokering fees, terminal handling charges, and inland transport. Other costs occur due to safety and security legislation, labelling rules and packaging requirements. Therefore, efficient customs administration and the availability of standardized and harmonized trade documents are crucial to success in exporting.

Export Promotion Programmes (EPPs) are provided by governments to help firms – particularly SMEs – overcome perceived obstacles to exporting. They can be classified as the following direct measures: (i) country image building (e.g. advertising and promotional events); (ii) export support services (e.g. export training and technical assistance); and (iii) marketing (e.g. trade fairs and export missions), market research, publications (e.g. market surveys), and trade finance support (export credits, export guarantees/insurance) (Lederman, Olarreaga, and Payton 2006). Governments set up export credits through direct loans, subsidies, insurance and guarantees (Fleisig and Hill 1984). These tools are intended to help firms overcome financial and liquidity difficulties related to their international activities or credit constraints. Export guarantees are mainly provided on exports to countries that present significant political risks. However, SMEs are underrepresented in these distant markets (see Section 3.2). It should be emphasized that the use of selective export subsidies is currently severely limited by WTO rules. Previous studies show that export credits and guarantees have a positive impact on the level and intensity of exports (see Janda et al, 2013, and Badinger and Url, 2013). Even though governments have extensively adopted EPPs, various studies point out that SMEs have a limited awareness of such measures and do not actively use them (Hauser and Werner 2010).

With respect to outward FDI activities, Svetličič et al. (2007) show that the highest barriers to SME investments are host-country-related factors, including high levels of political risk, unstable investment climates, a systemic lack of transparency, and general instability.

The information gap is still regarded a serious problem for SMEs, even in the current era of extensive information availability (Kumar 2012). The literature shows that SMEs that are unable to gather and use export market information exhibit a lower probability of exporting and lower export intensity (Koksal and Kettaneh 2011). Evidence based on surveys of the UK shows that the inability to contact potential overseas customers is a serious barrier to entering international markets (Crick 2007a; Kneller and Pisu 2007). Using data for Swedish manufacturing exporters, Rundh (2001, 2007) shows that difficulties in finding suitable distribution channels as well as insufficient knowledge of the procedures involved in international business are very important barriers together with competitors' control over the distribution system[32].

Combined internal and external considerations

Overall, SME decisions to engage in foreign markets depend on not just one, but a combination of internal and external factors. More innovative and productive SMEs are more likely to export, and also exhibit higher export intensity. However, the evidence of the impact of internationalisation on productivity is mixed. Learning-by-exporting occurs in specific circumstances, and while there is robust evidence that the internationalisation of SMEs has a positive impact on firm growth, there are still few studies that rigorously investigate its causal effects. A recurring finding in the empirical literature is that micro enterprises are most often not distinguished from larger SMEs. Furthermore, few studies distinguish between exports of goods and exports of services.

SME international expansion is impaired mainly by knowledge-related weaknesses and by external barriers, such as strong competition and difficult access to foreign markets due to existing business regulations and distribution channels. In order to overcome obstacles to internationalisation, the research reviewed above emphasizes the skill-related attributes of SMEs: managerial and technological expertise on the one hand, and knowledge of foreign markets, cultures, and institutional and legal frameworks on the other. SME internationalisation efforts are further stimulated by host-country characteristics such as opportunities for sales and profit growth.

With regard to ways in which the relevant barriers can be overcome, two distinct dimensions stand out. The first is the role of home-country government authorities in supporting SME internationalisation processes though a variety of measures related to export and FDI promotion policy. The main challenge underlined by various studies is that SMEs' knowledge and awareness of EPPs is still limited, which lowers their potential impact. The second dimension concerns the decision to expand into foreign markets which is increasingly dependent on ownership and control of products and resources perceived as valuable by foreign firms active in global value/supply chains. Developing relationships with large multinational customers and distributors allows SMEs to gain market and technological knowledge and, most importantly, access to further networks across national boundaries.

3.2. Trends in SME export behaviour

3.2.1. The role of firm size, industry and distance

In order to formulate effective policy strategies that support the internationalisation activities of European SMEs, a detailed empirical analysis of the characteristics of exporting behaviour and other modes of internationalisation is required. This section analyses patterns of SME export behaviour based on firm size, industry, time, and destination market using several different data sources. The main indicators are export participation and the ratio of exports to output. The firm size categories are defined as 0-9, 10-49, 50-250, and 250+ employees. The main databases[33] are the Community Innovation Survey (CIS) 2010 (based on 20 EU countries plus Norway), the Trade and Enterprise Characteristics (TEC) database, and the linked trade statistics, with the Structural Business Statistics (SBS) provided by Eurostat's Esslait project (MMD database). In addition, the Business Environment and Enterprise Performance Survey (BEEPS) data collected by the World Bank is used. The databases differ widely with respect to country coverage, coverage of micro enterprises, industry coverage, definition of exports (exports of goods or exports of both goods and services), export threshold, and available export indicators (export status and/or amounts of exports). Note that the differences in the share of exporting SMEs across the databases are likely related to these factors (see Box 3.1).

Table 3.1 provides basic information on export status (of goods) by firm size for the manufacturing sector in the EU in 2010 based on the TEC database. Given that relatively few manufacturing firms export service products independently of goods exports, the TEC database can provide a fairly precise picture of the export participation of manufacturing SMEs. Among the roughly two million manufacturing SMEs (0-249 employees) in the EU-28, 14.3 per cent export goods to EU countries and 9.7 per cent do so beyond the EU. One can observe that export participation increases strongly with firm size. Meanwhile, 7.9 per cent of micro enterprises, 37.5 per cent of small firms, and 67.0 per cent of medium-sized enterprises export to internal markets, compared to 85.4 per cent of large manufacturing firms. This indicates that the export participation of large firms is about 10 times higher than that of micro enterprises. A similar pattern emerges in observing exports to non-EU countries. It is interesting to note that the difference in export participation between medium-sized and large firms is lower than between micro enterprises

[32] See also Arteaga-Ortiz (2003) for Spain.

[33] See Annex Table A3.1 for a comparison of the data sources.

Table 3.1: Export participation in EU manufacturing (goods excluding services) by firm size based on trade statistics (Intra and Extra EU) in 2010 (percent)

Firm size (employees)	Number of firms	Intra-EU exporters in percent	Extra-EU exporters in percent
0-9	1,629,538	7.9	4.4
10-49	286,738	37.5	28.1
50-249	69,443	67.0	58.4
250+	15,073	85.4	77.1
0-249	*1,985,719*	*14.3*	*9.7*
10-249	*356,181*	*43.3*	*34.0*
Total	2,000,792	14.8	10.2

Note: contains data for 23 EU countries (EU-28 excluding IE, BE, EL, HR and MT). Business enterprise sector excludes financial services, agriculture and non-business public services, NACE Rev. 2 84-99.
Source: Eurostat, TEC database, New Cronos.

Box 3.1: Notes on export data

The section on the patterns in SME exporting activities relies on a number of main data sources. These include the TEC database, which incorporates the number of goods-exporting firms and the export value for intra- and extra-EU trade. Data is available for 24 EU countries (excluding IE, BE, MT and HR) and includes all industries, as well as micro enterprises for the period 2008-2010. Since the TEC database is constructed by linking trade micro data with business registers, these registers determine the size classes at hand. The trade data is taken from three different sources: In extra-EU trade, customs declarations are used, which in practice guarantees nearly comprehensive data collection. For intra-EU trade, Intrastat data on business entities that are subject to Intrastat reporting (mainly larger enterprises) is used, while VAT data is taken for the smallest traders. This also ensures nearly complete data availability at the trader level. Whether an enterprise is subject to Intrastat reporting is based purely on its trade volume, not on other criteria such as turnover. In practice, this means that there is no systematic bias (underrepresentation) of micro companies.

The second database is the Community Innovation Survey (CIS) 2010. It is a representative survey covering all main manufacturing and service industries, with about 160,000 observations based on firms with 10 or more employees. The CIS contains information by region (EU and non-EU countries, along with information on export markets) on whether firms sold goods and services abroad in the period 2008-2010. One limitation of the data set is that its industry coverage is limited to manufacturing, wholesale trade, transport, and financial and business services. Construction is also partly covered.

The third major data source is trade/VAT statistics linked with the structural business statistics collected within the ESSLait project. The resulting Micro Moments Database includes data on the exports of goods and services of firms with 10 or more employees in 12 EU countries[34] and Norway for the period 2002-2010. Information is available for manufacturing and service industries, but it does not include mining, construction and energy, water supply. Service exports are included for most of the countries (except AT, IT, NL, and NO). Each of the main data sources has its merits and shortcomings, such as industry coverage, inclusion of micro enterprises, and coverage of service exports (see Annex Table A3.1 for details).

(less than10 employees) and the medium-sized firms (50-249 employees).

This indicates that SMEs are highly heterogeneous in their export participation behaviour, despite often being treated as one entity. One initial important finding of this chapter is that export participation rates depend significantly on the definition of SMEs (with or without micro enterprises). If micro enterprises are included, this leads to 14.3 per cent export participation rate of manufacturing SMEs, whereas excluding micro enterprises results in 43.3 per cent (both for Intra EU). Results based on two-digit industry data presented in the background report indicate that the gap in export participation between SMEs (0-249 employees) and large firms is smallest in industries characterised by a high skill and/or R&D intensity. CIS data makes it possible to calculate export participation rates for SMEs in the service industries. In the last decade, the tradability of services increased rapidly due to the internet and other technological developments.

Table 3.2 lists export participation rates across broad industry groups, distinguishing by firm size but not by destination market. For SMEs (10-249 employees), export participation is highest in manufacturing (51.7 per cent), followed by information and communication services (40.9 per cent) and transportation (36.2 per cent). An important result is that the gap in export participation between SMEs (10-249 employees) and large firms is much less pronounced in some service industries, most notably in information and communication services and in finance. When medium-sized and large firms

34 AT, DE, DK, FI, FR, IE, IT, LU, NL, SE, SI, UK

Table 3.2: EU export participation of goods and services by firm size and industry 2008-2010 (in percent)

Industry groups based on NACE Rev.2	10-49	50-249	10-249	250+
Mining and quarrying	24.1	47.0	27.8	56.3
Manufacturing	45.5	77.5	51.7	88.9
Electricity, gas, water supply	14.7	12.2	14.0	16.8
Construction	4.1	11.5	4.7	39.9
Wholesale trade	34.3	46.5	35.7	47.1
Transport and storage	35.0	43.2	36.2	50.0
Information and communication	38.6	51.1	40.9	54.9
Financial, insurance activities	17.4	23.7	19.1	25.2
Professional, scientific, technical	24.2	47.6	26.7	62.9
Total	30.7	42.6	32.6	55.1

Note: Sample based on EU-20[35] plus Norway. Weighted by sample weights. Number of firm-level observations is 139,000 (unweighted). Source: CIS 2010 Eurostat, Safe Centre own calculations.

Table 3.3: EU export participation (goods and /or services) by firm size and broad industry groups 2008-2010 (in percent)

	SMEs (10-249)			large firms (250+)		
Industry groups based on NACE Rev.2	EU/EFTA / only	non EU EFTA/only	Both	EU/EFTA / only	non EU EFTA/only	Both
Mining and quarrying	14.7	2.8	10.3	12.8	5.6	38.0
Manufacturing	21.3	2.5	27.9	17.6	1.7	69.6
Electricity, gas, water supply	7.7	0.8	5.5	9.1	1.6	6.1
Construction	3.1	0.9	0.8	14.3	6.1	19.5
Wholesale trade	17.6	2.3	15.9	15.1	1.9	30.1
Transport and storage	21.2	1.8	13.3	22.8	1.6	25.6
Information and communication	15.0	4.1	21.7	16.3	2.0	36.5
Financial, insurance activities	9.2	1.0	8.9	10.9	0.9	13.3
Professional, scientific, technical	11.0	2.7	13.0	13.6	2.9	46.4
Total	14.9	2.1	15.7	15.5	3.4	36.2

Note: EU-20 plus Norway. Weighted by sample weights. See Table 3.2 for further comments.
Source: CIS 2010 Eurostat, Safe Centre own calculations.

are compared, the difference in export participation largely disappears. In summary, another important result of this analysis is that the differences in export participation between SMEs and large firms are much less pronounced in services than in manufacturing.

Another interesting aspect of SME internationalisation behaviour is the export participation rate of those outside the EU. Table 3.3 shows export participation rates across broad industry groups and three destination groups for SMEs based on CIS 2010 data for 20 EU countries plus Norway. The results for SMEs show that exporting to EU/EFTA/candidate countries or serving both markets are the most common ways of serving foreign markets. Interestingly, the share of SMEs that are generally present in markets outside Europe is relatively high in information and communication services at about 25.8 per cent (21.7 plus 4.1 percent), which is close to the 30 per cent (27.9 plus 2.5 per cent) ascertained for manufacturing SMEs. Other service industries are clearly lagging behind (15.7 per cent for professional and technical services, 18.2 per cent for wholesale trade, 15.1 per cent for transportation). To sum up, results show that SMEs in ICT services are much more oriented towards worldwide markets than are other service industries.

Along with export participation, export behaviour is commonly taken as a measure of the export-to-output ratio. However, given that it is more difficult to become an exporter than it is for those already exporting to increase their exports, the export-to-output ratio is commonly seen as less important in describing the export behaviour of SMEs.

Table 3.4 presents the export-to-output shares for the EU manufacturing sector by firm size based on the TEC database. For 2010 the ratio of goods exports to turnover is 22.9 per cent for SMEs and 36.3 per cent

35 BG, CY, CZ, DE, EE, ES, FR, HR, HU, IE, IT, LT, LU, LV, NL, PT, RO, SE, SI, SK

Table 3.4: Ratio of goods exports to output in EU manufacturing by firm size in 2010 (in percent)

Firm size class	Intra-EU total	Extra-EU	Total
0-9	8.5	3.8	12.3
10-49	11.2	5.9	17.2
50-249	19.7	9.5	29.2
250+	21.9	14.4	36.3
10-249	*16.6*	*8.2*	*24.7*
0-249	*15.4*	*7.5*	*22.9*

Note: Aggregate for manufacturing contains data for EU-28 excluding IE, BE, EL, LU, HR and MT).
Source: Eurostat, TEC database, Structural Business Statistics, New Cronos.

Table 3.5: Direct and indirect export participation, EU total business sector in 2008 (in percent)

	5-49	50-249	250+	SMEs (5-249)
Indirect export participation	6.9	14.1	24.5	8.0
Direct export participation	16.2	45.5	56.0	20.5
Indirect and/or direct export participation	19.7	50.2	66.5	24.2

Note: Countries are Poland, Romania, Estonia, Czech Republic, Hungary, Latvia, Lithuania, Slovak Republic, Slovenia, Bulgaria and Croatia. Numbers are weighted using sample weights. The number of observations is 3355.
Source: BEEPS 2008.

for large firms. Again, the export-to-output-value ratio increases with firm size. However, the differences in the export-to-output ratio between micro enterprises and large firms are less pronounced than those seen in export participation. Another important result is that the group of SMEs is highly heterogeneous, with larger differences in export share between micro enterprises and medium-sized firms (17 percentage points) than between medium-sized and large firms (seven percentage points).

Furthermore, it is interesting to note that the export intensity of medium-sized enterprises in the internal market is close to that of large firms (20 per cent and 22 per cent, respectively). However, the export intensity of medium-sized firms in non-EU destinations is much lower than that of large firms. This indicates that even medium-sized SMEs are at a disadvantage when serving distant markets. The analysis above focuses solely on direct exports. SMEs often start to export indirectly by supplying parts or final goods to a domestic distributor/agent or another independent domestic firm[36].

Table 3.5 displays direct and indirect export participation rates for the overall business enterprise sector which show that the total export participation of SMEs increases slightly when indirect exports are taken into account, from 20.5 to 24.2 per cent. Both indirect and direct export participation increases with firm size, indicating that these types of exporting are complementary rather than substitutable.

The findings based on the TEC database in the previous section show that the export participation (defined as exports of goods) of firms increases with firm size. Meanwhile, the export-to-output ratio for manufacturing also increases with firm size, but to a lesser extent. While there is a consistent positive relationship between export participation and firm size, the relationship between export intensity and firm size in services is less clear. The structural business statistics linked with the trade/VAT database can be used to explore the relationship between firm size and export intensity.

Table 3.6 shows the average export-to-output ratio by size classes and broad industry groups. The results for manufacturing industries show that the average export/output ratio increases with firm size. In particular, the gap in export intensity between small and large enterprises is generally larger for intermediate and investment goods than for consumer goods. Furthermore, the results for the manufacturing sector show that SMEs are a highly diverse group of enterprises, with medium-sized firms generally displaying little difference in export behaviour compared to large firms. However, there are large differences in export intensity between the smallest size class and larger SMEs. For the main service industries, however, there is no clear pattern in the relationship between firm size and export intensity. For market services as a whole, the export/output ratios for two groups of small firms are 14.1 and 14.7 per cent, respectively, while the ratios for medium-sized and large firms are 15.0 and 14.0 per cent, respectively. For business and financial services, the export intensity of large service firms is only slightly higher than that of small service firms (12.8 per cent vs. 9.6 and 10.7 per cent). The finding that the export intensity of service firms is less dependent on firm size is consistent with the empirical evidence based

[36] Information on direct and indirect export participation can be calculated using firm level data from the 2008 wave of BEEPS database provided by the World Bank (or from the EFIGE dataset).

Table 3.6: Exports (goods and services) to output ratio, EU-10+NO, 2003-2010 (in percent)				
Industry groups based on NACE Rev.1.1	**10-19**	**20-49**	**50-249**	**250+**
Total manufacturing excluding electrical machinery	19.4	23.6	35.8	47.8
Consumer goods	16.0	22.2	27.9	29.3
Intermediate goods	16.6	20.8	35.0	48.6
Investment goods, excluding electrical machinery	30.6	31.8	48.0	61.8
Electrical machinery & post and communication services	22.0	24.9	38.8	32.9
Market services excl. post and telecommunication	14.1	14.7	15.0	14.0
Distribution	17.9	17.9	17.4	16.0
Financial and business services excluding real estate	9.6	10.7	13.6	12.8
Personal services	2.1	2.5	3.2	4.7

Note: Unweighted means. The sample includes annual data for AT, DK, FI, FR, IT, NL, NO, PL, SE, SI and UK for the period 2003-2010.
Source: ESSLait Micro Moments Database based on the trade/VAT database and Structural Business Statistics.

on data for EU countries (Gourlay et al., 2005 and Harris and Li, 2009 for UK service firms; Eickelpasch and Vogel, 2011 for German service firm; and Lejárraga and Oberhofer, 2013 for French service firms).

A further aspect involves investigating the most important destination markets of these SMEs and the difference to those of large firms. Table 3.7 shows SME export participation in goods by destination region for three EU countries (FR, NL, and SE) by size category. Results for France, the Netherlands, and Sweden show less than 1 per cent of SMEs (0-249 employees) are exporting to China and India in 2010, compared to between 27 and 32 per cent for large firms. The corresponding numbers of SMEs with between 10-249 employees range between 4 and 6 per cent (FR 4.2 per cent, NL 5.6 per cent, and SE 5.7 percent). In particular, very few micro enterprises are exporting goods to the growth markets China and India with export participation rates between 0.1 and 0.2 per cent of the three EU countries in 2010. This indicates that the gap in exporting to growth markets between SMEs and large firms is much more pronounced for micro enterprises than for larger SMEs (10-249). Similarly, very few SMEs are exporting to whole region South and East Asia (including China and India). In contrast, the export participation of SMEs (0-249) to the EU-28/EFTA region is significantly higher, ranging between 2 and 13 percent of the three EU countries.

3.2.2. Other internationalisation activities

As mentioned earlier, the other main mode of internationalisation involves outward FDI activities. Table 3.8 presents a breakdown of SME internationalisation strategies by different categories based on data for the manufacturing sector for four EU countries based on the EFIGE dataset.[37] The different modes considered in the analysis include firms only exporting indirectly; exporting directly and indirectly; directly investing abroad; outsourcing production internationally; exporting and investing abroad; exporting and outsourcing; and exporting, investing, and outsourcing abroad. It is clear from Table 3.8 that direct exporting is the most prevalent internationalisation mode with about 48 percent. Interestingly, 3.6 percent of firms export indirectly only, followed by FDI and international outsourcing each with 0.6 percent. 2.4 percent of SMEs either export and conduct FDI, or combine export with international outsourcing. A very small proportion of SMEs engaged simultaneously in all three internationalisation modes. It is also possible to calculate the percentage of SMEs that have a foreign affiliate. Outward FDI activities are defined as firms directly or indirectly owning 10 per cent or more of the equity of affiliates abroad. The FDI status refers to the year 2012. Of the 1,814,700 SMEs (0-249 employees) in the total business enterprise sector for which data is available in the EU-28, only 52,000 have a foreign subsidiary abroad, which is equal to a share of 3.1 per cent[38] (see Table 3.9).

When comparing the share of SMEs that have a foreign affiliate abroad with those that export, one can conclude that exporting is the preferred internationalisation mode as compared to outward FDI activities. In addition, very few European SMEs have foreign affiliates in markets outside Europe. The share of SMEs with foreign affiliates outside the EU/EFTA region is 1.2 per cent. The corresponding share for large firms is 11.4 per cent.

[37] EFIGE dataset is based on a firm survey undertaken in seven EU member state countries; Germany, France, Italy, Spain, United Kingdom, Austria, and Hungary. The data collected from the EFIGE survey were augmented with additional balance sheet information from the Amadeus database. In this analysis, due to a limited number of observations for some of variables, it was necessary to exclude data for the United Kingdom, Austria, and Hungary.

[38] This number should be interpreted with caution given that micro enterprises and to lesser extent small firms are underrepresented in the Amadeus database.

Table 3.7: Export participation (goods) by firm size and destination markets for selected EU countries (in percent)

Host country group	0-9	10-249	0-249	250+	Total
			France		
EU-28 + EFTA	1.0	18.9	2.0	61.2	2.1
North America	0.3	6.5	0.7	36.9	0.8
South and East Asia incl. China and India	0.4	7.7	0.8	41.3	0.9
China + India	0.1	4.2	0.4	30.6	0.4
			Netherlands		
EU-28 + EFTA	10.8	44.7	12.9	85.4	13.1
North America	0.3	7.8	0.8	33.9	0.8
South and East Asia incl. China and India	0.6	13.9	1.4	60.9	1.6
China + India	0.2	5.6	0.5	27.1	0.6
			Sweden		
EU-28 + EFTA	3.7	30.4	5.2	67.2	5.3
North America	0.5	9.0	0.9	40.1	1.0
South and East Asia incl. China and India	0.5	9.4	0.9	41.2	1.0
China + India	0.2	5.7	0.5	31.8	0.5

Note: Export data refers to exports of goods only. Data refers to the total business enterprise sector.
Source: Statistics France (Insee), Statistics Netherlands, Statistics Sweden. China excludes Hong Kong SAR.

Table 3.8: Internationalisation Activities of SMEs by mode in manufacturing in 2008 (in percent)

	Number	Percent
Purely Domestic Market Traders	3,158	42.5
Indirect Exporters only	266	3.6
Direct Exporters	3,538	47.6
FDI	45	0.6
International Outsourcing	46	0.6
Exporting and FDI	176	2.4
Exporting and International Outsourcing	180	2.4
Exporting, FDI, and International Outsourcing	27	0.4
Observations	7,436	100.0

Note: Categories are mutually exclusive. Direct Exporter category includes firms which only export directly and firms which export indirectly and directly simultaneously. Based on sample of SMEs for France, Germany, Italy and Spain.
Source: Authors' analysis of the EFIGE data set.

The findings so far show that export participation of SMEs is much higher than the propensity to undertake FDI by establishing a foreign affiliate. An interesting question is whether industries with a higher share of exporting SMEs are likely to have a higher share of SMEs with foreign affiliates abroad. In order to investigate the correlation across the two internationalisation modes, the FDI and the export status at the two digit manufacturing level for EU countries for which data is available is compared. Figure 3.3 shows that export participation and the decision to invest abroad go hand in hand.

3.3. Determinants of SME export behaviour

As outlined in Section 3.1, a number of studies have investigated the determinants of SME export behaviour. These determinants can be divided into external and internal factors. External factors include home- and host-country characteristics and business regulations. Internal firm-specific factors include innovation activities, human capital, initial level of productivity, and foreign ownership. As outlined earlier, exporters are more productive, innovative, and skill-intensive than non-exporters. This is due to the fact that only the most productive and innovative SMEs can cover the entry costs associated with exporting. This section reinvestigates the role of the external and internal factors of export participation and export intensity.

Table 3.9: Share of SMEs with foreign affiliates abroad EU-28 total business enterprise sector in 2012 (in percent)

	All destinations	EU-28 and /or EFTA	Non EU-28 and/or EFTA
0-9	2.8	1.8	0.9
10-49	2.1	1.2	0.8
50-249	7.7	4.7	3.2
250+	21.4	15.2	11.4
0-249	3.1	1.9	1.2

Source: Amadeus 2013.

Table 3.10: Correlation between export participation (Extra-EU) and business/export regulations

		0-9	10-249	0-249
Documents to export (number) in 2009	r	-0.40	-0.34	-0.40
	p	0.04	0.09	0.04
Time to export (days) in 2009	r	-0.49	-0.24	-0.53
	p	0.01	0.23	0.00
Cost to export (US$ per container) in 2009	r	-0.28	-0.40	-0.31
	p	0.15	0.04	0.12
Cost of starting a business (% of income per capita) in 2009	r	-0.48	-0.28	-0.50
	p	0.01	0.16	0.01
Share of workers with university degree and above in % in 2009	r	0.50	0.27	0.50
	p	0.01	0.17	0.01

Note: The table reports Pearson correlation coefficients r and the corresponding p-value. Export participation refers to 2010. Business and export regulation indicators are lagged one year and refer to 2009. Countries: EU-28 excluding IE, BE, MT, HR.
Source: TEC, Eurostat, Doing Business Indicators World Bank. Own calculations.[39]

3.3.1. Role of export and business regulations and export promotion

The nature of export regulations in the home market is likely to influence the export participation and export intensity of SMEs. The World Bank has introduced measures of time, costs, and the number of documents necessary for export procedures (World Bank Doing Business indicators). These indicators aim to measure the efficiency of customs regulations and domestic transport infrastructure. In 2013, the cost to export ranged between USD 1,030 per container within the EU (unweighted average across 28 EU countries) and USD 580 in China. In the EU countries, there is a high degree of variation in these indicators, with higher regulations in southern Europe. Furthermore, other country characteristics are also likely to have an influence on the share of exporting SMEs. It is reasonable to expect that participation in international markets increases with the level of economic development and the human capital of the country at hand (ISGEP, 2008).

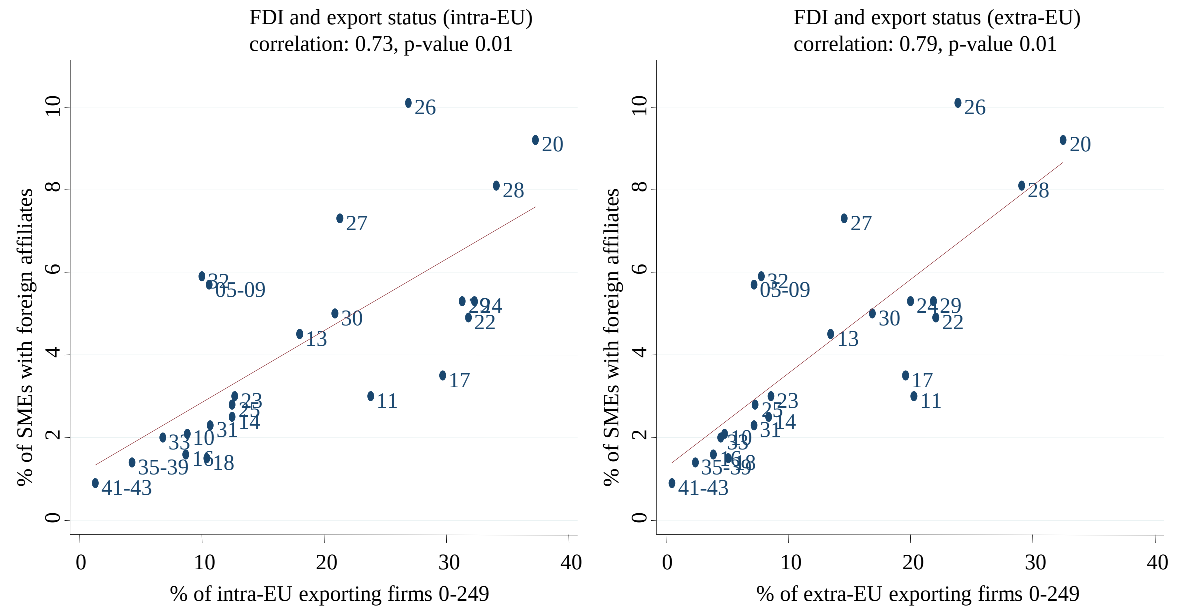
Table 3.10 reports the correlation coefficients and the significance levels between the percentage of exporting SMEs and different types of export and business regulation indicators, as well as other country characteristics.

The correlation coefficients show that the time and number of documents needed to export are significantly and negatively related to SME (0-249 employees) export participation in non-EU countries, with correlation coefficients of -0.53 and -0.40, respectively. For micro firms, one can find similar results. When SMEs are defined as 10-249 employees the correlation for number of documents to export and export participation is still negative but only significant at the 10 percent level. The alternative measure of export barriers – the cost to export in terms of USD per container – is significant for small and medium-sized firms (10-249 employees), with a correlation of -0.40. Given the findings, EU countries should continue to reduce the costs associated with exporting.

With regard to the results of the correlations for entry regulations, one can see that the costs of starting a business are an obstacle to the export participation of micro firms in non-EU markets, with a correlation of -0.48. In contrast, the correlations between the different types of entry regulation and export

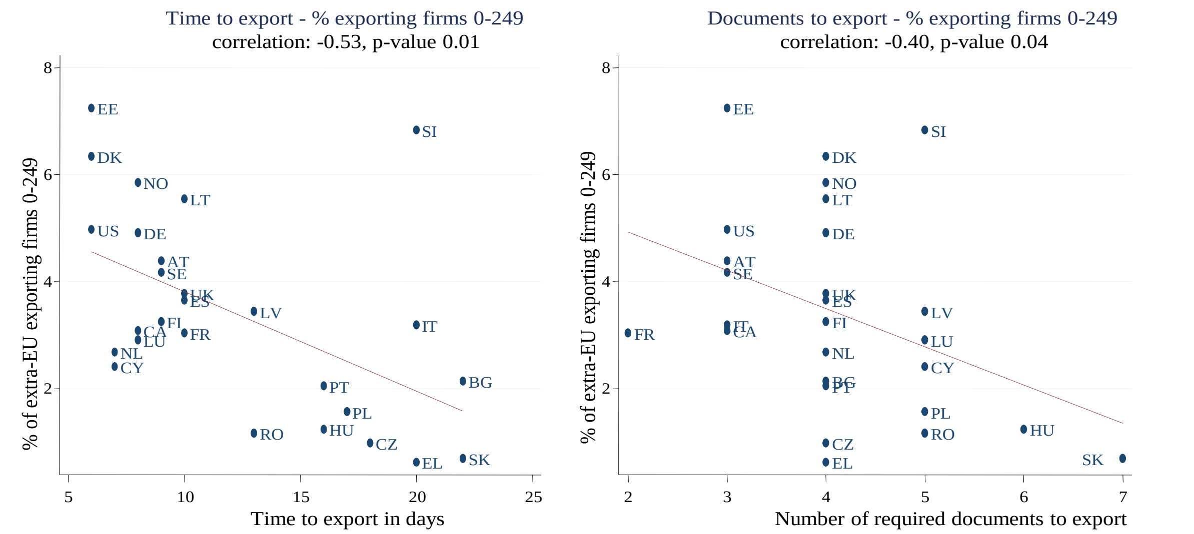
[39] The sample consists of 27 countries: 24 EU member states, the US, Canada, and Norway. Export participation is defined as the number of SMEs exporting to non-EU countries. For the remaining countries, export participation refers to all destinations.

Figure 3.3: Relation between FDI status and export status across EU manufacturing industries



Note: NACE Rev 2. Examples: 20 refers to chemicals, 28 machinery, 26 computers, electronic and optical products, 27 manufacture of electrical equipment.
Source: Amadeus 2013 and TEC database.

Figure 3.4: Export regulation and the share of exporters to non-EU markets



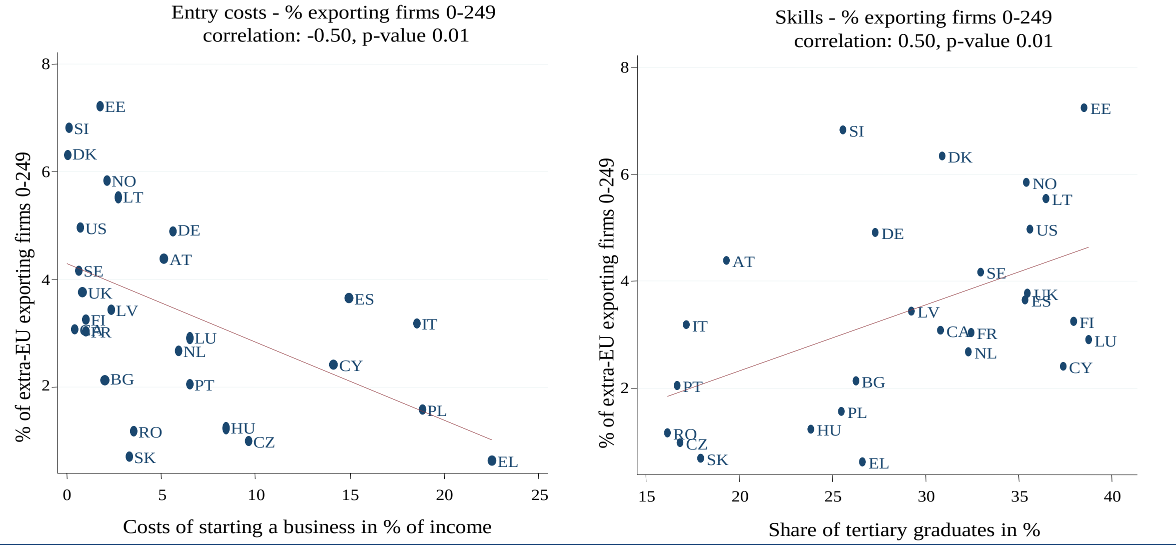
Source: TEC, Eurostat, Doing Business Indicators World Bank, own calculations.

participation are insignificant for SMEs with 10 to 249 employees.

The correlations for the other types of business regulations, such as minimum capital requirements, number of procedures required to start a business, and time (in days) needed to start a business, are generally not significantly different from zero. Furthermore, for micro firms export participation in non-EU markets significantly increases with the share of workers with a tertiary degree (with a correlation of 0.50). The relationships can also be illustrated using scatter plots (see Figure 3.4 for the time and number of documents required to exports and Figure 3.5 for entry costs and human capital).

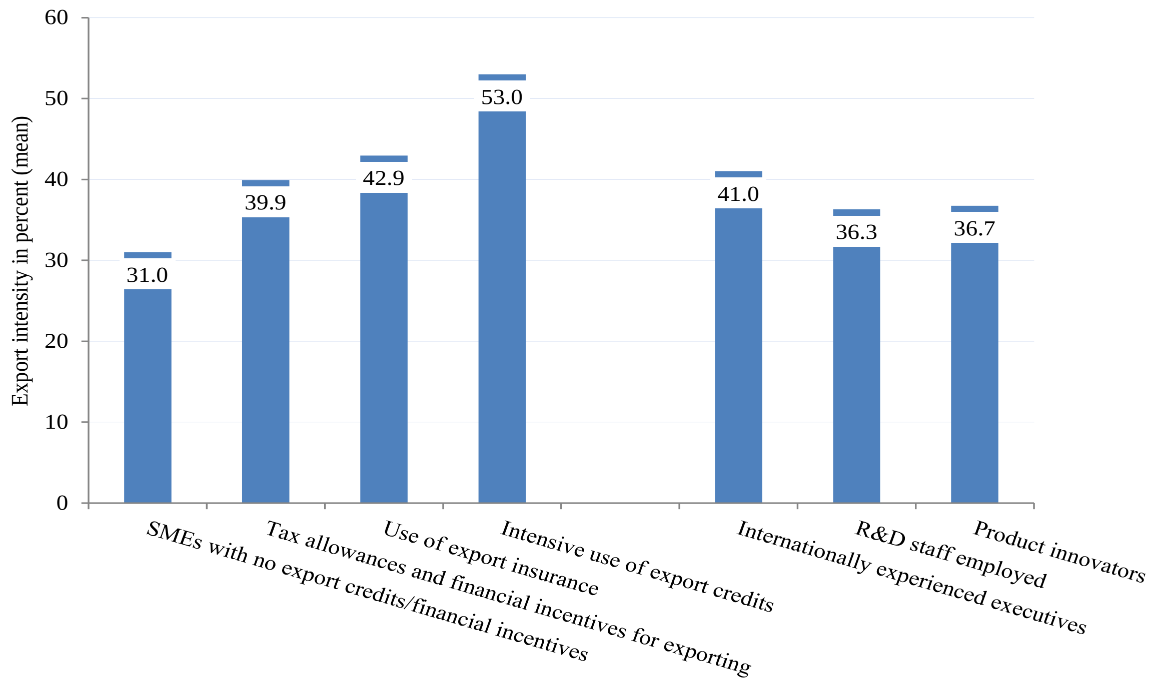
In summary, the results show that improving the business climate and taking export facilitation measures stimulates the exporting activities of SMEs. This holds particularly true for micro firms. Given the results, the EU countries should continue to offer better business conditions and lower export regulations for SMEs. In the last 10 years, a number of EU countries have reduced the time and costs associated with starting a business. In contrast, the cost of exporting has slightly increased in the last five

Figure 3.5: Entry regulation, skills and the share of exporters to non-EU markets



Source: TEC, Eurostat, Doing Business Indicators World Bank, own calculations.

Figure 3.6: Export intensity of SMEs benefiting from export promotion programmes and other factors in 2008 (in per cent)



Note: Based on a sample of SMEs for France, Germany, Italy and Spain. The graph compares the export intensity of SMEs without financial incentives to those benefiting from the different export promotion programmes as well as other variables (SMEs with internationally experienced managers, product innovations and R&D activities). The effects of the variables are partial effects controlling for other firm characteristics and are based on the regression results displayed in Annex Table A3.2.
Source: EFIGE database merged with additional data from Amadeus.

years (by 14 per cent between 2008 and 2013 based on the World Bank Doing Business indicators).

Export Promotion Programmes are another important measure to stimulate exports of SMEs. Figure 3.6 shows that firms benefitting either from export insurance, financial incentives to export, or intensive export credits have significantly higher export-to-output ratios than firms receiving no such support based on estimates for manufacturing SMEs four European Countries (France, Germany, Italy and Spain).[40] The difference between these two groups

[40] The effects are estimated controlling for other firm characteristics (e.g. size, productivity and innovation

ranges between 9 and 22 percentage points (the regression results are presented in Annex Table A3.2).

In terms of the strength of the relationships between policy variables and export intensity, the export credit estimate is the most pronounced, suggesting that SMEs that use export credits intensively have a 71 per cent higher export intensity than those that do not (this is equal to about 22 percentage points higher export intensity given the benchmark of the average export intensity of 31 percent). The finding that export credits and other financial incentives to export are positively related to the export intensity of SMEs suggests that public policies designed to support exporting may be effective in raising SME export performance. The EFIGE data also includes information on firm specific advantages such as R&D activities, product innovations and international experience of managers. These factors are also important in determining the export intensity and export decision of SMEs. Figure 3.6 also shows that SMEs with internationally experienced managers have a ten percentage points higher export intensity (as compared to the benchmark value of the export intensity of 31 percent) while SMEs with product innovations and R&D facilities also have a higher export intensity.

3.3.2. Firm-specific factors: the role of productivity, innovation, and skills

This section investigates differences in firm characteristics between exporting and non-exporting SMEs. It also focuses on investigating whether SMEs that export to EU and non-EU markets exhibit different characteristics than those that only serve the European market. In addition, the role of these factors in the export/output ratio is examined. CIS 2010 data containing information on productivity, innovation activities, and export status is taken for about 110,000 SMEs; for a subset of countries, information on skill intensity is also available. Results based on the CIS data for 2010 show that European SMEs have a lower productivity level than that of large firms. As shown in Figure 3.7, the productivity level of SMEs ranges between 44 and 86 per cent of the level of large firms, with higher values for service industries. Given the lower productivity of SMEs, it is interesting to consider the extent to which participation in international markets helps SMEs catch up with their larger counterparts.

Figure 3.8 shows the relative productivity level of SMEs by industry sector within and outside Europe. The results show that SME export participation and relative productivity level are positively related. In particular, the relative productivity level of exporting SMEs (10-249 employees) is between 10 and 15 percentage points higher than those for non-exporting SMEs As expected, the relative productivity level is higher for SMEs that are present in both markets than for those that are only present in one of the two.

For the business sector as a whole, non-exporting SMEs have a relative productive level of 45 per cent, whereas those exporting to either Europe or countries outside Europe have a productivity level of 55 and 53 per cent, respectively; SMEs exporting to both markets, meanwhile, have a relative productivity level of 60 per cent. The gap in the relative productivity level between non-exporters and exporters to both markets is more pronounced for some service industries. Results presented in the background report indicate that the relationship between export participation and productivity is more pronounced for small firms than for medium-sized firms.

The next step is to investigate whether the productivity premium of exporters is significant across industries. The productivity premium of exporters – or "export premium", which can be defined as an average percentage difference in labour productivity between exporters and non-exporters – can be estimated using the specification based on ISGEP (2008) (see Box 3.2). Table 3.11 contains the results of the robust regression of the exporter productivity premium for the group of SMEs.[41]

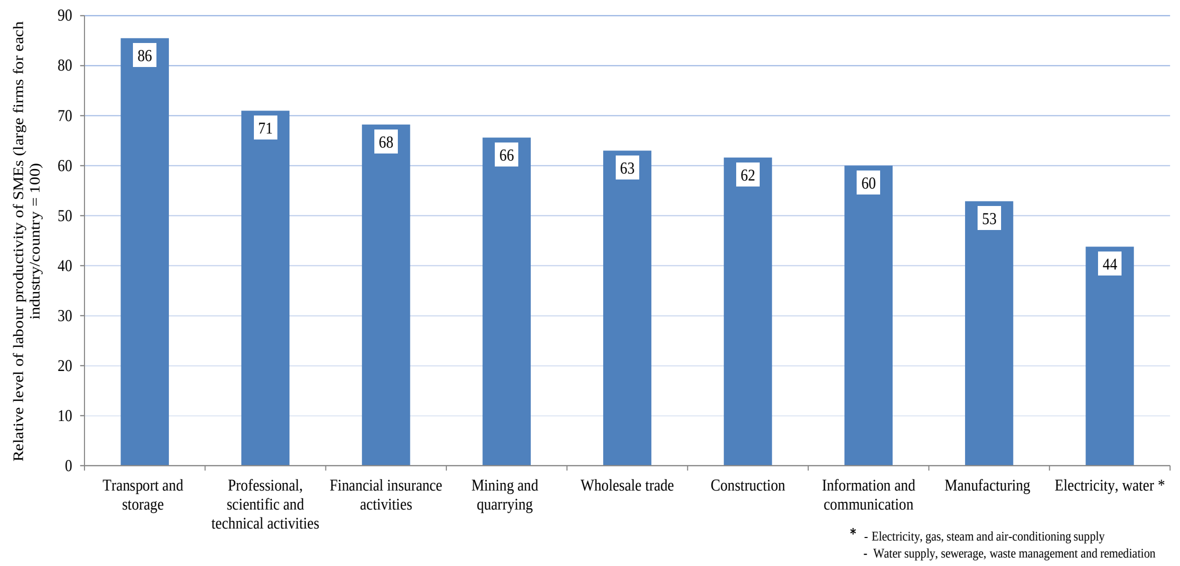
Table 3.12 shows the corresponding results, distinguishing export participation by destination. The dependent variable is the productivity level of SMEs relative to that of large firms (means across industry-country pairs). On average across the 20 EU countries, the productivity level of exporting SMEs is 13 percentage points higher than that of non-exporting SMEs (as compared to large firms). The highest productivity premium of exporters can be observed when SMEs are present in both markets simultaneously.

Innovation activities are another important driver of export activities. Table 3.13 shows that export participation rates are higher for SMEs that introduce new market products, which holds true for all broad industry groups. The difference in export participation between innovative and non-innovative firms, measured in terms of new market products, is greatest in professional services and manufacturing (more than 30 percentage points). This clearly indicates that export participation and product innovations go hand in hand although it is not possible to distinguish between causes and effects

activities). The estimation model is the second stage of the Heckman selection model estimated using data on four EU countries based on the EFIGE dataset merged with additional data from Amadeus for 2008.

[41] Robust regression concerns a weighted least-squares procedure that puts less weight on outliers, achieved using Cook's distance and then performing Huber iterations. See for example Stata (2013).

Figure 3.7: Relative productivity level of SMEs (10-249) relative to large firms by broad industry groups in 2010 (large firms=100)



Note: Relative labour productivity of SMEs is calculated by dividing turnover per employee of SMEs to that of large firms (mean across industry/country cells. Number of observations is 139,000. Country coverage: BG, CY, CZ, EE, ES, FR, HR, HU, IT, LT, LU, LV, NL, NO, PT, RO, SE, SI and SK
Source: CIS 2010 Safe Centre.

Table 3.11: Robust regression estimates of the exporter productivity premium for SMEs (10-249) based on 20 EU countries

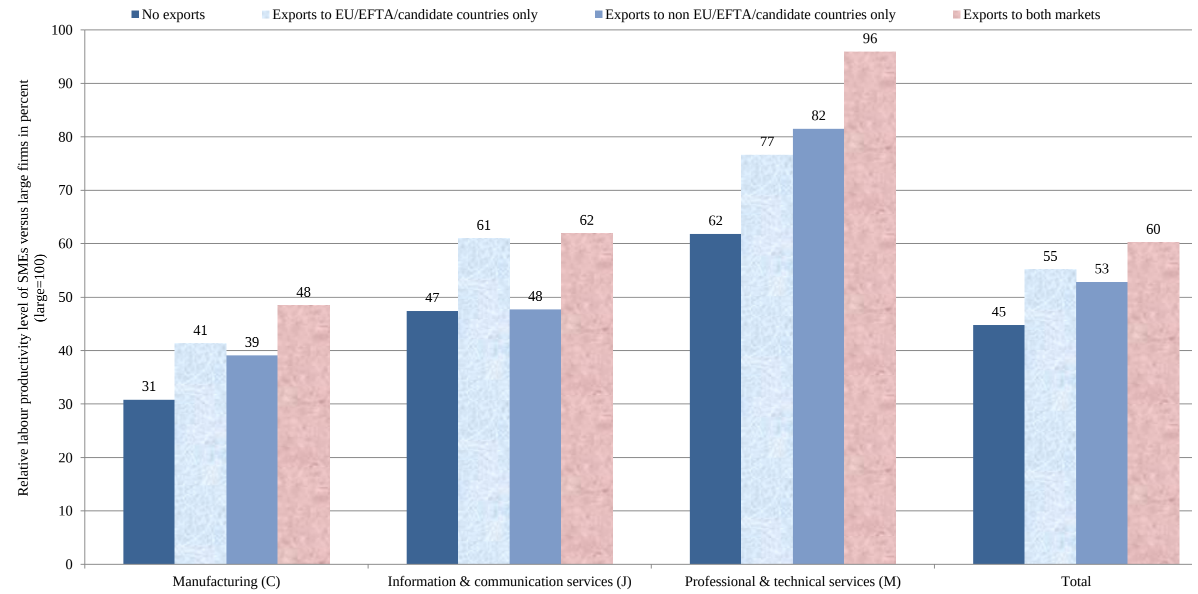
Industry groups based on NACE Rev. 2	coef.	t-value	# of obs	R^2
Total	0.12 ***	69.79	115741	0.13
Manufacturing	0.13 ***	57.57	53118	0.13
Distribution	0.10 ***	22.34	20010	0.11
Transportation	0.35 ***	36.16	8293	0.42
Information & communication	0.07 ***	13.10	7980	0.07
Financial sector	0.09 ***	6.82	3060	0.10
Professional, scientific and technical activities	0.12 ***	17.96	8479	0.12

Note: The table reports robust regression results of the relationship between the relative productivity level of SMEs and the export status following the specification proposed by ISGEP (2008). The percentage effect of export participation on the relative productivity level can be calculated as (exp(ß)-1) multiplied by 100 (Halvorsen and Palmquist 1980). Country dummy variables are included but not reported. Country coverage: EU-20.
Source: CIS 2010 Safe Centre.

because of the two-way dependency between exporting and innovation activities.

Given that there is a positive association between exporting and innovation activities, it is interesting to investigate whether this association is more pronounced for SMEs that export to both European and non-European markets. Figure 3.9 shows the share of SMEs with different types of technological innovations by destination. The results show that SMEs exporting to both markets are more innovative than those that are present in one or the other. In particular, the propensity to introduce new products is 30 percentage points higher for SMEs that export worldwide than for non-exporters (46 versus 16 per cent). In the case of new market products and process innovations, the difference is 21 percentage points.

Figure 3.8: Relative productivity level of SMEs (10-249) by export status and destination by industry based on 20 EU countries (large firms=100)



Note: Weighted by sample weights. Number of observations is 139,000. Source: CIS 2010 Safe Centre.
Weighted by sample weights. Number of observations is 139,000. Country coverage: BG, CY, CZ, EE, ES, FR, HR, HU, IT, LT, LU, LV, NL, NO, PT, RO, SE, SI and SK
Source: CIS 2010 Safe Centre.

Table 3.12: Robust regression estimates of the exporter productivity premium for SMEs by destination (total business enterprise sector)

	Exporter coef.	t-value
Exports to EU/EFTA/candidate countries only	0.08 ***	36.73
Exports to non EU/EFTA/candidate countries only	0.08 ***	15.60
Both markets	0.17 ***	79.47

Note: The table reports robust regression results of the relationship between the relative productivity level of SMEs and the (destination specific) export status. The coefficient measures the exporter productivity premium of SMEs relative to large firms in percentage points. Country coverage: EU-20.
Source: CIS 2010 Safe Centre.

Table 3.13: Export participation of SMEs by market novelties (in percent)

	mining	manufacturing	energy	construction	wholesale trade	transport	I & C	financial sector	professional services
No new markets products	24.8	46.4	12.8	4.3	33.9	35.2	34.7	17.6	22.1
New markets products	50.3	77.7	30.1	15.1	52.8	57.9	55.0	33.4	55.0

Notes: Weighted by sample weights. Number of observations is 139,000. Country coverage: EU-20.
Source: CIS 2010 Safe Centre.

Figure 3.10 lists the shares of exporting SMEs by skill intensity. One can see that the skill intensity and export participation of SMEs go hand in hand. The relationship is more pronounced for SMEs in service industries (e.g. information and communication services, finance, and transportation) with a progressive improvement in SME export participation associated with an increased share of university-educated employees.

As mentioned earlier, SMEs are not only engaged in exporting but also in other internationalisation modes such as investing abroad and international outsourcing. Annex Table A3.3 shows the marginal

Box 3.2: The link between productivity and exporting

It is generally believed that firms improve their relative productivity after they begin exporting (learning-by-exporting effects). However, there is self-selection into exporting caused by the fact that the most productive firms start to export. Following the seminal works of Clerides et al. (1998) and Bernard and Jensen (1999), a large number of studies have investigated the causal effect of exporting on productivity – the learning-by-exporting hypothesis – without reaching a consensus. Some studies find no significant effects of exporting on firm productivity after the self-selection effect is taken into account. A recent extensive review of the literature by Silva et al. (2012) suggests that learning-by-exporting occurs in limited circumstances. In particular, it is more likely to occur: a) among younger firms and new entrants in foreign markets, b) for firms highly exposed to foreign markets, c) only in certain industries, and d) mainly for firms exporting to high-income countries. The use of cross-sectional data does not allow for an investigation of the dynamic relationship between exporting and productivity, but it does make it possible to estimate the "export premium". This is defined as the percentage difference in labour productivity between exporters and non-exporters. In order to account for differences in production technology and capital intensity across countries and industries, the relative productivity level of SMEs relative to large firms is calculated. The relative productivity level is then regressed on export status, country dummy variables, and industry dummy variables:

$$RELPROD_{ijct} = \beta_0 + \beta_1 EX_{ijct,\cdot t-2} + \gamma DCO_{ijct} + \eta DSEC_{ijct} + \varepsilon_{ijct} \cdot ,$$

where i denotes firm, j industry, c country and t time. The dependent variable is the relative productivity level, RELPROD is defined as output (turnover) per employee of SMEs, Y/L^{SME}, in 2010 to that of the average large firms, Y/L^{large} in the same industry and country in 2010 (measured as the mean for each industry in a given country). EX is the export status (goods and/or services) between 2008 and 2010. DCO and DEC are country and industry dummy variables. β_1 expresses the differences in the relative labour productivity between SME exporters and non-exporters. Possible extensions could involve disaggregating export status by export participation in different destination markets. This would make it possible to investigate whether SMEs exporting both within and outside Europe have a higher productivity level than those who are present in one of the two destination regions. Note that, according to ISGEP (2008) the export premium tends to be overestimated since it is not possible to control for firm fixed effects using cross-sectional data.

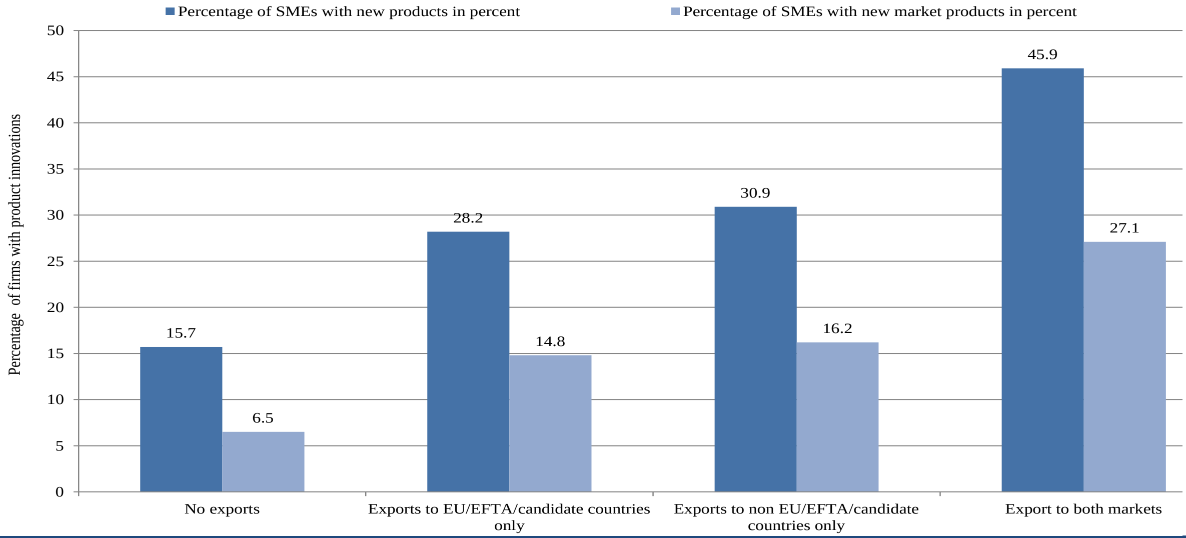
effects of multinomial logit regression of the factors that determine the intensity with which SMEs export, engage in FDI, and outsource internationally.[42] Results show that firm-specific advantages appear to be the main drivers. However, the sign and significance differ widely across the different types of internationalisation modes. Labour productivity is significantly positively related with exporting, with a 1 per cent increase in productivity linked to a three-percentage-point increase in the probability of exporting on average.

However, high labour productivity is not a prerequisite of a high probability of indirect exporting. The finding that productivity is less relevant to indirect exports than direct exports is consistent with the theoretical expectations (e.g. Ahn et al. 2011). In terms of innovative activity, firms that employ R&D workers are more likely to export directly or export. Product innovators are found to be positively associated with active engagement in exporting. Interestingly, firms that protect their intellectual property are found to export more often. Results also indicate that firms that have applied for intellectual property protection are less likely to export indirectly.

The results of the multinomial logit model also indicate that the choices of each form of internationalisation are positively related to firms that are more productive, employ R&D staff and internationally experienced managers, and engage in importing. In addition, older and larger firms are more likely to export and invest abroad, while foreign-owned firms and product innovators have a higher propensity to export. Productivity, employing R&D staff and internationally experienced managers, and importing are positively associated with the intensity of exports (measured as percentage of exports in turnover), FDI, and outsourcing. The importance of firm-specific advantages differs across the main internationalisation modes (exporting and FDI). In particular, the drivers of SME internationalisation are also different for direct and indirect exporting. Product innovations and R&D activities are only relevant to (direct) export decisions. As for the drivers of internationalisation mode intensities, labour productivity is positively associated with firms that are engaged more intensively in exporting, FDI, and international outsourcing. This indicates that the most productive firms are more likely to be internationalised irrespective of the mode of internationalisation.

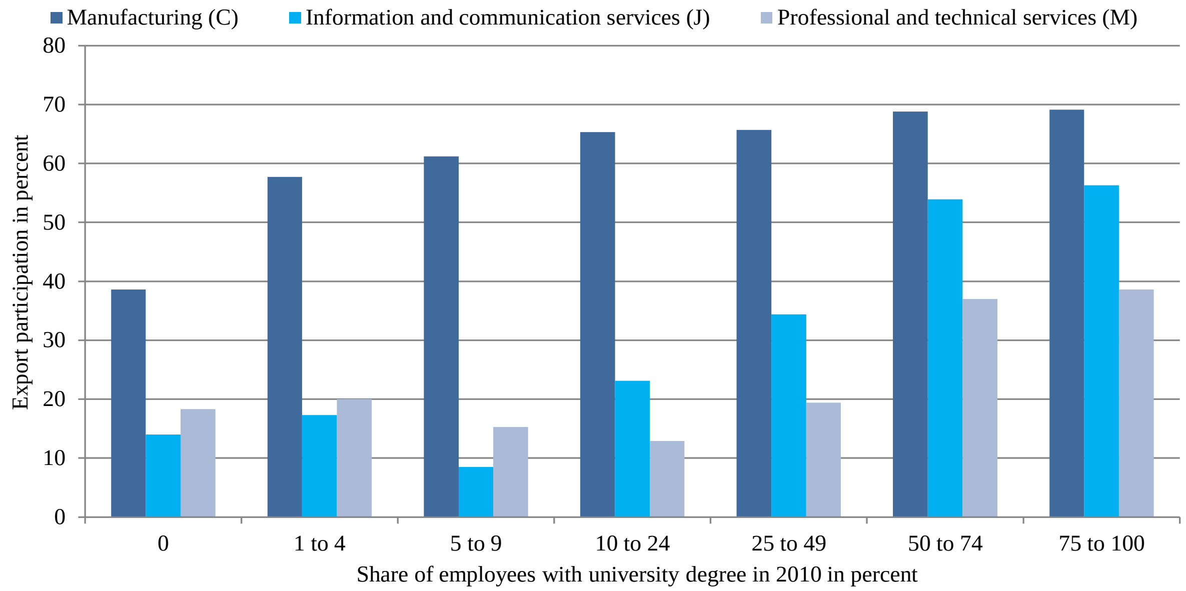
[42] A multinomial logit model is used to predict the probabilities of the different potential outcomes of a categorically distributed dependent variable, given a set of independent variables. Here, the model is used to estimate how various factors influence firms' internationalisation model. See Box 3.3 for details. The results provide measures of association rather than causal effects.

Figure 3.9: Share of SMEs with product innovations by export participation and destination market (10-249 employees)



Notes: Weighted by sample weights. Number of observations is 139,000. Country coverage: EU-20.
Source: CIS 2010 Safe Centre.

Figure 3.10: Export participation of EU SMEs (10-249 employees) by firm skill intensity (in percent)



Notes: Weighted by sample weights. Number of observations is 139,000. Coverage: EU-20.
Source: CIS 2010 Safe Centre.

The findings of the analysis above show that export decisions and export intensity are significantly correlated with both productivity and innovation activities of SMEs which indicates that general framework conditions are important for success in international markets. This also suggests that the successful internationalisation of SMEs is likely to depend on a mix of direct and indirect policies rather than on a single policy instrument. For example, there are likely to be complementarities between policies that promote innovation and those that support trade; policymakers should thus seek to integrate and coordinate such policies. Improvements in framework conditions can lead to higher productivity levels through, for example, the reduction of the costs of doing business, lower mark-ups and better allocation of resources, improved utilisation of production inputs, and greater incentives to innovate.

Box 3.3: Determinants of SME Outward Internationalisation Modes using a multinomial logit model

The determinants of the outward internationalisation mode choices are estimated using a multinomial logit model (MNL). In this analysis, information is available for firms who deal purely with the domestic market, export indirectly, export directly, directly invest abroad, internationally outsource production, export and directly invest abroad, export and outsource abroad, and export, invest and outsource abroad. All groups are mutually exclusive. For the empirical estimation strategy, it is assumed the firm chooses the internationalisation strategy that maximises its profit. Firm profit for each internationalisation mode is expressed as follows;

$$\pi_{icm} = \alpha_{0cm} + \sum \beta_{jm} Z_{icjm} + \gamma_{cm} + \theta_{sm} + \varepsilon_{im}$$

where π_{icm} is the profit of firm i in country c from choosing internationalisation mode m, the firm-specific term Z_{icjm} includes a set of firm controls that are expected to influence their internationalisation mode. β_{jm} is the coefficient corresponding to each variable. γ_{cm} and θ_{sm} are country and industry specific effects which are included to control for respective compositional differences across countries and sectors that may influence firm internationalisation mode selection. Under the assumption that the error term ε_{im} follows the Weibull distribution and under the assumption that profit for the firm that supplies only the domestic market is zero, the probability of firm i in country c choosing internationalisation mode m is expressed as:

$$PR(INT_{ic} = m) = \frac{\exp\left[\hat{\alpha}_{om} + \sum \hat{\beta}_{jm} \hat{Z}_{icjm} + \hat{\gamma}_{cm} + \hat{\theta}_{sm}\right]}{1 + \sum_{m}^{7} \exp\left[\hat{\alpha}_{om} + \sum \hat{\beta}_{jm} \hat{Z}_{icjm} + \hat{\gamma}_{cm} + \hat{\theta}_{sm}\right]}$$

Multinomial logit coefficients are interpreted in terms of relative probabilities. It is necessary to compute marginal effects to reach conclusions on actual probabilities. Accordingly, the marginal effect of each variable is based on the derivative of the probability of each internationalisation mode with respect to the explanatory variable.

Based on the empirical results, several policy implications can be drawn. First, policies aiming to increase the skill levels and R&D indirectly increase the export activity of SMEs. Second, the significance of skill intensity and R&D intensity indicates that SMEs need to improve the quality of their products and services in order to be successful in foreign markets. The significance of foreign ownership indicates that collaborating with large foreign firms is one way for small firms to compensate for their shortcomings in exporting.

3.3.3. The role of ICT as a facilitator of SME internationalisation

The importance of ICT in internationalisation has seldom been explored despite its obvious potential in simplifying international activities, especially for smaller firms and exports of services. In this section, the role of different ICT capacities in the internationalisation of European SMEs is investigated empirically. The ICT capacities explored are: having a website; degree of broadband internet-enabled employees; iii) conducting online sales; and proportion of schooled ICT employees.

Probit model estimates presented in Table 3.14 (and described in Box 3.4) show that ICT is significantly and positively related to the exporting activities of small and medium-sized firms in most of the countries investigated, although the specific ICT capacity that is most important varies to some extent across countries. As can be seen in the table, it appears that basic advantages such as having a website are important for export decisions in a majority of countries, while the e-sales variable remains insignificant. This indicates that even simpler ICT tools may help firms carry out a range of activities from a distance that would otherwise be more difficult and costly. A website makes a firm more visible while enabling it to establish direct contact with customers, strengthen its customer service, and build up a customer-related information system.

A website may also support international advertising and make it possible for firms to tailor their online experience to customers from specific markets. These results are in line with those of Lendle et al (2012), who find that online markets potentially build trust and reduce information friction; and with Freund and Weinhold (2004), who conclude that websites are positively related to exporting activities.

In France, Italy, Norway, Sweden, and the UK, the degree of broadband internet-enabled employees is positively correlated with exporting behaviour even after controlling for firms' human capital. This result may indicate that SME employees in these countries use the internet as a resource in activities connected to exploiting opportunities in international markets, as suggested by Portugal-Perez and Wilson (2012).

Box 3.4: Modelling the determinants of export participation and export intensity

Modelling the export behaviour of SMEs involves two stages: export participation (extensive margin) and export intensity (intensive margin). The probability of exporting can be estimated by a probit or logit model. Bernard and Jensen (2004) show that size, productivity, labour quality, ownership structure, introduction of product innovations and past successes in export markets, are factors that increase the probability to export. For data that includes information on export value, two-part models or Heckman selection models can be employed. A two-part model would describe both the decision to export and the share of exporting SMEs. All explanatory variables are lagged one year in order to mitigate endogeneity problems. However, the regression results do not determine causality but rather provide measures of association. The export intensity equation is conditional on having positive values for exports and is therefore only estimated on a subset of the data. Given that the export share in the second part of the model is bound between values close to zero and one, the generalized linear model (GLM) link is used. In practice, ordinary least squares (OLS) estimation will lead to similar results. Table A3.2 provides results of the Heckman sample selection model. Table 3.14 provides results for the probit model of the export decision.

Access to online transactions, or e-sales, is the third ICT variable investigated. Contrary to expectations, there is no clear evidence of a relationship between e-sales and decisions to export. This indicates that a system for online sales is not enough to support the exporting activities of SMEs. Instead, there could be a further underlying factor related to a lack of trust in online purchases. Alternatively, investments in proper and secure systems for online sales may require resources that are out of reach for certain SMEs, while this would be a lesser concern for larger firms (as indicated by the results of Eurostat, 2012). Employees trained in ICT are another potential resource. According to Schott (2004), highly skilled employees are important in determining the export activities of a firm. Specific ICT skills are also expected to complement other capacities of the firm. The results confirm a positive correlation between ICT-trained employees and export status in four out of the five countries (Denmark, Norway, Sweden, and the United Kingdom) for which data on educational achievement is available.

It is interesting to note that in Norway, Sweden, and the United Kingdom, the positive relationship between the degree of broadband internet-enabled employees and export status applies even when controlling for the proportion of ICT-trained employees. That is, if two SMEs with a similar proportion of ICT-educated employees are compared, the probability of exporting should be higher for the firm that has a larger proportion of employees with fast internet access. This result suggests that internet use creates benefits even when used by employees who are not trained in ICT.

It is likely that the importance of ICT capacities differs between manufacturing and service firms. Results show no clear pattern in the estimates across the two industry groups except for the presence of a website, which is more often related to the export decisions of service firms than those of firms in manufacturing. A similar analysis by Eurostat (2012) based on a data set including a high proportion of large firms renders fewer significant estimates for the relationship between having a website and deciding to export, while the link to online sales is more common. This suggests that the firm size might be a more crucial determinant of its decision to export than its sector.

In policy terms, continuing efforts to support fast internet access, which is indeed one of the key areas of the Digital Agenda for Europe, may still be a plausible solution – at least for countries exhibiting a lower intensity of ICT usage. This would enable small and medium-sized firms to take the first digital step into a new market by establishing a website with core information on their products and services. A natural next step would then be to introduce more advanced activities on the website, such as by allowing online transactions. That said, the difficulty of finding significant links between exporting behaviour and online sales may be related to firms still being resistant or unaccustomed to these kinds of transactions, or simply unable to afford a website with proper sales functions. A secure host platform for online sales serving smaller firms might balance the distorted competition between smaller and larger firms on the one hand and between firms in countries with lower and higher ICT intensity respectively, on the other.

Table 3.14: Determinants of exports decision: Probit estimations, pooled samples over time of SMEs

		AT^{G}	DK	FR	IE	IT^{G}	LU	NL^{G}	NO^{G}	PL	SE	SI	UK
Firm has website	coef	0.11	0.00	0.09 *	0.19 ***	0.24 ***	0.17 **	0.01	0.23 ***	0.21 ***	0.21 ***	0.29 **	0.28
	t	0.55	0.00	1.83	4.27	9.32	2.40	0.09	3.20	6.05	2.96	2.04	0.52
Employee broadband access	coef	0.07	0.06	0.13 *	n.a	0.20	-0.12	0.02	0.35 **	0.05	0.35 ***	0.09	0.99 **
	t	0.29	0.71	1.79		4.52	-1.12	0.23	4.86	0.90	5.35	0.47	2.11
Online transactions	coef	0.05	0.04	0.05	0.07	0.04	-0.06	0.03	0.06	0.06	0.07	0.14	0.41
	t	0.33	0.52	0.75	1.52	0.85	-0.66	0.49	1.35	1.52	1.50	0.82	1.21
ICT-intensive human capital	coef	n.a	0.79 ***	0.24	n.a	n.a	n.a	n.a	0.50 **	n.a	0.50 **	n.a	2.36 **
	t		3.01	0.87					2.12		2.46		2.18
Non-ICT intensive human capital	coef	n.a	0.14	0.69 ***	n.a	n.a	n.a	n.a	-0.62 ***	n.a	0.59 ***	n.a	0.61
	t		0.54	3.63					-3.83		3.22		0.68
Human capital	coef	n.a	n.a	n.a	n.a	n.a	n.a	-0.14	n.a	n.a	n.a	0.08	n.a
	t							-0.67				0.20	
Log wages	coef	0.29	n.a	n.a	0.02	0.20 ***	-0.17 *	n.a	n.a	0.15 ***	n.a	n.a	n.a
	t	1.51			0.39	6.52	-1.81			4.32			
Prior exports	coef	1.39 ***	2.79 ***	2.43 ***	1.96 ***	3.29 ***	2.10 ***	1.18 ***	1.33 ***	2.11 ***	2.15 ***	1.98 ***	1.14 **
	t	6.03	15.52	19.48	15.04	78.89	8.55	10.21	14.50	31.83	17.65	5.73	2.22
Log labour productivity	coef	0.0002	0.0000	0.0002 **	0.0002	0.0000	0.0001	0.0000	0.0002 ***	0.0001 ***	0.0000 **	0.0027 ***	-0.0001
	t	0.62	0.51	2.07	1.33	0.62	-0.85	0.27	8.36	3.57	2.29	2.72	-0.18
Log employment	coef	0.37 ***	0.19 ***	0.13 ***	0.13 ***	0.14 ***	-0.09 **	0.14 ***	0.27 ***	0.16 ***	0.13 ***	0.27 ***	0.31
	t	4.09	4.47	4.55	5.21	11.04	-2.25	4.35	9.86	9.95	5.98	4.04	1.01
Capital/labour ratio	coef	-0.0001	0.0001 **	0.0001	n.a	-0.0001	n.a	0.0013	-0.0001 ***	0.0000	0.0000	0.0000	0.0009
	t	-0.02	2.59	0.20		-1.33		1.32	-5.02	0.17	-0.88	0.00	1.18
Age	coef	n.a	0.00	0.00	0.00 **	0.00	0.01 ***	0.00	0.01 ***	-0.01 ***	0.00	-0.01	0.00
	t		-0.80	-0.13	2.24	1.38	3.42	1.46	2.84	-3.77	0.10	-0.66	0.01
Foreign ownership	coef	n.a	0.12	0.20 ***	0.02	0.00	n.a	-0.01	0.39 ***	0.56 ***	0.22 ***	0.42 **	-0.13
	t		1.48	2.77	0.31	0.00		-0.15	6.34	12.52	3.37	2.18	-0.34
Export spillovers	coef	2.14 ***	0.29	-0.11	-0.35	0.50 ***	0.76 **	1.73 ***	0.66 ***	-0.33 *	0.22	0.23	3.62 ***
	t	4.14	0.98	-0.45	-1.40	6.21	2.22	6.30	3.27	-1.83	1.08	0.36	2.89
Constant	coef	-1.78 *	0.90	0.41	-5.49	-0.63 ***	2.08 ***	0.49	-1.76 ***	-1.18	0.51	-1.29	5.54
	t	-1.90	1.41	1.12	0.00	-3.69	3.72	1.40	-5.18	-6.02	1.65	-1.15	0.00
Observations		800	5897	6486	5385	34802	4479	4923	6476	18690	9068	912	333
Industry dummies		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*Note: All explanatory variables (except age and ownership) are lagged one year. G signifies information only available for exports of goods. ***, ** and * denotes significance at the 1, 5 and 10 per cent levels. Coverage: EU countries as indicated. The LR chi-square test shows that the model is statistically significant at the one percent level in all cases.*
Source: ESSLait PSEC dataset and own calculations.

3.3.4. Market destination characteristics and export performance

The descriptive statistics presented in Section 3.2 show that SMEs are at a particular disadvantage in exporting to distinct markets. While firm-specific advantages such as innovativeness and skill intensity play a key role in determining a firm's export performance, differences in exporting costs across market destinations due to geography, infrastructure, institutional, and other factors are also accepted as being particularly important. To date, there is limited empirical research that analyses the relevance of such country characteristics for SMEs in comparison to large firms.

The use of an augmented gravity model[43] makes it possible to examine whether the effect of destination market characteristics on exporting decisions and export intensity differs according to firm size.[44] These destination market characteristics include the gravity factors (size and distance), GDP per capita, business regulations, and property rights. Results suggest that market size as measured by GDP, common language and property rights protection in the destination country all are significantly positively related to the percentage of exporting SMEs in non EU markets (see Annex Table A3.4 for the results for France). This indicates that large destination markets, sharing a common language and a strong property rights regime attract a larger number of exporting SMEs outside Europe. SME export participation is found to decrease as the geographical distance (a proxy for transportation costs) between trading countries increases. For example, results suggest that if country A is 10 percent further away than country B to France, smaller firms will on average export 3.7 percent less to country A than to country B. There is some evidence to suggest that micro, small, and medium-sized firms are discouraged from entering distant markets as compared to large firms, but those who do overcome the higher costs of exporting across longer distances do so by exporting greater average shipments per product and firm. The results indicate that business and trade regulations in the host market have strong negative impact on export participation. It is interesting to note that stronger property rights protection and lower legal costs of contract enforcement are found to encourage micro and small French firms to begin exporting or expand their exported products.

The analysis suggests that trading partners that share a common native language are likely to experience greater export participation amongst SMEs. In terms of communication infrastructure, there is some evidence to suggest that better internet infrastructure in the destination market in question is more beneficial to the likelihood of micro firms engaging in exporting. Meanwhile, stronger property rights protection and lower legal costs of contract enforcement are found to encourage micro and small French firms to begin exporting or expand their exported products. Regarding regulatory trade barriers, the French results indicate that these barriers have a greater negative effect on the export participation of small and medium-sized firms.

Overall, the size of the export market and trade costs associated with geographic distance clearly matter, but the results suggest that a reduction in other trade costs, such as those arising from the development of better communication infrastructure, more efficient legal institutions, and lower regulatory barriers to trade may lead to relatively larger increases in the number of exporting SMEs.

3.4. THE IMPACT OF EXPORTING ON FIRM GROWTH

This section estimates the impact of exporting on the growth of SMEs. It is likely that the link between exporting and firm growth differs across specific firm characteristics, such as industry affiliation, skill intensity, and productivity level.

Knowledge of the variation in the impact of exporting on firm growth is important for managers because it can help SMEs maximize the benefits of exporting. This section is based on an analysis of CIS 2010 data for 20 EU countries (described in Box 3.5) and investigates the relationship between the initial size of SMEs and subsequent growth. Gibrat (1931) suggests that a firm's growth is independent of its initial size; the probability of firm growth should thus be similar for firms of varying sizes in a given industry. More recently, Haltiwanger et al (2013) have also highlighted the importance of firm age when considering firm growth dynamics.

CSES (2012) suggests that for EU countries, the size distribution in terms of employment remains stable over time, indicating that SMEs do not grow faster than their larger counterparts. The possibility that smaller firms do grow faster than larger firms does not necessarily mean that the weight of the smaller firms in the economy grows over time, particularly if SMEs exhibit a higher exit rate at the same time. The size distribution of employment also depends on the number of firms that exit through bankruptcy or

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[43] The model applied to three EU countries (France, Ireland, Slovenia) for which sufficient data was available. The summary results for France are reported in Annex Table A3.4. Additional results are reported in the background report.

[44] The empirical approach is described in the background report. To summarise, total goods exports in a sector are decomposed into firm and product extensive margins and the product intensive margin, and are then linked to destination country characteristics using a gravity model specification. To examine if the relationship between the trade variables and the country characteristics differ across firm size groups, firm size dummies are interacted with each of the destination characteristics.

Box 3.5: The link between exporting and SME growth

Following Bernard and Jensen (1999), the firm growth model can be augmented by a measure of initial export participation. Other control variables include size (ln Y) and size squared, innovation output activities (NEWMKT, INPS), the productivity level of SMEs relative to large firms (RELPROD), foreign ownership (FOROWN), belonging to a domestic enterprise group (GROUP), industry affiliation (DEC), and country effects (DCO):

$$\left(\ln Y_{ijct} - \ln Y_{ijct-2}\right)/2 - = \beta_0 + \beta_1 \ln Y_{ijct-2} + \beta_2 (\ln Y)^2_{ijct-2} + \beta_3 EX_{ijct,t-2} + \beta_4 NEWMKT_{ijct,t-2}$$
$$+ \beta_5 INPS_{ijct,t-2} + \beta_6 FOROWN_{ijct} + \beta_7 GROUP_{ijct} + \beta_8 RELPROD_{ijct-2} + \gamma DCO_{ijct} + \eta DSEC_{ijct} + \varepsilon_{ijct}.$$

Here *i* denotes firms, *j* industries, *c* countries, and *t* time. The dependent variable, $\Delta \ln Y = \left(\ln Y_{ijct} - \ln Y_{ijct-2}\right)/2$, measures the average annual change in turnover (or alternatively, employment) over a two-year period (2008-2010). The parameter $ß_3$ indicates the difference in firm growth between exporting and non-exporting SMEs, measured in terms of percentage points and controlling for other factors. A negative coefficient for $ß_1$ means that small firms grow faster than larger firms. A significant coefficient of the squared term of initial size means that there is a non-linear relationship between firm growth and size. The firm growth equation can be estimated using OLS with robust standard errors (alternatively with the robust regression method). Several extensions of the firm growth model are provided. The first involves dividing export status according to the respective destination markets. A further extension is to investigate whether the strength of the relationship depends on the initial level of SME productivity relative to that of large firms. The underlying hypothesis is that the relationship between exporting and firm growth is stronger for highly productive SMEs.

acquisition. However, smaller firms (particularly micro enterprises) are not only characterized by their growth rates, but also by a higher probability of exiting the market. This is often related to suboptimal firm size. In fact, evidence for the EU based on the structural business statistics for 2010 shows that the exit rate decreases with firm size: 12 per cent for firms with zero employees, 7 per cent for firms with 1-4 employees, 3 per cent for 5-9 employees, and 2 per cent for firms with 10 or more employees.

3.4.1. Export activity and SME growth

In order to gather some initial insights into the relationship between firm size and firm growth and the role of export status, the percentage of SMEs (10-50 employees) is calculated as a function of initial employment. Figure 3.11 shows that the percentage of growing firms is consistently higher among exporters than among non-exporters up to a threshold of 35 employees and that the share with growing employment is greater for small firms (those with 10-20 employees). However, for SMEs with around 20 or more employees, the share of firms with rising employment appears rather independent of initial size.

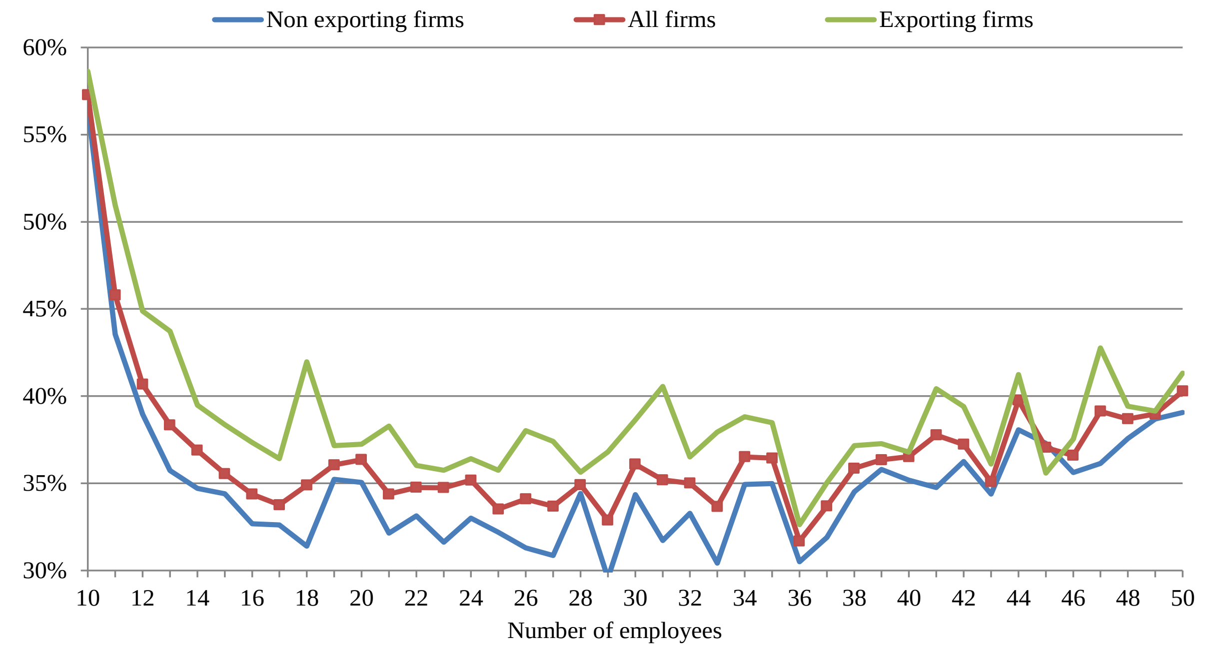
Annex Table A3.5 shows the results of robust regression analysis described in Box 3.5 on the determinants of SME employment growth for the overall business enterprise sector and eight broad industry groups based on CIS 2010 data. Figure 3.12 shows the coefficient of the relationship between export status and firm growth, controlling for other enterprise characteristics and country effects by broad industry groups. The results show that exporting SMEs have a significantly higher average annual growth rate of employment for the period 2008-2010 than do non-exporting SMEs when controlling for size, innovation output, foreign ownership, industry affiliation, and country effects. For the total sample, the annual employment growth rate of exporting SMEs is 0.6 percentage points higher on average than that of non-exporting SMEs between 2008 and 2010. The corresponding result for the difference in output growth rate is 0.9 percentage points per year. The positive relationship between SME exporting activities and firm growth is noteworthy given the time period examined in the analysis, which was characterized by economic and financial crises. This indicates that exporting SMEs recovered faster from these crises than SMEs that were only present in their domestic markets. An alternative interpretation is that the crisis induced SMEs to engage more in exporting as domestic demand was falling (European Commission, 2013).

3.4.2. Destination markets

A further step in this analysis focuses on whether the exporting on firm growth effect differs across destination markets. It might be the case that the link between firm growth and export status is stronger when SMEs are globally present rather than in one of the two markets in question.

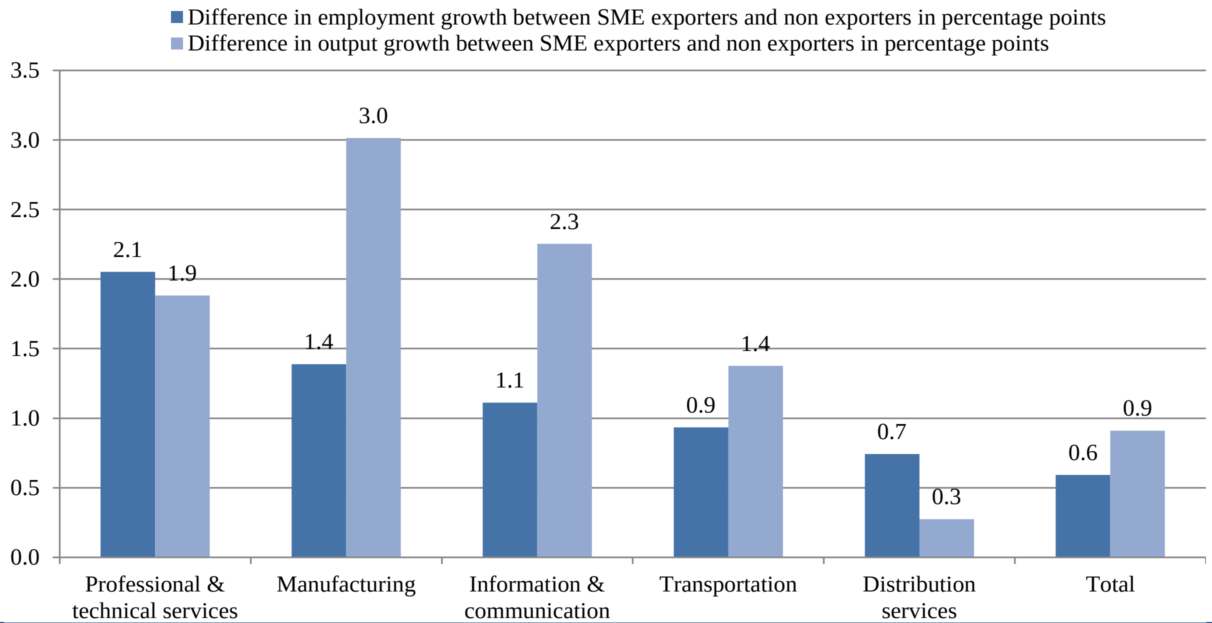
Figure 3.13 displays the estimation results, which indicate that exporting both within and outside Europe (EU/EFTA/candidate countries) is significantly and positively related to firm growth. In general, the magnitude of the relationship between exporting and firm growth is larger for exports within than outside Europe. In information and communication services, however, results show that SMEs present in both export markets exhibited a higher growth rate of output and employment between 2008 and 2010.

Figure 3.11: Percentage of firms with growing employment in EU-20 countries between 2008-2010 by size



Note: The number of observations range between about 3000 for firms with 10 employees to about 200 for firms with 50 employees. Size is measured as number of employees for 2008.
Source: CIS 2010. Eurostat Safe Centre.

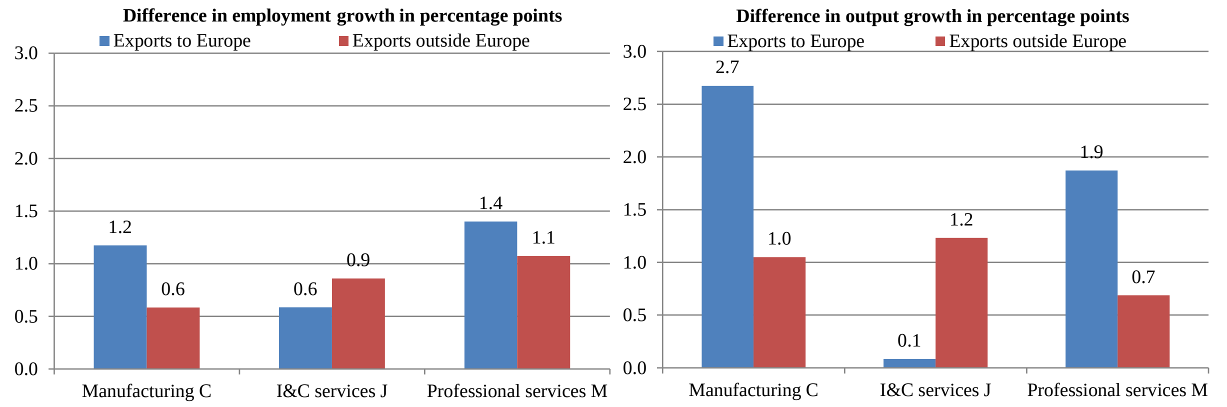
Figure 3.12: Difference in firm growth between SME exporters and non-exporters in selected sectors between 2008-2010



Note: Coefficients measure the difference in firm growth between exports and non-exporters in percentage points. The specification is based on Gibrat's specification and Bernard and Jensen (1999). See Box 3.5. The number of observations is 115,000, of which 51,600 are manufacturing SMEs.
Source: CIS 2010. Eurostat Safe Centre.

Overall, the findings suggest that exporting SMEs tend to create more jobs and achieve higher output growth than non-exporting SMEs. The link between exporting and firm growth is higher in skill intensive service industries. The magnitude of this relationship increases with the productivity level of SMEs relative to large firms in a given industry and country. Results based on Swedish firm-level data presented in the background report indicate that the exporting effect is larger for SMEs with high skill intensity.

Figure 3.13: Difference in firm growth between SME exporters and non-exporters by destination market between 2008-2010



Note: Coefficients measure the difference in firm growth between exports and non-exporters by destination in percentage points controlling for size, foreign ownership.
Source: CIS 2010. Eurostat Safe Centre.

3.5. SUMMARY AND POLICY IMPLICATIONS

Globalization and technological advances have reduced distances and the significance of national borders in various areas, and enabled the exchange of previously non-tradable goods and services. These changes have also ushered in opportunities and challenges for European SMEs. However, barriers to internationalisation are systematically higher for SMEs than for larger companies. Given the more limited resources and higher vulnerability of SMEs compared to large companies, a key question relates to the role that policymakers should play in helping SMEs internationalise, particularly with regard to the appropriate mix of targeted policies. In other words, policymakers should consider whether and to what extent they should rely on direct measures in promoting SME internationalisation and on indirect measures, such as improving framework conditions to support decisions for SMEs to export and invest abroad.

3.5.1. Main results

This chapter presents a number of new findings which may be of particular relevance when designing policies for the support of SME internationalisation. These results can be grouped under three categories: firm and management characteristics; firm specific advantages; and home and host country characteristics.

Concerning firm and management characteristics, the results show that the size of SMEs is crucial. Micro enterprises and small firms have significantly lower export participation rates compared with the other size-groups of firms. This holds particularly true for one-person businesses and young SMEs in traditional industries. New empirical findings show that the differences in both export participation and export intensity across firm size is larger within the group of SMEs than between medium-sized firms and large firms. However, for services the export to output ratio of SMEs is largely independent of firm size, unlike manufacturing. The strong size dependency can also be observed for the second most important type of internationalisation: outward FDI activities. In general, exporting is a more vital internationalisation strategy for SMEs than FDI or international outsourcing while indirect exports play a relatively minor role.

Another important result is that firm characteristics such as industry affiliation, age and destination play an important role for SME export behaviour. Export propensity of SMEs varies markedly across industry affiliations, with larger participation rates in manufacturing and in software and business services. Sectoral differences are also significant in terms of SME internationalisation via FDI. Compared with large firms, SMEs are overrepresented in European markets and underrepresented in non-European markets. SMEs have a strong disadvantage for exports beyond Europe, particularly for more distant markets such as China. Foreign ownership has a strong impact on the internationalisation inclination of SMEs: foreign-owned SMEs have a higher probability of exporting and also show a higher export to output ratio. The age of the SMEs is impacting upon the developments in their internationalisation: the older the SME, the more internationalised it is, thus the older the SME, the more likely it is to export and to invest abroad. There are some exceptions, particularly in ICT and business services where younger firms are often also internationally active.

With respect to firm-specific advantages the results show the productivity level of the SMEs, technological innovations, R&D activities, skill intensity and ICT capacities are all strongly positively related to the export participation of SMEs. In particular, productive firms are more likely to be internationalised. Export participation increases significantly with innovation, R&D activities and skill intensity. There is also a positive relationship between ICT capacities and exporting behaviour of SMEs, although which ICT capacity matters is country-specific. Finally, there is a link between the firm's decision to internationalise via FDI and between its level of productivity, innovation and the capital intensity of production. Furthermore, it is important to note that many exporting SMEs, particularly those with low productivity or low skill intensity do not realize their full growth potential. SMEs can maximize their benefits from exporting by upgrading their workforce and/or increasing their productivity level.

The analysis also provides evidence on the importance of external factors in influencing the propensity of export. Export participation of SMEs is strongly influenced by home country-characteristics, with higher export and business regulations in the home market leading to lower export participation rates. New empirical results show that export intensity of SMEs is significantly positively related with both export promotion measures and export credits. Host country level factors are also significant in SME internationalisation including market size, sharing a common language and geographical distance. SMEs are more sensitive to language differences and intellectual property rights than large firms.

3.5.2. Policy considerations

Framework conditions

The analysis presented in this chapter demonstrates that framework conditions are a critical policy tool that can be used to support SME internationalisation as these address the most important drivers and barriers. This is in line with the policies and messages contained in documents published by the European Commission which emphasize the importance of framework conditions in improving European and SME competitiveness. In a related policy update, the European Commission (2012) proposes four main elements (investment in innovation, better market conditions, access to capital and labour, and skills) to improve the framework conditions for reinforcing the growth potential of EU industry. Similarly, the European Commission (2010a) emphasizes the importance of improving framework conditions in ensuring a competitive and sustainable EU industry, especially for SMEs. The Commission and member states have taken several policy measures to support the framework conditions for firms' innovation and productivity under the Europe 2020 Strategy. These measures include policies designed to support firms' innovation activities, such as by enhancing the quantity and quality of tertiary education, encouraging smart specialisation strategies, and building a competitive business environment. Appropriate framework conditions are seen as crucial from the point of view of spreading key enabling technologies in the European Union.

An important advantage of policies that seek to improve framework conditions is their non-distortive character compared to direct, targeted policy measures with the same aims. However, certain results of the analysis presented here indicate that direct measures to support SME internationalisation are justified in some areas because they address specific market failures, which have a disproportionate effect on SMEs compared to larger firms. The analysis presented earlier suggests that framework conditions can be critical in influencing the main drivers of company-specific advantages, and thus of efforts to promote internationalisation (for example, improving productivity, technological innovation and R&D, ICT, firm size, and skill intensity). Second, given that the relationship between the exporting of SMEs and firm growth increases with the productivity level and/or skill intensity of SMEs, policy makers should not only focus on providing incentives to export, but put more emphasis on general policies (i.e. that help/induce firms to improve productivity, innovativeness and skill intensity) that are also beneficial to SMEs.

This chapter also highlights the crucial nature of external factors, particularly in the area of regulatory and bureaucratic impediments, and with specific regard to the various elements of the transaction costs of exporting and investing abroad. This may be related to the administrative burden associated with exporting (or investing abroad) or to the overall administration requirements for enterprises (entry and exit barriers, administrative efforts, etc.). The results underscore the validity of the common policy recommendations which target local business climates and can be summarized as openness, deregulation, and administrative simplification. In addition, various infrastructure considerations can be of particular importance. The evidence presented here draws attention to the importance of specific policies, such ICT initiatives, as well as policies that improve the related infrastructure. Furthermore, reducing the transaction costs of internationalisation (trade costs in a broad sense) by improving the level and quality of related infrastructure (e.g. road, ports, railways for goods and the internet for services) is also important.

Heterogeneity of SMEs

The results presented earlier also underscore various aspects of the heterogeneity of SMEs. First, they emphasize the differences compared to large companies in terms of productivity levels, and ability to deal with internationalisation requirements, especially in the area of information, operational/managerial capacities, and financial strength. Direct policies targeting SMEs can thus be justified in helping such firms overcome these difficulties during internationalisation although there is relatively little information on the evaluation of such policies[45].

Second, the link between various SME characteristics and internationalisation performance may in certain cases justify addressing various groups of SMEs directly when designing policies. For example, the underrepresentation of SMEs in non-EU markets and those outside Europe explains why informational, operational, and financial support should be especially useful for SMEs trying to establish a foothold in these markets. Differences in the strength of the link between firm size, firm age, and ownership on the one hand and internationalisation performance on the other may also justify differentiated support. The degree of internationalisation also differs by sector: in certain industries, SMEs may build firm-specific advantages that quickly provide a basis for internationalisation (ICT, other high-tech sectors).

Third, the heterogeneity of SMEs is connected to the link between internationalisation and firm-specific advantages such as productivity, skill intensity, innovation, specific technology, and new/unique products and services. This latter finding points to the fact that superior firm-specific advantages provide the basis for sustainable, lasting, and successful internationalisation. It also affirms the importance of improving the framework conditions that enable SMEs to gain these firm-specific advantages.

Policy implications

SMEs play a significant role in the economies of the EU member states, especially in employment, output, R&D and as suppliers to large firms but also increasingly through exports and foreign direct investment. Although the degree of internationalisation of SMEs is now proceeding at a higher speed than previously, the level of internationalisation of SMEs remains low. Instead, the majority of SMEs are still oriented towards the domestic market, particularly for micro enterprises including sole proprietorships. Given that a large number of small and micro enterprises are not exporting, further efforts should be made to increase the export participation of these firms, particularly by increasing the awareness of the benefits of internationalisation in terms of improvements in firm growth and performance.

The findings that export credits and other incentives as well as firm specific advantages stimulate export activities of SMEs suggest that successful internationalisation of SMEs depends on a mix of direct and indirect policies rather than on a single policy instrument. Creating favourable framework conditions, namely supporting innovation and R&D activities, further investments in ICT infrastructure, will help to increase the internationalisation activities of SMEs. EU member countries should continue to reduce export regulations and offer better business climate conditions for SMEs. Although EU countries have made efforts to reduce the administrative burden on SMEs and generally reduced the time and costs associated with starting a business during recent years, the cost to export has not seen the same progress. Focus on measures to improve the administration of exporting (or investing abroad), such as harmonisation of administration procedures and processing times for contact with and reporting to authorities in relation to exporting, may be useful.

Another area where improving framework conditions could be beneficial, as it indirectly affects the capacity of SMEs to internationalise, relates to certain elements of the infrastructure. Improving the ICT and internet infrastructure as well as the level and quality of trade-related infrastructure and related policies would be beneficial in indirectly promoting the internationalisation of SMEs.

Besides improving framework conditions, certain targeted policy measures may be appropriate in aiming at eliminating certain market failures hindering the internationalisation of SMEs, and addressing those SME subgroups which are hit hardest by these. The analysis presented in this chapter has also underlined the heterogeneity of SMEs in their degree of internationalisation with respect to size, age, industry affiliation, and ownership, as well as firm-specific advantages such as productivity, innovation, skills and ICT capabilities. The heterogeneity within the group suggests that less focus should be put on this cohort as a whole, but rather on small firms and medium-sized firms separately, particularly when formulating measures offering direct assistance in the form of information, financial and operational support.

[45] A study to review the internationalisation opportunities and support policies for European SMEs (EIM, 2011) found that such measures generally had a positive impact on SME performance in international markets but that there was relatively little evaluation of such policies. The most common types of support measures in the EU relate to information provision, including advisory and consulting services to organized trade fairs, seminars, matchmaking, and facilitated meetings with potential clients.

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ANNEX TO CHAPTER 3

Table A3.1: Overview of the main databases on internationalisation activities of SMEs

	TEC	CIS	ESSLait MMD	BEEPS	EFIGE
Criteria	**Exports of goods**	**Exports of goods/services**	**Exports of goods/services**	**Direct & indirect exports**	**Direct & indirect exports, FDI, international outsourcing**
Export participation	yes	yes	no	yes	yes
Export intensity	yes	yes	yes	yes	yes
Exports by destination	Intra/Extra EU	Intra/Extra EU-EFTA	no	no	yes
Export threshold	no	no	partly	no	no
Firm size threshold	0	10	10	5	5
Sector coverage	A-U (here B-N excl. K)	B-M (excl. NACE Rev. 2 47, I, L)	NACE Rev 1.1 C-N (excl. D,E,F)	Business enterprise	Manufacturing
Country coverage	EU-24	EU-20	12 EU countries	11 EU countries	4 EU countries
Time period	2008-2010	2010	2003-2010	2008	2008

Note: MMD denotes Micro Moments Database provided by the ESSLait project. TEC denotes Trade Enterprise Characteristics database (TEC), CIS denotes Community Innovation Survey, EFIGE denotes European Firms In a Global Economy, BEEPS refers to the Wold Bank's Business Environment and Enterprise Performance Survey.

Table A3.2: Determinants of the intensity of internationalisation mode choices of SMEs, marginal effects

	Export intensity	Export decision	FDI intensity	FDI decision	International outsource intensity	International outsource decision
Intensive use of export credit	0.536***	.	0.014	.	-0.054	.
	(0.063)	.	(0.229)	.	(0.248)	.
Use Trade/export insurance	0.326***	.	-0.156	.	0.180	.
	(0.054)	.	(0.162)	.	(0.160)	.
Use export tax and financial incentives for exporting	0.253**	.	0.600**	.	0.164	.
	(0.113)	.	(0.268)	.	(0.303)	.
Support from public or private institutions for FDI or international outsourcing	0.268*	.	-0.269	.	0.085	.
	(0.160)	.	(0.190)	.	(0.376)	.
Financial incentives provided by the public sector	-0.057	0.043**	-0.324	-0.005	0.007	0.003
	(0.069)	(0.022)	(0.201)	(0.006)	(0.148)	(0.008)
Tax incentives	-0.015	0.001	-0.313*	-0.004	-0.393**	0.009
	(0.062)	(0.019)	(0.170)	(0.006)	(0.183)	(0.007)
Productivity (lagged)	0.078*	0.051***	0.225*	0.015***	0.343**	0.016***
	(0.043)	(0.012)	(0.117)	(0.003)	(0.139)	(0.004)
Capital intensity (lagged)	0.021	-0.005	-0.102*	-0.007***	-0.157**	-0.009***
	(0.022)	(0.006)	(0.062)	(0.002)	(0.080)	(0.002)
RD staff employed	0.158***	0.105***	-0.242	0.012**	0.343	0.021***
	(0.061)	(0.016)	(0.213)	(0.006)	(0.223)	(0.007)
Product innovators	0.170***	0.097***	0.108	0.004	0.015	-0.002
	(0.057)	(0.016)	(0.178)	(0.006)	(0.206)	(0.007)
Process innovators	-0.065	-0.004	-0.203	-0.002	-0.061	-0.004
	(0.052)	(0.016)	(0.165)	(0.005)	(0.150)	(0.006)
IP registration	0.092	0.069***	0.070	0.004	-0.214	0.033***
	(0.057)	(0.020)	(0.166)	(0.005)	(0.174)	(0.007)
Int. experienced executives	0.280***	0.066***	0.361**	0.025***	-0.032	0.016**
	(0.060)	(0.022)	(0.145)	(0.006)	(0.168)	(0.008)
Importer	0.117**	0.212***	-0.079	0.017***	0.743***	0.040***
	(0.056)	(0.015)	(0.198)	(0.006)	(0.263)	(0.007)
Production costs	0.004	-0.016	-0.354*	0.011*	0.458**	0.013**
	(0.057)	(0.017)	(0.194)	(0.006)	(0.193)	(0.007)
Product Quality	-0.111**	-0.003	0.317*	0.001	0.070	0.008
	(0.052)	(0.015)	(0.163)	(0.005)	(0.173)	(0.006)
Labour Regulation	-0.107*	-0.008	0.228	0.002	0.258	0.008
	(0.058)	(0.017)	(0.172)	(0.005)	(0.167)	(0.007)
Market demand conditions	-0.011	0.002	-0.239	-0.005	0.062	-0.008
	(0.052)	(0.015)	(0.168)	(0.005)	(0.165)	(0.006)
Scale dummy	0.072	-0.015	0.036	-0.010	0.383**	-0.013
	(0.090)	(0.024)	(0.228)	(0.007)	(0.192)	(0.010)
Domestic owned	-0.466***	-0.129***	-0.173	-0.008	-0.141	-0.013
	(0.070)	(0.027)	(0.186)	(0.006)	(0.166)	(0.009)
Age 20+	0.075	0.071***	-0.300*	0.010**	-0.383**	-0.006
	(0.052)	(0.015)	(0.177)	(0.005)	(0.162)	(0.006)
Size (lagged)	0.051	0.184***	-0.283	0.049***	0.338	0.011
	(0.041)	(0.045)	(0.336)	(0.007)	(0.239)	(0.009)
No of firms	3819		3819		3819	
λ	-0.151		0.233		-2.239	
ρ	-0.132		0.298		-0.981	
Wald test for H0: ρ=0 , (P value)	χ^2 (1) = 2.32, (0.128)		χ^2 (1) = 0.75, (0.386)		χ^2 (1) = 24.40, (0.000)	
Log-likelihood	-5594.547		-545.006		-793.4108	

*Notes: Marginal effects are based on maximum likelihood estimates for Heckman models. Robust standard errors are in parentheses. *, **, ***, denote 10%, 5%, 1% significance levels. Country, sector specific effects not shown. Test statistics based on regression output. Detailed specification of the model can be found in the background report.Country coverage: DE, ES, FR and IT. Source: Analysis based on the EFIGE data set.*

Table A3.3: Determinants of the internationalisation mode choices of SMEs, marginal effects

	DOM	IEXP	DEXP	FDI	OUT	EXP, FDI	EXP,OUT	EXP, FDI, OUT
Productivity (lagged)	-0.055***	-0.008*	0.036***	0.001	0.003	0.011***	0.008**	0.004**
	(0.012)	(0.004)	(0.012)	(0.002)	(0.002)	(0.003)	(0.004)	(0.002)
Capital intensity (lagged)	0.011*	-0.002	0.006	-0.002*	-0.002**	-0.005***	-0.004**	-0.002**
	(0.006)	(0.002)	(0.007)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)
RD staff employed	-0.102***	0.007	0.075***	-0.001	0.000	0.007	0.011*	0.002
	(0.017)	(0.007)	(0.017)	(0.003)	(0.004)	(0.005)	(0.006)	(0.002)
Product innovators	-0.095***	-0.009	0.102***	-0.001	0.001	0.003	-0.004	0.003
	(0.017)	(0.007)	(0.017)	(0.004)	(0.004)	(0.005)	(0.007)	(0.002)
Process innovators	0.004	0.006	-0.001	0.000	-0.002	-0.001	-0.004	-0.002
	(0.016)	(0.007)	(0.016)	(0.002)	(0.003)	(0.004)	(0.006)	(0.002)
IP registration	-0.068***	-0.019***	0.038*	0.005	0.005	-0.001	0.039***	0.002
	(0.021)	(0.006)	(0.021)	(0.004)	(0.005)	(0.005)	(0.009)	(0.002)
Int. exp-erienced executives	-0.073***	-0.004	0.026	0.005	0.012*	0.022***	0.006	0.006
	(0.023)	(0.009)	(0.023)	(0.004)	(0.007)	(0.007)	(0.008)	(0.004)
Importer	-0.228***	0.015**	0.161***	0.004	0.002	0.011**	0.030***	0.006***
	(0.017)	(0.007)	(0.017)	(0.003)	(0.003)	(0.005)	(0.005)	(0.002)
Product quality	0.012	-0.009	-0.017	-0.003	0.002	0.005	0.013**	-0.003
	(0.016)	(0.007)	(0.016)	(0.003)	(0.003)	(0.004)	(0.005)	(0.003)
Production costs	0.017	-0.009	-0.029*	-0.003	0.003	0.014***	0.006	0.001
	(0.017)	(0.007)	(0.018)	(0.003)	(0.003)	(0.004)	(0.006)	(0.002)
Labour Regulation	-0.004	0.008	-0.010	-0.001	-0.002	0.003	0.008	-0.002
	(0.017)	(0.007)	(0.018)	(0.003)	(0.003)	(0.005)	(0.006)	(0.002)
Size (lagged)	-0.160***	-0.010	0.106**	0.008***	0.001	0.034***	0.016	0.005*
	(0.045)	(0.016)	(0.044)	(0.003)	(0.009)	(0.005)	(0.012)	(0.003)
Scale dummy	0.035	-0.013	0.003	-0.010	-0.008	-0.003	-0.003	-0.001
	(0.024)	(0.010)	(0.025)	(0.007)	(0.008)	(0.007)	(0.009)	(0.004)
Market conditions	-0.003	0.010	0.009	-0.001	0.001	-0.010**	-0.009	0.002
	(0.015)	(0.006)	(0.016)	(0.002)	(0.003)	(0.004)	(0.006)	(0.002)
Domestic owned	0.125***	0.011	-0.114***	-0.012*	-0.002	-0.001	-0.007	-0.001
	(0.025)	(0.009)	(0.027)	(0.006)	(0.005)	(0.006)	(0.010)	(0.003)
Age 20+	-0.055***	-0.003	0.059***	0.002	-0.006	0.005	-0.008	0.005***
	(0.015)	(0.006)	(0.016)	(0.003)	(0.003)	(0.004)	(0.006)	(0.002)
Financial incentives public sector	-0.043**	0.017*	0.021	-0.004	-0.001	-0.004	0.011	0.002
	(0.022)	(0.010)	(0.022)	(0.003)	(0.004)	(0.005)	(0.009)	(0.003)
Tax incentives	0.009	-0.004	-0.000	-0.004*	0.005	-0.001	-0.002	-0.001
	(0.020)	(0.007)	(0.020)	(0.002)	(0.005)	(0.005)	(0.006)	(0.002)

*Note: Analysis based on the EFIGE data set. Marginal effects are based on multinomial model estimates. Robust standard errors are in parentheses. *, **, ***, denote 10%, 5%, 1% significance levels Country, sector specific effects not shown. Test statistics based on regression output. Number of observation is 3847 and the Pseudo R^2 is 0.19. Country coverage: DE, ES; FR and IT.*
Source: EFIGE dataset.

Table A3.4: Augmented gravity model of the percentage of exporting firms (French firms to non-EU destinations)

		Large	Medium	Small	Micro
ln GDP const prices in destination country	coef.	0.34 ***	0.42 ***	0.45 ***	0.35 ***
	t	13.26	16.66	20.06	13.99
Common language	coef.	0.77 ***	1.19 ***	1.47 ***	1.33 ***
	t	13.41	17.88	25.20	15.84
Cost of legal enforcement of contracts (0-10)	coef.	0.00	-0.02	-0.05 ***	-0.07 ***
	t	0.08	-1.79	-4.56	-5.58
Geographical distance	coef.	-0.27 ***	-0.34 ***	-0.37 ***	-0.31 ***
	t	-10.65	-9.74	-11.23	-10.98
Phone network	coef.	0.06 ***	0.08 ***	0.05	-0.03
	t	3.16	2.77	1.63	-1.21
Tariff index	coef.	0.00	0.01 ***	0.01	0.01
	t	-0.19	3.12	1.36	0.98
Regulatory trade barriers	coef.	-0.07 ***	-0.10 ***	-0.11 ***	-0.03
	t	-5.39	-7.06	-5.63	-1.62
Property rights protection (0 to 10 strongest)	coef.	0.06 ***	0.08 ***	0.11 ***	0.13 ***
	t	6.91	10.86	14.49	13.84

Note: Dependent variable is the logarithm of the number of exporting firms. The specifications are estimated using OLS. Industry fixed effects and year effects are included in the models. T-values are based on robust standard errors. The number of observations is 35,968. The adjusted R^2 is 0.64. Analysis is conducted over the period 2000-2007.
Source: Customs data and BRN Ministry of Finance

Table A3.5: Robust regression method of the relationship between EU SME exporting and employment growth

	Total sample		Mining	
	coef.	**t**	**coef.**	**t**
ln employment 2008	-0.204 ***	-107.79	-0.139 ***	-7.39
ln employment 2008 squared	0.023 ***	87.11	0.014 ***	5.26
Export status 2008-2010	0.006 ***	8.25	0.025 ***	3.60
New market products 2008-2010	0.014 ***	13.47	0.006	0.44
Process innovations	0.016 ***	18.54	0.015 *	1.94
Foreign ownership 2010	0.011 ***	8.67	0.014	1.34
Domestic group 2010	0.078 ***	6.78	0.012	1.52
Country dummies	yes		yes	
Constant	0.417 ***	109.96	0.30 ***	8.33
# of observations	113674		1312	
	Manufacturing		**Energy and water supply**	
	coef.	**t**	**coef.**	**t**
ln employment 2008	-0.143 ***	-50.54	-0.088 ***	-11.73
ln employment 2008 squared	0.014 ***	37.16	0.009 ***	9.08
Export status 2008-2010	0.014 ***	13.08	0.005	1.41
New market products 2008-2010	0.012 ***	8.85	0.016 ***	3.02
Process innovations	0.015 ***	13.24	0.009 ***	2.81
Foreign ownership 2010	0.015 ***	7.99	0.010 *	1.95
Domestic group 2010	0.013 ***	9.10	0.006 *	1.74
Country dummies	yes		yes	
Constant	0.303 ***	54.14	0.196	13.91
# of observations	51633		4367	
	Construction		**Distribution**	
	coef.	**t**	**coef.**	**t**
ln employment 2008	-0.300 ***	-36.20	-0.274 ***	-62.34
ln employment 2008 squared	0.036 ***	30.43	0.034 ***	52.86
Export status 2008-2010	0.026 ***	5.20	0.007 ***	4.36
New market products 2008-2010	0.010	1.49	0.011 ***	3.57
Process innovations	0.024 ***	5.97	0.010 ***	4.54
Foreign ownership 2010	0.004	0.34	0.002	0.83
Domestic group 2010	0.009 **	2.14	0.003	1.30
Country dummies	yes		yes	
Constant	0.560 ***	34.72	0.522 ***	45.11
# of observations	8593		19761	
	Transportation		**Information & communication**	
	coef.	**t**	**coef.**	**t**
ln employment 2008	-0.266 ***	-39.59	-0.497 ***	-61.39
ln employment 2008 squared	0.031 ***	32.68	0.062 ***	52.84
Export status 2008-2010	0.009 ***	3.38	0.011 ***	3.31
New market products 2008-2010	0.010	1.35	0.019 ***	4.95
Process innovations	0.023 ***	5.61	0.017 ***	4.68
Foreign ownership 2010	-0.003	-0.50	0.015 ***	2.84
Domestic group 2010	0.005	1.41	0.010 **	2.55
Country dummies	yes		yes	
Constant	0.541 ***	39.49	0.940 ***	59.28
# of observations	8377		7596	
	Financial sector		**Professional & technical scvs**	
	coef.	**t**	**coef.**	**t**
ln employment 2008	-0.136 ***	-15.13	-0.369 ***	-50.67
ln employment 2008 squared	0.015 ***	12.13	0.046 ***	43.01
Export status 2008-2010	0.007	1.39	0.021 ***	7.38
New market products 2008-2010	0.007	1.25	0.020 ***	5.45
Process innovations	0.014 ***	3.17	0.018 ***	5.96
Foreign ownership 2010	-0.004	-0.85	0.013 ***	2.69
Domestic group 2010	-0.014 ***	-3.17	0.013 ***	4.27
Country dummies	yes		yes	
Constant	0.29 ***	15.31	0.686 ***	51.95
# of observations	3255		8706	

*Note: *p<0.1, ** p<0.05, ***p<0.01. Two tailed -t-test. The dependent variable is the average annual growth of employment between the period 2008-2010. The coefficient on the export dummy measures the differential in the employment growth between exporters and non-exporters. The percentage effect of export participation on the relative productivity level can be calculated as (exp(ß)-1) multiplied by 100 (Halvorsen and Palmquist 1980). Country coverage: EU-20.*

Source: CIS 2010. Eurostat Safe Centre.