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The Impact of Export Dynamics on a Firm's Growth

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Primary submission: 11.10.2013 | Final acceptance: 18.02.2014

Abstract

Purpose: This research aimed to identify the prevalence and particular characteristics of export-driven growth as opposed to those of the domestic market. It examined how the relative dynamics of export sales vs. domestic sales were affected by internationalization intensity (FSTS), age of the firm, early internationalization, size of the firm and industry technological level. Similarly, it examined the impact of sales growth and its direction (domestic vs. export-driven) on company performance.

Methodology: The analysis was based on panel data from approximately 300 manufacturing firms in the Mazovia region of Poland that were engaged in sustained export operations during 2003 to 2010. Several hypotheses were tested regarding factors affecting the growth dynamics of regular exporters as well as their performance (productivity).

Findings: This research proved that only a small percentage (less than 10%) of firms reached the status of regular exporter. Although regular exporters engaged in international operations shortly after their foundation, they formed a distinct category of early internationalizing firms. For the management of young, ambitious ventures, achieving regularity in their initial export operations represented a major challenge.

Implications: Regularity of international sales is crucial for export performance, both at the enterprise and country levels. This implies that export promotion efforts should concentrate on growth-oriented firms, specifically to assist them in reaching regular exporter status shortly after initiating sales outside the domestic market.

Originality: The analysis of the internationalization process was expanded by adding the regularity dimension, which has been rarely addressed in the extant literature.

Keywords: export dynamics, firm growth, internationalization intensity, early internationalization

JEL: D22, L26, M16

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Introduction

Although expansion on external markets reflects the growth ambitions of firms engaged in international business operations, there is little understanding of how such operations actually stimulate the overall growth and to what extent export-driven growth differs from the dynamics and trajectories of growth based on domestic markets. One of the reasons for the existing substantial knowledge gap is that this subject is being studied within several largely unrelated research streams, namely the core entrepreneurship field, international entrepreneurship, international management and international economics. Researchers representing those streams used different concepts and models and also different research methods for testing relevant theories.

This research aimed to fill this gap in just one aspect, namely to identify the prevalence and particular characteristics of export-driven growth as opposed to that of the domestic market. It examined how the relative dynamics of export sales vs. domestic sales were affected by internationalization intensity (FSTS), age of the firm, early internationalization, size of the firm and industry technological level.

To test relevant concepts, the empirical analysis was restricted to regular exporters; i.e., those involved in export operations without interruption for a longer period of time (7 years). By doing so, it tried to avoid a potential distortion of the research results caused by inclusion of a large segment of small-scale incidental or lifestyle exporters who, having survived an initial unstable period, later stagnated with very low sporadic transactions or even withdrew completely from export activities. Due to the availability of empirical data, the research was confined to Poland. Bearing in mind that Poland falls within the category of medium-size markets, studying it offered a useful platform for studying export and domestic sales trajectories and their linkages, as both directions of sales expansion were seen as viable options for future growth.

The study reviewed the extant literature that addresses the relationship between exporting and firm growth in several quite distinct research streams, namely entrepreneurship, international entrepreneurship, international management and international economics. Next, it developed the research model and built hypotheses for further testing. Data and methodologies of empirical research were presented in a subsequent section, followed by a discussion of the results and management and policy recommendations.

Literature review

The empirical research on the internationalization of a firm, its growth, microeconomic performance and macroeconomic effects was conducted within several, largely independent research streams using both quantitative and qualitative methods.

 DOI: 10.7206/mba.ce.2084-3356.105

Entrepreneurship

In the entrepreneurship field, a separate research stream emerged over the last 20 years that focused on the process of firm growth, and particularly on firms demonstrating exceptionally high growth of turnover and employment (so called "gazelles", high-growth, high-impact firms) (Delmar, Davidsson and Gartner 2003; Coad 2009). Although the high growth ambition does not always lead to an exceptional microeconomic performance (Davidsson, Steffens and Fitzsimmons 2009), from the macroeconomic perspective, these firms play a very important role in creating new jobs and added value (GDP). This approach marks a departure from research directions that focused on traditional small businesses (Davidsson, Delmar and Wiklund 2002; Gilbert, McDougall and Audretsch 2006).

The initial concentration of these relevant research efforts was on the macroeconomic impact of "gazelles": young firms that experience exceptional growth rates of employment, sales and added value (Birch and Medoff 1994). The findings prove the crucial contribution of high-growth firms, representing a small percentage of the entire population of business establishments, to the generation of new jobs in the economy (Henrekson and Johansson 2010). However, the rapid turnover growth did not always lead to an increase in employment. Such observations resulted in the identification of a category of high-impact firms (a subset of high-growth firms) where turnover growth was combined with employment growth (Acs, Parsons and Tracy 2008).

The research conducted to date helped identify the particular characteristics of the growth process and the crucial distinction between organic growth and that resulting from acquisition and restructuring (Davidsson, Lockett, Wiklund and Girma 2011). Findings also revealed that there was no such category as high-growth firms in general. Instead, some companies experienced an exceptionally high growth phase after which they typically returned to the industry average (Garnsey and Heffernan 2005). In general, growth trajectories were largely diversified, but some typical patterns were identified (Garnsey, Stam and Heffernan 2006). Additionally, some researchers emphasized the need to explore qualitative aspects rather than to focus only on growth rates (Wiklund, Patzelt and Shepherd 2009; Wiklund and McKelvie 2010).

Unfortunately, the international context of firm growth is under-researched within this research stream, particularly regarding whether the accelerated growth is driven by domestic market, international markets or both. Based on a literature review, Naldi (2008) concluded that researchers typically separately addressed the factors that drive small and medium enterprise (SME) growth and the factors that drive SME internationalization but rarely examined the effects of internationalization on SME growth.

Among a few exceptions, worth mention is the study of Halabisky (2005) on job creation performance by Canadian exporters during 1993–2002. He found that 1) firms engaged in exporting

were much more likely to be hyper- or strong-growth firms than those that did not export; and 2) exporters contribute far more than their proportional share to job creation.

Internationalization of new ventures

A very popular subject vigorously debated over the last 20 years and coined in the literature as "born-global" research relates to the impact of early internationalization on future growth and the performance of international operations and company activities in general (Keupp and Gassman 2009). The dominant view is that firms engaging early in exporting have better chances for high growth and performance. Growth ambitions were clearly reflected in the early definitions of born-global. As Oviatt and McDougal (1995) stated, born-global firms "seem to have aggressive growth objectives in that they rapidly exploit technological advantages, acquire foreign technologies, and follow clients into foreign lands. When those facts are combined with the observation that small business creates a significant portion of new jobs in America, then the collective potential of global start-ups as a powerful economic engine begins to emerge" (p. 31). Similarly, Bloodgood, Sapienza, and Almeida (1996) pointed out the high aspirations and potential for growth of new entrepreneurial ventures. On the other hand, there is a longstanding tradition in the entrepreneurship research of attributing growth ambitions to the entrepreneurial activities of smaller firms (Wiklund et al. 2009). Again, there is a direct reference in the extant literature to entrepreneurial orientation (innovativeness, proactiveness, and risk-taking behavior), thus differentiating international entrepreneurship from the internationalization of SMEs in general (McDougall and Oviatt 2000).

However, mounting empirical evidence suggests that such a view can be seriously challenged. The study conducted by Eaton et al. (2007), using transaction-level customs data from Colombia, demonstrated that in a typical year, nearly half of all Colombian exporters were not exporters in the previous year. These new exporters tended to be extremely small in terms of their overall contribution to export revenues, and most did not continue to export in the following year. Similarly, Cieślik, Kaciak and Welsh (2010), using large-panel data from Polish exporters, identified a large segment of small-scale accidental exporters who sporadically engaged in export/import transactions. Even after surviving the initial unstable period, they later continued with very low export sales. When entering international markets, such marginal exporters could benefit from the improved flow of information through the Internet and the information and communications technology (ICT) revolution, in general, and from decreasing costs of international travel and communication (Morse, Fowler and Lawrence 2007). Thus, one can observe a diversified impact of early internationalization on future growth: negative for companies with insufficient export potential and positive for companies with strong foundations for growth.

International management

This research stream focused primarily on the operations of large multinational firms and their subsidiaries. From the perspective of a multinational company as a whole, the key topic being

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researched addressed the relationship between the degree of multinationality (typically measured as the percentage of export sales in total sales and geographic or product diversification) on firm performance (Contractor, Kumar and Kundu 2007). However, the findings were quite ambiguous. Despite the predominant view that such a relationship is non-linear, researchers are widely divided as to whether it is U-shaped, inverted U-shaped, or S-shaped (Li 2007). With respect to the growth of domestic vs. export sales, this largely depends on the key motives and subsequent strategies pursued by the firms' headquarters. Such strategies are typically classified as market seeking, resource seeking, strategic asset seeking, or efficiency seeking (Dunning and Lundan 2008). Nachum and Zaheer (2005) added additional export-seeking motives as an extension of market-seeking (e.g., selling to neighboring countries). However, exporting can also be a reflection of an efficiency-seeking strategy where goods are manufactured in the most efficient locations in terms of availability and costs of resources and exported globally through a multinational company (MNC) distribution network (export platforms).

On the other hand, in the vast array of foreign affiliates, particularly among those launched by smaller parents, many examples reflect entrepreneurial growth orientation (proactivity, innovation, risk-taking) rather than the pursuit of a global strategy. Once established, such firms often undertake internationalization initiatives independently from their parents. This kind of occurrence presents ways to include foreign subsidiaries as a unit of analysis in the growth of the internationalization of new and established ventures. Holm et al. (2008) pointed out that the independent internationalization of foreign subsidiaries has not yet been adequately researched.

The research conducted by Salomon and Shaver (2005) pointed to the interrelationship between export and domestic sales, concluding that they should not be examined in isolation. They identified striking differences between Spanish-owned firms and foreign-owned firms operating in Spain. However for local firms, domestic and export sales were complements, and in the case of foreign-owned firms, they were typically substitutes.

International microeconomics

In recent years, a new research trend emerged within the international economics sub-discipline due to the increased access to large panel data from statistical offices and other sources, which allowed researchers to conduct analyses based on individual economic and financial company data (Bernard et al. 2007). The key focus of such a trend is the relationship between exporting (international operations in general) and company productivity (for an extensive overview, see Wagner 2007; Wagner 2012). Two main concepts, self-selection and learning from exporting, have been put forth regarding the direction of such a relationship (ISGEP 2008). The self-selection argument indicates that only the best companies in a given country engage in international operations as higher productivity enables them to compete in international markets. Other researchers point to the "learning from exporting" effect (Salomon 2006). Companies that

engage extensively in international operations are exposed to diverse operating environments, acquire more intensively relevant knowledge and build higher level competencies. This leads to increased productivity and performance that is also demonstrated in domestic operations.

Berman, Berthou and Hericourt (2011) studied the interconnections between domestic and international sales trajectories by French manufacturing enterprises using a large firm-level database for 1995 to 2001. The key finding was that domestic and foreign sales complemented rather than substituted for each other, and exogenous variations in foreign sales were positively associated with domestic sales, even after controlling for changes in domestic demand.

In summary, the research carried out within diverse research streams (entrepreneurship, international entrepreneurship, international management and international economics) pointed to the general notion of the positive impact of involvement in international operations related to the growth and performance of firms. However, detailed empirical research indicated that this relationship was much more complex and was not always positive. Unfortunately, due to the different theoretical assumptions and research methods used, the findings from various research streams cannot be properly integrated to form a comprehensive body of knowledge. The research conducted in the international economics and international management fields is typically static in nature and does not consider changes that take place at the company level over time. At the same time, the researchers in the international economics and entrepreneurship fields, using large micro-panel data, are not able to examine and triangulate the results with the analysis of the actual processes within the firms. On the other hand, the research within the international management field is conducted primarily with the use of questionnaire surveys combined with qualitative methods (e.g., in-depth interviews and case studies). The key obstacle in applying such methods is the limited willingness, particularly by management of smaller firms, to participate in the surveys and provide relevant financial information, which also affects the quality of data and the risk of conducting research on non-representative samples.

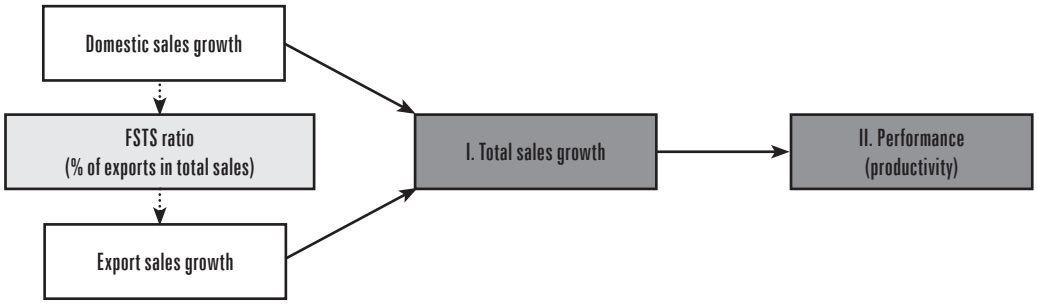
| Research plan

The basic research concept was to examine the impact of domestic vs. export sales growth trajectories on the total sales growth and performance (productivity). The research plan encompasses two phases as depicted in Figure 1.

The relevant growth pattern trends may emerge at different stages of company internationalization, as measured by the foreign sales/total sales (FSTS) ratio. The change in FSTS ratio over time indicates whether the total sales growth is predominantly domestic or export driven. Taking into consideration the prevailing view in the extant literature that internationalization augments growth opportunities, one expects that firms experiencing higher growth of exports compared to domestic sales (reflected in the increase of FSTS ratio over time) would experience higher growth

 DOI: 10.7206/mba.ce.2084-3356.105

Figure 1 | Research plan model



Phase I: Impact of domestic vs. export sales growth on total sales growth

of total sales. Since this analysis was confined to the regular exporters, it was expected that the younger firms and those that embarked on exporting at the early stage of operation would experience higher total sales growth. Thus, the following hypotheses were formed:

H I.1. Companies with higher level of internationalization, as measured by FSTS ratio, will demonstrate higher total sales growth.

H I.2. Exporting firms experiencing higher export growth rates compared to domestic sales will demonstrate higher total sales growth (superiority of export-driven growth).

H I.3. Younger firms will experience higher total sales growth than older firms.

H I.4. Firms that embark on exporting at early stages will experience higher total sales growth than late exporters.

Phase II: Impact of total sales growth on performance (total sales per employee)

As previously discussed, achievement of exceptionally high growth rates does not necessarily lead to higher performance, particularly in profitability (Davidsson et al. 2009). This research used a simplified productivity measure : total sales to employment ratio as a proxy for performance. In this case, the expectation was that firms experiencing high turnover growth do not necessarily need to grow employment at a similar pace, which obviously leads to higher productivity. The increased productivity typically coincides with the size of the firm, as larger entities may benefit from the economics of scale.

With respect to the current level of internalization measured by the FSTS ratio, there was a striking difference between domestic and foreign-controlled firms. In the case of foreign-controlled companies, the share of exports in total sales was 43%; for domestic exporters, this ratio was

only 9% (Table 2). As the extant research on the multinationality/performance relationship has had quite ambiguous results so far (Li 2007), no relevant hypothesis was proposed regarding this relationship. However for domestic exporters, the "learning from exporting" argument seems valid, and those with broader international exposure should demonstrate higher productivity.

Since both domestic and foreign-controlled exporters had to be continuously engaged in exporting for at least 8 years (2003–2010) for this study, they had already incurred sunk costs associated with initiating international operations. At that stage, the efficiency-seeking motive, identified in the international management literature, might well apply. Therefore, this study argued that firms embarking on export-driven growth would experience higher productivity.

Following the international entrepreneurship literature emphasizing the positive effects of early export engagement as well as the "learning from exporting" argument, this study proposed that early internationalization would positively correlate with performance. This led to the following hypotheses:

H II. 1. Companies experiencing higher total sales growth will achieve higher productivity, compared to their slow-growing counterparts.

H II.2. Larger companies in terms of sales volume will achieve higher productivity.

H. II.3. Increases in FSTS ratio will lead to better performance.

H. II.4. Younger firms will demonstrate higher productivity levels compared to older firms.

H. II.5. Early internationalization will lead to better performance.

Methodology and data collection

Selecting panel data of regular exporters

This research was based on panel data derived from the database of Polish commodity exporters maintained by the Polish government institution, the Analytical Centre of Customs Administration (CAAC). The companies selected for the research purposes had to meet the following criteria:

- They were located in the Mazovia Region.
- Their core activity was manufacturing (NACE 2 10–33).
- They were regular exporters; i.e., they were engaged in export sales during 2003 to 2010 (8 years) with export sales exceeding 200 thousand euros each year. (Companies below 200 thousand euros of export sales in a given year are not obliged to report to CAAC).

 DOI: 10.7206/mba.ce.2084-3356.105

These criteria led to the identification of 489 regular exporters, which were 7.8% of the total number of 6,279 commodity exporters in the Mazovia region.

Since the CAAC database contains only information about exports and imports, it had to be matched with other sources like the official company register (REGON) and economic and financial data provided by the professional suppliers. In the latter case, the study tried to obtain data on turnover, employment and assets. It was possible to obtain such data only for 298 exporting firms for 2007 to 2010. Those 298 companies comprised the panel data used for further analysis.

Key characteristics of regular exporters in panel data

The distinction between regular and irregular (sporadic) exporters helped to identify one of the most crucial problems, namely the irregularity of engaging in international sales by the overwhelming majority of exporters. It confirmed the findings from earlier research (Cieślik et al. 2010) and similar studies conducted in other countries (e.g., Eaton et al. 2007) like Colombia. As a result, export sales appear to be dominated by a handful of large and stable exporters. The 489 firms included in the panel data contributed 55% of the commodity exports in the Mazovia region in 2010, while the 298 exporters for which economic and financial data became available contributed 45%. The managerial and policy implications of this predominant export irregularity are addressed in the concluding section.

The second most important observation related to the role of foreign-controlled firms among large and stable manufacturing exporters (see Table 1). Foreign subsidiaries accounted for 44% of the total number but contributed over 75% of export sales by 298 regular exporters from the Mazovia region. The latter contribution was weighed against the share of foreign-controlled firms in the Polish manufacturing exports in general, which is among the highest in the world and exceeded 65% in recent years (UNCTAD 2008).

The selection criteria of regular exporters, and particularly the requirement for continuous involvement in the export operations during 2003–2010, favored well-established companies. On average, firms included in the panel data were 18 years old and launched export sales shortly after foundation. With respect to domestic firms, the average delay between foundation and exporting was 3.1 years, whereas for foreign subsidiaries it was only 1.3 years.

Table 2 illustrates the growth patterns of the 298 firms and their contribution of exports to the overall turnover growth. This follows the OECD classification (OECD 2008) and defines high-growth firms as those experiencing average annual turnover growth of 20% or higher during the 3-year period of 2007–2010. The table also categorizes between firms achieving growth rates below 20% and those with declining turnover growth during the period under study. Furthermore, it distinguishes between export-driven and domestic-driven growth patterns depending on whether the export growth rate during 2007-2010 was higher than domestic sales or vice versa.

Table 1 | Key characteristics of regular exporters in the Mazovia Region (2010 data)

	Total	of which domestic firms	of which foreign-controlled firms
All firms			
No. of firms	298	166	132
Total sales (mln Euros)	33,062.1	19,628.1	13,434.0
Exports (mln Euros)	7,573.4	1,782.1	5,791.3
Employment (thousands)	78.7	32.3	46.4
Up to 49 employees			
No. of firms	101	66	35
Total sales (mln Euros)	3,178.2	447.8	2,730.4
Exports (mln Euros)	1,138.5	226.6	911.9
Employment (thousands)	0.6	0.6	0.1
50–249 employees			
No. of firms	120	70	50
Total sales (mln Euros)	2,326.0	1,199.9	1,126.1
Exports (mln Euros)	860.2	342.8	517.5
Employment (thousands)	16.6	9.7	6.9
250+ employees			
No. of firms	77	30	47
Total sales (mln Euros)	27,557.9	17,980.4	9,577.4
Exports (mln Euros)	5,574.7	1,212.8	4,361.9
Employment (thousands)	61.4	22.0	39.4

Source: author's calculations.

As the time frame of the research coincided with the most recent global economic and financial crisis, the study needed to take into account its negative implications. Although the 298 firms as a whole experienced positive annual growth rates of total sales and export sales, 8.1% and 4.3% respectively, almost half of the firms (148) experienced negative turnover growth during 2007–2010. Among those affected were both local and foreign-controlled firms. The most striking characteristic of the declining firms was the size. Representing almost 50% of the panel data group, declining firms contributed only 10% of the total turnover and 17% of export sales.

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Table 2 | Regular exporters by turnover growth dynamics 2007–2010 (2010 figures – million Euro)

	Total			of which domestic firms			of which foreign-controlled firms		
	No of firms	Sales	Exports	No of firms	Sales	Exports	No of firms	Sales	Exports
A. HG firms ≥ 20% annual growth									
Export driven	12	776.2	330.2	6	352.4	64.0	6	423.8	266.2
Domestic driven	10	1,723.4	376.3	3	21.0	6.3	7	1,702.4	370.1
Subtotal	22	2,499.5	706.5	9	373.4	70.3	13	2,126.2	636.2
B. Slow-growing 0–20% annual growth									
Export driven	74	6,280.7	2,795.2	38	861.1	273.5	36	5,419.7	2,521.7
Domestic driven	54	20,845.8	2,732.2	28	16,605.7	626.8	26	4,240.1	2,105.4
Subtotal	128	27,126.5	5,527.4	66	17,466.7	900.3	62	9,659.8	4,627.1
C. Declining									
Export driven	62	1,478.3	612.5	36	591.9	298.3	26	886.4	314.2
Domestic driven	86	1,957.7	726.9	55	1,196.1	513.2	31	761.6	213.7
Subtotal	148	3,436.1	1,339.4	91	1,788.0	811.5	57	1,648.1	527.9
All firms									
Export driven	148	8,535.2	3,738.0	80	1,805.3	635.9	68	6,729.9	3,102.1
Domestic driven	150	24,526.9	3,835.4	86	17,822.8	1,146.2	64	6,704.1	2,689.2
TOTAL	298	33,062.1	7,573.4	166	19,628.1	1,782.1	132	13,434.0	5,791.3

Source: author's calculations.

With respect to the high-growth firms, they represented equally the domestic and foreign-controlled sectors. While foreign subsidiaries belonging to the high-growth sub-group expanded primarily in the Polish market, the exceptional growth of local firms was predominantly export driven. One may therefore conclude that for the ambitious local firms, once they embark on a high-growth strategy, expanding the export base is a must.

The stylized fact resulting from numerous research undertakings in both developed and developing countries is that foreign-controlled firms on average are more productive when compared to

their local counterparts (Wagner 2012). This generally holds for the regular exporters included in the panel data in which the respective productivity difference was still significant at about 29% (Table 3). One shall bear in mind that following the self-selection argument (Wagner 2007), local regular exporters need to be far more productive than sporadic and non-exporters to compete on the international markets by approaching the productivity levels of international firms.

Table 3 | Productivity of regular exporters – breakdown by growth dynamics (Average sales per employee – 2010 thousand Euro)

	Total	Domestic firms	Foreign– controlled firms
A. HG firms ≥ 20% annual growth			
Export driven	172.4	184.1	160.7
Domestic driven	423.2	66.4	494.6
Subtotal	279.9	160.6	346.2
B. Slow-growing 0–20% annual growth			
Export driven	189.5	134.6	244.4
Domestic driven	281.2	322.7	238.0
Subtotal	232.4	223.5	241.5
C. Declining			
Export driven	100.7	80.0	128.3
Domestic driven	99.9	102.7	94.7
Subtotal	100.2	93.6	110.6
All firms			
Export driven	153.7	115.1	196.9
Domestic driven	198.9	193.0	206.4
TOTAL	176.8	156.0	201.6

Source: author's calculations.

Interestingly, there were striking differences in productivity between high-growth, slow-growing and declining firms; the latter category achieved only 40% of the productivity levels of high-growth firms. This may support that high productivity provides a strong base for exceptionally

 DOI: 10.7206/mba.ce.2084-3356.105

high growth but also the vulnerability of low productivity firms to the unfavorable trends in the external business environment.

Models

To verify the hypotheses, two models were tested: Model 1 for the hypotheses in Phase I, and Model 2 for the hypotheses in Phase II.

Model 1: $TSG = \beta_0 + \beta_1 FSTS\_10 + \beta_2 FSTS\_10\_07 + \beta_3 AGE + \beta_4 TTI + \beta_5 HT\_MHT + \beta_6 MLT + \varepsilon$

where

TSG is a total sales growth measured as a ratio of total sales in 2010 to total sales in 2007 (a log transformation was applied in order to match the distribution of the data closer to normality);
FSTS_10 is the ratio of foreign sales to total sales in 2010;
FSTS_10_07 is the change in FSTS ratio over time (FSTS_10 divided by FSTS_07 and logarithmized);
AGE is the firm age;
TTI is time to internationalization; and
HT_MHT (high and medium-high technology) and MLT (medium-low technology) are dummies to control for manufacturing industry technology levels (with LT or low-technology level kept as a reference category).

Model 2: $PERF = \beta_0 + \beta_1 FSTS\_10 + \beta_2 FSTS\_10\_07 + \beta_3 AGE + \beta_4 TTI + \beta_5 HT\_MHT + \beta_6 MLT + \beta_7 TSG + \beta_8 SIZE + \varepsilon$

where

PERF is a performance variable measured as a ratio of Total Sales to Employment in 2010 (in a logarithmic form) and SIZE represents total sales in 2010 (logarithmized).

The analysis checked for potential multicollinearity by examining the variance inflation factors and found them all to be at acceptable levels in both models, with VIFs well below 10.0 (Neter et al. 1996). It also employed White's test for heteroskedasticity and found the residuals to be homoskedastic (p-value = .60) in Model 1 and heteroskedastic (p-value = .07) in Model 2. Consequently, Model 1 was estimated with the standard OLS procedure, while in Model 2 the variance-covariance matrices were estimated according to the White's (1980) method.

Variables

Dependent Variables

In Model 1, the dependent variable (TSG) is a total sales growth measured as a (logarithmized) ratio of total sales in 2010 to total sales in 2007. Total sales growth was measured in a number of ways in previous

studies, e.g., as a percent per annum (Johnsen and McMahon 2005); through various manipulations of first-year and last-year sales: as a net difference between total sales in the beginning and the end year (Oke, Burke and Myers 2007), as a relative or absolute ratio of last-year to first-year sales (Weinzimmer, Nystrom, and Freeman 1998; Delmar et al. 2003), or as the slope of the sales regression line over time (Weinzimmer et al. 1998; Chandler, McKelvie and Davidsson 2009; Cieślik and Kaciak, 2011).

In Model 2, the dependent variable (PERF) is a performance variable measured as a (logarithmized) ratio of total sales to employment in 2010. The sales-per-employee ratio was used as a measure of performance (productivity) in many studies; e.g., Lööf and Hesmati (2006); Khurrum et al. (2007); Ngo et al. (1998); Kotey (2005).

Independent variables

In Models 1 and 2, FSTS_10 is the share of turnover from foreign markets to the total turnover (foreign sales to total sales) in 2010. It is one of the most widely used measures of a degree of internationalization of a firm (e.g., Kuivalainen, Saarenketo and Puumalainen 2012). A related measure, FSTS_10_07, captures the increase of the FSTS ratio over time (FSTS_10 divided by FSTS_07; again, this variable was logarithmized). AGE (firm age) and time to internationalization (TTI) variables are also common in the internationalization and born-global literature (e.g., Cieslik, Kaciak and Welsh 2012; Acedo and Jones 2007; Zucchella, Palamara and Denicolai 2007; Morgan-Thomas and Jones 2009; Singh, Gaur and Schmid 2010; Lin, Liu and Cheng 2011; Khavul, Pérez-Nordtvedt and Wood 2010). The analysis operationalized the age of the firm as the number of years from the establishment of the company to 2012. TTI was calculated as the number of years between the year of establishment and the first recorded export sale.

In Model 2: SIZE is a proxy for firm size, operationalized as a log of total sales in 2010. Many recent studies used total sales as a proxy for firm size (Contractor et al. 2007; Konopaske, Werner and Neupert 2002; Un and Cuervo-Cazurra 2008).

Control Variables

In Models 1 and 2, HT_MHT (high and medium-high technology) and MLT (medium-low technology) are dummies to control for manufacturing industry technology levels (OECD 2005; Heidenreich 2009; Hervas-Oliver, Garrigos and Gil-Pechuan 2011). Tables 4 and 5 show the regression results for Models 1 and 2, respectively.

Discussion

While assessing the results of the regression analysis, it should be emphasized once again that the research focused on regular exporters only; i.e., those continuously engaged in exporting

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Table 4 | Model 1 (OLS regression results)

Dependent variable: TSG; Heteroskedasticity-robust standard errors, variant HC1

	Coefficient	Std. Error	t-ratio	p-value	
Const	-0.000760982	0.0666265	-0.0114	0.99090	
FSTS_10	-0.075092	0.046294	-1.6221	0.10590	
FSTS10_07	0.19918	0.0414374	4.8068	<0.00001	***
AGE	0.00324558	0.00404179	0.8030	0.42264	
TTI	-0.00251642	0.00582407	-0.4321	0.66602	
HT_MHT	-0.0542463	0.0281423	-1.9276	0.05491	*
MLT	-0.0161539	0.0296048	-0.5457	0.58574	
Mean dependent var	-0.012365	S.D. dependent var		0.207461	
Sum squared resid	11.307250	S.E. of regression		0.199887	
R-squared	0.090950	Adjusted R-squared		0.071677	
F(6, 283)	4.718994	P-value(F)		0.000134	
Log-likelihood	58.951130	Akaike criterion		- 103.9023	
Schwarz criterion	-78.213090	Hannan-Quinn		-93.60990	

White's test for heteroskedasticity - Null hypothesis: heteroskedasticity not present

Test statistic: LM = 21.6902 with p-value = P(Chi-square(24) > 21.6902) = 0.597754.

during 2003–2010. Only 8.4% of commodity manufacturing exporters based in the Mazovia region demonstrated such regularity. Regular exporters are typically mature firms with sizeable international operations. Strongly overrepresented within this group were subsidiaries of multinational companies.

With respect to Phase I of the research, addressing the relationship between the dynamics of exports and domestic sales and the total sales growth, only one out of four hypotheses has been confirmed (Table 4). The analysis found a positive correlation between the increase of export intensity (FSTS_10_07) and the total sales growth (TSG). This implies that firms following export-oriented strategies have better chances for achieving exceptionally high growth rates. This confirms findings from Berman et al. (2011), based on the French data on the complementarities between domestic and export sales, the latter becoming the triggering factor for local turnover growth. On the other hand, the degree of internationalization, measured by the FSTS ratio, age of the firm, and early internationalization (TTI) proved to be insignificant for explaining the total sales growth of exporting firms.

With respect to Phase II of the research, which was aimed at testing the relationship between total sales growth and productivity, three out of six hypotheses were confirmed (Table 5).

Table 5 | Model 2 (OLS regression results)

Dependent variable: PERF; Heteroskedasticity-robust standard errors, variant HC1

	Coefficient	Std. Error	t-ratio	p-value	
Const	2.81747	0.287914	9.7858	<0.00001	***
TSG	0.483443	0.137685	3.5112	0.00055	***
SIZE	0.394228	0.0318634	12.3724	<0.00001	***
FSTS_10	0.0134205	0.0747648	0.1795	0.85772	
FSTS10_07	-0.00926501	0.0659533	-0.1405	0.88842	
AGE	-0.0198074	0.00661487	-2.9944	0.00308	***
TTI	0.0155603	0.00830804	1.8729	0.06247	*
HT_MHT	-0.0288257	0.047655	-0.6049	0.54591	
MLT	0.0241683	0.0491512	0.4917	0.62344	

Mean dependent var	5.595693	S.D. dependent var	0.432832
Sum squared resid	16.97765	S.E. of regression	0.284334
R-squared	0.584298	Adjusted R-squared	0.568462
F(8, 210)	32.30365	P-value(F)	9.13e-33
Log-likelihood	-30.73699	Akaike criterion	79.47397
Schwarz criterion	109.9756	Hannan-Quinn	91.79269

White's test for heteroskedasticity – Null hypothesis: heteroskedasticity not present

Test statistic: LM = 53.5246 with p-value = P(Chi-square(40) > 53.5246) = 0.0746925.

A positive correlation with productivity (PERF) was found both for total sales growth (TSG) and company size (SIZE), while a negative correlation was found for company age (AGE). TTI turned out to be correlated (albeit weekly) with productivity (PERF), but in the direction opposite to that predicted in Hypothesis II. 6. According to this result, the longer time to internationalization, the higher the productivity. On the other hand, both the current level of internationalization (FSTS) and the change of FSTS ratio (FSTS_10_07) were not significant.

While performing the regression analysis, it was controlled for the potential effect of technology level of a given industry in which regular exporters operate. This variable proved to be insignificant for productivity and significant for dynamics. The analysis found (see Model 1) that firms belonging to high or medium-high-technology industries (HT_MHT) exhibited lower total sales growth than firms operating in low-technology (LT) environments.

Altogether, the majority (i.e., 5 out of 9) of the hypotheses tested were not supported by the results of the analysis. Since these hypotheses were based on the existing body of internationalization literature, this may imply that regular exporters represent a distinct category of exporters,

 DOI: 10.7206/mba.ce.2084-3356.105

thus calling for the development of alternative theoretical concepts and variables explaining their growth and performance. Regular exporters are typically mature, older firms engaging in exporting at very early stages of their operations. However, these early stage developments could not explain growth trajectories taking place after several years.

Conclusions

This research complements an earlier study by Cieślik et al. (2010), which indicated that the overwhelming majority of exporters, including those initiating export sales very early, do not grow international sales and remain at the level of sporadic micro-exporters, quite often abandoning export markets entirely. The present study revealed that only a fraction (less than 10%) of firms engaging in international sales serve in export markets in a continuous manner, which typically leads to high export volumes. Thus, for managers of young exporters, overcoming initial irregularity becomes a key challenge facilitating future growth and performance in international operations. Eaton et al. (2007) pointed to one reason for irregularity, namely that exporters and external buyers must undergo a period of learning about one another, and only after some time can a young exporter assess the viability of an international route for expansion. Gabrielsson et al. (2008) referred to another cause of irregularity, namely premature internationalization. In many circumstances, acquisition of the necessary experience and building of a sales network requires a longer preparatory period. Consequently, premature internationalization can be harmful for future expansion. The issue of this definitely under-researched topic and broadening of the knowledge base in this particular field could be of crucial importance for designing effective strategies aimed at overcoming initial irregularity by young exporters.

Addressing the issue of export irregularity is of utmost importance for growing exports at the country level. Research conducted in various countries proved that the majority of export sales are generated by a handful of large established exporters, including the subsidiaries of multinational corporations. However, to ensure the continuous, healthy growth of exports, it is of crucial importance that the "upper league" is continuously expanding by the influx of new regular exporters. Eaton et al. (2007) found that the fraction of new exporters, which managed to grow international sales, during less than a decade account for almost half of export growth. Thus, assistance to the young ambitious firms in overcoming irregularity of their international sales should be seen as an important instrument for implementing an export-oriented strategy at the country level.

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