

# THE SPEED OF INTERNATIONALISATION OF ENTREPRENEURIAL START-UPS IN A TRANSITION ENVIRONMENT

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## **ABSTRACT**

This paper examines the speed of internationalisation by newly established firms operating in the rapidly changing environment of a country undergoing systemic transition, as exemplified by Poland. Two dimensions of the speed of internationalisation are examined: (a) export readiness, measured by the time distance between the year of establishment and the year of the first export sale, and (b) export dynamics, measured by the rate of exports growth over time. A longitudinal process analysis based on a large micro data set of Polish manufacturing firms helped identify two interesting patterns: On one hand, most Polish exporters embarked on exports shortly after their establishment. On the other however, exporters were highly diversified with regard to export dynamics, with only a handful of entrepreneurial start-ups becoming high-growth exporters.

**Keywords:** *Internationalisation process; Institutional context; Emergent markets;  
International entrepreneurship; Internationalisation strategy.*

## **1. Introduction**

The management and international business research community generally agrees that emerging economies, particularly those undergoing transition from a centrally-planned to a market system (transition economies), provide a “fascinating research laboratory” (Mayer and Peng, 2005, p. 600) for testing existing management and IB theories and advancing new or modified ones. The prevailing stream of research to date has focused on testing existing management theories, namely new institutional economics, transaction cost and resource-based view, as well as organizational learning, networks, and absorptive capabilities (Hoskisson et al., 2000; Wright et al., 2005; Hitt, Li, and Worthington, 2005; Zhu, Hitt, and Tihanyi, 2006). These theories are typically applied to three types of firms (organizations) operating in a transition environment: foreign investors, local incumbents (mostly state-owned enterprises), and entrepreneurial start-ups (Peng, 2000).

A clear weakness of such an approach lies in its strong Western focus and the lack of detailed analysis of the indigenous context (Tsui, 2004), particularly the impact of radical systemic transition from the communist system to the market economy system in a relatively short time. The dynamic context of rapid systemic changes taking place in Central and Eastern Europe (CEE) could benefit greatly from a longitudinal analysis investigating the evolution of business processes over time – a method strongly advocated in the management research but rarely implemented (Hoskisson et al., 2000; Meyer and Gelbuda, 2006).

What is of particular concern, however, is that testing the explanatory power of existing management and IB theories in the transition economy typically lacks sound empirical context, shaped by rich and reliable industry statistics and publicly available company data from which general trends and patterns can be detected. Under such circumstances, the results of standard research methods like mail surveys and interviews with managers of local companies cannot be examined in the context of industry and/or macroeconomic trends.

In the present paper, we advance an indigenous, context-sensitive stream of research as advocated by Tsui (2004), with the objective of understanding the speed of the process of internationalisation of entrepreneurial start-ups during the transition from a command-type system to a market economy system. Since we believe research of the internationalisation process in a particular transition environment may benefit from a methodological approach based on inductive theory building (Locke, 2007), we adopt such an approach here. Initially, this entails gathering and analysing empirical data to identify trends and patterns of internationalization under transition. This helps formulate research questions that are relevant in a particular context of the economy undergoing transition (radical systemic transformation). Only then can alternative theoretical concepts be evaluated in terms of their explanatory power followed by the suggested extension of the existing models to incorporate novel transition-specific aspects of internationalisation.

The inductive approach is typically pursued in case studies used for grounded theory building, with some limited examples addressing the particular context of a transition environment (Danis and Wade, 2002; Vincze, 2003). In this paper, we complement the inductive approach by analyzing a large micro data set containing statistical information on the entire population of Polish firms engaged in export operations between 1993 and 2003. This method seems particularly useful in the case of transition economies in view of the insufficient statistical information at company level.

This paper is organized in six sections: In the first we present the context of systemic transition from the perspective of the major entities involved: foreign investors, incumbent local firms (public and private), and entrepreneurial start-ups, taking Poland's institutional and economic environment as an example. To that effect, we compiled both qualitative and quantitative data, which allowed us to assess the magnitude of the systemic change and its impact on key players in the internationalisation process during the transition period 1989 –

2003. In sections 3, 4 and 5, the body of the paper, we present the results of the longitudinal analysis of the speed of internationalisation of entrepreneurial start-ups in the Polish manufacturing sector between 1993 and 2003. We examine two dimensions of speed: (a) export readiness, measured by the time distance between company formation and launching exports and (b) export dynamics, measured by the export growth rate over time. The final section contains the main conclusions, policy recommendations, and points for future research.

The paper makes two contributions to the extant literature. First, we expand indigenous research focused on the specific context of firm-level internationalisation in CEE economies undergoing systemic transition. The second contribution is of a methodological nature and involves analysis of large, anonymized data. The application of such data in the field of international economics (Wagner, 2007) indicates its potential beneficial use in IB research as well.

## **2. Firm-level internationalisation: The magnitude of change under transition**

In this section we present key characteristics of the systemic transition from a centrally planned to a market-oriented system, focusing particularly on qualitative and quantitative features that profoundly affected the internationalization process at firm level during the transition. In this process we contrast the status in Poland towards the end of the communist era, i.e. in 1988, with the scenario 15 years later (2003) when Poland was mature enough to gain accession to the European Union in May the following year.

The crucial concept for understanding the process of internationalization at firm level (or lack of it) under communism was the so-called principle of the monopoly of foreign trade. This ideological policy stated that not only private entities but also fully controlled state-owned enterprises were barred from directly exporting and importing and had to process import/export transactions through designated state agencies – foreign trade organizations

(FTOs). The monopoly of foreign trade had been extended to inward direct foreign investment, and the maximum business presence allowed was in the form of so-called representative offices of multinational companies performing limited marketing and promotion activities.

During the 1970s and 1980s certain measures were introduced to relax the monopoly on foreign trade. Nevertheless, the number of business entities engaged in cross-border operations towards the end of the communist era in 1988 was negligible, as the quantitative historic data in Figure 1 shows. Towards the end of 1988, in a country of over 38 million inhabitants, there were only 767 exporting firms. For most of them exports were minor transactions as over 91% percent of total turnover had been channelled through 62 state-owned foreign trade agencies.

From the institutional perspective, January 1, 1989 can be seen as a useful demarcation date for beginning the transition from a communist system to a market economy in Poland. Between 1989 and 1990 and in subsequent years all key institutional elements of the old communist regime had been substituted by new regulations facilitating the functioning of the market mechanism and privatizing the state-owned sector.

The transition resulted in a rapid increase of domestic firms engaged in export operations. Between 1988 and 2003 more than 158,000 firms engaged directly in exporting, of which some 40,000 survived as exporters in 2003. Simultaneously, large multinationals and smaller Western firms have rushed to set up their subsidiaries. Over 48,000 subsidiaries registered during the transition period, of which 15,400 remained active in 2003. The relatively low survival rate points to the mounting obstacles foreign investors faced operating in an unstable economy that was undergoing radical transformation. However, a substantial number of subsidiaries were established just to capitalize on the generous tax incentives during the early 1990s, after which they ceased operations in Poland.

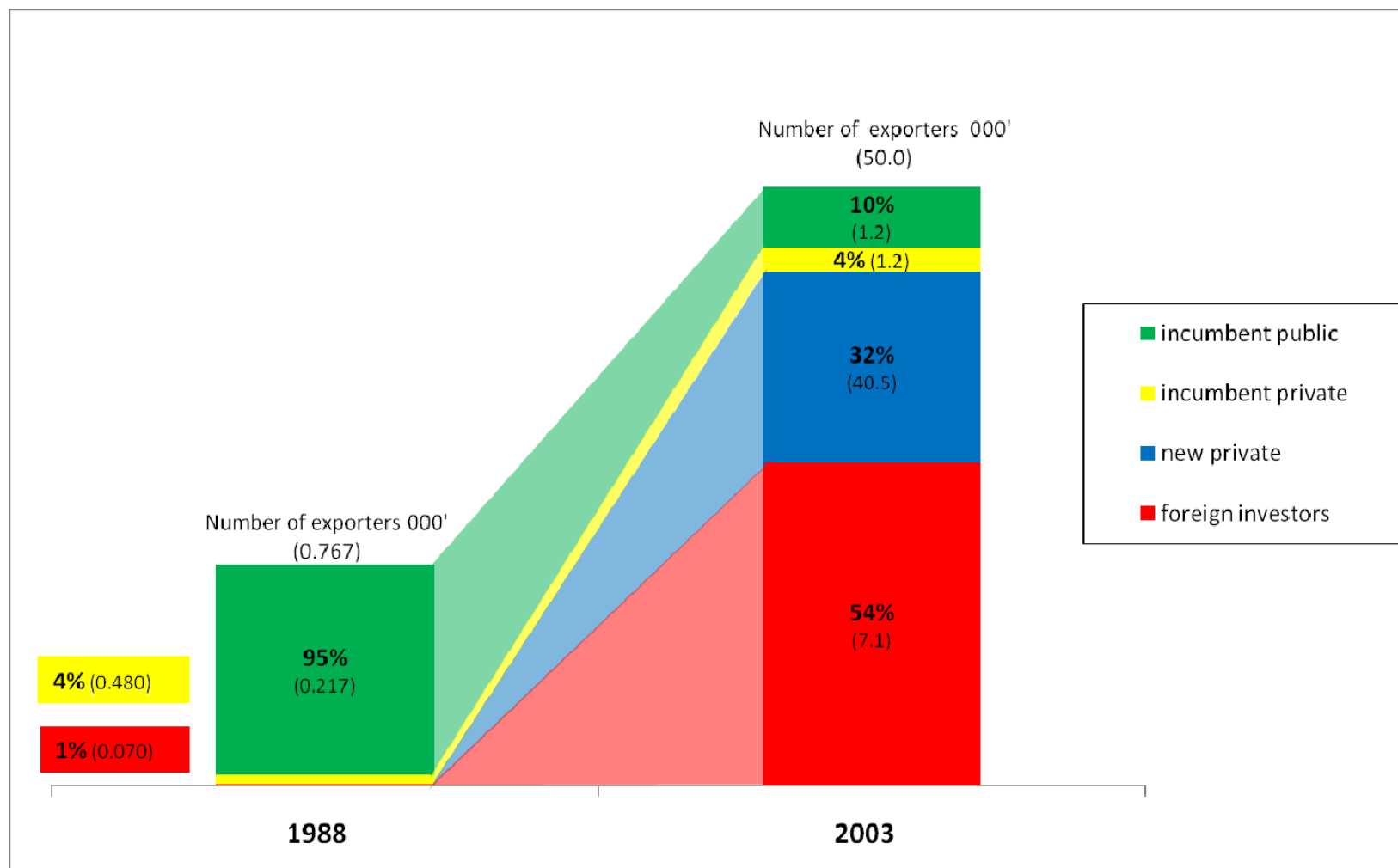
Figure 1 illustrates in quantitative terms the magnitude of change in export operations at firm level resulting from the systemic transition, and the roles of key players in the process. Between 1988 and 2003 Poland's commodity exports (constant prices) increased 3.7 times. From a microeconomic perspective, however, the above aggregated growth resulted from diversified directions and performance by major players. With respect to the state-owned companies, there was a drastic decline of their share in Polish commodity exports, namely from 95% in 1988 to 10% in 2003. At the same time, foreign subsidiaries dramatically expanded their international operations, providing for more than half (54%) of Polish commodity exports. Concerning the domestic private sector's contribution of 36% of Polish commodity exports in 2003, the most striking pattern was that 90% of this contribution was the result of export sales of new entrepreneurial start-ups, with limited involvement of incumbent private firms established before 1989.

The public sector's declining role can be directly linked to systemic changes and deliberate policies aimed at decreasing its overall share in the Polish economy. Towards the end of the communist era, in addition to 12,000 state-owned enterprises there were over 586,000 private small business entities outside the agricultural sector (which was predominantly in private hands). These were mostly sole proprietorships engaged in handicrafts, taxi drivers, retail trade, services, etc. Their apparent lack of success by incumbent private firms in "going abroad" requires further scrutiny.

The answer lies partly in the business skills and experiences accumulated while conducting business under communism. They were strongly embedded in the communist operating environment and became obsolete, if not an impediment, when the rules changed. The negative impact of "communist embeddedness" was profoundly reflected in the field of marketing. Generally, clients were not looked after under communism due to an acute

**Figure 1**

**Polish commodity exports 1988 - 2003: The number of firms and % share of total turnover by major categories of exporters**



**Source:** FTDC Database and various publications of the Polish Central Statistical Office.

shortage of consumer goods and services and customers waiting in lines. The major concern and key survival factor was purchasing various production inputs, materials, and components, mostly from state-owned enterprises and trading organizations. As a result, incumbent private firms were ill equipped to operate within a market environment where the crucial success factor related to building a strong client base.

### **3. The longitudinal analysis - methodology and data collection**

The analysis conducted in the preceding section has helped identify two major dynamic categories of exporters during the period of transition after 1988, i.e. foreign investors and entrepreneurial domestic start-ups. Since the authors have investigated the first group in a separate study, we now focus on a detailed analysis of the second dynamic group of players – new entrepreneurial start-ups.

The issue of the speed of internationalisation has been dealt with extensively in the extant literature, primarily by contrasting cautious, stepwise engagement in international activities demonstrated by the Uppsala model (Johanson and Vahlne, 1977) with the recent phenomenon of engaging extensively in international business operations shortly after start-up, as reflected in the “born-global” stream of research (for an overview see Rialp, Rialp, and Knight (2005). Although the concept of speed of internationalisation has attracted plenty of attention, it has not been well defined. This implies a lack of widely accepted definitions, constructs, and measurement techniques. The notion of internationalisation speed has been associated with the time elapsed from the company’s foundation to the first entry of international markets, labelled throughout this paper as export readiness. Although it is still being followed in the extant literature (e.g. Acedo and Jones, 2007) there is a growing consensus concerning the multidimensional character of internationalisation speed. In

addition to export readiness, it encompasses speed of country diversification (Oviatt and McDougall, 2005) and pace of using different forms of international activity (Jones and Coviello, 2005). Surprisingly little research has been conducted so far on export dynamics, i.e. rate of growth of international sales after initial foreign market entry. In the internationalization speed model proposed by Oviatt and McDougall (2005) export growth dynamics have been incorporated indirectly in an additional dimension – the speed of international commitment (increase of the export/total sales ratio). We believe, however, that there is merit in including export (international sales) growth as a separate dimension of international speed. Firstly, this is because the increase of international commitment may not necessarily reflect the dynamics of international operations but merely slower growth, or even the decline of domestic sales. Secondly, studying export growth trajectories enables identifying particular characteristics of high-growth exporters, which, in turn, provides a promising opportunity for integration of internationalisation and high-growth streams of research, with particular focus on new ventures as advocated by Gilbert, McDougall, and Audretsch (2006).

The longitudinal analysis of the internationalisation speed of Polish entrepreneurial start-ups has been conducted on a large micro data set containing export sales of all Polish exporters engaged in commodity trade between 1993 and 2003 – over 158,000 exporters in total. The input data has been provided by the Foreign Trade Data Centre (FTDC) – a public organization responsible for compiling and processing official statistics on Poland's export/import commodity turnover (later referred to as the FTDC Database). To arrive at a manageable number we have eliminated accidental exporters, i.e. those that never achieved an annual export turnover of 80,000 PLN (27,000 USD), with an aggregated share of less than 0.2% of total export volumes. The core data set of the remaining 61,000 entities is fairly reliable although certain data errors seem unavoidable with such a large number of

participating firms. In addition to export sales volume in each year, we compiled additional data on each firm allowing for categorization of entities in the database by year of establishment, ownership (local versus foreign, private versus public), industry, legal form, and geographic region.

The following longitudinal analysis of the internationalisation process has been restricted to entrepreneurial start-ups in the manufacturing sector only (NACE Classification Division 15 to 37) representing 49% of the total number of firms. Excluded from the analysis is the second largest group of exporters – trading companies, which could produce confusing results due to differences between both industry groupings. The remaining, predominantly service firms, have been excluded because cross border service transactions are not properly captured in commodity trade statistics. After further eliminating firms which do not belong to the entrepreneurial start-up category (foreign subsidiaries, public firms, and domestic incumbents established before 1989), we arrived at a total of 18,896 private firms representing the core data set for the longitudinal analysis.

#### **4. Export readiness**

To investigate this dimension of internationalisation speed, we have related the year of first export sale to the year of establishment. Initially, we planned to adopt a time frame of three years, often used in extant literature to differentiate between “born global” firms and “late exporters” (Knight, Bell, and McNaughton, 2001; Andersson and Wictor, 2003; Aspeland and Moen, 2005). However, in view of the high proportion of firms launching exports in the first years of operation we decided to introduce a more detailed categorization, namely:

- Instant Exporters (IE), those launching export sales in the year of registration (Year 0) or in the first full year of operation;

- Quick Exporters (QE) – those launching exports in the second and third year of operation. However, those firms which registered in the first year of transition (1989) and launched exports in 1993 have also been categorized as Quick Exporters;
- Late Exporters (LE) – firms launching exports in the fourth year after registration or later.

The distinction between Instant and Quick Exporters is not merely a technical one. For the first group, export sales had to be carefully planned at the preparatory stage of the new venture, otherwise relevant transactions, such as identifying potential customers, negotiating, handling necessary documentation, etc., could not have been accomplished during a short period. For Quick Exporters incidental export decisions, i.e. those resulting from unsolicited orders were still possible.

The results of the export readiness analysis are contained in Table 1. The most striking evidence is the prevalence of instant internationalisation among exporting entrepreneurial start-ups. At the same time, the number of Late Exporters was quite significant only among firms established between 1989 and 2003, with a visibly declining trend between 1994 and 1999.

How can these empirical findings be explained within the context of the mainstream IB research? With respect to the particular context of transition economies in the CEE region, researchers' attention has focused on the operations of multinational enterprises, whereas the internationalization of newly established domestic firms remained largely unexplored (Mayer and Peng, 2005). Institutional theories provide the most obvious framework for studying internationalization of domestic firms in countries undergoing systemic transition. A radical change of the regulatory framework shaped the new operating environment, which prompted the emergence of millions of new businesses that could freely expand their activities on international markets.

Although the basic regulations paving the way for the market economy were rapidly introduced between 1989 and 1990, the enforcement rules and informal institutions supporting efficient free market mechanisms were implemented with some delays, and the process has not been fully completed, even in mature transition economies. New young businesses in the CEE region still faced various obstacles while pursuing their domestic and international operations. We therefore conclude that institutional theories do not adequately explain the internationalization process of new private firms engaging in international activities relatively early after systemic change and within immature institutional environments. Considering the anti-internationalisation direction of the communist past, one would rather expect internationalisation to take place only after becoming firmly established on domestic markets.

Similar conclusions can be derived from other streams of theoretical IB research, such as transaction cost theories, resource-based view, theoretical concepts emphasizing the role of networks, and organizational learning (Coviello, 2006; Hitt, Li and Worthington, 2005). Entering international markets requires building firm-specific resources – usually a lengthy process due to the general unavailability of relevant skills in the region or country. Due to a very limited number of business entities directly exporting or importing during communist times, there were regions and towns without any management personnel with international experience. Forging cooperative links with foreign business partners would be a natural remedy in view of the crucial role of networks in the early stages of the internationalisation process (Freeman, Edwards, and Schroder, 2006), but again, new entrepreneurs would suffer from a lack of experience because of restrictions under communism, not only in business but in tourism, social, and cultural exchanges. One impediment originating from communist rule was a lack of fluency in foreign languages within the small business sector. This has improved only recently as a result of the inflow of young, educated people into this sector.

However, one particular concept within organizational learning theory, namely the “learning advantage of newness” (Autio, 2000) might be useful for explaining internationalization patterns of entrepreneurial start-ups under transition. This concept suggests a greater flexibility among newly established firms compared to older ones, allowing them to assimilate knowledge on international markets more efficiently. This can be a valid point for entrepreneurial start-ups under transition but it may not outweigh all the impediments of internationalisation resulting from an unstable institutional environment, and lack of specialized knowledge and skills, particularly during the initial transition phase.

**Table 1 Entrepreneurial exporting start-ups in the Polish manufacturing sector**

Year of Establishment	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	1989 - 2003
<b>Export Readiness <sup>(1)</sup></b>																
Instant Exporters				941	912	803	876	803	806	681	599	724	641	590	341	8 717
Quick Exporters	416	1045	1333	567	439	283	263	226	228	186	170	191	86	n.a	n.a	5 433
Late Exporters	370	1034	840	743	608	319	297	231	157	106	41	n.a	n.a	n.a	n.a	4 746
TOTAL	786	2079	2173	2251	1959	1405	1436	1260	1191	973	810	915	727	590	341	18 896
<b>% of the total number of firms established in a given year</b>																
Instant Exporters				41.8	46.6	57.2	61.0	63.7	67.7	70.0	74.0	79.1	88.2	100.0	100.0	46.1
Quick Exporters	52.9	50.3	61.3	25.2	22.4	20.1	18.3	17.9	19.1	19.1	21.0	20.9	11.8			28.8
Late Exporters	47.1	49.7	38.7	33.0	31.0	22.7	20.7	18.3	13.2	10.9	5.1					25.1
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<b>% share of the volume of exports in a given year</b>																
<b>Year <sup>(2)</sup></b>					<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>1993 - 2003</b>
Instant Exporters					39.9	47.2	55.0	59.0	61.6	60.2	61.6	60.2	58.6	62.4	64.7	59.9
Quick Exporters					60.1	52.1	43.6	38.5	35.1	35.8	33.8	34.7	35.8	31.0	27.8	35.3
Late Exporters					0.0	0.7	1.4	2.5	3.3	4.0	4.6	5.0	5.7	6.6	7.5	4.8
TOTAL					100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

<sup>(1)</sup> For a definition of Instant Exporter, Quick Exporter, and Late Exporter see text

<sup>(2)</sup> Data on turnover was available only for the 1993 – 2003 period

**Source:** Own calculations based on FTDC Database

## **5. Export growth**

### *5.1. Diversification of growth rates of export sales*

The analysis of one dimension of internationalisation speed – export readiness – has shown relatively little diversification of exporting behaviours as the majority of exporters have embarked on international sales shortly after business registration. How successful were those exporting start-ups in expanding their international operations over time? To address this issue we have conducted a longitudinal analysis focusing on the rates of growth of export sales between 1993 and 2003. In view of the lack of agreed measurements relating specifically to exports, we have adopted recent definitions and conventions advanced by OECD (Ahmad and Gonnard, 2007). The proposed format stipulates measuring annualized growth rates over a minimum period of three years. High-growth firms are those that achieve annualized growth of sales and/or employment of over 20%. To eliminate cases of high growth being exclusively the result of very low base values, and to allow for meaningful comparative analyses, the proposed methodology introduced a minimum threshold level of 10 employees in the base year.

Our set of micro data contained export sales only, with no access to other key variables such as employment or total sales figures. As an alternative to the OECD minimum employment threshold, we have adopted an annual export sales limit of 800,000 PLN (approximately 270,000 USD), which is used in the Polish statistical system as a threshold for defining minor exporters who are not obliged to provide detailed statistics on commodity turnover within the European Community. Due to high inflation rates during the period under investigation (1993 – 2003) we have adjusted export values for inflation by using producer price indexes (PPI) (EconStats 2006).

The analysis of growth rates of export sales has been conducted in two phases. In the first phase, we have computed individual growth rates (based on the OECD methodology

described above) for all firms that were exporters in 2003. There were 13, 276 such firms within the original pool of 18,896 of all new entrepreneurial start-ups in the manufacturing sector. The results, based on comparisons between years 2003 and 2000 are presented in Table 2. They clearly demonstrate high diversification of exporters with respect to achieved growth rates. The majority have not reached the threshold of 800,000 PLN, thus falling into the marginal exporters category. Among those exceeding the minimum threshold of 800,000 PLN (3,018 firms), the majority belonged to either a slow-growing or declining category. Only 734 exporters (5.5% of the total number) qualified as high-growth exporters, according to the OECD convention; however, they contributed to 26.6% of Polish manufacturing exports in 2003.

The results of the initial analysis presented above lead to the formulation of the following research question:

- *Which characteristics differentiate dynamic exporters from those slow-growing or even declining ones?*

In view of the limited research focusing specifically on the rapid growth of international sales (Klatt 2006; Halabisky, 2005), we will refer to the extant entrepreneurship literature on new venture growth. After reaching an initial level of stability or “business platform” (Davidsson and Klofsten, 2003), new ventures typically face major challenges during the accelerated growth stage (Flamholtz and Randle, 2000). Among various factors influencing high growth (for an overview see Gilbert, McDougall, and Audretsch (2006) two seem particularly relevant for international expansion (Klatt, 2006): the founders’ strong motivation to grow, reflected in the venture’s growth-oriented vision (Barringer, Jones, and Neubaum, 2005), and building managerial capability to cope with mounting problems and obstacles, typically encountered during the rapid growth phase (Barringer and Jones, 2004).

**Table 2 High-growth versus low-growth exporting entrepreneurial start-ups in the Polish manufacturing sector 2000 – 2003**

(based on annualized growth rate of exports between 2000 and 2003)

	Number of exporters	%	Value of exports (million PLN)	%
1. High-growth exporters $r > 20\%$	734	5.5%	11 250	26.6%
2. Low-growth exporters of which:	2 284	17.2%	18 748	44.3%
2.1. Slow growing $0\% \leq r \leq 20\%$	899	6.8%	12 215	28.9%
2.2. Declining $r < 0\%$	1 385	10.4%	6 533	15.4%
3. Not included in the growth analysis of which:	10 258	77.3%	12 314	29.1%
3.1. Base 2000 below 800,000 PLN	6 748	50.8%	5 268	12.5%
3.2. Too young – first exports after 2000	3 510	26.4%	7 046	16.7%
<b>TOTAL</b>	<b>13 276</b>	<b>100.0%</b>	<b>42 312</b>	<b>100.0%</b>

Note: The analysis included those firms which have reported export sales in the last period of observation (2003) – 70.3% out of 18 896 firms in the base sample.

**Source:** Own calculations based on FTDC Database

## 5.2. Hypotheses

Based on the above, we hypothesize that high-growth exporting firms are predominantly those with a long-term international expansion strategy. This strategy is reflected primarily in a strong commitment towards internationalization and building managerial capacity, which is necessary for the implementation of the said strategy. We test five hypotheses, three of which reflect commitment to international expansion and two reflect managerial capacity to manage rapid growth in international markets.

We argue that starting export operations immediately after start-up indicates strong commitment to international markets.

**Hypothesis 1:** The time distance between company formation and first export sale is negatively associated with export growth rate.

We also claim that when the time needed to reach the minimum threshold of 800,000 PLN after the initial export sale shortens, this suggests strong commitment to expanding exports in subsequent years.

**Hypothesis 2:** Time distance between launching export sales and reaching annual export volume exceeding minimum threshold is negatively associated with export growth rate.

Polish entrepreneurial start-ups use predominantly sole proprietorships and partnerships, whereas corporate forms are being typically viewed as too costly and troublesome in terms of additional administrative requirements. Corporate legal vehicles obviously strengthen the image of a young firm, particularly vis-a-vis international clients, thus reflecting strong commitment to accelerated growth on international markets.

**Hypotheses 3(a, b):** Use of corporate legal vehicles is positively associated with export growth rate. In particular, we expect that limited liability or joint-stock companies will show a higher positive relationship with growth than firms operating under other legal forms: a sole proprietorship (Hypothesis 3a) or a partnership/other (Hypothesis 3b).

It is obviously difficult to achieve aggregated high growth over a longer period when expansion years are interrupted by setback years, i.e. years when export sales decline compared to the previous year (Garnsey and Heffernan, 2005). We therefore argue that high growth exporters use deliberate growth management policies and therefore experience fewer setback years in export sales than their slow-growing counterparts.

**Hypothesis 4:** The number of setback years relative to the total export horizon (time distance between the first export sale and the last observation year) is negatively associated with export growth rate.

What is even more difficult and calls for sophisticated planning techniques, is the ability to achieve low volatility of export sales during a turbulent, rapid growth period. This is because increased volatility often results in production bottlenecks, deteriorating quality, violation of delivery schedules, cash flow problems, etc. Hence, we argue that high growth exporters with strong managerial capabilities are better equipped to avoid excessive volatility in their annual export sales.

**Hypothesis 5:** High volatility of export sales is negatively associated with export growth rate.

### 5.3. Measures

As described in the previous section, we collected longitudinal information about export sales of all domestic and private firms in Poland's manufacturing sector still in existence in 2003 ( $n = 18,896$ ). Since the export sales data covered the period from 1993 to 2003 only, and we wanted to investigate the export readiness of these companies, we selected only those firms established after 1992 and still exporting in 2003 ( $n = 8,545$ ). Finally, we kept only those which, since their establishment, exceeded at least once the stage of micro-firm level of 800 000 PLN (as explained in the previous section) and had positive export sales in 1999 or earlier ( $n = 2,411$ ). This last condition was guided by the requirement that regression analysis with one independent variable (one of the techniques we have applied to this data set) requires an absolute minimum of five observations (Hair et al., 2006: 196). After deleting extreme data points with values beyond four standard deviations from the mean (a univariate detection of outliers) or unusually high Mahalanobis  $D^2$  measures (a multivariate detection of outliers) [Hair et al., 2006], the final sample consisted of  $n = 2,376$  firms.

#### - Dependent Variable

*Growth in annual export sales.* Sales have been considered one of the suitable indicators of growth (see Davidsson and Wiklund, 2000). Following the recommendation by

Weinzimmer et al. (1998), we use the OLS regression beta coefficient as a measure of growth. This approach recognizes changes in observations during the middle years of the time horizon and, as such, is preferable over typically used growth measures based on only two observations. Accordingly, beta coefficients were calculated separately for each of the  $n = 2,376$  firms, based on all the observations available for each firm – its actual export horizon *AEH* (the *AEHs* ranged from 11 observations for firms established in 1993 to five observations for firms established in 1999).

#### - **Independent Variables**

*Export readiness.* Starting export operations soon after start-up would indicate strong commitment to international business. We measure export readiness as the number of years between the year of establishment and the first recorded export sale.

*Years to minimum threshold.* Reaching the minimum threshold (800 000 PLN in our case) in the initial phase of export development would indicate strong commitment to growing exports in subsequent years. We operationalize this variable as the number of years between the year of the first recorded export sale and the year in which export sales reached the minimum level of 800 000 PLN.

*Legal form.* This variable indicates three types of legal form: (i) a corporation (joint-stock or limited liability), (ii) a sole proprietorship, and (iii) a partnership.

The last two variables are related to a particular problem young, growing firms faced, namely the management of a high growth process.

*Setback years relative to AEH.* We calculate setback years in the following way: First, for each firm, we determine the number of instances when export sales in  $year(t)$  are not higher than export sales in  $year(t-1)$ . Then, we divide these numbers by the lengths of the actual export horizons (*AEH*), to account for different numbers of years over which export sales may take place for a given firm.

*Volatility in annual export sales.* We measure volatility in the firm's annual export sales as the coefficient of variation (e.g., Pinches and Kinney, 1971), calculated over the actual export horizon (*AEH*).

#### **- Control Variables**

*Firm age.* We see the need to control this variable in view of the discussion in the preceding sections. The fact that some entrepreneurs responded very quickly to the systemic changes after 1988 reflects their strong motivation and self-efficacy which, in turn, may positively affect their growth ambitions on international markets. We operationalize the age of the firm as the number of years from the establishment of the company to 2003.

*Industry effects.* To control for industry groupings we adopted the categorization of industries by factor intensity – one of the key classifications used for the analysis of patterns and specialization in international trade at industry and country level (OECD, 1987). Each of the NACE three-digit groups was dummy-coded into five-factor intensity product groups: science-based, specialized supplier, scale-intensive, labor-intensive, and resource-intensive.

Since the raw data indicated that all the ratio-scaled variables violated the rule of non-normal distribution, we employed z-transformation for all such measures.

#### **5.4. Hypothesis Tests**

We used hierarchical linear regression to test our hypotheses and regressed growth in annual export sales against the control and independent variables in two steps. In the first step, we entered the control variables. In the second step, we added the independent variables.

A review of the correlations (because of a lack of space, we do not present the correlation matrix – it is available from the author(s) upon request) indicates that the correlation between independent variables does not pose a problem; none of the coefficients is higher than the threshold of 0.7 related to multicollinearity (Anderson et al. 1996), and a decisive majority is within  $\pm 0.2$ . Nevertheless, we checked for potential multicollinearity by also examining the

variance inflation factors and found them all to be at acceptable levels, with VIFs well below 10.0 (Neter et al., 1996). Calculations of VIF ranged from a low of 1.066 to a high of 1.865. We also employed Levene's test to check the threat of heteroskedasticity. The results showed that heteroskedasticity is a problem with the data. Graphical inspection of the plots involving standardized residuals versus the dependent (predicted) values, as well as the independent and control variables, also revealed heteroskedasticity problems. Consequently, all variance-covariance matrices have been estimated according to White's (1980) method.

Table 3 shows the results of the multiple regression analysis. Model 1 (Table 4, first column) shows the results when only the control variables were included. We tested the hypotheses formally in Model 2 (Table 4, second column) by including the control and independent variables simultaneously. The change in  $R^2$  when we added the independent variables to the control model was significant ( $\Delta R^2 = .179$ ;  $p = .00$ ). The regression results show that our predictions in Hypotheses 1, 2, 3a, 3b, and 4 are supported; starting export operations soon after start-up (H1), reaching the minimum threshold (800,000 PLN) in the initial phase of export development (H2), choosing a corporate legal vehicle (limited liability or joint-stock company) rather than a sole proprietorship (H3a) or partnership (H3b), and minimizing the number of setback years relative to the length of export horizon (H4) are significant predictors of high growth in annual export sales. We also found support for a relationship between volatility and growth in annual export sales; however, this was in an opposite direction to the one predicted in Hypothesis 5.

In terms of control variables, we found (Model 2) that firm age is not significantly related to a firm's growth in annual export sales. We also found that, compared to labor-intensive firms, specialized suppliers exhibit lower growth in annual export sales, whereas resource-intensive firms show higher growth.

Table 3 Regression results; Dependent variable: Growth in annual export sales; n = 2,376

	Model 1	Model 2
H1: <i>Export readiness</i>		-.057***
H2: <i>Years to minimum threshold</i>		-.117***
H3a: <i>Legal form (sole proprietorship)</i> <sup>1</sup>		-.106***
H3b: <i>Legal form (partnership/other)</i>		-.119***
H4: <i>Setback years relative to AEH</i>		-.172***
H5: <i>Volatility in annual export sales</i>		.088***
<i>Control variables</i>		
Firm age	-.053***	.003
Factor intensity (science-based) <sup>2</sup>	-.007	-.035
Factor intensity (specialised supplier)	-.050 <sup>†</sup>	-.084***
Factor intensity (scale-intensive)	.084***	.044
Factor intensity (resource-intensive)	.067***	.035*
F	10.23***	30.581***
	(5;2370)	(11;2364)
ΔF (robust)		54.528***
		(6;2364)
R <sup>2</sup>	.025	.204
ΔR <sup>2</sup>		.179 (p=.00)
		(compared to Model 1)
Adjusted-R <sup>2</sup>	.023	.201

Unstandardized regression coefficients: \*\*\* p < .001; \* p < .05; <sup>†</sup>p < .10; two-tailed tests

<sup>1</sup> 'Legal form (corporation)' used as base category

<sup>2</sup> 'Factor intensity (labor-intensive)' used as base category

In view of the results of the statistical analysis presented above, we may conclude that all three hypotheses relating to commitment to international expansion have been confirmed. As to the remaining two hypotheses addressing managerial capacity issues, the regression analysis brought mixed results. This has proved that high-growth exporters were more efficient in avoiding temporary setbacks in absolute volumes of export turnover. At the same time, they were confronted with higher volatility of growth rates over time compared to their slow-growing counterparts. The latter finding may lead to the conclusion that volatility in growth rates represents a major and still unresolved management bottleneck among Polish high-growth exporters. However, to finally confirm such a conclusion we would need to include additional variables, for example the ratio of exports to total sales. For a company exporting, for example, only 10% of its total turnover, a high volatility of export sales may

result in only limited problems caused by insufficient production capacities, disruptions in meeting delivery schedules, and financial difficulties, etc. However, such problems can be very significant for a company exporting, for example, 70% of its turnover. As indicated earlier, at this stage we were not able to include such variables due to a lack of information on total sales volumes in our database.

## **6. Concluding remarks**

Firstly, we believe that using an inductive method, enhanced by a longitudinal process analysis of a large data set which covers the entire population of Polish exporters, was very useful for our research undertaking, i.e. an investigation of firm-level internationalisation in a transition environment. Most importantly, we were able to reveal context-specific trends and processes, which then led to the formulation of valid research questions. We were able not only to quantitatively assess the economic significance of the said processes within a given national economy (Poland), but were also able to position them in a particular context of transition from the communist system to a market economy system.

Secondly, the statistical analysis based on large micro data sets provides a valuable base “research springboard” for conducting further analyses using both quantitative and qualitative methods, and relating them to the patterns and trends identified during the initial phase. As suggested earlier, the statistical analysis of anonymized data sets containing a large number of entities, but with limited information on each entity, has obvious limitations: initial findings cannot be confirmed through direct contacts with the companies, additional variables cannot be added, etc. This can be remedied by follow-up research validating key findings, particularly through qualitative methods such as case studies and interviews with top management. With respect to the particular issue of internationalization speed, the comparative analysis of instant and quick exporters versus late exporters, as well as of high-growth versus slow-growth exporters, seems to be particularly promising.

Finally, we would like to point out some important policy implications. For example, the finding that a newly established firm becomes an exporter predominantly during the initial phase would call for significant adjustments in export promotion programs. Rather than providing support for smaller existing firms, the relevant measures and tools should be focused on those entrepreneurs who plan to start a new business or are at an early stage of the formation process. This can be accomplished, *inter alia*, by expanding the international subjects in various educational programs aimed at fostering entrepreneurial activities.

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