

General Trends and Roles of High-Growth Firms in the Polish Manufacturing Sector 1996 – 2006

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by

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1. Introduction

The present paper presents initial results of statistical analysis that is carried out in cooperation with the Central Statistical Office of Poland as a preparatory phase of a research project on high-growth firms in Poland, with special emphasis on internationalization. In terms of statistical analysis, we follow, in principle, the definitions and conventions that are adopted by OECD,² with due consideration for long-term research objectives and the following particular conditions that prevail in Poland:

a) Impact of Radical Systemic Transformation in Poland, in Effect Since 1989

These changes result, inter alia, in major ownership restructuring, which takes place in the public sector, particularly during 1990–1995. Therefore, we limit our analysis to the 1996–2006 period, when conditions with respect to ownership restructuring are more stable. In addition, during the second phase of the project, we attempt to categorize separately the enterprises that are established as new entities and those that emerge as a result of organizational and/or legal restructuring.

b) Effect of Inflation

Inflation during the period of analysis (1996–2006), as measured by the PPI index (manufacturing) is rather high in Poland as compared to other OECD countries and amounts to 43%, while over 70% of said price increase occurs during 1996-2000. During 2003–2006, the level of inflation as measured by said index is much lower (7,1% for the whole period) so that at this stage we have not adjusted current total sales and export sales values for inflation.

c) FDI and Exports as Growth Drivers

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² Ahmad, N., Gonnard, E., High Growth Enterprises and Gazelles, ICE Meeting, Copenhagen, 22-23 February, 2007.

We categorize separately enterprises that have foreign-equity participation (those with a 10% or greater foreign-equity stake) and the remaining domestic enterprises. It is important to note that foreign-controlled enterprises contribute 35,7% of all employment, 49,3% of total sales, and 71,8 % of export sales by companies with 10 or more persons employed in the Polish manufacturing sector in 2006³. From our previous research it has been found that exports have become an important growth driver for dynamic Polish firms. Therefore we add export sales in our analysis as the third growth measurement variable, in addition to employment and total sales.

d) Current and Historic High-Growth Firms

With respect to the definition of high-growth enterprises, we introduce a distinction between Current High Growth (HGC) and Historic High Growth (HGH) firms. As our data set covers the period 1996–2006, the HGC enterprises are those that meet the high-growth criterion for the last observation year (2006):

$$X_{2006}/X_{2003} > 1,728.$$

The HGH firms are the enterprises that meet the above high-growth criterion for at least one out of seven possible historic observations: 1999/1996, 2000/1997, 2001/1998, 2002/1999, 2003/2000, 2004/2001, and 2005/2002. Thus, a given enterprise can be both HGC and HGH, one of the two, or none. The purpose of introducing such a dual concept of high-growth firms is twofold:

- To facilitate future research on trends and conditions in retaining high-growth status over time;
- To allow for a continuity of the research methodology once statistical data for subsequent years (i.e. 2007, 2008, and so on) is added to the core data set.

2. Data Source and Initial Data Set Format

The basic source of statistical information for this study is micro data available from the Annual Enterprise Survey of the Central Statistical Office of Poland. Submission of data to this Survey is obligatory for Polish enterprises that employ ten or more persons in a given calendar year. There are approx. 66,000 such enterprises that submit data for 2006. Out of those, 47,048 have full accounting systems, of which 15,096 firms operate in the manufacturing sector. These enterprises constitute the core dataset for our research.⁴ The next step is to include data on employment, total sales and export sales for all 15,096 enterprises from previous annual surveys during the period 1996–2005. All additional

³ These are our own calculations based on Central Statistical Office data. When including smaller (mostly domestic) manufacturing firms, the contribution of foreign subsidiaries drops by 5-6%.

⁴ The remaining 19,000 enterprises kept simplified accounting system and therefore were obliged to provide only minimum set of data, excluding, e.g. the employment and export sales, which were crucial in our analysis.

characteristics of individual enterprises, such as foreign-equity content, industry, etc., are defined on the basis of the most recent status, i.e. 2006.

Having established the core data set, it is possible to calculate growth ratios of t_n/t_{n-3} for each observation period (maximum eight observation periods), separately taking the employment, total sales and export sales variables. Growth ratios are calculated only in case when employment in the base year reaches the threshold of ten employees. On the basis of the above calculations, the status of HGC and/or HGH is assigned to individual enterprises in line with agreed high growth criteria, separately for each variable: employment, total sales and export sales.

3. Initial Results Discussion

It should be emphasized that the study's comprehensive statistical analysis of company growth rates are based on micro data that is carried out in Poland for the first time. Therefore, the results we obtain so far must be evaluated with caution as some additional testing and cross checking is required. With these limitations in mind, one can point to the following initial findings, based on aggregate data that is presented in Annex Table 1:

- a) High-growth firms play very important roles in the Polish manufacturing sector. Taking employment as a base, they account for 7,0% of the total number of firms in the 2006 sample. This ratio is surprisingly high as compared to other countries, as demonstrated in comparative analysis conducted by Hofman and Junge (2006)⁵. Taking total sales as a base, the share of high-growth firms is 15,2% of the total number of firms in the 2006 sample. It should be noted that during 2003–2006, the Polish manufacturing sector as a whole experiences very high sales growth (with an annualized growth rate of approx 13,5%) and high-growth firms contribute 35,5% of the sector's total sales in 2006.
- b) The initial results of this study fully confirm the crucial role of foreign-controlled firms in achieving high growth as well as the need to categorize separately domestic firms and foreign subsidiaries. In fact, foreign subsidiaries, which account for 20% of the total number of firms in the sample, are clearly overrepresented among high-growth firms, irrespective of a growth variable taken as a measurement base. Their impact is most profoundly demonstrated when taking into consideration additional variable—export sales. Only 618 high-growth foreign subsidiaries (4,1% of the firm sample) account for 39,4% of Polish manufacturing exports in 2006. We may therefore conclude that adding international dimensions (i.e. FDI and export sales) proves useful for an enhanced understanding of the high-growth phenomenon at the firm level.
- c) Within the first phase of our research, we conduct preliminary analysis of the historic context of high growth. The most important finding is that, among those firms that

⁵ Quoted in Ahmad and Gonnard (2007), p. 4.

experience high growth during 2003–2006, more than half experience such growth during previous observation periods ending 1999–2005.

4. Future Research Directions

Based on the preliminary findings and some practical issues that are identified while processing statistical micro data, the following future directions should be carried out in the second phase of the project:

a) Separation of Organic Growth

Major privatization programs that lead to substantial restructuring of the public sector are largely accomplished before 1996, which is the base year of our analysis. However, there is a need to identify and separate all new firms that are founded as a consequence of legal and organizational restructuring that takes place mostly in the private sector from “organic” start-ups. In the case of restructuring, a new entity begins operations with sizeable employment and turnover already in the year of registration, which may overshadow the employment and turnover figures of truly “organic” start-ups.

b) Evaluation of Trends in Declining Firms

Typical analysis of high-growth firms is based on the dichotomy: high- versus slow-growth. Separating the negative-growth segment of firms may offer additional insights as to the characteristics of the growth process at the micro level.

c) Linking Growth with Size-Class Bands

A detailed analysis of the growth achieved with breakdown by specific size-class bands of employment (e.g. 10 -19, 20 – 49 etc) is another promising direction for research. This may help to identify those bands that reveal growth potential as well as those for which growth stumbled.

d) Researching the Historic Roots of Growth

The database that compiles micro data on Polish manufacturing firms enables longitudinal analysis for the period 1996–2006, with further extension as data that covers additional years is available in the future. One of the issues that require careful investigation is the relationship between dynamic start-ups and growth orientation during subsequent phases of the company life cycle. In this context, the concept of *gazelle* is crucial and requires some practical considerations.

According to the definition proposed by the OECD, *gazelle* companies are, in effect, a sub-set of high growth firms that achieve the required level of growth during the first five year period after establishment. In practical terms, there are some indirect implications of the proposed definition that result in which the concept becomes somewhat restrictive to capture various growth scenarios of truly dynamic firms during the initial five-year period:

- a) To qualify as a *gazelle*, the company must reach the threshold of ten employees for the first time in the first or second year of operation. If this happens in the founding year, according to the agreed procedure, the firm is not counted as a gazelle. If the threshold is reached in the third year or later, the company also does not qualify, as the growth ratio cannot be calculated properly for the (last) fifth year of observation.
- b) Based on author's practical experiences in assisting start-up companies, the growth trajectories of newly-borne firms during initial years are quite diversified and dependent on various conditions and factors. For example, start-ups that are founded by broader entrepreneurial teams with a clear, dynamic vision do not employ large numbers of people during the initial phase. This is partly because founders are involved not only in company management but, in fact, also perform various operating functions at the outset.

Therefore, an alternative concept is proposed as a research tool – *antelope*, defined as an enterprise that reaches the threshold of 20 employees during its first five years of operations. Unlike *gazelles*, *antelopes* are not a sub-set of high-growth firms. This concept is limited to the initial five year period of the company lifespan and may or may not coincide with high growth status during the formation period or later phases of the company lifecycle.

To illustrate the arguments that are raised above, we apply both *gazelle* and *antelope* concepts to alternative growth scenarios during the initial five-year period, all of which end up with 20 employees in the last year. The results are given below:

Growth scenario	Employment								Minimum 10 employees	Gazelle	Antelope
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Ratio 4/1	Ratio 5/2			
A	1	2	5	9	12	20	6,000	4,000	NO	NO	YES
B	1	2	10	12	16	20	8,000	2,000	YES	YES	YES
C	8	10	12	14	17	20	1,700	1,667	YES	NO	YES
D	2	9	13	14	15	20	1,667	1,538	YES	NO	YES
E	3	7	9	15	18	20	2,571	2,222	NO	NO	YES
F	10	12	15	17	19	20	1,583	1,333	YES	NO	YES

One additional argument in favor of the *antelope* concept is that it is compatible with the “high-expectation entrepreneur” definition as used in the Global Entrepreneurship Monitor Project.⁶ On the other hand, the *gazelle* term is quite popular in various parts of the world, but quite often is used as an alternative expression for high-growth firms, not necessarily very young firms. For example, this is the case in the annual rankings of the Business Gazelles in Poland.

⁶ Autio, E., 2007 Global Report on High-Growth Entrepreneurship, Babson College, Babson Park, 2007, p.8.

5. Concluding Remarks

Recent initiatives of the OECD in cooperation with Eurostat to elaborate unified definitions and conventions that facilitate comparative studies of the phenomenon of high-growth enterprises are important and timely in terms of future research that may, in turn, have crucial policy implications. From the perspective of transition economies that have joined European Community only recently, such studies may help to overcome apparent confusion as to policy formulations that are aimed at supporting SMEs in general, and the specific policy measures that are addressed to the entrepreneurial (dynamic, innovative, knowledge-based) segment of SMEs. Another area that may benefit from an enhanced understanding of growth-oriented companies is the education and training segment. This may be helpful to design specific educational programs that are aimed at nascent and young entrepreneurs to strengthen their entrepreneurial orientation and focus on the functional and operational issues that are associated with high growth.⁷

⁷ The author is the leader of the nationwide educational and advisory Program „Dynamic Entrepreneurship”, addressed to students and academic community in Poland. See more www.cieslik.edu.pl.

Annex Table 1

High-growth firms in the Polish manufacturing sector in 2006¹⁾

	Growth variable: Employment Aggregate 2006/2003 ratio = 1,135			Growth variable: Total sales Aggregate 2006/2003 ratio = 1,455			Growth variable: Export sales Aggregate 2006/2003 ratio = 1,687		
	Domestic firms	Foreign subsidiaries	Total	Domestic firms	Foreign subsidiaries	Total	Domestic Firms	Foreign subsidiaries	Total
I. All firms²⁾									
Number of firms	12 054	3 042	15 096	12 054	3 042	15 096	12 054	3 042	15 096
Employment (thousand)	1 178,2	654,4	1 832,5	1 178,2	654,4	1 832,5	1 178,2	654,4	1 832,5
Total sales (billion PLN)	354,8	345,5	700,3	354,8	345,5	700,3	354,8	345,5	700,3
Export Sales (billion PLN)	68,9	175,6	244,5	68,9	175,6	244,5	68,9	175,6	244,5
II. High growth firms (2003–2006)									
Number of firms	708	353	1 061	1 691	609	2 300	673	618	1 291
Employment (thousand)	97,9	136,0	234,0	218,8	179,9	398,6	182,1	239,5	421,6
Total sales (billion PLN)	28,0	75,6	103,6	139,3	109,1	248,3	128,9	162,5	291,4
Export Sales (billion PLN)	5,9	47,4	53,3	28,7	69,8	98,6	33,6	96,3	130,0
As % of all firms (I)									
Number of firms	5,9%	11,6%	7,0%	14,0%	20,0%	15,2%	5,6%	20,3%	8,6%
Employment (thousand)	8,3%	20,8%	12,8%	18,6%	27,5%	21,8%	15,5%	36,6%	23,0%
Total sales (billion PLN)	7,9%	21,9%	14,8%	39,3%	31,6%	35,5%	36,3%	47,0%	41,6%
Export Sales (billion PLN)	8,5%	27,0%	21,8%	41,7%	39,8%	40,3%	48,8%	54,8%	53,1%
III. High growth firms with past high growth experience³⁾									
Number of firms	317	241	558	1 016	479	1 495	321	394	715
Employment (thousand)	55,9	114,4	170,3	154,1	162,4	316,5	96,4	184,5	280,9
Total sales (billion PLN)	16,2	61,0	77,2	120,9	102,6	223,6	50,8	135,3	186,1
Export Sales (billion PLN)	3,8	37,1	40,9	25,9	65,8	91,7	15,9	84,9	100,8
As % of high growth firms (II)									
Number of firms	44,8%	68,3%	52,6%	60,1%	78,7%	65,0%	47,7%	63,8%	55,4%
Employment (thousand)	57,1%	84,1%	72,8%	70,4%	90,3%	79,4%	53,0%	77,0%	66,6%
Total sales (billion PLN)	57,8%	80,6%	74,5%	86,8%	94,1%	90,0%	39,4%	83,3%	63,9%
Export Sales (billion PLN)	64,2%	78,3%	76,7%	90,1%	94,2%	93,0%	47,2%	88,2%	77,6%

1) High-growth firms are those with ratio of employment, total sales or export sales $X_{2006}/X_{2003} > 1,728$

2) Included in the analysis are manufacturing firms with 10 or more employees participating in the Annual Survey

3) All firms experiencing high growth at least once during previous observation periods ending 1999 - 2005.

Source: Own calculations based on data provided by the Central Statistical Office of Poland