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## Determinants of High-Growth Enterprises in Poland

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The paper explains the concept and significance of high-growth enterprises and discusses selected factors that may have an impact on high growth dynamics. It is against such a background that the results of almost 4,000 Polish companies considered to be in the high-growth category are presented. This includes profiles of selected company qualities taking into account their size, location, core activity, and capital. The decided bulk from among the examined companies (almost 83%) consists of small and medium enterprises, where their locations in the individual regions of Poland does not significantly depart from basic entrepreneurial indicators by territory. The research made it possible to answer a question relating to ties among selected factors that can influence the dynamic growth of companies (employment level and capital value), where the measure of high-growth is expressed as revenue over time. No correlation was found between these variables, but thanks to the application of nonparametric analysis of variance, statistically significant differences between the levels of the sales growth coefficient in particular enterprise categories was revealed (by employment, core activity, and capital).

**Keywords:** high-growth enterprises, gazelles, growth determinants, growth measures.

## Determinanty szybkiego wzrostu przedsiębiorstw w Polsce

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W artykule wyjaśniono pojęcie i znaczenie przedsiębiorstw wysokiego wzrostu (*high-growth enterprises*) oraz omówiono wybrane czynniki, które mogą wpływać na wysoką dynamikę wzrostu. Na tym tle przedstawiono wyniki analizy blisko 4000 polskich przedsiębiorstw zaliczanych do kategorii przedsiębiorstw wysokiego wzrostu. Zaprezentowano profil wybranych cech tych przedsiębiorstw, uwzględniający ich wielkość, lokalizację, charakter działalności oraz posiadany kapitał. Zdecydowaną większość wśród badanych przedsiębiorstw (blisko 83%) stanowią małe i średnie przedsiębiorstwa, a ich lokalizacja w poszczególnych regionach Polski nie różni się zasadniczo od podstawowych wskaźników przedsiębiorczości w ujęciu terytorialnym. Przeprowadzone badania pozwoliły odpowiedzieć na pytanie badawcze dotyczące związków pomiędzy wybranymi czynnikami, które mogą wpływać na dynamiczny wzrost przedsiębiorstw (wielkość zatrudnienia i wartość posiadanego kapitału), a wskaźnikiem szybkiego wzrostu wyrażonym przyrostem przychodów w wybranym okresie. Nie stwierdzono korelacji pomiędzy tymi zmiennymi, ale w wyniku zastosowania nieparametrycznej analizy wariancji stwierdzono statystycznie istotne różnice

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poziomu wskaźnika wzrostu obrotów w poszczególnych kategoriach przedsiębiorstw (według zatrudnienia, rodzaju działalności i wartości kapitału).

**Słowa kluczowe:** szybko rozwijające się przedsiębiorstwa (SRP), gazele biznesu, czynniki wzrostu, mierniki wzrostu.

**JEL:** L25, L26, O31

## 1. Introduction

Entrepreneurship and innovation are behind the development of each and every economy and especially in transforming economies such as is the case for Poland. Of key importance for the continued growth of the Polish economy is entrepreneurship seen in the rapid growth of enterprises, in particular micro and small ones that dominate its economy. It should be stressed that in the structure of Polish companies, small and medium companies account to from 99.8% of such entities, where this sector is dominated by micro-companies whose share in the total number of companies is 95.6% (with 92.5% in the case of the EU). The share of small companies in the population of SMEs in Poland (3.3%) is almost one-half smaller than the EU average, which amounts to 6.2% (Report on the State of the Sector..., 2015, p. 38). Moreover, statistical data demonstrates that in 2013 the average company in Poland employed a mere five people (the exact figure was 5.5). In that same year the average large company had 844 employees with 103 in the case of medium-sized ones, twenty-one for small, and two people for micro companies (Report on the State of the Sector..., 2015, p. 18). Although certain positive changes are being observed in terms of the structure of entrepreneurship in Poland, that structure continues to be the weak point of the economy. In spite of the obvious benefits of micro and small companies, they are weak “players” in today’s increasingly globalized markets. It is difficult for them to compete in contact with larger entities. It is also difficult for them to achieve other benefits related to size. The weakness of micro and small companies stems from their small development potential. The consequence of this is lower productivity, lower investment outlay, etc. For this reason the identification of the phenomenon of high-growth company and its conditions must be deemed important because such research results can be useful in shaping an appropriate economic policy aimed at changing the structure of companies by stimulating growth, especially growth of micro and small companies. In this context, companies characterized by a high growth dynamic and referred to by D. Birch as *gazelles* (Henrekson and Johansson, 2008) make up an important subject of study. Statistical data have been gathered and rankings developed in Poland for the past couple of years. They encompass companies meeting the basic criterion qualifying them in the high-growth company category (known as high-growth enterprises/entrepreneurship),

i.e. marked by high growth in turnover, which creates the possibility of exploring this interesting phenomenon. Taking into account the above premises, analysis of the profile of qualities of these companies has been deemed an important research objective, encompassing their size, location, core activity, and capital. The conducted research also makes it possible to answer research questions pertaining to links among selected factors that may influence company growth and the rapid growth indicator (expressing growth in revenues over the selected three-year period).

## 2. The Concept of High-Growth Enterprises

The concept of entrepreneurial companies – *gazelles* – made its appearance in the 1990s. According to D. Birch, they are distinguished by two special features: a significant growth dynamic (at least a 20% increase in sales per annum) and innovativeness (Kuratko and Hodgetts, 2001, pp. 10–12). A third quality is the creation of a large number of jobs by such entities. At the same time it should be stressed that according to Birch, gazelles are young companies although they are not necessarily small (Acs et al., 2008). Another concept has made its appearance over recent years – *high-efficiency companies* – companies that grow fast and create new jobs (Acs et al., 2008; Zbierowski, 2010). Today, numerous publications confirm that companies of this type are characterized by exceptionally high growth (usually measured in turnover and employment growth) and are referred to as *high-growth companies* (Delmar, Davidsson, and Gartner, 2003; Eckhardt and Shane, 2011), *rapid-growth companies* (Barringer, Jones, and Neubaum, 2005), and *high-growth entrepreneur/enterprise/entrepreneurship* (Stam, Sudole, Hessels, and Van Stel, 2007; Autio and Rannikko, 2016). Polish literature discussing this subject matter uses the terms *firma wzrostowa* or *firma szybko rosnąca* (Gancarczyk, 2008) or *przedsiębiorstwo szybkiego wzrostu* (GUS – Research Results, 2014.). In its turn, studies by the PARP – Polish Agency for Enterprise Development apply the term *przedsiębiorstwo wysokiego wzrostu*, which is a direct translation of the English high-growth enterprise (*Przedsiębiorstwa wysokiego wzrostu...*, 2014). The term *gazela biznesu* [business gazelle] continues to be in use (Kuratko and Hodgetts, 2001).

Company development is treated as a qualitative category strictly linked to the growth category, which reflects quantitative growth, including levels of turnover and employment or market share (Stabryła, 1996; Lisowska, 2013; Lisowska, 2015). It is those values – i.e. turnover, employment, and capital – that are most frequently used in measuring companies as a quantitative category. Delmar et al. call attention to the fact that numerous studies use absolute sales quantities over a five-year period or relative employment growth over three years (2003). Analysis of literature makes it possible to conclude that the most frequently applied measure of rapid

growth is growth in sales volume over a defined period of time (overview of measures based on a literature overview performed by M. Gancarczyk, 2008). The already mentioned Delmar team (2003) stresses the importance, and therefore also the consequences, of selecting between absolute and relative measures used to quantify the dynamics of growth from the point of view of studying the dependence between company size and its growth. Absolute measures display a tendency to assign higher growth to larger companies, while smaller companies achieve an impressive growth dynamics if relative measures expressed as percentages are applied (Delmar et al., 2003). Worth noting is that in studies on this phenomenon, the definition proposed by the OECD is also used. According to that definition, these are entities that show a growth in sales revenue or employment greater than 20% as a yearly average over three successive years<sup>1</sup> (*Przedsiębiorstwa wysokiego wzrostu...*, 2014). Specialists from the OECD have proposed the term *high-growth enterprise* (HGE), which has come to be translated [into Polish] as *przedsiębiorstwo wysokiego wzrostu*.

GUS – Central Statistical Office of Poland analyses assume the value of revenues as the measure serving to assess the direction and rate of development of examined companies, identifying:

- High-growth enterprises, which include entities demonstrating an average annual growth rate in revenues over the analyzed three-year period at a level of 20% or more;
- Growth enterprises, characterized by a lower revenue growth rate, but above 10%;
- Gazelles, which are companies operating on the market for no more than five years that are characterized by a high growth rate – an average of 20% or more over a three year period (GUS Research Results, 2014).

As can be derived from the above, measurements of company growth are characterized by rather significant variety. This applies to scientific studies, economic analyses, and the development of rankings of rapidly developing companies. For the purposes of the studies presented in this paper, the measure of company growth used is revenue growth (from the sales of products or services), which means growth in sales volume over the most recent three-year period, expressed as a percentage. The terms *high-growth company*, *rapid-growth company*, and *business gazelle* shall be used interchangeably.

### 3. Determinants of High-Growth

The dynamics of company growth are dependent on both external and internal factors. Questions of external determinants, mainly tied with a company's environment and defined as a set of factors influencing the functioning and development of the company, can be considered well researched in

topical literature (Bednarczyk, 1996; Grierszewka and Romanowska, 2002; Wach, 2008). Most often included among external factors are macroeconomic factors that have an impact on not only rapid growth, but growth of entrepreneurship in general. This set includes the regulatory environment, access to financing (capital), location, infrastructure, and the availability of other resources such as networking – collaboration among companies and scientific institutions – social factors – level of social capital and corporate culture – and the specifics of the industry (*Przedsiębiorstwa wysokiego wzrostu...*, 2014). As to this last factor, it has been demonstrated that innovative, high-technology industries create greater opportunities for growth than other, more traditional ones. Nevertheless, research results relating to this relationship are not univocal (Coad and Rao, 2008; Heimonen, 2012).

However, worth noting is the fact that as a part of the analysis of the environment, external determinants are looked at from various perspectives, where a subdivision into the macro-environment and the competitive environment are dominant (Grierszewska and Romanowska, 2002). At the same time, topical literature is a source of other concepts for structuring the surroundings that take into account the macro-environment, meso-environment, and micro-environment. From this perspective, the macro-environment is the collection of general operating conditions of companies active in a given country. The meso-environment encompasses regional factors that influence the company in a regional dimension and takes into account the specific qualities of individual areas. In its turn, the micro-environment embraces the competition, customers, suppliers, and business partners (Bednarczyk, 1996). Yet another proposal for structuring the surroundings is found in the work of L. Krzyżanowski (1999) and K. Wach (2008).

The results of research into the phenomenon of high-growth companies indicates a particularly strong impact of internal factors. An overview of these is presented by M. Gancarczyk (2008) who calls attention to their key importance, confirmed by numerous studies of these questions. It is the view of this author that it was the research of D. Storey that has had a deciding impact. Storey isolated three categories linked with entrepreneur, the organization, and strategy (Gancarczyk, 2008). Internal factors are most often classified with respect to the person of the entrepreneur as well as the company. Internal conditions tied with the person of the entrepreneur make reference to the following aspects: personality traits, behavioral types, and the shaping of relations. The second category of internal conditions for development relate to the qualities of the company itself. The main factors in this area are company age, period of its functioning of the market, size, usually measured in numbers of employees, sector, and level of company held resources, including human, material, financial, and intangible (Lisowska, 2013; Strużycki, Editor, 2008; Skowronek-Mielczarek, 2011). The authors of the PARP Polish Agency for Enterprise Development study also

call attention to the important role of internal factors, including the qualities and competencies of the company owner (*Przedsiębiorstwa wysokiego wzrostu...*, 2014). A significant quality entrepreneurs managing the growth of companies that is pointed to in topical literature turns out to be personal ambitions – ambitious entrepreneurship – which is also a subject of interest on the part of researchers (Stam et al., 2012).

Among specific growth factors, company innovation – the ability to create and implement new solutions, products, services, processes, etc. – is also included. Much research has been conducted on the ties between innovation and company results, taking into account various measures of innovation and results. On the other hand, research into the role of innovation in the quick growth of the companies being considered in this paper is relatively rare (Coad and Rao, 2008; Heimonen, 2012). The research of Heimonen (2012) as conducted on Finnish SMEs shows that in the examined sample of growth companies was not characterized by any significantly higher level of innovation in either urbanized or agricultural areas. Similar results were received by Coad and Rao who studied links between innovation and the growth of companies. They indicate that a part of the companies developing innovative activities noted a fall in sales and that the coupling of quick company growth with innovation is encumbered by significant risk. As concluded by Coad and Rao, innovative activities are coupled with a relatively high level of risk and for this reason can increase the probability of achieving high results, but in no way guarantee it (Coad and Rao, 2008).

In general, the studies show that company growth is underscored by its multidimensionality (Wickham, 2006) and considering it from various perspectives in combination with strategy, resources, surroundings, etc. (Wickham, 2006).

#### **4. Directions of Research on the Phenomenon of High-Growth**

Gazelle businesses, being high-growth companies, have been the subject of many studies over recent years published in journals both abroad and in Poland (Cieślik, 2008).<sup>2</sup> As was noted above, research into high-growth companies<sup>3</sup> is conducted from many perspectives. Numerous studies on the characteristics of such companies have been conducted in order to establish size, age, and sector (Acs et al. 2008; Henrekson and Johansson, 2008). Of interest are studies that question the relation between exceptionally high growth dynamics and profitability (Markman and Gartner, 2002) or studies that call attention to the threat of high-growth, including with respect to profitability in the later period of the existence of the company (Davidsson, Steffens, and Fitzsimmons, 2009). Other research looks at company growth measures and models (Delmar et al., 2003). Also of interest are studies conducted over the long term on the sustainability of

high-growth – e.g., Swedish research encompassing the years 1997–2008 (Daunfeldt and Halvarsson, 2015). Topical literature also presents studies examining the above-mentioned role of innovation in high-growth companies (Del Monte and Papagini, 2003; Coad and Rao, 2008; Heimonen, 2012) as well as links between outlay on research and development and rapid growth in the context of specific sector-related factors (Mazzucato and Parris, 2015). Also conducted were analyses aimed at developing policies and strategies for supporting this phenomenon (Beech, Donoghue, Hungerford, Okhowat, and Wells, 2011–2012; McKenzie, 2015). Reports and studies on high-growth companies were also prepared in Poland by the GUS Central Statistical Office of Poland and PARP Polish Agency for Enterprise Development.

## 5. Study Methodology and Characteristics of the Examined Sample of Companies

As was stressed in the introduction, the goals of the research were tied with the quest for answers to the following questions:

- 1) Are business gazelles marked by any special profile of qualities? Here, the subject of analysis was size (measured in numbers of employed), core activities, level of assets, and location.
- 2) Is there any link between selected factors that might determine rapid company growth – i.e. their size and amount of capital – and achieved growth in revenues for a selected three-year period?
- 3) Is there any differentiation in growth in turnover (statistically significant) in the examined companies with respect to their size, core activities, and capital?

Ties among the variables and measures of quick growth were investigated using the Pearson correlation coefficient as well as nonparametric analysis of variance (the Kruskal-Wallis test).

A database of high-growth companies as put together by Coface Poland Sp. z o.o [Ltd.] was used in the analysis. The high-growth company database has been assembled for Poland as of 2001 in the form of the “Business Gazelle” ranking as developed for the *Puls Businessu* [Business Pulse] daily by Coface Poland (a credit bureau). For the needs of this ranking, it was assumed that high-growth companies are characterized by highest growth in revenues achieved over the most recent three-year period. Each edition of the ranking looks at company results for the previous three years, using available financial documents. This analysis utilized the database created for the 15th Edition of the Business Gazelle Ranking 2014. The 2014 ranking edition looked at results achieved over the years 2011, 2012, and 2013. Companies that met the following criteria were contenders for the Business Gazelle 2014 title:

- Operations launched prior to the year 2011 and carried on continuously;

- Sales revenues in the three to 200 million zloty range in the base year 2011;
- Growth in sales revenue noted on a year-to-year basis over the years 2011–2013;
- No losses noted over the years 2011–2013, where analysis of financial results for the three examined years was made possible.<sup>4</sup>

The position of the company on the ranking list was determined by growth in turnover expressed as a percentage and achieved over a period of three years (2013 vs. 2011). The business gazelle database created in the year 2014 encompassed 4,304 companies. In the case of 357 entities, data was incomplete and for this reason the analysis encompassed 3,947 companies. The database contained data for companies that took part in the ranking and that were ordered in line with the turnover growth coefficient for the indicated period. The database included those companies that demonstrated very high growth in turnover over the three-year period (where the highest achieved rate was 2,842%) and those whose growth in turnover amounted to 100% (companies occupying the last places). In terms of structure by voivodeships [provinces], the largest number of business gazelles was registered in the Voivodeship of Mazovia – a total of 760, which accounted for 19.26% of the examined sample. The second voivodeship as to number of dynamically developing companies in the analyzed set was the Voivodeship of Greater Poland – 504 entities making up 12.77% of the studied sample. With 453 registered business gazelles, third place was occupied by the Voivodeship of Silesia. The lowest percentages of business gazelles according to data from the ranking were registered in the Świętokrzyskie, Lubusz, Podlasie, and Western Pomerania voivodeships. Due to the fact that the analyzed database was created on the basis of a voluntary decision on the part of the company to take part in the ranking, data regarding the numbers of companies-participants by location were supplemented by two additional indicators characterizing the concentration of companies in the given voivodeship. The detailed structure of business gazelles, inclusive of supplementary data relating to individual voivodeships, is presented in Table 1.

Data accumulated in Table 1 makes it possible to state that the structure of growth companies by location does not differ significantly from the number of entities (with respect to population numbers) and their entrepreneurship potential as described by selected entrepreneurship indicators.

Table 2 depicts the structure of the examined sample by employment. The decided bulk from among the examined companies consists of small and medium ones. Small companies employing from ten to forty-nine workers amounted to 1,643, which is 41.63% of all studied companies. Medium-sized companies employing from fifty to 249 workers amounted to 1,622 companies from the sample (852 companies employed 50–100 workers and 770 entities employed 101–249 workers). Their percentage share was 41.09%.

<b>Voivodeship</b>	<b>Number of companies in the database</b>	<b>Percentage share</b>	<b>WP*</b>	<b>WSPR**</b>
Lowe Silesia	390	9.88% (4)	48.6	65.4 (4)
Kuyavia-Pomerania	225	5.70%	40.6	49.5
Lublin	130	3.29%	34.2	23.1
Lubusz	70	1.77%	43.3	40.0
Łódź	232	5.88%	46.0	41.0
Lesser Poland	328	8.31% (5)	48.7	64.9 (5)
Mazovia	760	19.26% (1)	57.0 (1)	84.6 (1)
Opole	73	1.85%	37.4	45.9
Subcarpathia	136	3.45%	33.1	39.0
Podlasie	84	2.13%	36.8	38.2
Pomerania	281	7.12%	49.4	75.4 (2)
Silesia	453	11.48% (3)	45.2 (8)	70.3 (3)
Świętokrzyskie	65	1.65%	37.9	28.2
Warmia-Masuria	132	3.34%	35.8	20.8
Greater Poland	504	12.77% (2)	51.8 (2)	60.3 (6)
Western Pomerania	84	2.13%	51.6 (3)	53.6
<b>TOTAL</b>	<b>3,947</b>	<b>100.00%</b>		

\* WP – Number of active SMEs per 1,000 inhabitants in Poland in 2013 (*Report on the State of the Sector...*, 2015).

\*\* WSPR – Synthetic indicator for entrepreneurship in the regions (*Report on the State of the Sector...*, 2015).

Tab. 1. Business Gazelle Structure by Voivodeship and Selected Entrepreneurship Indicators

<b>Number of employees</b>	<b>Number of companies</b>	<b>Percentage share</b>
1–9	320	8.11
10–49	1643	41.63
50–100	852	21.59
101–249	770	19.51
250–...	362	9.17
<b>TOTAL</b>	<b>3947</b>	<b>100.00</b>

Tab. 2. Structure of the Examined Sample by Employment

It should be stressed that in the examined population of high-growth companies, which is clearly dominated by small and medium enterprises, the structure is very similar to that presented by the GUS Central Statistical Office of Poland on the basis of filed reports on economic activity (*Selected Entrepreneurship Indicators*, 2014).

Analysis of the structure of the sample by core activities shows that it mostly consists of entities conducting a mix of activities.<sup>5</sup> This category amounts to 1,837 companies, which is 46.54% of all investigated entities. However, worth noting is that fact that in the case of a mix of activities, manufacturing and trade prevail. There were 9,165 (23.18%) exclusively manufacturing companies in the examined group and 785 (19.89%) trading companies. The least numerous group of companies in the investigated sample was made up of service companies whose share amounted to just over 10%.

Core activity	Number of companies	Percentage share
Manufacturing	915	23.18
Trade	785	19.89
Services	410	10.39
Mixed	1837	46.54
TOTAL	3947	100.00

Tab. 3. *Business Gazelle Structure in Terms of Type of Activity*

In terms of equity, most of the companies in the examined sample were in the one to five million zloty range. The second most numerous group in the examined sample of companies consisted of entities whose equity ranged from ten to fifty million zlotys. The least numerous group was made up of companies whose equity capital exceeded 100 million zlotys (3.37%). This means that only a part of the large companies can belong to this category (large entities account for just over 9% of the sample). The detailed structure of examined companies by equity is presented in Table 4.

Equity value in millions	Number of companies	Percentage share
<1,000,000	314	7.96
<1,000,001 – 5,000,000>	1396	35.40
<5,000,001 – 10,000,000>	708	17.95
<10,000,001 – 50,000,000>	1204	30.53
<50,000,001 – 100,000,000>	189	4.79
>100,000,000	133	3.37
TOTAL	3944	100.00

Tab. 4. *Business Gazelle Structure by Equity*

## 6. The Economic Situation in Poland over the Years 2011–2013: The Study Context

External conditions, including the economic situation influencing the conducting of business activities, can be a factor fostering or impeding high-growth companies. The following should be noted for the 2010–2013<sup>6</sup> period in analyzing the most important data characterizing the macro-economic situation facing companies:

- A result of the financial crisis (2008) was the lowering of the dynamics of the GDP, including in Poland. The lowest indicator was noted in 2009, where these indicators rose slowly as early as 2010 and 2011. A fall occurred in 2012 and was maintained on a similar level in 2013.
- The inflation indicator over this period varied. In 2010 it amounted to 2.6%, while over the two successive years it increased to 4.3% and 3.7% (in the years 2010 and 2012) followed by a fall to 0.9% in 2013, where the year 2014 registered a state of deflation (*Report on the State of the Sector...*, 2015).
- The unemployment rate in 2010 and 2011 amounted to 9.5% (the yearly average), 10.2% in 2012, 10.4% in 2013, with a fall in 2014 (*Population Economic Activity...*, 2015).
- Barriers in the form of limited access to capital were listed as being second in terms of importance over the years 209–2013 (*Report on the Situation of Banks...*, 2013).

## 7. The Results of Research into Selected Company Growth Factors (High-Growth Companies)

As conducted, the research assumed that the determinants of high-growth may be employment level or equity. Table 5 presents the results of the relation between the level of employment and equity, and the turnover growth indicator.

Pearson Correlation Indicator		
		Growth in turnover
Employment	Pearson	<b>-0.035*</b>
	N	3947
Equity	Pearson	<b>-0.055**</b>
	N	3944

\* –  $p < 0.05$

\*\* –  $p < 0.01$ .

Tab. 5. Relation between Employment, Equity, and the Turnover Growth Indicator

In line with the conducted analyses, the correlation between the variables in the relation between employment and equity, and growth in turnover proved to be negative (Pearson correlation coefficients at a level of  $-0.035$  and  $-0.055$ ). Thus, the achieved results indicate that the value of the turnover growth indicator decreases with an increase in employment as well as with an increase in equity. However, bearing in mind the low values of the correlation indicators, it may be stated that the strength of these relations is small.

In the further section of the statistical analyses, average levels of the turnover growth indicator<sup>7</sup> were juxtapositioned, depending on the level of employment, core activity, and equity level. The nonparametric analysis of variance (the Kruskal-Wallis test) was utilized in order to check the statistical significance of differences between individually isolated categories of companies (by employment level, core activity, and equity level).

Table 6 presents average values for the turnover growth indicator relating to employee numbers. On the basis of the conducted analyses, it is possible to demonstrate that the average highest level of the turnover growth indicator in the examined categories of companies was a characteristic of companies employing from one to nine workers. The average dynamics of the turnover growth indicator for these companies was 166.20%. It is in this one case that the Kruskal-Wallis test shows that the difference in the average dynamics of the turnover growth indicator between micro-companies and other categories (by employment) is statistically significant. The data presented in Table 6 demonstrate that the average dynamics of the turnover growth indicator, which achieved a value of over 139% among large companies, falls with the increase in numbers of employees.

Table 7 presents the average value for the dynamics of the turnover growth indicator by core activity. Pursuant to conducted analyses, it is possible to state that the average greatest level for this indicator in the

Number of employees	Number of companies	Average turnover growth indicator (%)	Average rank of the turnover growth indicator
1–9	320	166.20	2384.49
10–49	1643	150.58	2080.48
50–100	852	138.34	1829.93
101–249	770	136.79	1809.71
250...	362	139.37	1816.49
TOTAL	3947		

H = 92.41 ( $p = 0.005$ )

H – Kruskal-Wallis test statistics

$p$  – Empirical level of significance.

Tab. 6. Average Turnover Growth Indicator Increase by Employment

examined subgroups is characteristic of companies whose activities are mixed (mainly manufacturing and trade). The average growth in turnover for these companies was 148.55%. The data found in Table 7 also make possible the observation that the lowest average level for the turnover growth indicator characterizes trading companies – 131.42%. As applied, the Kruskal-Wallis test shows that the difference in values for the turnover growth indicator between the isolated categories of companies whose activities were mixed (mainly manufacturing and trade) and the other types is statistically significant.

A similar analysis was performed with respect to the differentiation of companies by their equity capital. Table 8 presents the average value of the turnover growth indicator for the investigated companies (arranged

Type of activity	Number of companies	Average turnover growth indicator (%)	Average rank of the turnover growth indicator
Trade	784	131.42	1579.86
Manufacturing	914	142.94	1855.22
Services	409	143.04	1759.25
Mixed	1836	148.55	2244.98
TOTAL	3943		

$H = 222.51$  ( $p = 0.021$ )

$H$  – Kruskal-Wallis test statistics

$p$  – Empirical level of significance.

Tab. 7. Average Level of the Turnover Growth Indicator by Core Activity

Equity capital in millions	Number of companies	Average turnover growth indicator (%)	Average rank of the turnover growth indicator
<1,000,000	314	154,35	2105.11
<1,000,001 – 5,000,000>	1396	152,21	2111.13
<5,000,001 – 10,000,000>	708	146,55	2076,67
<10,000,001 – 50,000,000>	1204	142,42	1816.18
<50,000,001 – 100,000,000>	189	140,02	1772.17
>100,000,000	133	125,99	1351.23
TOTAL	3944		

$H = 98.974$  ( $p = 0.000$ )

$H$  – Kruskal-Wallis test statistics

$p$  – Empirical level of significance.

Tab. 8. Average Level of the Turnover Growth Indicator by Equity Capital

in subgroups by equity) as well as the Kruskal-Wallis test. It is on the basis of the conducted analyses that it may be stated that the average greatest level of the turnover growth indicator is a characteristic of companies that have equity capital of up to one million zlotys. On average, the growth in turnover for these companies amounted to 154.35%. The average level of the turnover growth indicator decreases as the level of the equity capital increases. In the case of companies with equity in excess of 100 million zlotys it amounts to 125.99%. The results of the Kruskal-Wallis test show that the differences between the average values for the turnover growth indicator in all intervals defined by level of equity are statistically significant.

## 8. Research Summary and Conclusions

The investigated Polish business gazelles are primarily small and medium companies, which is in agreement with the results of other studies (Acs et al., 2008; Davidsson et al., 2005; Henrekson and Johansson, 2009; Mitusch and Schimke, 2011). The share of companies with the lowest equity (below one million zlotys) is close to the share of micro-companies in the examined population (7.96% and 8.11%, respectively). As to companies with the greatest amount of equity (over 100 million zlotys), no such similarity exists with respect to the share of large companies (in this case the shares amounted to 3.37% and 9.17%, respectively). On the basis of the analyses, it is also possible to notice that companies with less equity develop dynamically, but their turnover growth indicator increase rate gradually slows in line with growth in equity in the hands of the company. There is also a fall in the dynamics of the increase in revenues in line with growth in company size (measured by employment).

The frequency of occurrence of business gazelles in the individual voivodeships does not significantly differ from indicators describing entrepreneurship in the individual regions of Poland. Conducted research also shows that among Polish business gazelles it is companies of a mixed character, especially those that combine manufacturing and trading operations, that form the majority. If additionally the fact that from among the examined high-growth companies over 23% declare activities exclusively involving manufacturing is taken into account, then this signifies a clear dominance of companies with a manufacturing profile in the company population.

The average greatest level of the turnover growth indicator in the examined population of companies (taking into account a subdivision by sub-categories) is a characteristic of entities that:

- Employ from one to nine workers;
- Operate on the basis of a mix of activities (mainly manufacturing and trade);
- Hold equity of up to one million zlotys.

It should be stressed that no correlation was found between the selected company growth factors and the application of a measure of the dynamics of growth in turnover over the examined three years (2013 vs. 2011). At the same time, the results of the application of nonparametric analysis of variance show statistically significant differences in the average value for the turnover growth indicator by specific company category (by employment, core activity, and equity).

The results of the research on high-growth companies suggests agreement with the opinions expressed by other researchers on this phenomenon: business gazelles are not a separate class of companies that have specific qualities thanks to which they owe their rapid growth and on the basis of which it would be easy to identify them univocally (*Fast-Growth Companies*, 2014). Research shows that high growth year after year over an extended period of time may apply to various companies, but it generally applies to a small share of the set of companies. As to the selected indicators describing the macro-economic situation over the years 2010–2013, it may be stated that high-growth companies may also make their appearance in situations of a poor or moderately good economic situation.

A certain limitation in the presented studies is the principle behind the creation of the high-growth company database that was at the disposal of the authors of this paper that was put together thanks to managers/owners volunteering to taking part (and present data describing the company in accounting documents). In the view of the authors, the acquired business gazelle database would have provided a much more in-depth picture of high-growth companies if it had contained additional information, such as the year of the establishing of the companies, their period of functioning, their range of activities, and ratio of domestic to foreign capital.

The presented research results can be considered a good starting point for continued studies on this phenomenon, especially its sustainability over the long term. Swedish studies cast doubt on the possibility of high growth over a long period of time (Daunfeldt and Halvarsson, 2015). Further research should provide an answer to the following question: Is growth in revenue linked to financial results and is it tied to the strategic, structural, and organizational growth of companies (Wickham, 2016)? Taking into account the results received and their limitations, it is also necessary to conduct further research on business gazelles relating to the internal conditions of high-growth companies, including internal factors tied to the person of the entrepreneur. An interesting direction for study seems to be the identification of selected owner competencies, especially owner motivation (what is known as ambition entrepreneurship) and the owner's system of values and its influence on the growth dynamic, especially as research into these questions is being conducted in other countries (Tomczyk, Lee, and Winslow, 2013).

The phenomenon of rapid growth is sufficiently important from the point of view of the development of the economy, improvement in the structure of entities creating it, and also the effects of development decisions in the companies themselves, that it deserves further exploration.

### Endnotes

- <sup>1</sup> The OECD definition assumes that in identifying high-growth enterprises the entities that are considered are those whose start as an enterprise with a minimum of ten people, which immediately rejects companies that in the previous year were high-growth micro-enterprises (*Przedsiębiorstwa wysokiego wzrostu...*, 2014).
- <sup>2</sup> Analysis of Polish literature, especially journals, and especially ones such as *Przegląd Organizacji* [Overview of Organizations], *Problemy Zarządzania* [Management issues], and *Management and Business Administration: Central Europe* do not indicate significant interest over the past ten years on the part of researchers on the subject of companies with a fast rate of growth. Studies concentrated on questions of development conditions, the growth of SMEs, and development barriers (Lisowska, 2013; Lisowska 2015; Daszkiewicz, 2009; Matejun and Motyka, 2015).
- <sup>3</sup> Another concept that has made its appearance is the *high-impact firm*. This concept is understood as companies that create the most jobs and generate the greatest revenues, active in all sectors (Acs et al., 2008).
- <sup>4</sup> Excluded from the ranking were companies offering financial and related services, such as banks, insurance companies, factoring companies, leasing companies, and debt-collection companies. The ranking did not take into account the results of capital groups. Also excluded from the ranking were companies that had a negative equity value, even once.
- <sup>5</sup> The extreme variety of the examined companies in terms of activities is why no structure by PKD statistical classification economic activity is presented. Only a simplified placement into four categories is used.
- <sup>6</sup> A timespan greater than 2011–2013 was analyzed because it was assumed that decisions relating to the year 2011 were undertaken at least in 2010.
- <sup>7</sup> The average turnover growth indicator was calculated as the arithmetic mean of this indicator for the individual intervals by employment level, core activity, and equity.

### References

- Acs, Z., Parsons, W., and Tracy, S. (2008). High-Impact Firms: Gazelles Revisited. *Small Business Research Summary*, 328, June.
- Autio, E. and Rannikko, H. (2016). Retaining Winners: Can Policy Boost High-Growth Entrepreneurship? *Research Policy*, 45.
- Barringer, B.B., Jones, F.F., and Neubaum, D.O. (2005). A Quantitative Content Analysis of the Characteristics of Rapid-Growth Firms and their Founders. *Journal of Business Venturing*, 20.
- Bednarczyk, M. (1996). Otoczenie i przedsiębiorczość w zarządzaniu strategicznym organizacją gospodarczą [The environment and entrepreneurship in the strategic management of an economic organization]. *Cracow University of Economics Scientific Journals: The Special Series – Monographs*, No. 128, Cracow.
- Beech, T., Donoghue, B., Hungerford, G., Okhowat, A., and Wells, S. (2010–2011). *Fuelling Canada's Economic Success: A National Strategy for High-Growth Entrepreneurship*. Task Force of 2010–2011 Action Canada. [www.canadiangazelles.ca](http://www.canadiangazelles.ca).

- Birkinshaw J., Hamel G., and Mol M. J. (2008). Management Innovation, *Academy of Management Review*, No. 33.
- Cieślak, J. (2008). Przedsiębiorstwa dynamiczne: definicja, znaczenie w gospodarce, wyzwania w sferze polityki państwa [Dynamic companies: Definition, importance to the economy, and challenges in the realm of state policy]. *Kwartalnik Nauk o Przedsiębiorstwie* [The Science of Entrepreneurship Quarterly], 2(7).
- Coad, A. and Rao, R. (2008). Innovation and firm growth in high-tech sectors: A quantile regression approach. *Research Policy*, 37(4).
- Daszkiewicz, N. (2009). Bariery rozwoju MSP w świetle badań [Barriers to the development of SMEs in light of research]. In: *Uwarunkowania rynkowe rozwoju mikro i małych przedsiębiorstw. Mikrofirma 2009* [Market conditions and the development of micro and small companies: Micro-companies 2009]. *Zeszyty Naukowe Uniwersytetu Szczecińskiego* [University of Szczecin Scientific Papers], No. 540. *Ekonomiczne Problemy Usług* [The Economic Problems of Services], No. 34.
- Daunfeldt, S.-O. and Halvarsson, D. (2015). Are High-Growth Firms One-Hit Wonders? Evidence from Sweden. *Small Business Economics*, 44.
- Davidsson, P., Steffens, P., and Fitzsimmons, J. (2009). Growing Profitable or Growing from Profits: Putting the Horse in Front of the Cart? *Journal of Business Venturing*, 24.
- Del Monte, A. and Papagini, E. (2003). R&D and the Growth of Firms: Empirical Analysis of Panel of Italian Firms. *Research Policy*, 32.
- Delmar, F., Davidsson, P., and Gartner, W.B. (2003). Arriving at the High-Growth Firm. *Journal of Business Venturing*, 18.
- Eckhardt, J.T. and Shane, S.A. (2011). Industry Changes in Technology and Complementary Assets and the Creation of High-Growth Firms. *Journal of Business Venturing*, 26.
- Gancarczyk, M. (2008). Firmy wzrostowe – gospodarcze znaczenie i problemy identyfikacji [Growth companies: Economic importance and questions of identification]. In: A. Nalepka (Editor), *Organizacje komercyjne i niekomercyjne wobec wzmożonej konkurencji oraz wzrastających wymagań konsumentów* [Commercial and non-commercial organizations in the face of increased competition and growing consumer requirements]. Nowy Sącz: WSB-NLU.
- Gierszewska, G. and Romanowska, M. (2002). *Analiza strategiczna przedsiębiorstwa* [Strategic analysis of a company]. Warsaw: PWE Polish Economic Publishing House.
- GUS. (2015). *Aktywność ekonomiczna ludności Polski* [The economic activity of the population of Poland], 1st quarter 2015. Warsaw: GUS Central Statistical Office of Poland. <http://www.stat.gov.pl>.
- Heimonen, T. (2012). What Are the Factors that Affect Innovation in Growing SMEs? *European Journal of Innovation Management*, 15(1).
- Henrekson, M. and Johansson, D. (2008). *Gazelles as Job Creators: A Survey and Interpretation of the Evidence*. Research Institute of Industrial Economics, Stockholm, Sweden *IFN Working Paper*, No. 733.
- Kuratko, D.F. and Hodgetts, R.M. (2001). *Entrepreneurship: A Contemporary Approach*. Fifth Edition. Fort Worth: Harcourt College Publishers.
- Kuratko, D.F., Morris, M.H., and Covin, J.G. (2011). *Corporate Innovation & Entrepreneurship*. 3rd Edition. Australia: South-Western Cengage Learning.
- Lisowska, R. (2013). *Zarządzanie rozwojem małych i średnich przedsiębiorstw w obszarach marginalizowanych* [Managing the development of small and medium enterprises in marginalized areas]. Łódź: Łódź University Press.
- Lisowska, R. (2015). External Determinants of the Development of Small and Medium-Sized Enterprises: Empirical Analysis. *Journal of Entrepreneurship, Management and Innovation*, 11(4).
- Markman, G.D. and Gartner, W.B. (2002). Is Extraordinary Growth Profitable? A Study of Inc. 500 High-Growth Companies. *Entrepreneurship Theory and Practice*, 27(1).

- Matejun, M. and Motyka, A. (2015). Dynamika barier rozwoju w cyklu życia firm sektora MSP – wyniki badań monograficznych [The dynamics of development barriers in the life-cycle of companies in the SME sector: results of monographic studies]. *Marketing i Rynek* [Marketing and Market], 5.
- Mazzucato, M. and Parris, S. (2015). High-Growth Firms in Changing Competitive Environments: The US Pharmaceutical Industry (1963 to 2002). *Small Business Economics*, 44(1).
- McKenzie, D.J. (2015). *Identifying and Spurring High-Growth Entrepreneurship: Experimental Evidence from a Business Plan Competition*. Policy Research Working Paper, No. WPS 7391; Impact Evaluation Series. Washington, D.C.: World Bank Group. <http://documents.worldbank.org/curated/en/2015/08/24899889/identifying-spurring-high-growth-entrepreneurship-experimental-evidence-business-plan-competition>.
- Mitusch, K. and Schimke, A. (2011). *Gazelles: High-Growth Companies*, Consortium Europe INNOVA Sectorial Innovation Watch. [http://www.praxis.ee/wp-content/uploads/2014/03/sector-report-automotive\\_en.pdf](http://www.praxis.ee/wp-content/uploads/2014/03/sector-report-automotive_en.pdf).
- PARP. (2014). Przedsiębiorstwa wysokiego wzrostu w Polsce [Fast-growth companies in Poland]. Raport prepared by the CASE Center for Social and Economic Analyses, commissioned by the PARP Polish Agency for Enterprise Development, Warsaw. [http://badania.parp.gov.pl/images/badania/Przedsiębiorstwa\\_wysokiego\\_wzrostu\\_w\\_Polsce.pdf](http://badania.parp.gov.pl/images/badania/Przedsiębiorstwa_wysokiego_wzrostu_w_Polsce.pdf).
- PARP. (2015). Raport o stanie sektora małych i średnich przedsiębiorstw w Polsce w latach 2013–2014 [Report on the state of the small and medium enterprise sector in Poland over the years 2013–2014]. Warsaw: Polish Agency for Enterprise Development. [http://badania.parp.gov.pl/images/badania/ROSS\\_2013\\_2014.pdf](http://badania.parp.gov.pl/images/badania/ROSS_2013_2014.pdf).
- Podręcznik Oslo. Zasady gromadzenia i interpretacji danych dotyczących innowacji [The Oslo manual: Principles for accumulating and interpreting data on innovation] (2006). Joint OECD and Eurostat 2005 publication. Polish edition, Ministry of Science and Higher Learning, Department of Scientific Strategy and Development, Warsaw. <http://www.nauka.gov.pl/analizy-raporty-statystyki/podrecznik-oslo,archiwum,1.html>.
- Research Results GUS Central Statistical Office of Poland. Company Department (2011). Wybrane wskaźniki przedsiębiorczości [Selected indicators of entrepreneurship]. <http://www.stat.gov.pl>.
- Research Results GUS Central Statistical Office of Poland. Company Department (2014). Wybrane wskaźniki przedsiębiorczości [Selected indicators of entrepreneurship]. <http://www.stat.gov.pl>.
- Skowronek-Mielczarek, A. (2011). Regionalne uwarunkowania rozwoju małych i średnich przedsiębiorstw [Regional development conditions of small and medium enterprises]. In: M. Matejun (Editor), *Wspomaganie i finansowanie rozwoju małych i średnich przedsiębiorstw* [Support and financing for small and medium enterprises]. Warsaw: Difin.
- Stabryła, A. (1996). *Zarządzanie rozwojem firmy* [Managing company development]. Cracow: Cracow University of Economics.
- Stam, E., Bosma, N., Van Witteloostuijn, A., de Jong, J., Bogaert, S., Edwards, N., and Jaspers, F. (2012). *Ambitious Entrepreneurship: A Review of the Academic Literature and New Directions for Public Policy*. Den Haag: Adviesraad voor Wetenschap en Technologie-beleid (AWT). [http://www.awti.nl/upload/documents/publicaties/tekst/awt\\_as41\\_ambitious\\_entrepreneurship\\_def.pdf](http://www.awti.nl/upload/documents/publicaties/tekst/awt_as41_ambitious_entrepreneurship_def.pdf).
- Stam, E., Suddle, K., Hessels, S.J.A., and Van Stel A. (2007). High Growth Entrepreneurs, Public Policies and Economic Growth. *Jena Economic Research Papers*, 19.
- Strużycki, M. (Editor). (2008). *Podstawy zarządzania* [Management basics]. Warsaw: Warsaw School of Economics Press.
- The Charlotte Regional Fund for Entrepreneurs: Mapping Ecosystem* (2013), prepared by Turning Point Advisors U.S.A. [http://charlottebusinessresources.com/wp-content/uploads/The-Charlotte-Regional-Fund-for-Entrepreneurs\\_Final\\_Short-Appendix.pdf](http://charlottebusinessresources.com/wp-content/uploads/The-Charlotte-Regional-Fund-for-Entrepreneurs_Final_Short-Appendix.pdf).

- Tomczyk, D., Lee, J., and Winslow, E. (2013). Entrepreneurs' Personal Values, Compensation, and High Growth Firms Performance. *Journal of Small Business Management*, 51(1).
- UKNF. (2013). *Raport o sytuacji banków w 2012 r.* [Report on the state of banks in 2012]. Warsaw: Polish Financial Supervision Authority.
- Wach, K. (2008). *Regionalne otoczenie małych i średnich przedsiębiorstw* [The regional environment for small and medium enterprises]. Cracow: Cracow University of Economics Press.
- Wickham, P.A. (2006). *Strategic Entrepreneurship*. Fourth Edition. England: FT Prentice Hall Harlow.
- www 1 <http://gazele.pb.pl/static/kryteria> (assessed on December 1, 2015).
- Zbierowski, P. (2010). Wykorzystanie metodologii pomiaru efektywności względnej do oceny wpływu potencjału innowacyjnego na efektywność regionów i przedsiębiorstw [Using the relative performance measurement methodology in assessing the impact of innovation potential on regional and company efficiency]. *Współczesne Zarządzanie. Kwartalnik Środowisk Naukowych i Liderów Biznesu* [Contemporary Management: Scientific Community and Business Leader Quarterly], 4.