



CEIRD

Centre for Entrepreneurship,
Innovation and Regional Development

DISCUSSION PAPERS

**POLICY MAKERS' DREAM
GAZELLES- MYTH OR REALITY?**

Markku Virtanen and David Smallbone





CEIRD

Discussion paper No 6

Centre for Entrepreneurship, Innovation and Regional Development
at Ventspils University College
Discussion Paper No 6

POLICY MAKERS' DREAM GAZELLES- MYTH OR REALITY?

By Markku Virtanen¹ and David Smallbone²

2013

¹ Senior researcher of CEIRD at Ventspils University College, professor at Aalto University, Small Business Centre (Finland). E-mail: markku.virtanen@aalto.fi

² Senior researcher of CEIRD at Ventspils University College, professor at Kingston University (U.K.). E-mail: david.smallbone@kingston.co.uk



CEIRD

Discussion paper No 6

**Centre for Entrepreneurship, Innovation and Regional Development
at Ventspils University College
is supported by:**



ISBN 978-9984-648-45-3

© Authors, Centre for Entrepreneurship, Innovation and Regional Development at
Ventspils University College



Table of Contents

Abstract	5
1. Introduction	6
2. Definitions and categorization of gazelles	8
3. Former studies	10
4. Measurement period	11
5. Growth indicator and variable selection	12
6. Measurement of growth	14
6.1. Growth process	15
6.2. Firm demographics and context	15
7. Policies for supporting gazelles	17
7.1. Characteristics of policy makers dream gazelles	20
8. Data	21
9. The development of HGS firms	22
10. Conclusions and implications	25
References	28

**Abstract**

This working paper describes the match between policy maker's objectives to foster high growth firms and characteristics of gazelles. The analysis will be mainly based on former literature on gazelles and policies to foster high growth entrepreneurship. We argue that in many cases policies are based on the implicit assumptions that growing businesses are young start-ups and they are born in the hot spot industries. What are the distinctive characteristics of gazelles compared with the other types of businesses? For example age, size and location may be presupposed to be such characteristics which differentiate gazelles from other companies. What are the characteristics policy programs suggest to be possessed by gazelles? What contribution the gazelles create to regional development? To what extent the current research evidence supports the policy interests? We found evidence that even if the mainstream media and publicity support the above implicit assumption about characteristics of gazelles there exist a lot of research which confirm that gazelles are not only young and small firms in urban areas. Descriptive empirical analysis points out that in most cases high growth and success are not sustainable but both growth of turnover and personnel will decrease in the long run. The decrease of employment will follow the downturn of profitability with a lag suggesting that policies should focus competitiveness rather than high growth in order to take care of employment.

Key words: gazelles, policy making, high growth, regional development

1. Introduction

In recent years when global and European financial crises have taxed the tolerance of societies economic growth and employment have been the focus of the most policy programs. Entrepreneurship and high growth businesses are seen to be a core of these programs. Policy makers have allocated resources in order to foster entrepreneurship and high growth i.e. gazelle firms because several studies have suggested that these gazelles create large share of new jobs in the society. The most prominent author who has initiated the discussion about job creation is David Birch who proposed that while gazelles are rare, they account for most of the new jobs in the economy. Shane's (2009) argument that instead of allocating subsidies for start-ups policy should foster the new businesses which have high growth potential is clearly parallel to this proposition.

Quite a lot of resources have been allocated to foster entrepreneurship in start-up businesses in some specific branches of industry. This phenomenon is based on the implicit assumptions that growing businesses are young start-ups and they are born in the hot spot industries (currently ict-/software, game industry, creative industries etc.). Especially for those businesses expanding very rapidly from the start-up growth may be disastrous since they run out of working capital. In recent studies it has been found out that majority of those businesses which grow sustainably are mature companies, often also family businesses which have taken care of their profitability first (Davidsson et al. 2009; Steffens et al. 2009; Virtanen and Heimonen 2011).

In order to find out if these presuppositions are correct we will analyze the current research evidence about characteristics of gazelles and their contribution to the regional development. The paper answers to the following research questions: What are the distinctive characteristics of gazelles compared with the other types of businesses? For example age, size and location may be presupposed to be such characteristics which differentiate gazelles from other companies. What are the characteristics policy programs



suggest to be possessed by gazelles? What contribution the gazelles create to regional development? From policy perspective especially the capability for job creation is important part of the development. To what extent the current research evidence supports the policy interests?

The analysis will be based on the former literature about gazelles, their context and regional development. The other part of the analysis is description of the development paths of some chosen variables connected with gazelles. We will first review the former literature where location or context is considered to be a distinctive characteristic and analyze the results of these studies paying special attention to contribution to regional development. Then we will identify and deduce the policy instruments which have been used in different contexts and reflect the current research evidence and used instruments in order to evaluate if they are appropriate and linked to each other. Finally we will empirically analyze the development of sample firms in 1999 – 2012.

Our presupposition is that current research does not really support focusing of start-up ventures as the engines for regional development. Moreover, we expect that growth and profitability of gazelles should be simultaneous in order to create positive long term contribution to regional development. The results will give measures to policy makers when they evaluate allocation of funds in regional development and especially in promoting job creation in different contexts. Venture owners and stakeholders may take advantage of the results of the study when planning their future activities and strategies.

This paper proceeds so that first we introduce definitions and categorizations of gazelles where after we will review the former literature of gazelles, their characteristics and policy programs. Then the data and its descriptive analysis will be presented. Finally we will summarize the outcome in conclusions and give some thoughts for future research. The recommendations for future research concentrate especially on fostering high growth businesses in Baltic countries and especially in Latvia.

2. Definitions and categorization of gazelles

Those businesses which are growing fast in several consecutive years are called gazelles. Birch and Medoff (1994) classify firms into different categories, which were named as “mice”, “elephants” and “gazelles”. Acs et. al. revisit the Birch question: “Who creates jobs:mice, gazelles, or elephants?” Birch and Medoff (1994) concluded that mice represent the vast majority of companies that are small in size and add little to employment growth, while the small amount of large firms that also shed a significant amount of jobs are called as elephants. “Gazelles” which are neither large nor small are characterized by rapid revenue and employment growth and. Even if gazelles are rare, they account for disproportionately large share of new jobs in the economy. Birch and Medoff (1995) considered companies as gazelles if they reached a 20 % yearly growth in sales for four years and started out with a base-year revenue of \$100 000 at the start of the observation period.

Virtanen and Kiuru (2013) included growth and size in the definition but they also required that the growth firm should be profitable. As the reference they used definition from the Danish financial magazine Børsen. This definition includes four different criteria:

1. turnover of the venture should be larger than 135 000 € every year during the four year period
2. growth of turnover and gross profit should be positive every year (three observations)
3. cumulative net profit should be positive during the period of analysis
4. turnover and gross profit should be doubled during the research period

The first criterion refers to the size and the third one to profitability of the firm. Conditions 2 and 4 measure the growth of the venture. The fourth criterion means that annual growth of turnover and gross profit should be 20 % per year at the minimum. Four categories of gazelles were defined. If all the terms (size, growth, profitability) were



fulfilled the firm is called as a gazelle. Fawns of gazelles are such businesses which reach substantial growth and profitability but are too small compared to the limit 135 000€. Prodigal gazelles are large enough and grow substantially but are not profitable. In the group of premature infant gazelles only the growth criterion will be fulfilled. The approach of Virtanen and Kiuru (2013) emphasizes the sustainability of growth in their analysis.

Acs et. al. (2008) repeated the setting used by Birch (1979; 1987) and in their article “High-Impact Firms: Gazelles revisited” in addition to revenue growth also expansion of employment. Those firms which were growing and simultaneously increasing heavily the amount of jobs were called high impact firms. Acs et. al. (2008) analysed HIFs in three different periods 1994 -1998, 1998 – 2002, 2002 – 2006. When Birch (1979) defined the gazelles to be such firms which double their sales in for year meaning 20 % increase in growth every year Acs et. al. (2008) required also that their employment quantifier should be two or greater. The total amount of gazelles did not deviate from the HIF’s in smaller size classes but in large firm category (> 500 employees) in 2002 – 2006 there were almost 90 % more gazelles than HIFs. Even if in HIF category were fewer firms almost in relation to one to two than in gazelle category they created almost 18 % more new jobs than gazelles. Thus this means that some large firm gazelles also decreased their work force during the period. The amount of HIFs was the highest, almost 380 000 in the last period but less than 300 000 in the second period. Since the amount was about 350 000 in the first period we may conclude that economic cycles have considerable impact on the amount of HIFs. Acs et. al. (2008) characterized HIFs to be rather few representing only 2 – 3 per cent of the whole business population; rather old the average age being 25 years; found in all industries and locating almost in all parts of the country. Moreover, almost all the new jobs during all the three periods have been created by HIFs

One important feature of gazelles is that high growth should take place during consecutive years. Thus growth is longitudinal phenomenon. Time span of the most gazelle and growth studies is 3 – 5 years. The definition of gazelles The OECD defines high-growth firms as businesses where average annual growth in employees or in turnover is larger

than 20 % per year over a three-year period, and with ten or more employees at the beginning of the observation period.

3. Former studies

Davidsson, Achtenhagen and Naldi (2006) conclude that growth is a complex phenomenon and thus the determinants of fostering and hindering growth are not stable over time. High-growth firms i.e. gazelles have received attention since they contribute to social wealth through the creation of new jobs and improving competitiveness. Several authors have confirmed that the share of gazelles is small (2- 5 %) but they are estimated to create 70 – 80 % of new jobs (Niederbach et. al. 2007; Acs et. al. 2008, Mitusch and Schimke 2011). Gazelles are also considered to be small since for example seminal work by Birch (1979, 1981, 1987) argued that two thirds of new jobs are created by firms with twenty or fewer employees.

From the works of Birch (1979, 1981, 1987) the research on dynamics of business and small firm job creation has expanded significantly and the emphasis is currently on gazelles. Gazelles are often used as a synonym for all types of high-growth companies. Delmar et al. (2003) suggested five categories to be analyzed for appraisal of gazelles. 1) measurement period 2) growth indicator 3) measurement of growth 4) growth process and 5) firm demographics. As will be noticed these categories do not include any forms of other performance indicators than growth and mostly their contents is quite normative without any theoretical background.

This is a real problem with several gazelle studies and may be one reason why they do not pay any attention to other features of the performance than growth. One reason for this kind of approach is probably the implicit assumption that rapid growth leads to successful performance. As Birley and Weasthead (1990) propose growth and success are often seen as surrogates so that if a firm grows it is automatically also successful. In gazelle literature other performance indicators than growth are very scarcely used but in high growth literature Smallbone et. al. (1995) is one of the early deviations from this mainstream

since they demanded in addition to growth also certain level of profitability. From performance perspective it could be argued that there may be also some backsides of breeding the gazelles. If the high growth is encouraged by supporting measures which make fast scaling up possible it may be that the entrepreneurs' commitment to long term development will be lower than expected. The objective may be to achieve fast growth and sell the company thereafter. On the other hand, Heimonen and Virtanen (2011) found out that high growth means poorer success or in other words growth and success are negatively correlated. Parallel results were confirmed by Davidsson et. al. (2009) and Fitzimmons et. al. (2009) who suggest that profitability should be taken into account when striving for sustainable growth.

In order to outline the multifaceted phenomenon more accurately we have used the above proposition made by Delmar et. al. (2003). However, firm demographics is supplemented by referring to the context of the study since usually firm demographics may be seen to be dependent on the context. In the following analysis we shortly introduce the literature and results connected with each category.

4. Measurement period³

Several researchers have requested for more longitudinal studies on entrepreneurship. On a general level, the choice of time span is determined by the nature of the study and the interest of the study – is it primarily in factors determining changes over a longer or shorter period of time. Delmar (1997) suggests that the choice of time period is most likely very significant, because growth is dependent on both short- and long-term changes and these changes may take place with a distinct time lag. Even if Delmar (1997) as well as Virtanen and Heimonen (2013) concluded that majority of the studies analyse the time period of 3 – 5 year there seems to exist a punch of studies where the time span is longer. Henrekson and Johansson (2010) summarize the studies on gazelles as job contributors. In

³ The following methodological considerations are partly based on the project work done by Tuomas Silverang in Aalto University Start-up Center in 2012

the summary table they introduce 21 studies where from 10 analyse time period which is equal or longer than six years and in six studies it is ≥ 10 years.

In spite of the longitudinal data the used methods may affect the contents of the analysis. For example in OLS analysis it is difficult to capture all the time series properties of the data and several studies may be shrink to cross-sectional analysis using averages of the observations from different years. Overall, little academic work has been done on the choice of time period and its consequences on the outcome of an analysis (Delmar 1997; 2003). Therefore making valid and reliable suggestions regarding the appropriate time-frame is quite challenging.

5. Growth indicator and variable selection

The first aspect that requires considering is the validity and reliability of different growth indicators as determined from theoretical and methodological perspectives. Thorough reviews of literature by Ardichvili, et al. (1998) and Delmar (1997) suggest that potential growth indicators include in addition to sales and employment assets, market share, physical output, and profits. Sales and employment measures are the most widely used in empirical growth studies (Delmar 1997). On the other hand, alternative measures have their merits and could be used for example to construct performance indexes. One possibility is to use several indicators. Davidsson and Wiklund (2001) have found however, that simultaneous use of sales and employment reduces the amount of high growth businesses substantially. Thus selection of variable has also impact on empirical analysis.

A significant portion of scholars seem to think that if only one indicator were to be chosen as a measure of firm growth, it would be sales (e.g. Delmar et al. 2003; Ardichvili et al. 1998). Turnover growth is after all a key target for the entrepreneurs themselves, and is simultaneously closely observed by share-holders, venture capitalists and other members of the business community. This indicator is favoured by entrepreneurs themselves and

appropriate data is easily accessible and applies to all types of firms (Barkham et al. 1996, Delmar et al. 2003).

Sales may not be a perfect indicator for growth since it is affected by inflation and exchange rates and depends largely also on the branch of industry. However these problems arise mainly in international comparisons where we have data from several contexts where inflation and exchange rate are different. When we compare single firms within a country inflation and exchange rate bias are mainly caused by differences between branches of industry. Delmar et al. (2003) recognize that especially in high-technology start-ups assets and employment may grow very rapidly before any sales occur. These companies are left out of the analyses but the question is should they be included? According to our definitions above these firms are not categorized as gazelles during their early product development stages but it should be noticed that when we analyse gazelles we investigate a process which takes several years.

Even if sales and employment are not the only possible growth indicators available to policy makers they do not have as much drawbacks as many other indicators. As an example of these shortcomings Petersen and Ahmad (2007) state that while value-added or profits are a highly meaningful growth variable, appropriate data for cross-nation or even cross-industry evaluations is rarely available. On the other hand, indicators such as market share and physical output can only be compared within firms or industries with a similar product range (Delmar et al. 2003). Therefore the applicability of alternative indicators is limited to special contexts.

Delmar et al. (2003) propose that if firms are viewed as resource bundles growth analysis should analyse the accumulation of resources, such as employees. Schreyer (1999) further points out that when job creation on a macro-level is the rationale for the study, measuring growth in employment seems like the natural choice. From a practical standpoint, employment based measures are also less affected by many of the problems that affect turnover, such as price, inflation and exchange rate changes.

However, from the perspective of a single firm employment is seldom an ultimate objective of a business and thus the growth of employment will be biased in measuring the performance of a firm. The other major drawbacks of employment as a growth indicator result from it being affected by productivity increases of labour, machine-for-man substitution, degree of integration and other make-or-buy decisions (Delmar et al 2003). A firm can grow considerably in sales or other areas without any growth in employment. Thus indicators based exclusively on employment, may unwittingly lead to policies that have an adverse impact on productivity growth (Ahmad & Gonnard 2007).

6. Measurement of growth

One of the categories Delmar (1997) suggested to be analysed is how the measurement growth are made. As Davidsson and Wiklund (2001) suggest there exist three alternatives: absolute, relative and their combination as growth measurement. Growth can be measured by examining the actual firm size from one observation to another, or by relating size changes to the initial size of the company. The initial size of the company is challenging for both approaches. Small initial size means that large relative growth is easier to achieve with a quite small absolute growth whereas large initial size demands for large absolute growth in order to reach high relative growth (Delmar 1997; Storey 1997). In other words absolute measures tend to ascribe higher growth to larger firms whereas smaller firms more easily reach impressive relative growth. The measurement causes problems especially when studies from different contexts and data sets will be compared with each other

Some researchers advocate composite models that measure multiple indicators since no universally superior growth indicator have been introduced. Delmar et al. (2003) suppose that different indicators of growth are all attributes of the same underlying theoretical concepts of growth and therefore tend to be correlated. Thus instead of choosing a single explanatory variable, a more complete account of growth can be achieved through multiple indicators. The advantages of such models are its robustness and multidimensionality, which may serve specific purposes of the study. But as stated above

they usually decrease the amount of observations in the category of high growth businesses. Thus the decrease of the degrees of freedom may hinder the reliability of sophisticated statistical analysis. Sexton & Landström (2000, p. 39) have criticised composite models because of their content: “*Although possibly technically superior, conceptually such measures are empty, since it is impossible to state what dimensions they determine (neither dollars nor percentages)*”.

6.1. Growth process

Firms may grow either organically or through acquisitions or combining of both of these growth paths (Davidsson and Wiklund, 2001). Delmar et al. (2003) argue that organic growth really matters on macro-level job creation, because in acquisitions existing jobs are merely shifted from one organization to another. However, acquired growth may be also important if it reallocates resources to more productive uses. When an industry grows the initially large firm-base is rapidly reduced by increased competition (e.g. Henrekson & Johansson 2010) – therefore it seems quite plausible that in mature industries gazelles increasingly grow through the acquisition of its less efficient competitors.

Ideally any measure of firm growth would attempt to categorize organic and acquired growth separately, the key focus being on the former, with a second indicator focusing on the latter (Ahmad & Gonnard 2007). In practice, however, data that differentiates between the two is scarce making individual analysis highly challenging. This can be observed from Henrekson & Johansson’s (2010) extensive literature review: out of 20 studies only 2 reported on organic and acquired growth separately, with the vast majority settling for a measurement of total growth.

6.2. Firm demographics and context

Early works of Birch (1979, 1981) concentrated on firm demographics and the main question was who creates the jobs. Bich (1981) analysed business dynamics focusing those firms replacing jobs, their industry as well as age, size and location of the firm.

He found out that small business (< 20 employees) create two thirds of the new jobs (Birch, 1981). He also concluded that “*Smaller businesses more than offset their higher*

failure rates with their capacity to start-up and expand dramatically.” Haltiwanger et. al. (2011) analyse the same dynamics but their conclusion is that when age of the firm is controlled it is not so self-evident that size and net job creation are negatively correlated. They argue that young firms exhibit high rates of gross job creation and destruction. Young firms have very high job destruction rates from exit and thus net increase of jobs created by start-ups may be very low. Henrekson and Johnsson (2010) concluded that a few gazelles generate disproportionately large share of all the net jobs compared with other businesses. They also point out that gazelles are not necessarily small and young which is opposite to the definition given by OECD (2009).

Virtanen and Kiuru (2012, 2013) have analyzed the post-incubation gazelles of Aalto University incubator Aalto Start-up Center. They conclude that measured by the amount of job creation and growth of the jobs and value added post-incubation gazelles are High Impact Firms. From the job creation perspective one gazelle, Rovio Entertainment Oy (Angry Birds) dominates the data so that its personnel has increased from 26 in June 2009 to 377 at the end of the year 2012 and up to 650 in 2013. The company was started in 2003 and in 2008 it was on the verge of bankruptcy. Growth started next year and it received its status as a gazelle at the age 8 – 9 years. Analysing the group of post incubation gazelles it takes more than 6 years before they receive the level of gazelle. This is natural since they may stay in the incubator for three years.

Above we discussed measurement of growth which relates to firm size so that absolute measures favour large firms while relative measures the small ones. Therefore the size threshold that is chosen plays a critical role in both the reliability and validity of a study, and must strive to balance between the two (OECD 2011). Setting a low employment threshold will improve the potential size of the sample, but at the same time result in disproportionate numbers of small enterprises appearing in the data. In contrast when too high, disclosure problems increase, making the sufficient number of observations difficult especially in smaller countries. Moreover, in Europe and USA the definitions of size classes are different. Thus the studies may not be directly comparable even if little attention has been paid to this fact.

Even if we have concluded that the majority of new jobs will be created by gazelles we should take into account some caveats. If we define gazelles similarly as Lilischkis, (2011) has suggested this will be hardly true. For example when Acs et. al. (2008) argue that two thirds of new jobs created by SME gazelles they include all the gazelles not only the firms younger than 5 years. On the other hand, in their study the limit of SME is 500 employees whereas in European studies it usually is 250 persons. It should be noticed, however, that the share of small firms increased from 27 % to 38 % from 1994 to 2006.

The size of the economy may cause bias in growth estimations. An enterprise that starts up in a large country has greater scope to expand within that country than a firm starting out in a small country. Relative measurement mitigates biases towards large economies when comparing the company growth in different country context

Industry affiliation is not assumed to be related to firm growth per se, but to the nature of the growth process (Delmar et al 2003). Various organizational ecologists (e.g. Carroll & Hannan 2000) suggest that there are a number of industrial covariates that are unique to each industry, which affect the development of the firms in the studied population. This pattern of reasoning would suggest that the industry affiliation of a firm will affect its growth pattern, and therefore a certain sectorial “bias” can present itself. Sensitivity to sectorial differences must therefore be maintained when conducting cross-industry comparisons.

7. Policies for supporting gazelles

Many policy programs focus mainly on the emergence of new firms. For example OEVD (2009) emphasizes new high-growth companies when defining gazelles as newly born high-growth enterprises not older than five years. Some studies support these arguments. Mitusch, K and Schimke, A. (2011) suggest that small firms are overrepresented in the group of gazelles and they tend to be relatively young firms. However, Birch (1979) and Acs et. al. (2008) conclude that gazelles seem to be quite mature firms. (25 years on the

average) but they are younger than the so called low impact (other) firms. This result is supported by Gabrielsson et. al. (2011, 19 years in Sweden), and Heimonen and Virtanen (2011, 10 – 15 years in Finland). Virtanen and Kiuru (2013) concluded that post-incubation gazelles were on the average 6 years old.

One reason why start-up gazelles may be overrepresented in such samples where employment growth is used as a measure of growth is the fact that young firms exhibit both high rates of job creation and destruction (Haltiwanger et. al. 2011). However, as shown by Acs et. al. (2008) the firms with fewer than 20 employees represented almost 94 % of the whole population of HIFs but created only on third of the total job growth of this population. The share of firms with 20 – 499 employees was 5.9 and the share of the amount of jobs created 24 % whereas large firms comprised only 0.3 % of the population of HIFs but produced more than two fifths of all the jobs created by all the HIFs.

European Union has large interest in supporting gazelles (Niederbach et. al. 2007; Mitusch and Schimke 2011). One avenue to promote birth of gazelles is allocation of resources on incubators and accelerators in order to foster high growth innovative start-ups. The encouragement to fast growth is double-edged sword since it may lead to lack of proper infrastructure and people who manage these issues. As Nixon (2005): *”rapid pace of growth and change means that there will always be a gap between the demands of high growth venture and the structures and systems that are in place to manage its activities”*.

Ministry of Trade and Industry in Finland (2007) has examined policy measures designed for high growth firms in different countries. Niederbach et. al. (2007) have picked from that study different good practices launched to foster and serve high growth businesses. When these practices are evaluated, it will be discovered that five of these focus on start-ups, three all the growth firms and one especially for emerging technology. Thus we may conclude that even if the emphasis in high growth programs is in young firms and start-ups there exist also programs for later stage more mature businesses. For example in Growth Firm Service in Finland four public organisations strive to identify promising growth firms and offers them consultative services. Mastering Growth Program in the

Netherlands offers courses to initiate and manage growth. The initiative includes four modules for different size categories: start-up (< 15 employees), moderate growth (15 – 35 employees), fast growth (>35 employees), and large firms (> 250 employees). In spite of these exception majority of programs focus on start-ups and for example in Finland weekly business magazine *Talouselämä* includes “Growth entrepreneurship” section where the introduced businesses are mainly start-ups.

When we analyse the impact of gazelles on regional development it should be mentioned that gazelles are mainly studied at the country level even if gazelles are seen to be important from regional policy perspective. One interesting result from the viewpoint of regional development is given by Acs and Mueller (2008). They proposed that at the entry new firms have a strong impact on employment but only gazelles located in large diversified metropolitan areas exhibit pronounced long term job effects. similarly Virtanen and Heimonen (2013) discovered that growth of the firm is statistically significantly higher in urban area. Acs et. al. (2008) as well as Heimonen and Virtanen (2011) conclude that high growth and highly successful firms found in all regions and industries. At country level Autio (2009) argues that growth entrepreneurship in Finland is far behind the European and Scandinavian average. However, this analysis is based on Global Entrepreneurship Monitor data which reflects mainly intentions to grow.

What kind of instruments will be used to support gazelles? In addition to different kind of programs mentioned above, accelerators and incubators are most well-known environments to support development of start-ups and high growth businesses. Storey and Tether (1998) propose six policy areas to support new technology based businesses which are often expected to be the future gazelles. These areas are Science Parks; the Supply of PhDs in Science and Technology, the relationships between NTBFs and Universities Research Institutions; Direct, Financial Support to NTBFs from National Governments; and Technological Advisory Services for NTBFs Instruments Löfsten and Lindelöf (2002). Initiatives to promote NTBFs on Science Parks, will yield a higher rate of job creation than policies to help NTBFs in general.

7.1. Characteristics of policy makers dream gazelles

What are the characteristics of policy maker's dream gazelles? As was already mentioned for example OECD (2009) defines gazelles as high-growth enterprises born five years or less before the end of the three-year observation period. Thus gazelles are young by definition. Based on the analyses of policy initiatives it seems obvious that gazelles which are target of several programs are new, innovative, high technology start-ups (NTBF) within a hot spot branch of industry.

In the discussion above we have already referred to the studies about gazelles where authors have proposed that gazelles cannot be characterized as neither young nor small and will be represented in almost all the industries (Acs. et. al. 2008; Henrekson and Johansson, 2010). Heimonen and Virtanen (2011) found out that high growth and highly successful firms are not radically innovative but their success comes from incremental innovations and they act differently than the other firms. Henrekson and Johansson (2010) suggested that typical gazelles are not technology firms but compared to the other branches of industry they are overrepresented in services.

Several policy programs which are thought to foster high growth entrepreneurship put a lot of effort in order to generate private equity and venture capital supply for potential high growth SMEs. However, if these measures are supposed to increase the number of young gazelles it may be that demand and supply of funds do not match each other because venture capital investors would like to avoid technology risk (Ruhnka and Young 1988) which is often present in seed and start-up stage companies.

8. Data

In order to find out support for the proposed thoughts we used a sample collected from the Finnish high growth and highly successful firms (HGS) by Virtanen and Heimonen (2013). This sample consisted of those companies which were identified to be HGS firms in the period 2003 – 2005. Heimonen and Virtanen (2011) used a sample of 348 firms where from they identified 75 HGS firms. This sample was used as the bases for acquiring new data covering the years 1999 – 2012. After the first checking of the data revealed that 15 firms had either closed or merged their operations. Thus we acquired additional data from altogether 60 from Balance Consulting Oy. But closer investigation of the data revealed that some firms did not exist after the HGS period and/or balance sheet information was incomplete. Moreover, the final step was to take away investment banks and finance and holding companies, which have disproportionately large amounts of assets compared to other companies with similar numbers of personnel. Finally 11 firms were removed and the sample consisted of 49 companies. From these companies 30 were established before the year 1999, 3 in 1999, 4 in 2000, 7 in 2001 and 5 in 2002. Thus we could categorize 19 businesses as start-up firms in 2003. In this analysis we will emphasize the observations after HGS period since 16 the firms where established later than the first year of our data.

HGS firm is defined as a firm which has at least 20 % growth of turnover and receives at least 70 points as its success index in the period 2003 – 2005. Success index is constructed using six different variables which are Current ratio (CR), Debt ratio (DR), Earnings before taxes (EBIT), Equity ratio (ER), Repayment period (years), and Return on investment (ROI %). The value may vary between 0 – 100.

9. The development of HGS firms

In Figure 1 turnover of growth of HGS firms which have been growing fast ($> 20\%$ growth of turnover /year) and highly successful (success index > 70) is described. Mean and upper quartile seem to have slightly similar development path. During our HGS period growth has been above 20% but after that the trend seems to be downward sloping. Short downturn will be seen in the beginning of the 2000's and more serious recession in 2009. It is noteworthy that more than half of the businesses in our sample experienced decrease of turnover in the year 2009. Even if the firms have somehow recovered the rate of growth seems to have decreased to a lower level.

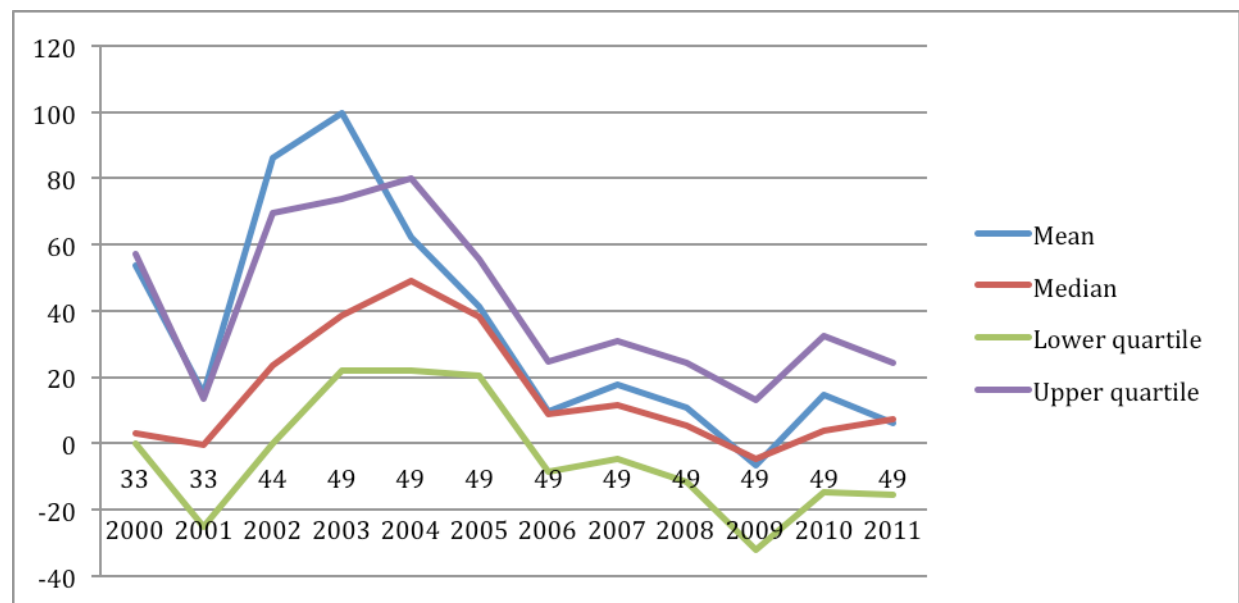


Figure 1: Turnover growth in 2000 – 2011 (%)

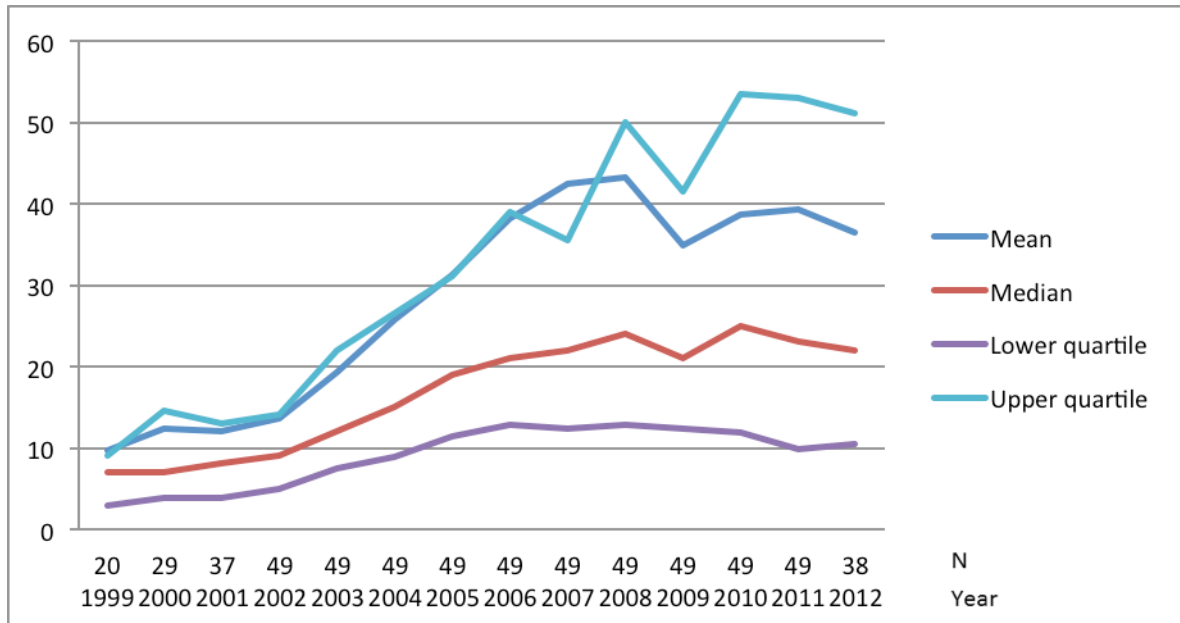


Figure 2: Number of personnel in 1999 - 2012

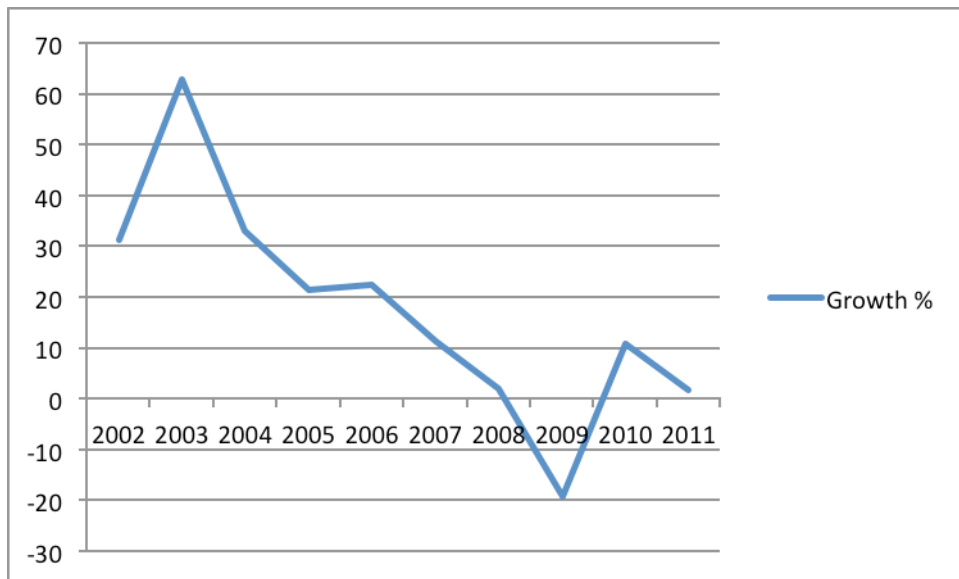


Figure 3: Growth percentage of the number of personnel

In Figure 2⁴ mean, median and upper and lower quartile of the number of personnel is depicted from the years 1999 – 2012. As can be seen the trend seems to be upward sloping indicating that these businesses have mainly been increasing their employees during the 2000's. However, this trend has changed and the firms in the sample have decreased their workforce in the year 2009. During the short downturn in the beginning of change of the millennium firms did not lay off their workers. Having a look at the total employment of whole sample we may conclude that high impact season of the sample firms has continued from the year 2002 up to the year 2006 when the growth of employment of the total sample has been more than 20 % annually (Figure 3). The total number of personnel in all the firms was 584 in 2002 and 1875 in 2006. There after the growth has been modest and in 2008 the total amount of work force in the sample companies has decreased almost by 10 % up to 2011 (from 2124 to 1924). In 2009 the total work force of sample companies decreased almost 20 %.

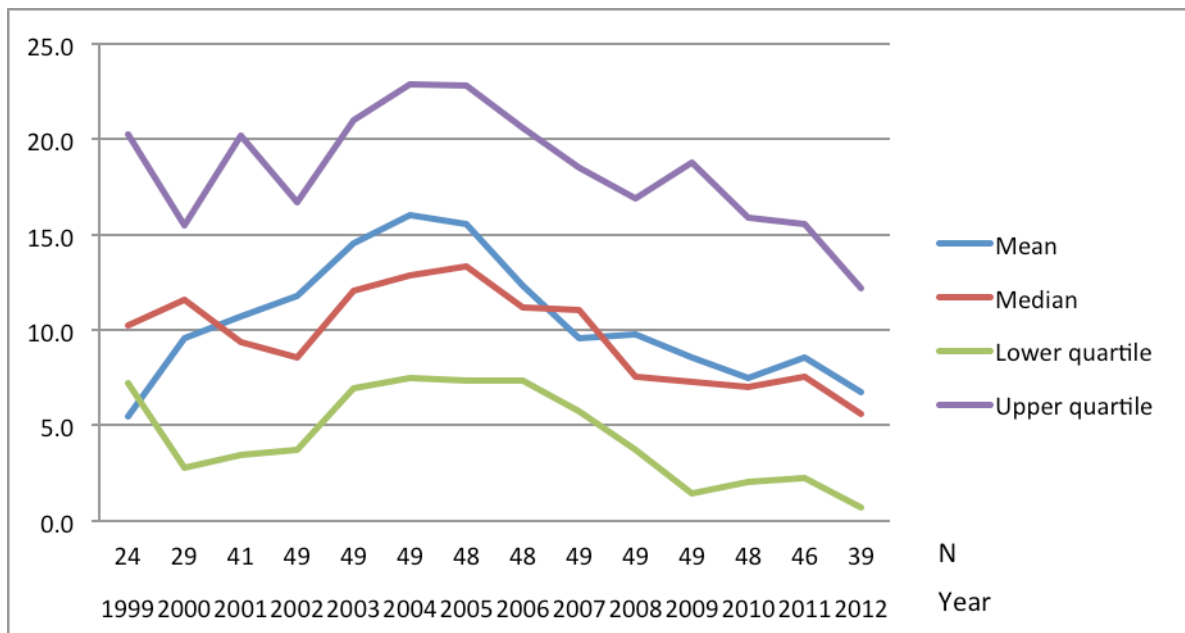


Figure 4: Operating margin in 1999 – 2012 (%)

The obvious reason for decrease in employment may be seen from Figure 4 describing operating margins of companies within the period 1999 – 2012. Since 2008 the operating margin has been less than 10 % in more than half of the sample businesses. It is even

⁴ The number of observations is plotted above the year.

more worrying that recession seems to have hit the operating margin in most of those businesses which have published their data from the year 2012. From Figure 3 we may conclude also that profitability started to deteriorate already in 2006.

Based on the above analysis it could be concluded that the firms identified as HGS businesses in the period 2003 – 2005 cannot be considered as high impact firms in the long run. Even if they collectively increase their employment up to the year 2008 only one of them, Assistor Oy overshoots the limit of SME employing more than 250 persons in 2011. However, this firm had 347 employees in 2008 where from the number of employees has decreased to 265 in 2011. About one fourth of the businesses are classified as small businesses employing 50 – 249 persons in 2011. From the policy perspective it is worrying that every seventh of those businesses which will reach HGS status have reverted as microbusinesses in 2011. More than 40 % of the firms had reduced their employees up to the year 2011 from the highest level of employment in 2005 – 2008. In some cases where the reduction was considerable it was connected with reorganisation of the business for example transferring the activities to a totally new branch of industry or building a concern where the jobs will be transferred to the other company. Thus reorganisation does not inevitably mean the loss of jobs but may be a follow up from the change in the strategy and modernisation efforts of a firm.

10. Conclusions and Implications

What are the distinctive characteristics of gazelles compared with the other types of businesses? What are the characteristics policy programs suggest to be possessed by gazelles? It has been assumed that for example age, size and location may be presupposed to be such characteristics which differentiate gazelles from other companies Based on the literature it could be argued that gazelles are rapidly growing firms from different locations and branches of industry (Birch, 1994; Acs et. al., 2008). They are not necessarily either young or small but can be found in different age and size classes. One crucial feature of gazelles is that because of fast growth they may change the size

category during the inspection period. However, in the sample of Finnish gazelles this transfer from SME category to large business was a real exception.

Several policy programs strive to foster new technology based firms (NTBF). In addition to above conclusion that gazelles may not be neither young nor small they are not technology firms either (Henrekson and Johansson, 2010; Heimonen and Virtanen, 2011).

Some support was found about concentration of gazelles in urban areas (Acs and Mueller, 2008; Virtanen and Heimonen, 2013). Acs and Mueller (2008) pointed out that in USA gazelles are concentrated in metropolitan areas in east and west coast and around Chicago. They also argued that employment effects of gazelles fade away within five years. Thus the contribution of gazelles to regional employment seems not to be sustainable. This was also confirmed in our descriptive analysis with the Finnish data.

The analysis shows that duration of high impact period of the sample firms has been about 5 years. Profitability of the firms has started to decrease in 2006 and thereafter firms have decreased their employees at increasing pace. In the year 2009 this decrease was almost 20 %. Our conclusion is that decrease in profitability precedes downturn of employment. in 2012 is equal or less than 12 % in three of the four firms (30 firms) of the sample. Even if these firms seem to have been high impact firms in 2002 – 2006 thereafter their development after HGS period has been quite poor.

When evaluating the results of our empirical analysis it should be noticed that sample is quite small and we do not have any control group. However, when we picked HGS firms from the data of 348 growing SMEs 75 were identified to be HGS firms. Before acquiring the additional data we found 15 such businesses which did not exist anymore. Our post HGS analysis is descriptive mainly because of small sample size.

For researchers this study suggests that data for the longitudinal growth studies should be collected from the longer period than 3 – 5 years. From the policy perspective it could be argued that in order to get sustainable growth and success firms should be nurtured also



during their HGS period. Firms should be encouraged to modernisation, agile changes in strategy and select focused strategies as suggested by Heimonen and Virtanen (2011). From regional policy perspective this study supports the view that urban areas have better resources to nurture HGS firms. In future studies we should find out are there any differences in development paths of HGS firms in rural and urban areas. Another avenue for future research could be inclusion of control group where the firms have not been identified to be HGS firms. Moreover, this analysis forms a framework for analysing gazelles in international context. In the future we will be focusing on the development of high growth businesses in Baltic countries, especially in Latvia.

References

- Achtenhagen, L., Naldi, L., and Melin, L. (2010). Business growth – Do practitioners and scholars really talk about the same thing? *Entrepreneurship, Theory & Practice*, March, 289-316.
- Acs, Z. J., Parsons, W., & Tracy, S. (2008). High-Impact Firms: Gazelles revisited. SBA Office of Advocacy, Corporate research Board, LLC Washington, DC 20037.34, pp. 253-277.
- Acs, Z.J. and Mueller, P. "Employment effects of business dynamics: Mice, Gazelles and Elephants." *Small Business Economics* 30, no. 1 (2008): 85--100.
- Ahmad, N. and Gonnard, E. "High growth enterprises and gazelles." paper prepared for the International Consortium on Entrepreneurship. Copenhagen, Denmark, 2007.
- Almus, M.(2002). What characterizes a fast-growing firm? *Applied Economics*, Vol. 34, Issue 12, pp. 1497-1508.
- Ardichvili, A., Cardozo, S., Harmon, S. and Vadakath, S. (1998) 'Towards a theory of new venture growth', *Proceedings of the 1998 Babson Entrepreneurship Research Conference*, Ghent,Belgium.
- Audretsch, D.B. (1995). Firm profitability, growth, and innovation. *Review of Industrial Organization* 10, no. 5: 579-588.
- Autio, E. (2009). *The Finnish paradox: The curious absence of high-growth entrepreneurship in Finland*, Helsinki: ETLA, The Research Institute of the Finnish Economy, Discussion papers, No. 1197.
- Barkham, R., Gudgin, G., Hart, M., & Hanvey, E. (1996), *The Determinants of Small Firm Growth (Vol 12)*. Gateshead, Tyne and Wear, UK: Athenaem Press.
- Birch, D.L. (1979). *The job generation process*. MIT, Cambridge, MA.
- Birch, D. L. (1987). *Job creation in America: How our smallest companies put the most people to work*, New York: Free Press.
- Birley, S. and P. Weasthead (1990). Growth and performance contrasts between types of small firms, *Strategic Management Journal*, Vol. 11, Issue 7, pp. 535-557.



- Carroll, G.C. & Hannan, M.T. *The Demography of Corporations and Industries*. Princeton, NJ: Princeton University Press, 2000.
- Cooper, A.C. (1993) 'Challenges in predicting new firm performance', *Journal of Business Venturing*, Vol. 8, No. 3, pp.241–253.
- Cooper, A.C., Gimeno-Gascon, F. J. and Woo, C. Y. (1994). Initial human and financial capital predictors of new venture performance, *Journal of Business Venturing*, Vol. 9, pp. 371-395.
- Covin, J. G. and Slevin, D. P. (1998). Adherence to plans, risk taking, and environment as predictors of firm growth, *The Journal of High technology Management Research*, Vol. 9, No. 2, pp. 207-237.
- Davidsson, P. and J. Wiklund (2000). Conceptual and empirical challenges in the study of firm growth, pp.26-44, in *Blackwell Handbook of Entrepreneurship*. Ed. D. L. Sexton and H. Landström, Blackwell Publishers Ltd, Oxford.
- Davidsson, P. and Wiklund, J. (2001) 'Levels of analysis in entrepreneurship research: current research practice and suggestions for the future', *Entrepreneurship Theory and Practice*, Vol. 25, No. 4, pp.81–99.
- 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* Vol. 24, Issue 4, pp. 388-406.
- Delmar, F. (1997) "Measuring growth: methodological considerations and empirical results." In *Entrepreneurship and SME Research: On its Way to the New Millenium*, by R & Miettinen A Donckels, 62--86. Aldershot, England: Ashgate, 1997.
- Delmar, F., Davidsson, P. and Gartner, W. B. (2003). Arriving at the high-growth firm, *Journal of Business Venturing*, Vol. 18, No. 2, pp. 189-216.
- .
- Ettlinger, N. and Tufford, M. (1996). Evaluating small firm performance in local context: A case study of manufacturers in Columbus, Ohio. *Small Business Economics* 8: 139-157.
- Gabrielsson, J., Politis, D. and Galan, N. (2011), "Rapid growth... and after? A study of growth patterns among ex-gazelles in Sweden," Paper presented in XXV RENT Conference, November 16 – 18, 2011, Bodø, Norway.

- Glancey, K. (1998). Determinants of growth and profitability in small entrepreneurial firms, *Int. J. of Entrepreneurial Behaviour and Research*, Vol. 4, No. 1, pp. 18-27.
- Hayton, J.C. "Competing in the new economy: the effect of intellectual capital on corporate entrepreneurship in high-technology new ventures." *R&D Management* 35, no. 2 (2005): 137--155.
- Heimonen, T. (2012). What are the factors that affect innovation in growing SMEs? *European Journal of Innovation Management*, Vol. 15, Issue 1, pp. 122-144.
- Heimonen, T. and Virtanen, M. (2012). Characteristics of successful gazelles – problems in approaches and methods of analysing the data. *International Journal of Business and Globalisation*, Vol. 9, No. 1, pp. 12-41.
- Henrekson, M. and Johansson, D. "Gazelles as job creators: a survey and interpretation of the evidence." *Small Business Economics* 35, no. 2 (2010): 227--244.
- Keeble, D. (1997). Small Firms, Innovation and Regional Development in Britain in the 1990s, *Regional Studies*, Vol. 31, No.3, pp. 281-293.
- Lilischkis, Stefan, (2011). Policies in support of high-growth innovative SMEs. An INNO-Grips Policy Brief by empirica Communication and Technology Research, European Commission
- Littunen, H. and Virtanen, M. (2006) 'Differentiating growing ventures from non-growth firms', *Int. J. of Entrepreneurship and Management*, Vol. 2, No. 1, pp.93–109.
- Littunen, H., and M. Virtanen (2009). Differentiating factors of venture growth: from statics to dynamics, *Int. J. of Entrepreneurial Behaviour & Research*, Vol. 15, No. 6, pp. 535 – 554.
- Markman, G. D. and W. B. Gartner (2002). Is extraordinary growth profitable? A study of inc. 500 high-growth companies, *Entrepreneurship, Theory and Practice*, Vol. 27, Issue 1, pp. 65-75.
- Mitusch, K and Schimke, A. (2011). "High-Growth Companies", Final report, Task 4, Horizontal Report 5, Europa Innova
- Moreno, A. M., and J. C. Casillas (2007). High-growth SMEs versus non-high-growth SMEs: a discriminant analysis, *Entrepreneurship and Regional Development*, Vol. 19, No. 1, pp. 69-88.
- North, D. and Smallbone, D. (2000). The Innovativeness and Growth of Rural SMEs



- Durign the 1990s, *Regional Studies*, Vol. 34, No. 2, pp. 145-157.
- OECD. *Entrepreneurship at a Glance 2011*. OECD Publishing, 2011.
- OECD. *Structural and Demographic Business Statistics 2009*. OECD Publishing, 2009.
- Parker, S. C., Storey, D., and Van Witteloostuijn, A. (2010). What happens to gazelles? The importance of dynamic management strategy, *Small Business Economics*, Vol 35, No. 2, pp. 203-226.
- Schreyer, P. "High Growth Firms and Employment." OECD Science, Technology and Industry Working Papers. Paris, France: OECD Publishing, 1999.
- Sexton, D., Pricer, R.W. and Nenide, B. (2000) 'Measuring performance in high growth firms', *Frontiers of Entrepreneurship Research Proceedings of the Twentieth Annual Entrepreneurship Conference*, Babson College, MA.
- Sexton, D.L. and Landström, H. *The Blackwell handbook of entrepreneurship*. Oxford, UK: Blackwell Publishers Inc., 2000.
- Smallbone, D., R., Leigh, and D. North (1995). The characteristics and strategies of fast growth SMEs, *Int. J. of Entrepreneurial Behavior and Research*, Vol. 1, No.3, pp.44-62.
- Steffens, P., Daviddson, P. and Fitzsimmons, J. (2009). Performance configurations over time: implications for growth- and profit-oriented strategies, *Entrepreneurship Theory and Practice*, Vol. 33, Issue 2, pp.125–148.
- Storey, D.J. *Understanding the Small Business Sector*. London: Routledge, 1997.
- Veronique, A., Schutjens, J.M. and Wever, E. (2000). Determinants of new firm success, *Regional Science*, Vol. 79, pp. 135-159.
- Virtanen, M. and Heimonen, T. (2007) 'Comparative analysis of fast growing and highly successful firms in urban and rural areas', Paper presented in 52nd ICSB World Conference, 13–15 June, Turku, Finland.
- Virtanen, M. and Heimonen, T. (2011). The development of high growth and highly successful SMEs: cases from Eastern Finland. *International Journal of Technology Transfer and Commercialisation*, Vol. 10, Nos. 3/4, pp. 411-432.
- Virtanen, M. and Heimonen, T. (2013) Longitudinal analysis of the development of high growth and success (HGS) firms - Are HGS businesses high impact firms? Paper to be presented in the XXVII RENT Conference, Vilnius, Lithuania, November 20-22, 2013



Virtanen, M. and Kiuru, P. (2012), Do the incubators foster excellent performance? The analysis of post-incubation gazelles of Aalto Start-up Center. Paper presented in Rencontres de St-Gall, September 2 – 5, 2012, St. Gallen, Switzerland

Virtanen, M. and Kiuru, P. (2013), Post- Incubation Performance – Are the Post-Incubation firms High Impact Firms? Paper presented in the 58th ICSB World Conference, Ponce, Puerto Rico, June 20 – 23, 2013



CEIRD

Discussion paper No 6

**Centre for Entrepreneurship, Innovation and Regional
Development
at Ventspils University College**

**Inzenieru street 101a
Ventspils, LV 3601
Latvia
www.venta.lv**