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High Growth Firms: As a Policy Option in Turkey

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Abstract

HGFs increasingly draw attention of policy makers with their outstanding performances as novel policy instruments. However, the heterogeneous nature of firm growth and its erratic patterns make them questionable. In addition, there is not any consensus about the definition and measurement method for high growth, which makes it difficult to compare different studies. The main research questions of this study are, whether HGFs in Turkey share common characteristics with HGFs in other countries and how the cohort of HGFs changes by using different definitions. In empirical part, the firm data is drawn from the SME Support Organization of Turkey (KOSGEB), in two consecutive four year periods. Our findings show that HGFs in Turkey have some common characteristics with other countries; they are relatively young and small. Whilst, firms with less than twenty employees comprise the majority of HGFs in this study, they are usually excluded out of the definition of HGFs in other studies. Furthermore, contrary to other studies, high growth is not one-time event and a significant amount of HGFs sustain their outstanding performance in the next periods. Consequently, each definition of high growth leads to a different cohort of firms. Whilst, a firm demonstrate high growth in one variable, it might have negative performance in others. Therefore, policies makers need to adopt their own definition in order to discriminate the outstanding performer firms from the modest ones.

Key words: high growth firms, fast growing firms, entrepreneurship policy

1. INTRODUCTION

In modern economies, developed or developing, entrepreneurship has been regarded as a key source of new jobs and wealth generation. An entrepreneur is a revolutionary heroic figure that identifies the imperfections and bottlenecks of the market and introduces innovative solutions for consumers or business (Schumpeter, 1934). By doing so, entrepreneurs destruct the stationary equilibrium of the market by opening a new way of production or operating in the market. In his seminal work, Schumpeter clearly distinguishes the role of "the (innovator) entrepreneur" from other businessowners in economic growth.

Policy makers and scholars are still in search of the best entrepreneurship policies. As the discrimination previously made by Schumpeter shows, not all enterprises but "the innovator entrepreneurs" generate growth; therefore, the challenging issue is to answer the question: which type of business generates more jobs and growth? Is it incumbents or new entrants, small or large enterprises, high-tech or low-tech enterprises? Another equally important question to be answered is how can governments effectively intervene and stimulate the natural progress of entrepreneurs?

In this study we focus directly on a relatively new phenomenon of entrepreneurship literature, namely high-growth firms (HGFs). In this domain, the main premise is that not all firms but a small percentage of firms generate disproportionately high levels of jobs and economic growth (Henrekson and Johansson, 2010). Thus, it implies that rather than promoting ordinary entrepreneurs, targeting those high-growth ones would be better for all economies.

The literature on HGFs begins with the provocative report "The Job Generation Process" by Birch, who claimed that small companies were responsible for the majority of new jobs in the US (Birch, The Job Generation Process, 1979). In fact, at the time the report was published, the US and the world economy were undergoing a major transformation, with economic recessions, oil crises, and high unemployment rates. Thus, the report had a high impact on economic policy and studies. Small businesses were regarded as a principal toolsfor regenerating growth and jobs, especially by Regan and Thatcher in the US and in the UK, respectively. However, Birch then revised his main argument and stated that not all small firms but only an exclusively small number of high-growth small firms, which he metaphorically termed "gazelles", were responsible for the most job generation (Landstörm, 2005).

Apart from the metaphorical terms, there are various definitions, terms and measurements, adopted by scholars and institutions around the world, related to HGFs. In fact, in this

differentiated complex world, comparison of the studies or the policies has become a challenging issue for those to discover how HGFs behave, grow and are supported.

From a policy perspective, if HGFs are to be used to drive economic growth, their common characteristics and growth factors have to be identifiedfirst. Almost four decades after Birch's introductory work, studies are now available to draw some familiar characteristics and patterns of HGFs from. These studies and publications have increasingly brought HGFs to the fore, both in developed and developing countries, as a novel policy tool.

In Turkey, as a developing country, HGFs also have been put at the core of small and medium enterprise (SME) policies. In the principal national strategic plan of Turkey (The10th Development Plan, 2014–2018), the main objective of SME and entrepreneurship policies was defined as prioritising fast growing firms, firms with growth potential, and also innovative SMEs, while supporting them (Ministry of Development, 2013). Thus, in the planned period, specific programmes are to be prepared to support HGFs. Yet, there are few studies in this field in Turkey. During the preparation of this paper, only two studies on HGFswere identified in Turkey. In the first, Güzel and Giray (2014) compiled literature on and policy implementations from other countries and OECD publications. In the latter study, Cansız (2013) analysed the social backgrounds of 32 high-growth entrepreneurs in technology development regions in Turkey. Yet, there need to be further studies to analyse the characteristics of HGFs in Turkey and whether HGFs in Turkey share common characteristics with other HGFs in other countries. In this regard, this paper contributes to the literature through comprehensive research on HGFs in Turkey.

The main research question of this paper was whether the HGFs in Turkey have similar characteristics to those in other countries or not. However, both the literature review and the empirical analysis conducted for this study showed the fact that the group of firms identified as HGFs in a study is likely to be changed by a different variable and measurement technique. Therefore, it is more essential to demonstrate how the cohort of HGFs changes by using different methodologies and variables.

In the empirical part of the study, the data, comprising 7,950 SMEs for 2006–2009 and 14,372 SMEs for 2010–2013, will be analysed. Two periods are chosen, first, to test the economic crisis and the recovery period's impact on HGFs and, second, to demonstrate persistence of growth in the long run. We will first analyse whether our findings and the HGFs common characteristics

are consistent, and then we will study the persistence of high growth within and between four-year periods. This will demonstrate how HGFs can be used as a policy tool.

This paper proceeds as follows. In section two, we will show how the concept of HGFs arose, and progressed and what the main views are and how these findings will be addressed. The very nature of the HGFs concept, the heterogeneity among definitions, the measurements and the variables are also discussed. The third section will be the part for the methodology, data and the measurements of this study. In the fourth section, findings of this research will be illustrated and compared with other country findings. In the final section, all the findings of the research and literature review will be evaluated to give a conclusion and recommendation, in particular for HGFs in Turkey.

2. THEORETICAL BACKGROUND AND HETEROGENEITY AMONG DEFINITIONS

2.1. Theoretical Background

High-growth firm literature began with the seminal report "Job Generation Process"by David Birch in 1979. When he analysed Dun and Bradstreet data comprising 12 million records of firms from 1969 to 1976 in the US, he found that firms with 20 or fewer employees created four times as many new jobs as large firms with more than 500 employees (Burlingham, 2012). Indeed, despite the fact that just 12 copies were sold, the report had an enormous impact on both the policy and the small-business research field. Actually, the 1970s were a time in which the oil crises and economic recession had made large companies questionable, and his report provided small business as a novel economic policy instrument for politicians such as Ronald Regan in the US and Margaret Thatcher in the UK (Landstörm, 2005). However, the report also attracted a number of critics for using inappropriate data because they were data just for credit rating purposes and not representing all the firms in the US.

He then revised his argument to state that neither small nor large but a small proportion of firms creates most of the jobs. He coined the metaphorical term "gazelles" for these high-growth firms, and their counterparts with steady growth performances were termed "mice" and "elephants" according to their size (Landstörm, 2005).

Contrary to Birch's claims, Davis et al. (1996) found that smaller firms exhibit higher gross rates of job creation, but not in terms of net rates. Large firms dominate both net job creation and job

destruction in the manufacturing sector in the US. They criticise the studies bringing small firms to the fore in terms of job creation by relying on unsuitable data to draw relationship between job creation and firm size. In essence, the relationship between net job creation and size is mixed and not robust. One of the important theories about size and the growth relationship is Gibrat'slaw (1931), which asserts that a firm's growth rate is independent of its size and random (Moreno and Coad, 2015). In their study, Moreno and Coad (2015) testedGibrat's Law, yet they could not easily reject or accept it. Rather, they concluded that most of the empirical evidenceshows that smaller firms grow faster than large ones, but the theory has some explanatory points for large ones.

In a similar vein, Daunfeldt and Elert (2010) conclude that Gibrat's law is rejected when it is analysed on aggregate level; small firms grow faster than large firms. Yet, when they did their analysis on industry level (five-digit NACE codes), Gibrat's Law was confirmed in almost half of the industries. Thus, growth seems to be a rather random process in industry-level analysis. Linking to this, Haltiwanger (2006) found that the age of the firm rather than its size has a relationship with growth. He asserts that there is no systematic relationship between net employment growth and size when age is controlled. Newer firms are more likely to display high growth than their older counterparts (Mason et al. 2009); nevertheless, 70% of HGFs are at least five years old (Anyadike-Daneset al., 2009). In their comprehensive study, by applying different definitions of high growth, Daunfeldt et al. (2010) found that a firm's age has a significant negative impact on the likelihood of being an HGF in almost all regressions. It means that young firms are more likely to be HGFs than their larger counterparts.

In many respects, there is mixed evidence for the determinant role of age or size on growth, yet,when we turn to evidence from existing literature on HGFs, there are some common facts on size and age. In 2010, Henrekson and Johanson conducted a meta-analysis; they identified 20 studies from 1990 to 2010 and found some common characteristics among HGFs. In their analysis, they concluded that they are not necessarily small and young, yet, on average, HGFs are younger and smaller than other firms. Halabisky et al. (2006) found that most of the hyper- and strong-growth companies are small (fewer than 100 employees) and responsible for 63% of job creation in the study period 1985–1999 in Canada. However, large companies are prominent among slow or negative growth firms, accounting for 89% of them.

The main premise of HGFs is that the outstanding performers generate most of the jobs in an economy; therefore, most of the studies focused on identifying HGFs' proportion and their job contribution. In the research, in all the UK firms from 2002 to 2008, it was found that 6% of all firms generated 54% of the jobs, which were later symbolised as the "Vital Six" (Anyadike-Danes et al., 2009). In line with the Vital Six, HGFs account for 4% of all firms and create 70% of jobs (Birch and Medoff, 1994). In sum, the proportion of HGFs, in a number of studies, changes from 1 to 10% of all firms, and their job contribution is 50 to 80% (Acs and Mueller, 2008, Acs et al., 2008, Deschryvere, 2008, Betbèze and Saint-Etienne, 2006, Halabisky et al., 2006, Lopez-Garcia and Puente, 2012).

Most of the studies were conducted on cross-sectional data sets and there are fewer studies on HGFs' attitudes in the long term. In this respect, Acs and Mueller (2008) analysed the employment effects of new firms in the long term. The empirical evidence indicates that the overall employment effect of start-ups is positive and very strong in the year they enter but this effect decreases and fades away in six years. They also found significant differences in terms of firm sizes. In accordance with HGF literature, most small firms, so-called mice (firms with fewer than 20 employees) stay small and have negative employment effects by the time. In addition, elephants (firms with more than 500 employees) have a negative U-shaped employment effect, in the initial three years, and then it turns to positive afterwards. However, gazelles (firms with 20 to 500 employees) are the only ones that develop a strong long-term employment effect after the entry year.

Prior studies have also focused on identifying some growth factors linked to high growth. OECD (2010) prepared a multi-country study in order to investigate the link between high growth and drivers such as innovation, business practices, networking, intellectual assets management and financing. First, innovation and the high-growth relationship was investigated. Although the previous OECD (2002) study had found a positive relationship between them, it was not supported because of lack of significant empirical evidence. The reason behind this conclusion was that different studies on this issue cannot be compared because of the diversity of their definitions of high growth and innovation; furthermore, firm-level effects of innovation found can be both positive and negative. Therefore, the report recommends that policy makers separate these two issues: innovation and high growth.

Baldwin and Gellatly (2006) found that high-growth entrants are twice as likely to innovate, to invest in computer-controlled processes for production, and to train. They also concluded that more successful firms are also more likely to have higher R&D sales and investments ratios. By the same token, Mason et al. (2009) investigated whether innovation drives growth and whether faster growth leads to higher spending on innovation and found that innovative firms who introduced innovations (process, product or wider innovations) grow twice as fast in both employment and sales as non-innovative firms.

It is a widely held opinion that high-tech firms are in greater proportion in the cohort of HGFs. In this respect, most government policies usually focus on R&D, innovation incentives and high-tech start-ups. Contrary to this view, almost all HGF studies conclude that HGFs exist in all industries and are not over-represented in high-tech industries (Halabisky etal., 2006, Henrekson and Johansson, 2010). HGFs can be found in all sectors, but Mason et al. (2009) showed in their findings that while business service firms are significantly over-represented manufacturing firms are under-represented in the group of HGFs.

Another topic studied in HGF literature is their regional effects. Mason et al. (2009) found that if two regions have the same level of firm growth, the region with a greater proportion of HGFs will generate more jobs.

In addition, HGFs do have an effect on industrial growth performance. Although HGFs can exist in all industries, regardless of technological level, it is crucial to know how they affect overall industry growth. Bos and Stam (2013) investigated young HGFs (gazelles) in the Netherlands in a 12-year period. They found that an increase in the prevalence of gazelles in an industry has a positive effect on subsequent industry growth. Yet, they could not find any relationship between over-representation of gazelles and subsequent industry growth.

One of the growth factors is the background of high-growth entrepreneurs. Mason and Brown (2013) studied 22 high-growth firms in Scotland. They found that business experience is a very essential factor in firm success; 13 of them had already pre-incubated in business and de novo entrepreneurship was relatively rare in the HGF group. Like Mason and Brown, Cansız (2013) analysed the social backgrounds of 32 HG entrepreneurs in technology development regions in Turkey. According to that study, HG entrepreneurs are more likely to have prior business experience and to be highly educated, preschool educated, exporting, active social network application users and open to cooperation.

On the whole, first, the large part of literature is on the proportion of high-growth firms and their outstanding job-growth shares in economies.Most of the studies are focusing on illustrating the outstanding performance of a small proportion of firms in different countries. Then, some of the studies focus on finding out some common characteristics and growth factors of HGFs. In line with general expectations, some studies analyse the relation between high growth and innovation or R&D. Few of them study HGFs' regional or industrial affects. In fact, if HGFs are to be used to stimulate new job creation and the wealth-generation process, more light needs to be shed on the nature of HGFs and growth factors. However, it is outside the scope of this study.

2.2. Heterogeneity in HGF Definitions and Methods

Indeed, HGFs are outstanding performers; nevertheless, it is hard to compare and contrast the findings of studies because of the heterogeneity among terms and definitions used in this field. Almost every study adopts idiosyncratic definitions, terms and measures to identify HGFs.

There is even a rich diversity in the terminology of high-growth firms.Here are some:*high-potential entrepreneurship* (Lerner, 2010)*high growth enterprises* (Eurostat-OECD, 2007), *high impact firm* (Acs et al., 2008), *Gazelle* (Bos and Stam, 2013), *hyper and strong growth firms* (Halabisky et. al 2006), *fast-growing enterprises* (Europe 2020), *High Growth Innovative Enterprises HGIE* (Kolar, 2014).

Though, Eurostat-OECD (2007) has introduced a practical definition for both HGFs and gazelles, there is not any consensus about the definition and measurement method for HGFs. Indeed, growth in a firm can be calculated with different variables such as employment, revenue, and productivity and with different methods (absolute, relative, organic etc.) in accordance with the purpose of study. Thus, while HGFs in a study may refer to a particular cohort of growing firms, it may refer to a very distinct group of firms in another study. Even within the same study, a different cohort of firms might be found to be HGFs because of the methodology that is adopted.

Growth can be measured in absolute or relative terms.Moreover, some studies preferred to combine both of them. While absolute growth indicators bring large firms to the fore, relative growth indicators give a greater chance of taking part in the cohort of HGFs to small firms.

The definition for HGFs suggested by Eurostat-OECD is as follows.

> *All enterprises with average annualised growth greater than 20% per annum, over a three year period should be considered as high-growth enterprises. Growth can be measured by the number of employees or by turnover(Eurostat-OECD, 2007,p.61)*

In the same manual, it is also recommended that the size threshold for firms be set to avoid negligible increases, such when a firm with solely one employee has an increase of one employee. If it is measured, it will be calculated as a 100% increase, which is greater than growth threshold for HGFs. Therefore, firms with fewer than **10 employees** at the beginning of the period should be excluded from the measurement of high-growth firms, which is measured in terms of either employment or sales.

In general, the terms gazelles and HGFs are being used interchangeably, but the Eurostat-OECD manual splits young ones from other HGFs and terms themgazelles. Although Birch, who coined the term gazelles for HGFs, has never referred togazelles as young or start-ups, the Eurostat-OECD manual split the definition into two groups of firms. The recommended definition ofgazelle in this manual is as follows:

> *All enterprises up to 5 years old with average annualised growth greater than 20% per annum, over a three year period, should be considered as gazelles. (Eurostat-OECD, 2007,p.63)*

In fact, some studies adopted the Eurostat-OECD definition, for exampleDeschryvere (2008), Anyadike-Danes et al. (2009), Hölzl (2011), and Mason et al. (2009). Nevertheless, this manual has not brought about general agreement on the definition of HGFs. Unlike inthe Eurostat-OECD definition, in the study of Bos and Stam (2013) a firm has to have at least 20 employees and generate at least 20 employees in the period in question to be identified as a gazelle.

Birch and the Eurostat-OECD manual define relative growth as annual growth of more than 20%, yet in some studies different relative growth thresholds have been used. In the study of Halabisky et al. (2006), more than 150% of growth over a four-year period was defined as hypergrowth and 50–150% growth was defined as strong growth. Moreno and Casillas (2007) prefer another way to identify high growth: 100% higher than the sector median in three consecutive years. In the European Commission report (2013), fast-growing firms were defined as firms with more than 10 employees and growing annually by more than 10%.

Furthermore, some studies also used a combination of different variables. In their research, Acs et al. (2008) identified high-impact firms as enterprises with sales that doubled over a four-year period and an employment growth quantifier (combination of absolute and relative change) of two or more over the same period.

Another tendency in defining HGFs is selecting the X% of the best performers in a population of firms. Daunfeldt and Halvarsson (2012) have taken 1% of the fastest growing firms for different measurements of growth. Coad et al. (2014) classified four groups of HGFs into 1% and 5% of the fastest growing firms in terms of employment or sales. In Delmar etal. (2003) a high-growth firm had to be among the top 10% of all firms in terms of an annual average in one or more of six categories. Schreyer (2000) focused on 5% and 10% of the fastest growing firms so as to identify HGFs.

Furthermore, another differentiation point in studies is using excluding thresholds for the population of firms in question. Birch, in 1994, excluded firms with a revenueof less than 100,000 USD.In the Turkey 100 project, in the study byAutio et al. (2007) and in the study byLittunen and Tohmo (2001)firms with a revenue of less than 500,000 USD (TOBB-TEPAV, 2014), firms with less than 1 million FIM,and firms with less than 500,000 FIM were excluded, respectively. While the Eurostat-OECD (2007) manual recommended that firms with fewer than 10 employees need to be excluded from the measurement of HGFs, Delmar et al. (2003), Bos and Stam (2013), Schreyer (2000) and Betbèze and Saint-Etienne (2006) excluded firms with fewer than 20 employees from their analysis.

The definition or the method adopted in a study might give very different results. For instance, Mason et al. (2009) highlight how their findings change in terms of number of HGFs. They adopted the OECD HGF definition, and, if the growth is measured in terms of employment, the proportion of HGFs in the overall population is 6%, but it rises to 12% in terms of turnover growth and to 17% if growth is measured by turnover per employee TPE.

Daunfeldt et al. (2010) tested the impact thatthe different use of definitions has. They applied four different indicators of growth: employment, sales, productivity and value added. Moreover, for each indicator they applied absolute and relative numbers and a combination of them. Consequently, the correlation between nine groups of HGFs is low, which means that the HGFs in each group are distinct from others. HGFs in relative terms are more likely younger and smaller than those in absolute terms. Yet, the most significant result of their research was identifying the diversity of their economic impacts due to the use of different growth indicators. Accordingly, while fast growers in employment give negative or small contributions to productivity growth, fast growers in productivity growth give small or negative contributions to employment and sales growth. It implies that there is a trade-off between these indicators.

"*All HGFs do not grow in the same way*". Delmar et al. (2003) put the heterogeneity of the growth patterns of HGFs in this way. They analysed the data of 11,748 firms, in Sweden,with at least 20 employees. By using 19 different measures of growth (absolute/relative, employee/sales, organic/acquisition etc.), they identified seven different types of firm growth. Similarly, in their study, Acs et al. (2008) classified the firms' growth patterns into six groups to show the heterogeneity of growth patterns of firms, such as *constant growers, mixed growers, non-changers, volatile non-changer, mixed decliners, and constant decliners.*

On the whole, even if firms were identified with the same measurements, HGFs and non-HGFs do not indicate two sharply discriminated homogenous groups of firms. Rather, there is heterogeneity and a stratified level of growth attitudes.

3. METHODOLOGY

3.1. Data

We used secondary data, which have been drawn from the database of KOSGEB, SME Development Organization of Turkey. SMEs who want to apply for the support programmes or services of the agency have to fill in and submit a statement, namely the "SME Statement". This statement is a legal form consisting of annual sales, employment and balance-sheet information of the SME. Our data set comprises all those SMEs which regularly submitted their SME statements during the two consecutive four-year periodsin question. In the first period, from 2006–2009, there are 7,950 firms and, in the second period, from 2010–2013, there are 14,372firms.These firms are all the firms in KOSGEB database which regularly submit their statements.

In this study, two consecutive time periods were chosen in order to analyse the persistence of high-growth performance and change of HGFs figures in different macroeconomic conditions. Most of the previous studies analyse high growth in a cross-sectional data set, in one specific period. Yet, these studies do not provide any information about how these HGFs performed in previous or subsequent periods. This point is very important for policy concerns because, if these firms do not continue their outstanding performance in the next period or demonstrate low growth, public funds allocated to these firms will be a waste of money. In order to set policy interventions on HGFs, their previous and subsequent performances need to be known. In this respect, two consecutive periods were chosen to show how HGFs perform in the long run.

Furthermore, the longitudinal time set allows us to analyse how the firms' performances changed in the economic crisis and the recovery period. The first period in this paper covers the global economic crisis and the second period covers the recovery period. Because it is so, we can compare the results during crisis and afterwards.

3.2. HGF Measurement

In line with the Eurostat-OECD manual and the most commonly used growth level for HGFs,an annual growth threshold of 20% and over was chosen to identify a firm as an HGF. Thus the aggregated growth in a four-year period corresponds to 72.8% in total. The firms that had a 72.8% growth in terms of sales or employment levels were marked as HGFs with this assumption in this study.

E_t= firm total employment in year (t)

E_{t-3}= firm total employment in year (t-3)

S_t= firm sales in year (t)

S_{t-3}= firm sales in year (t-3)

Measurement of Employment Growth in relative termsHGF_{Emp} $(E_t-E_{t-3})/E_{t-3}>=72,8$

Measurement of Sales Growth in relative termsHGF_{Sales} $(S_t-S_{t-3})/S_{t-3}>=72,8$

The Birch Index is measured as shown below:

Birch Index (BI_{Emp}) $(E_t/E_{t-3})*(E_t-E_{t-3})$

Birch Index (BI_{Emp} and BI_{sales}) $(S_t/S_{t-3})*(S_t-S_{t-3})$

In the main text, we identify HGFs in relative terms and with the Birch Index, which is a combination of absolute and relative measures. Relative means the percentage change in one year or within the four-year period. With the relative measurement, small firms will have a greater presentation among HGFs than large firms. To avoid over-representation of small firms, the definitions of HGFs use some thresholds to exclude small firms from the calculations, such as more than 10 employees or above specific turnover figures in initial years. Another way to do that is to combine absolute and relative change in one formulation. In this study, the Birch Index (BI)

will be used to combine relative and absolute change. By doing so, we try to create a balance between small and large firms in our HGFs measurement. The Birch Index calculation gives us a value, so it has to be ranked to select the highest ones. Researchers may define a cut-off point to identify HGFs in their study; it can be a threshold BI value or X% of the highest values. In this study, firms' BI values have been ranked and the highest 1%, 5% and 10% of them weredenoted as HGFs. This preference aims to demonstrate how various thresholds can be used and how they change the results.

Highgrowth is a phenomenon that cannot be well understood by solely dividing firms' growth into two groups, such as HGFs and non-HGFs. Yet, nearly all of the HGF studies show only HGFs and non-HGFs in their findings, implying that other firms do not grow. As mentioned above, Acs et al. (2008) identified six groups of firms in terms of growth patterns such as constant growers, mixed growers, non-changer, volatile non-change, mixed decliner, constant decliner. Their taxonomy implies that it would be better to classify firms into more than the two groupsHGF and non-HGF. Therefore, first, in order to show how the different use of definitions (more than 10% or 20% annual growth) will change the distribution of HGFs and in order to stratify the growth of firms, firms in this study are classified into four groups of growth. Some definitions define high growth as more than 10% annual growth and some define annual growth as more than 20%. This may help us to see the real distribution of firms and their relations with other variables.

In the relative measurement, we split annual growth of firms into four groups as follows:

Negative Growth	G<0%
Steady Growth	0%<G<10%
Modest Growth	10%<G<20%
High Growth	G>20%

In our data set, there are no large companies, all the firms are SMEs. The sizes of the firms were also divided into four groups (0–9, 10–19, 20–49, 50+) in the tables, in order to demonstrate how the size thresholds in the definitions of HGFs, such as more than 10 or 20 employees, affect the result and cohort of HGFs. In this study, a descriptive analysis will be done in order to illustrate HGFs' age, size, industrial and geographic distribution. By using different measures, we try to show how the common characteristics and growth persistence will change.

The following issues are descriptively analysed in this study:

1. Relationship between HGFs and Age
2. Relationship between HGFs and Size
3. HGFs' proportion among overall firms and job creation, with different measurements and in two periods
4. HGFs' industrial distribution
5. HGFs' geographical distribution
6. Persistence of high growth in two four-year periods and within periods
7. Do HGFs exploit KOSGEB support more than their counterparts?

4. FINDINGS

In this section, using different indicators, we show that the number of HGFs is sensitive to the definition of HGF. In addition, we also test whether our findings are consistent with previous studies.

4.1. Average Age of HGFs

As mentioned above, firm growth has frequently been associated with age or size. Despite the fact that there is mixed evidence for the correlation between age/size and growth, in particular, HGF studies concluded that HGFs are relatively young and small compared to their counterparts.

Acs et al. (2008) found that the average age of high-impact SMEs was 25 years oldin their study; yet, in this study the average age of HGFs changes from six to nine years old, under four different measures and periods. Table 1 illustrates that HGFs are younger than their counterparts, in terms of both relative employment and sales growth levels of firms, in two periods. Different measures of growth do not change this fact. Thus we conclude that our findings are consistent with other HGF studies.

In most of the previous studies, HGFs were found to be relatively young, but gazelle (those less than five years old) representation is lower. In Kolar (2014), only 1% of HGIEs were younger than five years. In our study, we found this ratio to be 28.4% in the first period and 31.5% in the second period. Young firm representation is not negligible, as Kolar (2014) pointed out. Their share increases very significantly in economic recovery periods.

In table 1, the average ages of firms are given according to their growth levels in terms of employment. It is clear from the table that with the increase in growth levels, the average ages decrease. It is notable that the average age of HGFs decreases dramatically in the second period, which a high number of young and high-growth firms are entering because of economic recovery. In other words, it can be concluded that during economic crises young firms are exposed to crisis effects more than other firms. Therefore, in recovery periods more young firms have growth opportunities.

Table 1: Average Age of Firms According to the Growth Levels

Growth Levels	Average Agein 2006–2009	Average Agein 2010–2013
Negative-Growth Firms	13	12
Steady-Growth Firms	12	13
Modest-Growth Firms	11	11
High-Growth Firms	8	6

4.2. Average Size of HGFs

Another commonpoint in HGF studies is the relationship between size and growth of the firm. In most cases, the smallness and newness may affect growth performance of a firm together and it is difficult to separate their sole effects. Thus most of the studies found that HGFs are younger and smaller than their counterparts. We also addressed the average size of firms according to the growth levels of employment. Our findings in table 2 are consistent with previous HGF studies. The average size for HGF_{Emp} is nine employees, and this isexactly the same in the two periods.

Table 2: Average Size of Firms According to the Growth Levels

Growth Levels	Average Sizein 2006–2009 **(# employees)**	Average Sizein 2010–2013 **(# employees)**
Negative-Growth Firms	35	27
Steady-Growth Firms	27	29
Modest-Growth Firms	19	24
High-Growth Firms	9	9

4.3. HGFs in the First Period (2006–2009)

The growth of firms was calculated first in terms of employment and then in terms of sales to show the differences between two measures. Table 3 presents the firms' distribution according to

their employment growth in first period with relative terms. In most of the previous studies, HGFs account for a small proportion of the firms. For instance, the percentage of HGFs is 4% in Birch and Medoff (1994), 5.4% in Deschryvere (2008), 6% in Anyadike-Danes et al. (2009) and 7% in Halabisky et al. (2006). Unlike in those studies, HGFs represent 30% of the firms in our findings. The reason behind this high ratio is that it represents all firms, while other studies take some part of the firm population out of measurement according to their HGFs definition, as mentioned above. If the firms with fewer than 10 or 20 employees are excluded, HGFs will represent 8% and 4% of all firms, respectively, which is consistent with previous studies. Yet, by doing so, studies exclude 74% or 88% of HGFs, respectively.

Table 3: Firm Grouping and Job Creation According to Growth Levels in Employment

Firm Size (# Employees)	Negative-Growth Firms		Steady-Growth Firms		Modest-Growth Firms		High-Growth Firms		Total	
	# firms	Job Creation	# firms	Job Creation	# firms	Job Creation	# firms	Job Creation	# firms	Job Creation
1–9	532	−911	497	445	521	1,459	1,766	17,702	3,316	18,696
10–19	508	−2,045	441	1,006	314	2,309	337	7,374	1,600	8,644
20–49	1,009	−8,847	683	3,005	338	5,196	227	9,455	2,257	8,808
50–249	444	−13,720	206	2,517	75	3,149	52	4,136	777	−3,918
Total	2,493	−25,522	1,827	6,973	1,248	12,112	2,382	38,667	7,950	32,231

However, this might be interpreted that,despite their high number in the HGFs group, small firms do not contribute a significant amount of jobs. In table 4, the number of HGFs and their job contribution are given to illustrate the share of firms in terms of size.

Table 4: HGFs and Job Creation by Firm Size

Firm Size # of Employee	# HGFs	% in HGFs	Job Creation	% Job Creation
1–9	1,766	74%	17,702	46%
10–19	337	14%	7,374	19%
20–49	227	10%	9,455	24%
50–249	52	2%	4,136	11%
Total	2,382	100 %	38,667	100%

By taking out solely the firms with fewer than 10 employees, 74% of the HGFs and 46% of their job contribution will be left out of the measurement. By adopting the Eurostat-OECD definition, in which the firms with fewer than 20 employees are taken out of the HGFs calculation, 88% of the HGFs and 75% of their job contribution will be left out of the measurement. On the contrary, size thresholds might be used to distinguish firms with more than 50 employees. In Table 4,

medium-sized firms (more than 50 emp.) account for merely 2% of the HGFs and 11% of job creation. In addition, medium-sized firms are responsible for 54% of all job losses in this period.

Turning to relative sales growth measurements, the picture is almost the same as when measured in terms of employment growth. Most of the HGFs (54%) are micro-sized firms and if the definition of HGFs excludes micro-sized firms or firms with fewer than 20 employees, 54 or 74% of them will be ignored.

Turning to job creation,we see that, while the net total job creation was 32,231, HGFs created 38,667 new jobs in the first four-year period (Table 3). Thus, it can be concluded that HGFs created 120% of the new jobs. Nevertheless, the net total job creation numbers consist of both total job creation and job losses in the same period. Therefore, in order to find out the real job contribution of HGFs, job losses are to be excluded from total job creation. In table 3, the total job creation is 57,752, and, when it is divided by the number 38,667, HGFs' job creation will be 67%. In this period, modest-growth firms and steady-growth firms account for 21% and 12% of total job creation, respectively. These explanations are made as a cautionary note to studies in which the HGFs' share of job creation is calculated with net job creation, rather than merely job creation numbers. In case of such an assumption, the proportion of HGFs in terms of total job creation will probably be unrealistically high.

Our central premise is that the cohort of HGFs will change withthe use of different variables and measures. To do so, in table 5, the firm growths are measured in terms of sales. Accordingly, HGFs constitute 39% of all firms, which is 9 points higher than HGFs proportion in terms of employment growth. It is clear that high growth is more common in sales growth than employment growth. Yet, it is not easy to mark this as an outstanding growth because nearly half of all firms had over 20% annual growth, even during economic crisis times. In this respect, in order to detect outstanding growth, annual growth thresholds have to be differentiated by the variable used in measurement. Unlike prior studies, and recommendations by Eurostat-OECD, use of a threshold of more than 20% annual growth in sales does not provide a selection of outstanding HGFs. In addition, the size distribution is similar to that measured in terms of employment growth; 74% of HGFs are firms with less than 20 employees. In line with relative employment findings, use of firm-size thresholds, such as more than 10 or 20 employees, will result in exclusion of the majority of HGFs, which has to be considered in identifying HGFs.

Table 5: Firm Grouping According to Growth Levels in Sales

Firm Size (# employee)	Negative-Growth Firms		Steady-Growth Firms		Modest-Growth Firms		High-Growth Firms		Total	
	#firm	%	#firm	%	#firm	%	#firm	%	#firm	%
1–9	616	32.47	444	30.45	424	31.09	1,640	**54**	3,124	40.34
10–19	373	19.66	299	20.51	309	22.65	613	**20**	1,594	20.58
20–49	654	34.48	507	34.77	465	34.09	624	**21**	2,250	29.05
50–249	254	13.39	208	14.27	166	12.17	148	**5**	776	10.02
Total	1,897	100	1,458	100	1,364	100	3,025	**100**	7,744	100

These two measurements show the differentiation of HGFs by using different variables in relative terms and how exclusion of firms with fewer than 10 or 20 employees will ignore the majority of HGFs. In a similar vein, in this part we try to incorporate relative and absolute growths of firms into our enquiry. In doing so, the Birch Index will be used, which is detailed in the methodology section.

Table 6 illustrate HGFs and non-HGFs in terms of employment growth. Birch Index values are ranked from highest to lowest, and the highest 1%, 5% and 10% of firms are denoted as HGFs. Each study can choose a cut-off percentage in order to define and identify HGFs. In this study, we prefer to show each of the three cut-off points to demonstrate how the proportion of HGFs and their job creation value will change. At first sight, it can be concluded that 1 or 5% of the highest BI values are not adequate to distinguish the HGFs that create most of the new jobs, because these firms constitute merely 5% and 27% of total job creation, respectively. Hence, the highest 10% of BI_{emp} is more plausible than others for identifying HGFs. Those firms constitute 46% of total jobs created in this period. However, if our analysis aims to exaggerate the job creation of HGFs, we would use total net job creation (32,231 jobs) rather than total job creation (57,752 jobs), and by doing so the proportion of HGFs would be 82%.

Consistent with the relative measurement of growth, micro firms and firms with 10 to 19 employees constitute the majority of HGFs in the BI_{emp} measurement. In the highest 10%, micro firms constitute 63%, and firms with 10 to 19 employees constitute 11% of HGFs. However,a more important point is the proportion of micro firms in the highest 1%, which is almost 100%. As mentioned above, in the relative measurement of growth, it is naturally expected that small firms will have higher growth levels than their counterparts. The Birch Index, as a combination of relative and absolute growth, is, therefore, used to balance this advantage of small firms. Yet, in our findings, almost all in the highest 1% of $BI_{emp}$are micro firms. This finding is again contrary

to the assumptions that micro firms might have high growth in relative terms but negligible absolute growth numbers. That is why most of the HGFs studies prefer to exclude micro or small firms from their enquiry.

Table 6: Firm Grouping and Job Creation with Birch Index

Firm Size # of Employee	Non-HGFs		HGFs 1%		HGFs 5%*		HGFs 10%*		Total	
	# firms	Job creation	# firms	Job creation	# firms	Job creation	# firms	Job creation	# firms	Job creation
1–9	2,817	8,660	78	2,896	298	7,321	499	10,037	3,316	18,696
10–19	1,513	5,087	0	–	27	1,815	87	3,557	1,600	8,644
20–49	2,126	1,682	1	173	45	3,661	131	7,127	2,257	8,808
50–249	699	–9,678	0	–	27	2,663	78	5,760	777	–3,918
Total	7,155	5,751	79	3,068	397	15,459	795	26,480	7,950	32,231

*HGFs 5% and 10% are cumulative numbers, 5% encompasses %1 and 10% encompasses the highest 1% and 5% firms.

In table 7, each method is given to compare the differences in results. Each of the three measurements confirms the importance of micro firms and firms with 10 to 19 employees, both in terms of firm number and job contribution. Moreover, in each measurement, the cohort of HGFs, the number of HGFs and their job contribution changes dramatically. Therefore, in comparing and interpreting the result of various studies, these differences have to be considered.

Table 7: Comparison of HGFs in Terms of Different Measures

Firm Size # Empl.	Relative (Employment)				Relative(Sales)		BI (Employment)			
	HGFs		Job Creation		# HGFs		# HGFs		# Jobs Creation	
	#firm	%	#jobs	%	#firm	%	#firm	%	#jobs	%
1–9	1,766	74	17,702	46%	1,640	54	499	63	10,036	38%
10–19	337	14	7,374	19%	613	20	87	11	3,557	13%
20–49	227	10	9,455	24%	624	21	131	16	7,127	27%
50–249	52	2	4,136	11%	148	5	78	10	5,760	22%
Total	2,382	100	38,667	100%	3,025	100	795	100	26,480	100%

Different measures result in different cohorts of HGFs; for instance, 2,382 HGFs were identified with relative employment growth. Of these firms, 769 were also found to be HGFs according to the Birch Index and 1,438 were also identified as HGFs in terms of relative sales growth. In total, only **486** firms were identified as HGFs in three measures of growth (relative employment growth, BI and relative sales growth) at the same time.

To highlight the difference between the measurements, the HGFs, identified by relative employment, were classified in terms of their sales growth in Table 8. Two hundred forty-nineout of 2,382 HGFs have had negative sales growth. Most have had steady or modest sales growth, but

only 1,438 have had high growth in terms of sales growth at the same time. This figure confirms the statement by Delmar et al. (2003)that"*All HGFs do not grow in the same way*". By selecting one variable to identify HGFs, it has to be considered that some HGFs in terms of other variables will be excluded.

Table8: HGF_{emp} Grouping in Sales Growth Levels

Growth Grouping	# HGF_{emp}
Negative Growth	249
Steady Growth	242
Modest Growth	282
High Growth	1,438
NA	171
Total	2,382

4.4. HGFs in the Second Period (2010–2013)

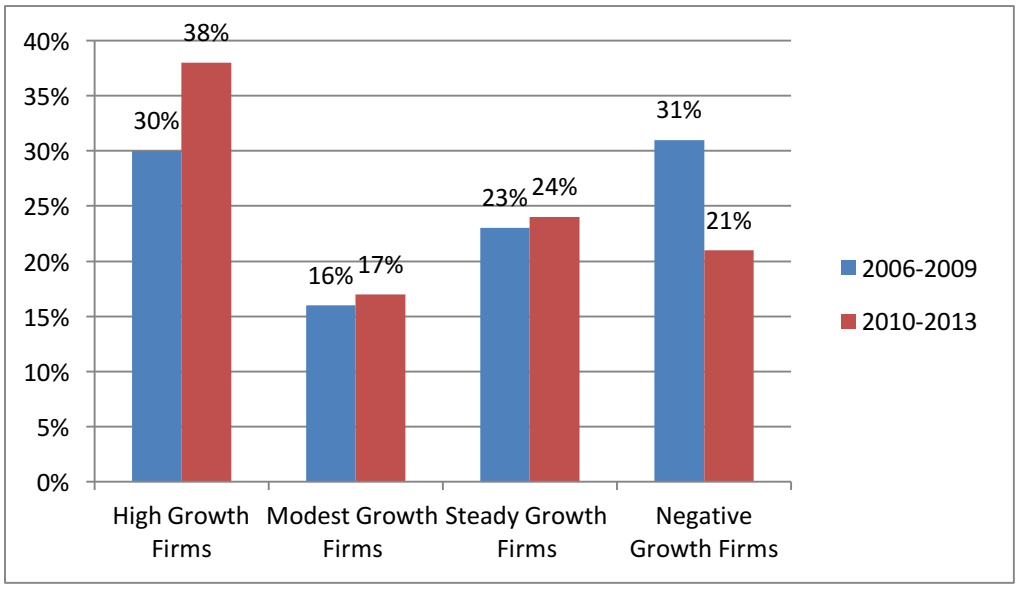
In the first four-year period (2006–2009), there was a global economic crisis, which may cause a deviation in our findings. Therefore, the same analysis is applied in the next period. Table 9 shows number of $HGFs_{emp}$and their job creation in the next period. At first sight, the distributions are very similar to those in the prior term.

Table 9: Firm Grouping and Job Creation According to Growth Levels in Employment

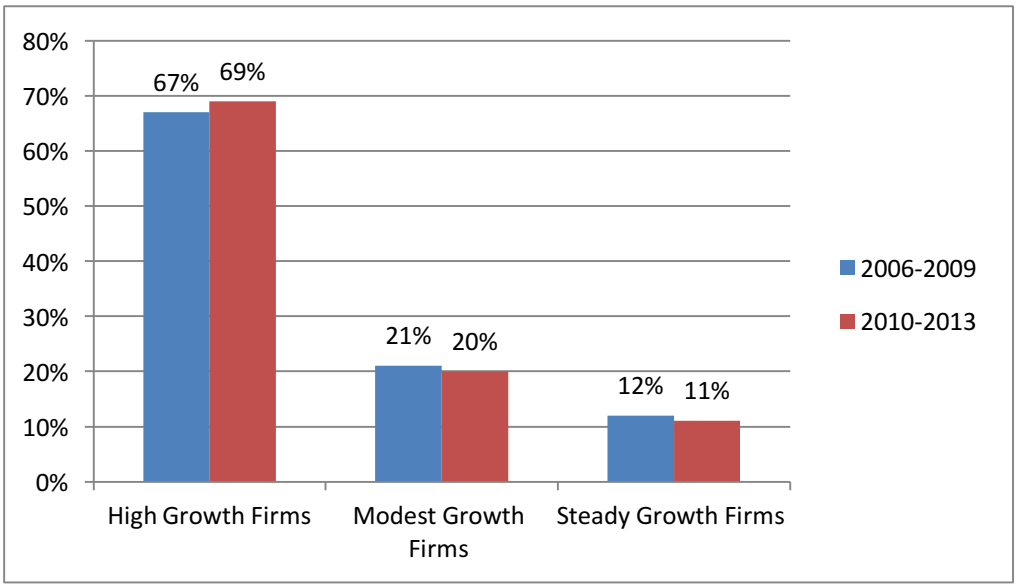
Firm Size (# employee)	Negative-Growth Firms		Steady-Growth Firms		Modest-Growth Firms		High-Growth Firms		Total	
	# firms	Job creation	# firms	Job creation	# firms	Job creation	# firms	Job creation	# firms	Job creation
1–9	1016	−1,583	1,084	795	915	2,407	4,016	46,832	7,031	48,450
10–19	707	−2,900	699	1,650	606	4,445	689	16,885	2,701	20,080
20–49	955	−7,582	1,133	5,532	668	10,423	578	25,934	3,334	34,308
50–249	360	−10,190	484	7,674	300	12,625	162	13,169	1,306	23,277
Total	**3,038**	**−22,255**	**3,400**	**15,650**	**2,489**	**29,900**	**5,445**	**102,820**	**14,372**	**126,115**

In the first term, there was an economic crisis and 2,493 firms had 25,522 job losses. Eighty-eight per cent of these job losses are coming from the firms with more than 20 employees. The job loss per firm is 10.2 employees. In this recovery period, 3,038 firms had 22,255 job losses. This is relatively few compared to the losses in the first period. The job loss per firm is 7.3 employees. In this period, firms with more than 20 employees are responsible for 80% of job losses. These figures imply that, during economic crisis, job losses per firm rise and that the share of firms with more than 20 employees also raises job losses.

Graph 1: Comparison of Firm Groupsin Terms of Employment Growth



Graph 2: Firm Groups in Terms of Total Job Creation



In Graph 1, the distribution of firms is given by the comparison with the prior period. In general, figures show economic recovery, through increasing growth levels of firms and decreasing level of negative growth firms. The share of HGFs in the second term is significantly higher than that in the first term. Accordingly, 38% of all firms had high growth in this period, which is also very high compared to figures in previous studies. In fact, this high share invites us to revisit the

definition of outstanding growth. Nevertheless, these HGFs created 69% of all jobs, which is almost the same figure as in the first period (Graph 2).

On the whole, our findings suggest that 20% annual growth is not a reasonable threshold to distinguish outstanding performers; rather, it gives us nearly one third of all firms, which makes policies relying on HGFs very problematic or impractical. However, size thresholds such as more than 10 or 20 employees can be considered, but the size distribution of HGFs and their significant job creation restrain us from doing so.

Table 10 shows the share of HGFs by size and their job contribution in comparison to the share in the prior term. Accordingly, the size and job contribution distribution are almost the same as those in the previous term. Moreover, both in number and in job creation value, the micro size firms and firms with 10 to 19 employees constitute the majority. This similar finding shows the robustness of our study.The size or job creation distribution does not significantly change in different periods, which suggests a constant fact in the firms' growth trajectory.

Table 10: $HGF_{emp}$and Job Creation Proportions by Firm Size

Firm Size # Employee	% in HGFs		% Job Creation	
	2006–2009	2010–2013	2006–2009	2010–2013
1–9	74%	74%	46%	46%
10–19	14%	13%	19%	16%
20–49	10%	11%	24%	25%
50–249	2%	3%	11%	13%
Total	100 %	100 %	100%	100%

Having compared relative employment growth in two periods, we do the same comparisons with relative sales growth and Birch Index employment growth. Table 11 shows the size distribution of HGFs in terms of sales growth. By the same token, the size distribution of HGFs in the second period is almost same as that in the first period.

Table 11: Size Distribution of HGFs in Terms of Sales Growth

Firm Size # Employee	(Sales) Relative	
	2006–2009	2010–2013
1–9	54%	50%
10–19	20%	19%
20–49	21%	22%
50–249	5%	8%
Total	100%	100%

Turning to the Birch Index, Table 12 shows the results of two periods. At first sight, there is a significant increase in the proportion of micro firms: while it was 63% in first period, it increased to 76% in the next period. In line with this increase, their share in job creation also rose from 38% to 50%. While the size distribution of HGFs is almost the same in the two periods both with relative employment and sales growth, this significant increase in the share of micro firms with the Birch Index implies important facts about HGFs. This is attributable to the fact that during economic recovery times, a small number of micro firms employ significant numbers of employees that can be marked as outstanding performers. In all the other sizes, shares of HGFs decreased both in number and job creation. In this respect, our finding suggests emphasising the importance of micro firms as outstanding performers. These real outstanding performers cannot be identified with general levels of growth such as 20%. In essence, in tables 10 and 11, these outstanding micro firms are masked by modest high-growth firms when using the annual 20% growth threshold. Therefore, novel approaches are needed to define HGFs in order to find the real champions, not ordinary firms. It is really an important point for further studies because all these studies are being conducted to enhance business policies to become more efficient. It is clear that limited public funds and government sources are not adequate to deal with all ordinary high-growth firms, not only in the developing world but also in developed countries. Thus studies have to feed policy makers with more insights and compact findings. In this respect, the role of outstanding micro high-growth firms needs more attention.

Table 12: HGFs and Job Creation with the Birch Index in Terms of Employment Growth

Firm Size	# HGFs				Job Creation			
# empl.	2006–2009		2010–2013		2006–2009		2010–2013	
1–9	499	63%	1,097	76%	10,036	38%	28,479	50%
10–19	87	11%	82	6%	3,557	13%	5,819	10%
20–49	131	16%	159	11%	7,127	27%	12,549	22%
50–249	78	10%	99	7%	5,760	22%	9,969	18%
Total	795	100%	1,437	100%	26,480	100%	56,816	100%

Apart from this novel finding, and as was done for the first period, we question how HGFs in terms of one measure perform under different measurements for the second four-year period. Accordingly, **5,445** HGFs were identified with relative employment growth.Of these firms, **1,433** were also found to be HGFs according to the Birch Index and **3,607** were also identified as HGFs in terms of relative sales growth. In total,**830** firms were identified as HGFs in three measures of growth (relative employment growth, BI and relative sales growth).

4.5. Persistence of HGFs

Across the world, policy makers need more evidence and instruments to establish the best policies with fewer public resources. Policies targeting or promoting HGFs sound like very plausible options for economic policies, but the crucial point in this approach is ensuring the growth of targeted firms. A firm considered to be promoted under any high-growth firms programme should provide high growth in a definite period or has to give some signals to detect its exante high growth. Otherwise these support programmes will be a waste of money. Therefore, studies focusing on persistence of HGFs' performance have a key role in HGFs policies. In this paper, persistence of high growth is tested both within each four-year period and between periods.

4.5.1. Persistence of High Growth Within Periods

Some prior studies conclude that high growth is an extraordinary performance, Daufeldt and Halvarsson (2012) coined the term one-hit wonders, which is confined to one or two years in a firm's life. However, we found a contrasting result in that most of the HGFs, 73% of HGF_{emp} and 79% of HGF_{sales}, sustained their high growth for two or more years (in table 13). This is a significant result that gives an opportunistic view and suggests targeting HGFs according to their past growth records, or, at least, we can conclude that this is not a "one-hit event". In a similar vein, 76% of HGF_{emp} and 81% of HGF_{sales} sustained their high growth for two or more years, in the second period, which is slightly higher than in the first period. This difference is attributable to the economic crisis.

Table 13: HGFs' Persistence WithinFour-Year Period

	2006–2009		2010–2013	
	HGF_{emp}	HGF_{sale}	HGF_{emp}	HGF_{sale}
1-Year High Growth	27%	21%	24%	19%
2-Year High Growth	61%	61%	56%	57%
3-Year High Growth	12%	18%	20%	24%
Total	100%	100%	100%	100%

4.5.2. Persistence of High GrowthBetweenTwo Periods

Most of the studies investigated the persistence of high growth between periods, thus, in this study, this issue isalso investigated. To do so, this study takes the proportion of HGFs, identified in two periods with three measurements such as the Birch Index in terms of employment ($\mathbf{BI_{emp}}$),

relative growth in terms of employment (**HGF_{emp}**)and sales (**HGF_{sale}**) as indicators. Accordingly, the highest persistenceratiois found in relative sales growth, 55.4% for **HGF_{sale}**,andthen relative employment growth, 24.2% for **HGF_{emp}**and 7.8% for **BI_{emp}**. In line with persistence patterns of **HGF_{sales}** and **HGF_{emp}** within periods, sales growth is more likely to be sustained between the periods which have higher persistence than measures of employment growth. There is also a difference between relative and BI calculations. The persistence of HGFs measured with BI is lower than that of HGFs measured in relative terms. In sum, the persistence tendency of HGFs is not consistent with previous studies. In the study of Daunfeldt and Halvarsson (2012), just 10 out of 1,210 HGFs have had high growth in the second period, which corresponds to 0.8%. Our findings are significantly distinct from 0.8%, implying that high growth is not a one-hit event. For robustness, we excluded micro firms and then recalculated persistence between periods. The persistence ratio is 55% for $HGF_{sale,}$ 22% for HGF_{emp} and 8% for $BI_{emp.}$ These figures are not significantly different from the figures calculated with micro-sized firms included. Therefore, we can conclude that our persistence ratios are significantly higher than those of previous studies.

Table 14: HGF Persistence BetweenTwo Periods

	BI_{emp}		**HGF_{emp}**		**HGF_{sales}**	
	#HGFs	%	#HGFs	%	#HGFs	%
HGFs in two periods	20	7.8	167	24.2	540	55.4
Total HGFs	255	100	689	100	975	100

4.6. Use of Public Subsidy (KOSGEB)

In the literature review, we have not recognised any studies examining how HGFs do benefit from government support or their attitudes towards subsidies. Therefore, we have no chance of comparing our findings with other studies. Our data set includes total payments to SMEs that KOSGEB supports, in the period 2010–2013. However, these figures do not provide any other information about this support, such as type, duration, conditions, etc. KOSGEB support payments were divided into groups of firms according to growth levels. In table 21, firms' growth levels are measured in terms of relative employment and sales growths. In every measurement, the use of support increases with the growth level in the firms. Negative growers are less likely to benefit from support than high growers are. This can be interpreted in two ways: first, slow or negative growers may not need government support; second, government programmes are designed to support much more successful firms rather than declining or modest growers; third, firms are more likely to seek external financial resources while growing.

In addition, there are differences between two measures of growth, employment and sales. The average subsidy payments are slightly higher for firms measured in terms of employment than for those measured in terms of sales. This may mean that government, in this case KOSGEB, may provide much more finance for growth in terms of employment or that firms which are growing in terms of employment may need more external finance than their counterparts.

Table 21: Subsidy Payments According to Growth Levels in Employment and Sales

Growth Grouping	Growth in Employment (Average)	Growth in Sales (Average)
Negative-Growth Firms	24.332 TL	22.652 TL
Steady-Growth Firms	30.502 TL	24.785 TL
Modest-Growth Firms	31.122 TL	29.832 TL
High-Growth Firms	31.257 TL	30.738 TL

5. CONCLUSION AND RECOMMENDATIONS

Entrepreneurship is the most important source of wealth generation and job creation. Yet, most firms do not grow or create jobs. Policies aimed at fostering economic growth have to consider this fact and discriminate between typical firms and growth-oriented ones.

Studies of high-growth firms provide fruitful insights that seem to dramatically change entrepreneurship and business support policies. As mentioned above, the first focus of this study is the comparison of the main characteristics of HGFs in this study and other studies.

Table 22: Comparison of Findings in This Study and Previous Studies

Common Characteristics of HGFs in other studies	Common Characteristics of HGFs in this study
HGFs are relatively young and small, but rarely start-ups	HGFs are relatively young and small. While most of the growth is generated by firms with fewer than 20 employees, larger firms are responsible for most of the job losses
Small proportion of firms disproportionately create most of the jobs and wealth (1 to 10% of firms generate from 50% to 100% of net job creation)	Small proportion, but significantly higher than in previous studies results (10% to 39% of firms generate from 50% to 100% of net job creation)
HGFs can be found in all industries and regions	HGFs exist in every region and industry and are proportionate to the overall industrial and geographic distribution
High-tech firms are not over-represented in the HGFs group	HGFs' representation in High-tech industries is slightly higher than overall firm representation, but notably higher in service industries
High growth is not linear but erratic	High growth is not linear, but not that much of a one-time event as found in prior studies. HGFs in this study tend to have higher persistence in their outstanding performance

With their outstanding growth potential, they increasingly attract the attention of policy makers and researchers. However, there are crucial challenges for those considering HGFs as a policy instrument:

- **Heterogeneity of Definitions**; almost all studies or institutes adopt different and specific definitions. Each variable and measurement method results in a different cohort of HGFs which makes it difficult to choose the optimum solution.

- **Heterogeneity in Nature**; findings of the previous studies provide a mixed picture of their characteristics. From a policy perspective, there need to be many more common characteristics in order to help high growth performance.
- **Erratic Growth Pattern**; in order to use HGFs as a policy instrument, their future growth performances have to be predicted exante. Yet, non-linear growth performance makes predictions unreliable.

As a result, in policy discourse, there are two main factions; on the one hand, authors advocate for abandoning traditional and generic business policies and focusing on HGFs(Shane, 2009);on the other hand, authors claim that despite high growth potential HGFs are unreliable sources which are theoretically great but impractical agents for economic solutions(Moreno & Coad, 2015).

In this study, in order to show the heterogeneity of definitions, we applied the OECD definition without micro-sized firms' exclusion and the Birch Index, which is a combination of relative and absolute growth. Each definition method provided a different cohort of HGFs, thus policy makers have to adopt the optimum definition for their objective. In this regard, existent definitions, even the Eurostat-OECD definition, are not practical and suitable for every economy and policy objective. In the light of the findings in this study, these are some propositions:

1. Do not exclude micro firms from the measurement of HGFs. If necessary, it is recommended that firms with more than 20 employees be excluded, because they are more likely to lose jobs. This may mitigate risks for policies targeting HGFs. Even in the Birch Index figures, micro firms especially account for a significant proportion of HGFs.
2. An annual growth rate of 20% is not adequate to identify outstanding performance. In our analysis, nearly one third of firms attain this threshold, and it is much easier in sales growth than in employment growth. Thus for each variable (employment, sales, productivity etc.) specific growth rate thresholds have to be defined in order to eliminate typical firms from focus.
3. The Birch Index might be more practical in policy applications and identifying outstanding growth than relative growth measures.

In previous studies, there is a generally held view that high growth performance is a one-time event and sustaining persistence is much rarer than being a HGF. In this study, the persistence performances of HGFs are not that much of a one-off event. These findings provide much more

room for HGFs policies. Records of HGFs may be used to predict their future growth or, at least, to eliminate typical firms from the scope of supporting programmes.

On the whole, generic entrepreneurship and SME policies do not distinguish typical firms from high-potential ones. In general, policies are focusing on high tech start-ups or R&D/innovation support, but HGFs studies show that R&D or high-tech does not guarantee wealth generation. Most research does not satisfy customer needs, thus resulting in unsuccessful commercialisation. Therefore, rather than generic SME and entrepreneurship policies, HGFs or firms with high growth potential have to be brought to the core of SME and entrepreneurship policies. Policies targeting firm growth need to focus on managing the growth or transforming R&D projects to commercially successful products. Beside the technical assistance, universities might have key roles at cooping the growth oriented managerial problems of HGFs.

There is no doubt that it bares high risks for governments while targeting and selecting potential HGFs in support programmes, but these risks can be defined at the beginning of these types of programmes, in order to sustain public acceptance for policies. Storey (2011) cites from the study of Alex Coad that only 15% of firm growth can be identified through analysis.In addition, Venture Capital reports also give similar success ratings for their firm portfolios, accordingly only 3 out of 20 VC backed firms can generate high returns. In the light of these facts, 85% of failure risk can be initially identified and accepted by the policy makers in advance. Today, many programme implementations across the world provide useful insights for policy makers who aim to launch high-growth support programmes. Their selection criteria, support tools, scopes, and methodology can be used as guidance to develop local ones. Nevertheless, all the growth definitions, methods and policies have to be designed according to regional or national specificity, to set successful HGFs policies.

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