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The Finnish paradox: The curious absence of high-growth entrepreneurship in Finland

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No. 1197

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THE FINNISH PARADOX: THE CURIOUS ABSENCE OF HIGH-GROWTH ENTREPRENEURSHIP IN FINLAND

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ABSTRACT: This paper looks at how well Finland performs in high growth entrepreneurship and uses data from the Global Entrepreneurship monitor to benchmark Finland against other European countries. It is found that Finland's prevalence rate of high growth entrepreneurial activity lags significantly behind most of its European and all of its Scandinavian peers. That this weak performance in high-growth entrepreneurship goes hand in hand with Finland being a world leader in per capita investment in R&D may be described as a paradox. The reasons underlying the underperformance of Finland remain however unclear. At this point, explanations should be sought in culture, industrial traditions and systemic experience in high growth entrepreneurship.

KEYWORDS: Firm growth, high growth firms, gazelles

JEL: D21, L25, M13, O12, O40

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1. INTRODUCTION

Whereas entrepreneurship in general is generally regarded as important for economic growth and rejuvenation, high-growth entrepreneurship appears particularly important for the generation of positive economic outcomes. A review of the economy's track record in producing and harnessing high-growth entrepreneurial ventures therefore constitutes an elementary aspect of any review of national innovation strategy. In this chapter we consider this 'stylised fact' against the background of the evaluation of Finland's National Innovation Strategy. Specifically, we focus on the track record of the Finnish economy in producing and harnessing high-growth entrepreneurial activity and assess the pertinent aspects of Finland's policy framework in this regard. In doing so, we review received empirical data with regard to the high-growth entrepreneurship phenomenon and extract 'stylised facts' from received data. Specifically, we seek to identify potential weaknesses of the Finnish innovation policy framework and suggest ways to address some of those weaknesses.

In doing this review we acknowledge another input into the evaluation of Finland's National Innovation Strategy, namely, a review of growth entrepreneurship and finance. Therefore we will not seek to undertake a deep review of the Finnish venture capital and high-growth financing sector. Our main emphasis is in seeking to understand the generic national and institutional conditions as well as specific SME policies, as implemented in Finland. We also review established 'good practice' in high-growth SME support.

It is necessary to consider how a 'high-growth entrepreneurial venture' should be defined. In this area, definitions proliferate, but for the purposes of this review we assume an intentionally vague definition and require that high-growth entrepreneurial ventures are: (a) entrepreneurial ventures (i.e., there is a dominant owner-manager or a group of dominant owner-managers, perhaps alongside institutional investors); (b) ventures that exhibit a significant ambition for growth; (c) ventures that exhibit a significant potential for realizing this ambition. We choose to employ a deliberately inclusive definition that emphasises potential rather than outcome, because predicting new venture growth is notoriously difficult. An often repeated observation is that governments cannot, and should not, pick winners (Storey, 1994). While we subscribe to this general advice, we also recognise that entrepreneurial growth sel-

dom, if ever, occurs without deliberate intent; that it is possible to measure growth ambition; and that it is possible to locate the general quarters from which the next high-growth ventures are likely to emerge. Even though ambition does not guarantee growth, absence of ambition almost certainly guarantees absence of growth. Because past track record seldom predicts future, we think that governments may be better off focusing on growth ambition rather than on 'proven' winners.

In this review we first summarise received 'stylised facts' regarding the high-growth entrepreneurship phenomenon. Then, we review Finland's performance in cultivating high-growth entrepreneurial activity, as compared against other advanced economies. We conclude by reviewing good practice in supporting high-growth entrepreneurial ventures as well as outlining recommendations for policy.

2. 'STYLISTED FACTS' ABOUT HIGH-GROWTH ENTREPRENEURSHIP

The expanding literature on high-growth entrepreneurship produces reasonably coherent findings that permit the establishment of 'stylised facts' about high-growth entrepreneurship. These 'stylised facts' were examined in a recent report by the 'Gazelles' expert committee of EU DG Innovation's Europe Innova programme . (Autio & Hoeltzl, 2008). These can be summarised as follows:

- 1 High-growth entrepreneurs deliver a disproportionate economic impact relative to their numbers
- 2 High-growth entrepreneurs are rare
- 3 High-growth entrepreneurship is not limited to technology sectors
- 4 High-growth entrepreneurs tend to be highly innovative
- 5 Achieving high growth can take a long time
- 6 High-growth entrepreneurs differ from ordinary entrepreneurs in terms of their demographic characteristics

2.1. Disproportionate impact by high-growth entrepreneurs

Empirical surveys in advanced economies almost invariably suggest that it is only a small minority of all new firms matter for economic growth (Acs, Parsons, & Tracy, 2008; Audretsch, 2002; Autio, 2007; Birch, Haggerty, & Parsons, 1997; Delmar, Davidsson, & Gartner, 2003b; Henrekson & Johansson, 2008; Höltzl, 2006; Storey, 1994). It is well established that, while only a small proportion of all entrepreneurial firms grow rapidly, this small minority delivers a disproportional economic impact relative to their numbers. According to these studies, anything from between 3% and 10% of any new cohort of firms will end up delivering from 50% to up to 80% of the aggregate economic impact of the cohort over its lifetime. It thus seems clear that: (1) high-growth entrepreneurship is an important phenomenon; and also, (2) that high-growth entrepreneurs tend to be few in number.

An amalgamation of data describing the entrepreneurial dynamics of the US economy provides an illustration of how high-growth entrepreneurial activity compares against ordinary entrepreneurial activity in terms of population prevalence. Table 1 lists some of the key figures.

Table 1. Entrepreneurial dynamics of the US economy¹

Number of people involved yearly in startups	12 000 000 (5,4% of adults in the US)
Start-up attempts	9 000 000 (33% of total stock of businesses)
Organised within six years (number of new businesses started each year in the US)	2 900 000 (1,3% of adults)
Hire at least one employee	640 000 (20% of all start-ups)
High impact firms (2002-6)	376 000 (1% of all firms; 6% of firms with payroll)
Angel investors (2006)	234 000 (0,1% of adults)
Received angel funds (2006)	51 000 (2% of all new firms)
Publicly traded firms	10 000 (0,04% of all firms)
New VC deals (2007)	3 912 (0,2% of new firms)
VC-backed IPOs (2007)	86 (0,004% of new firms – 2008:6; 2009-0)
High-tech IPO's (2007)	41 (0,0015% of all new firms)
Average age of high-impact firm	25 years

In the table, we can observe that some 5,4% of the US adult-age population is annually involved with start-up activity. This translates into 9 million start-up attempts annually and represents some 33% of the overall stock of businesses in the US. Of these, only one third actually get incorporated within six years, and of these, only some 20% become employers (i.e., hire one or more employees).

When looking at high-impact activity, the study by Acs et al (2008) provides illuminating statistics. In their review of 'high-impact firms', they found that some 6% of all US companies

¹ Sources: Adapted from Howard Aldrich; Panel Study of Entrepreneurial Dynamics; GEM; Acs, Z. J., Parsons, W., & Tracy, S. 2008. High-Impact Firms: Gazelles Revisited (manuscript). In S. O. o. Advocacy (Ed.), SBA Reports. Washington, D.C.: SBA Office of Advocacy.; Venture Economics.; US Small Business Administration Office of Small Business Advocacy.

with payroll had managed to double their size over a four-year period from 2002 to 2006. This represents 6% of the stock of firms with payroll in the US and only 1% of all registered firms (with or without payroll). Whereas 5,4% of adults are annually involved in start-up attempts, only 0,1% of US adults invested their own funds in start-ups started by others in 2006, and only 2% of all new businesses receive angel funding. Only 0,2% of all new firms received VC funding in 2007, and the number of VC-backed IPOs is minuscule for an economy the size of the US.

This review suggests that high-growth entrepreneurial activity represents a small minority of all entrepreneurial activity even in the global benchmark economy for entrepreneurship. As such, the rarity of high-growth entrepreneurial activity has important implications for the design of policies geared to facilitating and leveraging high-growth entrepreneurship for economic growth. The first implication concerns the *selectiveness* of gazelle support measures, as the biased distribution of economic potential suggests that return on policy investment could be maximised by focusing on potential high-growth firms. The corollary, however, concerns *selection*: is it possible to ensure that policy measures can be targeted on the right candidates?

Finally, it is important to recognise that high-growth entrepreneurship tends to be a temporally limited phenomenon, and that steady rapid growth is rare. Growth may also come in many forms, as, e.g., sales or employment growth; acquisitive or organic growth; and domestic or international growth (Delmar, Davidsson, & Gartner, 2003a). The unpredictability of entrepreneurial growth underscores the selection problem for high-growth entrepreneurship policy, and the volatility of the high-growth phenomenon presents its own challenges.

2.2. Sector distribution of high-impact firms

One aspect of selection concerns the sector distribution of high-impact firms. Although there is some evidence of the over-representation of high-growth firms in high-technology sectors, the high-growth phenomenon is not confined to technology sectors alone. Data from European Innovation Surveys and EuroStat show that firm growth distributions are highly similar across industry sectors (Höltzl & Friesenbichler, 2008). Figure 1 shows a comparison of

firm growth rates in eight industry sectors in Europe. The figures show log density plots of growth distributions, with each distribution peaking at zero growth. The further a given data point is away from the peak, the more rapidly a given firm is either shrinking (points to the left from the peak) or growing (points to the right from the peak).

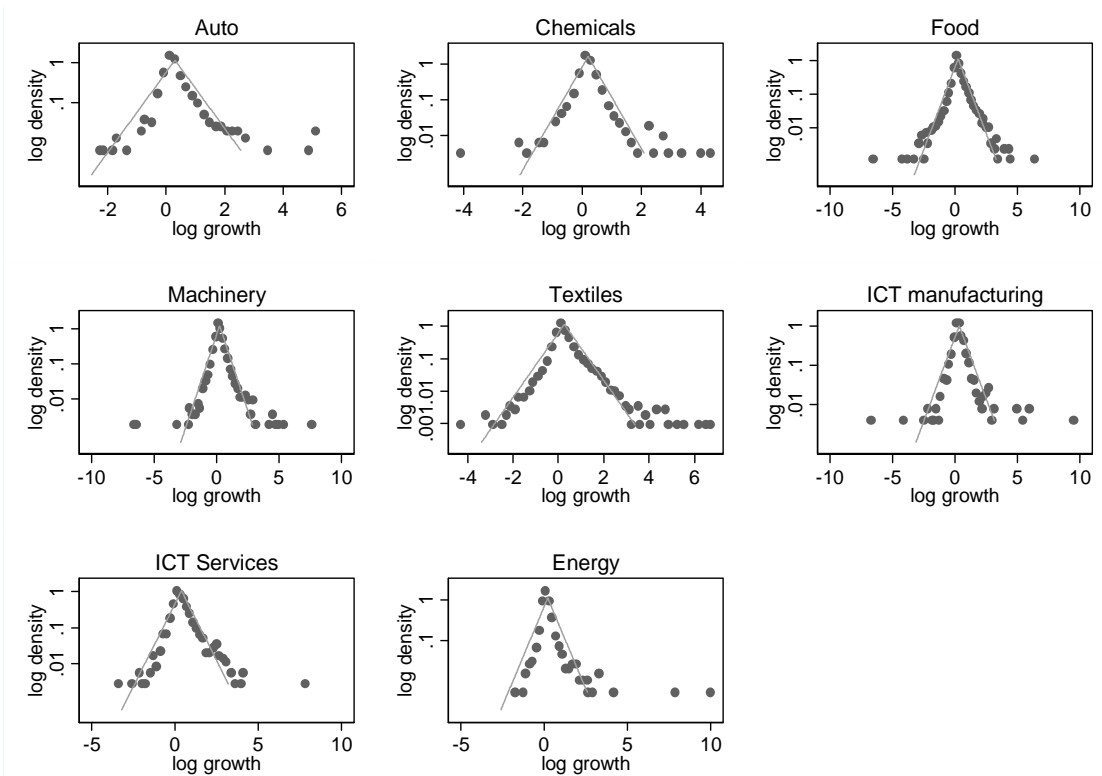


Figure 1. Firm Growth Distributions in European Industrial Sectors (Höltzl et al., 2008)

The data reported by Höltzl et al (2008) shows that the growth rate distributions are quite similar across industry sectors in Europe, with all of the studied sectors showing important deviations from zero growth, both in terms of firm-level shrinkage and growth. The most extreme examples of growth can be observed in ICT manufacturing and energy sectors, but also reasonably low-tech sectors such as textiles and chemicals exhibit important growth patterns. This finding is consistent with other surveys. In their review of research on ‘gazelles’, Henrekson and Johansson reached a similar conclusion and suggested that, if anything, high-growth SMEs tend to be prevalent in service sectors, as opposed to technology sectors (Henrekson et al., 2008).

In addition to absence of sector-specificity, data appears to suggest that the high-growth phenomenon is not necessarily limited to young or small firms, either. Acs et al (2008) analysed

data from all U.S. establishments and businesses and found that, on average, a 'high-impact'² firm was 25 years old (Acs et al., 2008). It should be observed that this finding was not strictly limited to owner-managed firms, however, and their growth measure included both organic and acquisitive growth. Nevertheless, Acs' analysis supports the conclusions of Hoeltzl et al (2008), as high-impact firms were observed in all size categories and industry sectors. Interestingly, they also discovered that so called 'super high-impact' firms (i.e., firms with two consecutive 4-year periods of doubling in size) were more common among large (500 plus employees) than among small firms. While similar data is not available from Finland, Acs et al's analysis suggests the high-growth phenomenon is not necessarily limited to new and small firms only.

2.3. High-growth entrepreneurship and innovation

Viewing the high-growth entrepreneurship phenomenon from the perspective of National Innovation Strategies, one has to consider not only the direct economic impact delivered by high-growth entrepreneurial firms, but also, the corollary systemic benefits associated with the high-growth phenomenon. The fundamental goal of national innovation strategies has to be the creation of conditions that facilitate sustained, and sustainable, economic growth. Sustained growth essentially requires that growth has to be based on productivity-enhancing innovation, and not, for example, on asset value appreciation or the exploitation of non-renewable natural resources. The requirement of sustainable economic growth implies that growth has to be based on sustainable use of energy, raw materials and other natural resources. In practice, this means that successful economies have to be able to grow while reducing their reliance on carbon-based energy sources and non-renewable and non-recycled raw materials. The mere 'production' of innovations, therefore, is not sufficient, as those innovations have to meet the sustainability and renewability criteria.

² High impact is defined as at least 100% total sales growth over the period from 1998 to 2002 plus an employment growth quantifier of 2 or greater, see Acs et al, 2008b).

Reviews of empirical studies suggest that high-growth entrepreneurial firms may be able to contribute toward productivity-enhancing innovation. Even though high-growth entrepreneurship is not confined to technology sectors, a number of studies do suggest that the high-growth phenomenon is associated with innovation. The analysis by Hoeltzl et al (2008) suggests a high occurrence of organisational innovation (e.g., innovative business and service delivery models), product and market diversification, internationalisation, as well as innovative business processes among rapidly growing SMEs (Höltzl et al., 2008). These findings (and similar findings reported by others) suggest that the high-growth phenomenon, while not confined to technology, tends to have a potentially disruptive effect on the marketplace. This, then, suggests that the beneficial effects of high-growth SMEs extend beyond direct economic impact (e.g., job creation and value creation) to include also beneficial, productivity-enhancing effects in the wider market context. Similar conclusions have been reported also in other studies considering the associations between (generic) entrepreneurship and economic development (see, e.g., van Praag (2007)).

2.4. High-growth entrepreneurship review – summary

The above review points to a number of important conclusions and related policy challenges for the Finnish National Innovation Strategy review.

First, high-growth entrepreneurship merits specific attention in a national innovation strategy because of the direct economic potential associated with the phenomenon. The direct economic impact of high-growth entrepreneurs is so disproportional that specific attention is necessary even if the phenomenon itself is quite rare in terms of absolute numbers of firms and individuals.

Second, high-growth entrepreneurship, in spite of its rarity, also appears to be quite a broad-based phenomenon in terms of sector distribution. This review suggests that innovation should be defined in similarly broad terms, to include also organisational innovation, business model innovation, product and market diversification and internationalisation. Measures to support high-growth entrepreneurship should not be confined to technological innovation activities alone, and they should target also other than young and small entrepreneurial firms.

Third, the volatility of the high-growth entrepreneurship phenomenon suggests that supporting high-growth entrepreneurs is not trivial. Some even argue that public policy interventions have no place in the context of supporting high-growth entrepreneurship, pointing to the observation that many highly successful start-ups do not appear to have difficulties in obtaining equity funding. In reality, the question of high-growth entrepreneurship policy is complex, and arguments can be made both ways. Whereas proven success cases, or 'super-gazelles' may indeed have little difficulty attracting resources, this obviously says little about the potential effectiveness of policy increasing the numbers of high-performing start-ups.

Having reviewed received consensus regarding the importance of high-growth entrepreneurship in national economies, we conclude that this form of economic activity merits special consideration within a national innovation strategy. How, then, is Finland faring in terms of high-growth entrepreneurship? In the chapter that follows, we compare Finland's performance in this regard against other countries in general and against the other Scandinavian countries in particular.

3. FINLAND'S PERFORMANCE IN HIGH-GROWTH ENTREPRENEURSHIP

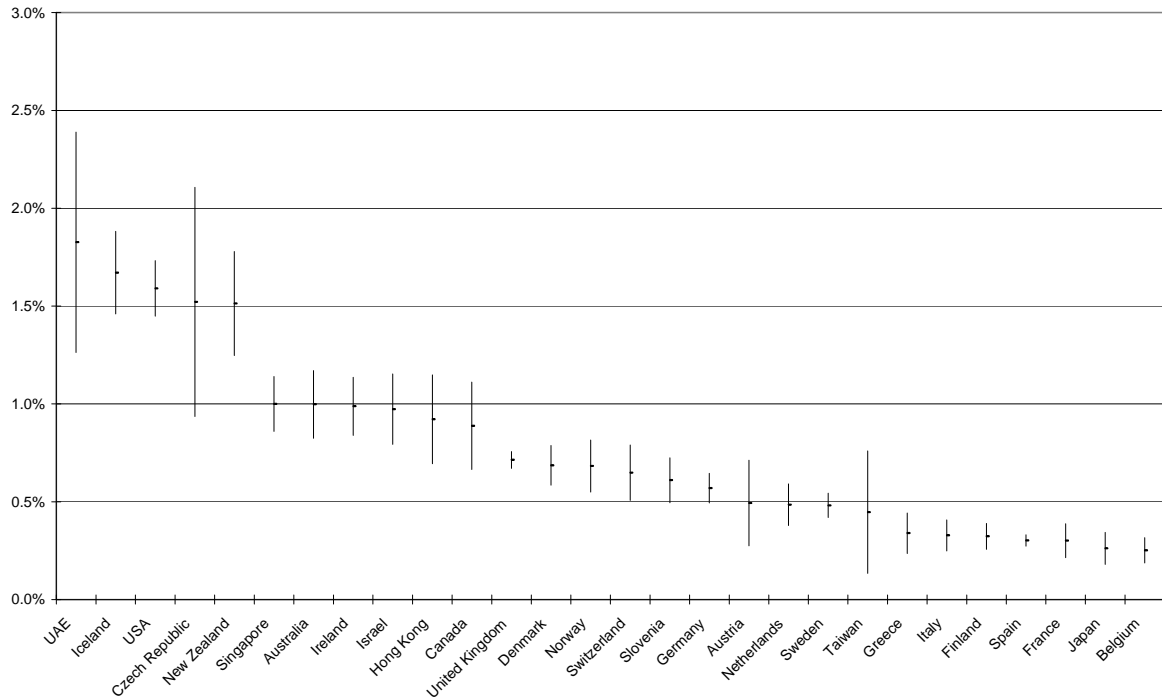
Because of the elusive nature of the phenomenon, there is relatively little hard data on how Finland performs in terms of high-growth entrepreneurship, defined here as strong owner-managerial aspiration for rapid organisational growth coupled with substantive potential for achieving this aspiration. The most widely applicable benchmark is provided by the Global Entrepreneurship Monitor (GEM) data. The strength of the GEM dataset is its strict international comparability ensured by harmonised data collection protocols, combined with its tight quality control (Reynolds, Bosma, & Autio, 2005). These aspects render it useful for benchmarking purposes. The GEM dataset is the only available dataset that offers extensive individual-level data on entrepreneurial behaviors, attitudes and aspirations in standardised form across a wide range of countries and over an extended time period. The individual-level aspect of the GEM dataset offers the possibility of analyzing determinants of entrepreneurial behaviors and aspirations at the individual level. Because this data is collected in standardised format across countries, it also offers the unique possibility of examining the effect of institutional conditions (e.g., a country's regulatory framework) on individual-level entrepreneurial behaviors. An additional valuable aspect of this dataset is its time series character at the country level, which permits cross-sectional time series analysis in panel data. For the period from 2000 to 2008, the GEM dataset comprises over 900 000 interviews of adult-age individuals in more than 60 countries.

3.1. Adult-population prevalence of high-aspiration entrepreneurs

The most recent international comparison of the adult-population prevalence of high-aspiration entrepreneurial behaviours was carried out in 2007 (Autio, 2007). For the present analysis, this comparison was updated with the latest available data, which covered years 2000 to 2008. Because high-growth entrepreneurship is a rare phenomenon, several years of adult-population was combined in order to permit sensible comparisons across countries. The pertinent results are shown in Table 2³.

³ Methodological note: Based on pooled GEM interview data for each country from 2000 to 2008.

Table 2. Adult-Population Prevalence of High-Aspiration Entrepreneurs in the GEM 2000-2008 Countries.



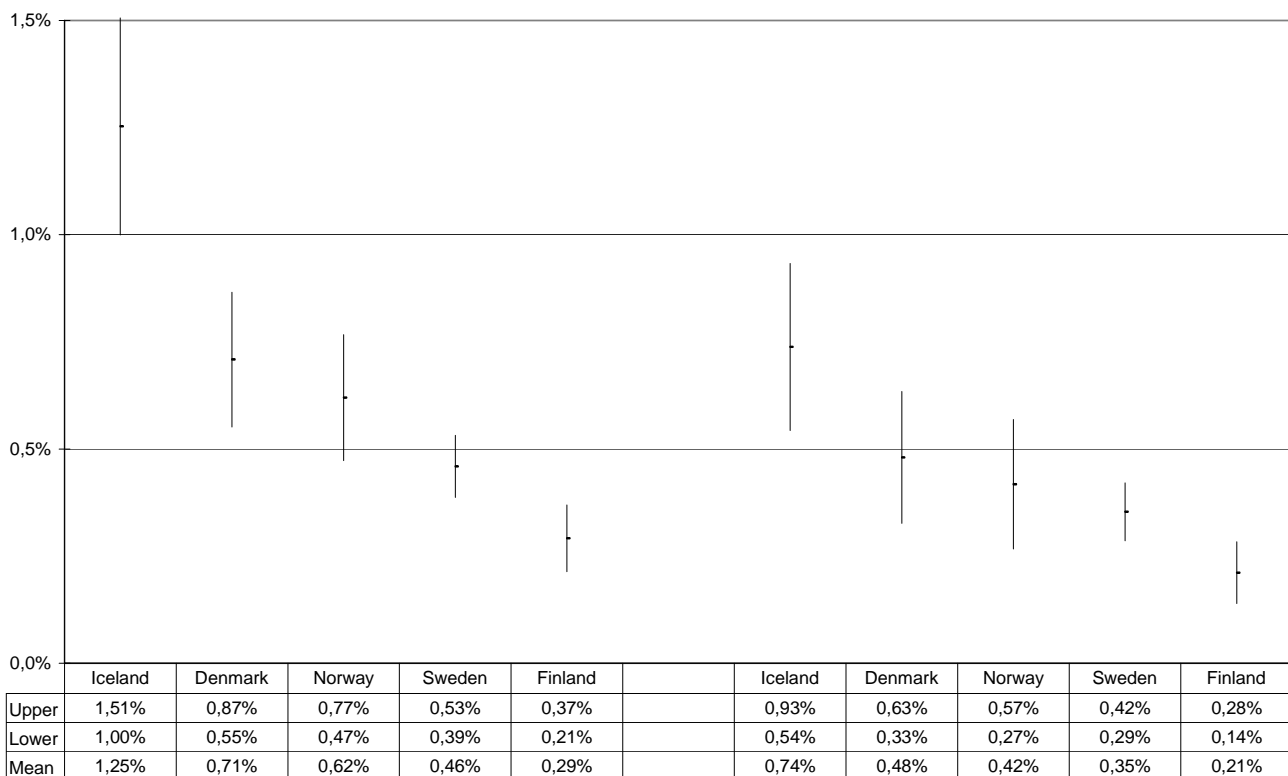
Even though we have available GEM data from a total of nearly 60 countries, table 2 shows the adult-population prevalence of high-growth entrepreneurs in middle- and high-income economies only – i.e., economies with a per-capita income of 20 000 USD or higher in 2008. The table presents the adult-population prevalence of individuals who qualify as either nascent or new entrepreneurs in the GEM dataset and who expect to employ at least 20 employees in five years' time. Nascent entrepreneurs are people who are currently actively trying to start a new company, for which they would become owner-managers. New entrepreneurs are owner-managers of companies less than 42 months old. The vertical bars in the graph indicate the 95% confidence interval. In other words, if the vertical bars do not overlap in the vertical axis, the difference between the two countries is statistically significant.

Two observations can be immediately made in Table 2. First, the variance across countries in terms of high-aspiration early-stage entrepreneurial activity is tremendous. The difference between Belgium and the US, for example, is nearly 10-fold. This is a major difference. Second, Finland is near the bottom among middle- to high-income countries, with a high-aspiration entrepreneurship rate of approximately one fifth of that of the US. According to the GEM data,

only approximately 0,3% of the adult-age population exhibit high-aspiration early-stage entrepreneurial activity, which puts Finland in the company of Greece, Italy, Spain, France, and Belgium among the EU countries. In the most closely comparable economy to Finland's, Sweden, the corresponding rate is 0,5%. This difference is statistically significant.

While there is ongoing debate regarding the determinants and impact of high-growth entrepreneurship in different countries (e.g., Levie & Autio, 2008), it is easy to see that a five-fold difference is not trivial, not to mention a difference of one order of magnitude. Nevertheless, different countries have different industry structures, domestic market conditions and stages of economic development. It may, therefore, make more sense to perform comparisons between countries that are the most like one another. In the following, we compare the high-growth entrepreneurship performance of Finland against the other Scandinavian countries. Here, too, the verdict is clear: Finland lags behind other Scandinavian countries in terms of high-growth new entrepreneurs and in terms of high-aspiration nascent entrepreneurs, see Table 3. Table 3 shows the adult-population prevalence of both new high-growth entrepre-

Table 3. High-Growth New Entrepreneurs and High-Aspiration Nascent Entrepreneurs in Scandinavian Countries (Pukkinen, Stenholm, Heinonen, Kovalainen, & Autio, 2007)



neurs (left in the graph) and nascent high-aspiration entrepreneurs (right in the graph) in the Scandinavian economics. Both are defined in terms of growth expectation of more than 20 employees in five years' time. We can observe that Finland lags behind other Scandinavian countries in both categories with a statistically significant difference. The observed adult-age population prevalence rates in Finland are closest to those of Sweden and quite significantly behind those of Iceland, Norway and Denmark.

Whereas one may argue that it may not make much sense to compare Finland against Iceland, the comparison against Sweden is clearly more relevant, given the highly similar industry structures in the two countries. Even though the percentage point difference between Finland and Sweden might seem small, this difference has potentially major consequences. Pukkinen et al (2007) estimated that the observed difference in terms of Finnish and Swedish entrepreneurs' growth aspirations could translate into a deficit in terms of job creation potential of up to 150 000 jobs over five years when standardised according to the size of the Finnish work force. In other words, if Finland were able to increase the growth aspirations of its entrepreneurs to the level of their Swedish counterparts, the job creation potential of Finland could be enhanced by up to 150 000 jobs over five years⁴. Because this estimate did not consider potential job migration effects, this estimate does not necessarily translate into gross job creation potential. However, the estimate may say something about the Finnish economy's ability to reallocate resources into most productive uses through high-growth entrepreneurial activity. The estimate based on GEM data is consistent with other data, as reported by Murray, Hyytinen and Maula (2009). Notably, they cited Finnish Ministry of Employment and Economy data that suggested that only some 2% of new entrants expected to employ 20 or more employees in three years' time. There are no international benchmarks to compare this data against, however.

3.2. Finland's performance in global entrepreneurship index and its sub-indices

Is Finland's 'growth ambition deficit' real, and if yes, what factors might contribute to it? To answer this question, a more detailed analysis of the GEM data is necessary. In addition to

⁴ Note that this estimate does not mean gross job creation potential, as job migration effects were not considered.

data on entrepreneurial activity, GEM collects a wide array of data on adult-age individuals' attitudes towards entrepreneurship, their entrepreneurial and business angel activities, as well as their aspirations. GEM also records rich data on respondents' demographic backgrounds as well as on the market impact and innovativeness of the new ventures observed, thereby enabling a more fine-grained analysis of the entrepreneurial dynamics of different economies. Recently, Acs and Szerb have used and extended the GEM data to create entrepreneurship indices, which provide a more fine-grained insight into differences across countries (Ács & Szerb, 2009). The dataset of Acs and Szerb has been made available for the present report, and in the following analyses we analyse the data from the Finnish perspective.

In the following we will review four indices, as computed by Ács and Szerb (2009). First, we review the Global Entrepreneurship Index, which is a composite of three sub-indices, as outlined below. Then, we review Finland's performance along the three sub-indices. The three sub-indices are:

- 1 Entrepreneurial Attitudes Index
- 2 Entrepreneurial Activity Index
- 3 Entrepreneurial Aspirations Index

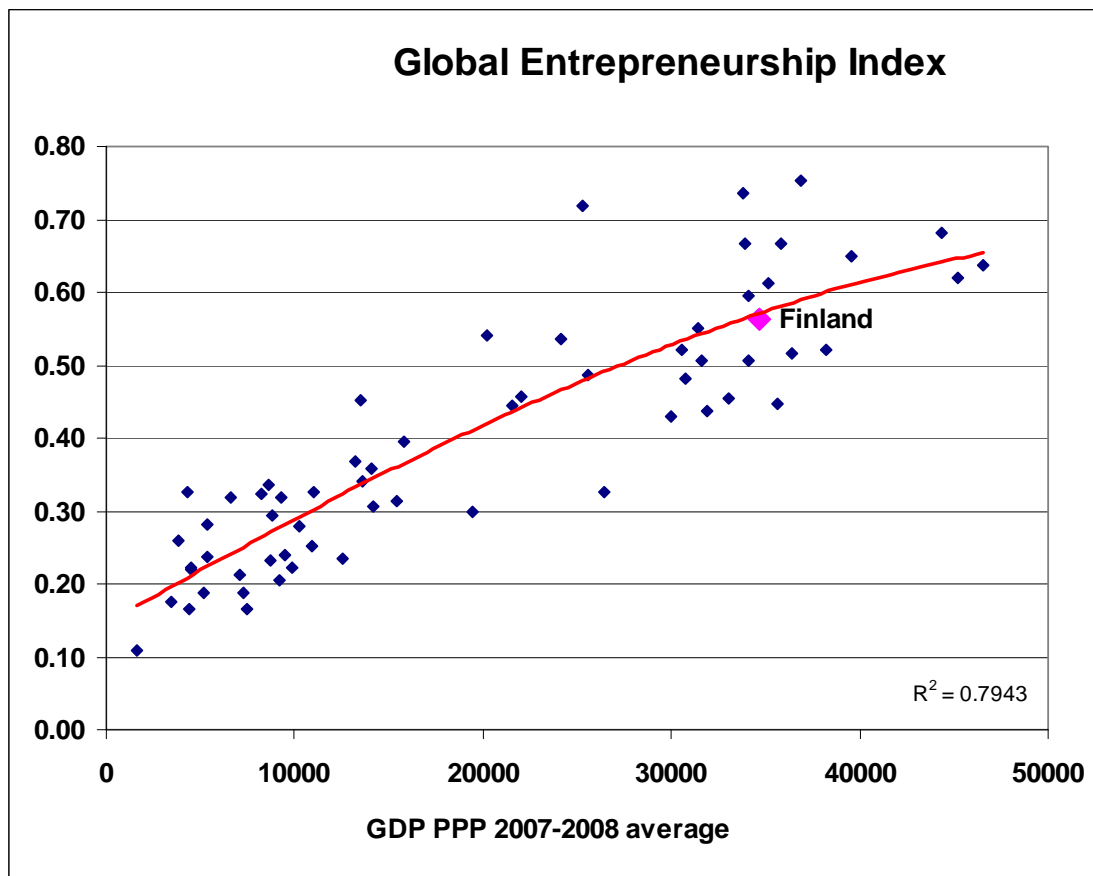
All of these indices have been computed based on the GEM data. The *Entrepreneurial Attitudes Index* comprises GEM data on general attitudes among the adult-age population toward opportunity recognition (whether or not individuals perceive good opportunities for starting new businesses), social status attached to successful entrepreneurs, attitudes toward risks, perception of entrepreneurial skills, as well as vicarious exposure (i.e., whether or not individuals knowing entrepreneurs personally).

The *Entrepreneurial Activities Index* represents a composite of GEM data measuring opportunity-oriented entrepreneurial activity. This data comprises the percentage of opportunity-driven start-ups of all start-ups; the percentage of start-ups focusing on medium- to high-technology sectors; the percentage of start-ups initiated by individuals with at least post-secondary education; as well as the percentage of start-ups facing no or only few competitors.

The *Entrepreneurial Aspirations Index* is a composite of the percentage of start-ups introducing products that are new to customers; percentage of start-ups that employ technologies less than five years old; the percentage of start-ups seeking to grow over 50 per cent in five years plus employ more than 10 employees; the percentage of start-ups exporting at least 10% of their sales; as well as the percentage of adult-age population reporting any micro-angel activity (i.e., investing their own funds into new start-ups started by others).

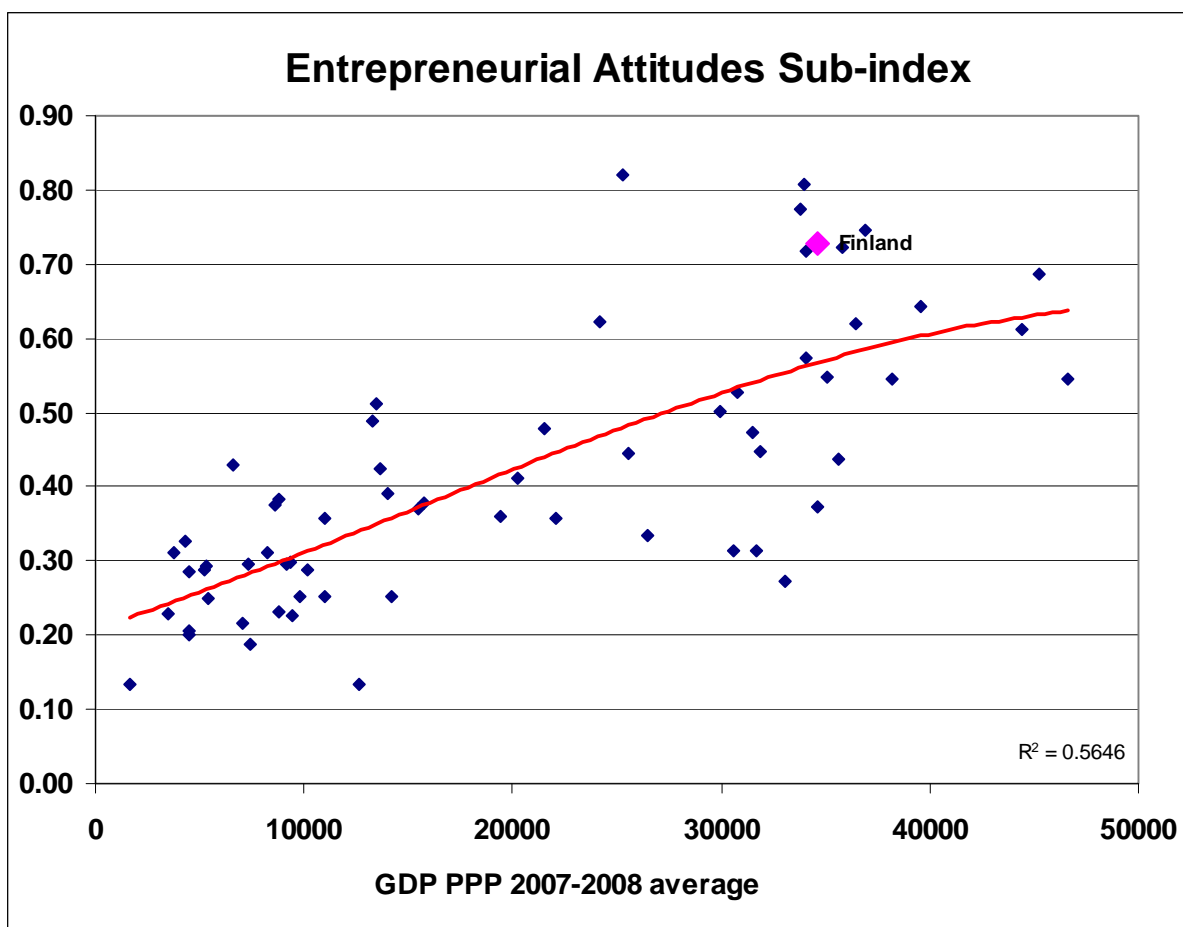
Table 4 shows the positioning of Finland relative to the Global Entrepreneurship Index. The base data of the index represents averages from 2007 to 2008. All GEM countries have been plotted along their index value as well as their GDP per capita (average for years 2007 and 2008). As can be expected for an index from which necessity-driven self-employment activity has been cleaned out, there is a general, if rather vague positive association between the level of economic development and the GEI index value. In this graph, Finland is positioned almost exactly on the trendline, suggesting that Finland's overall performance in terms of this composite index is approximately where it should be, given its level of economic development.

Table 4. Finland and the Global Entrepreneurship Index



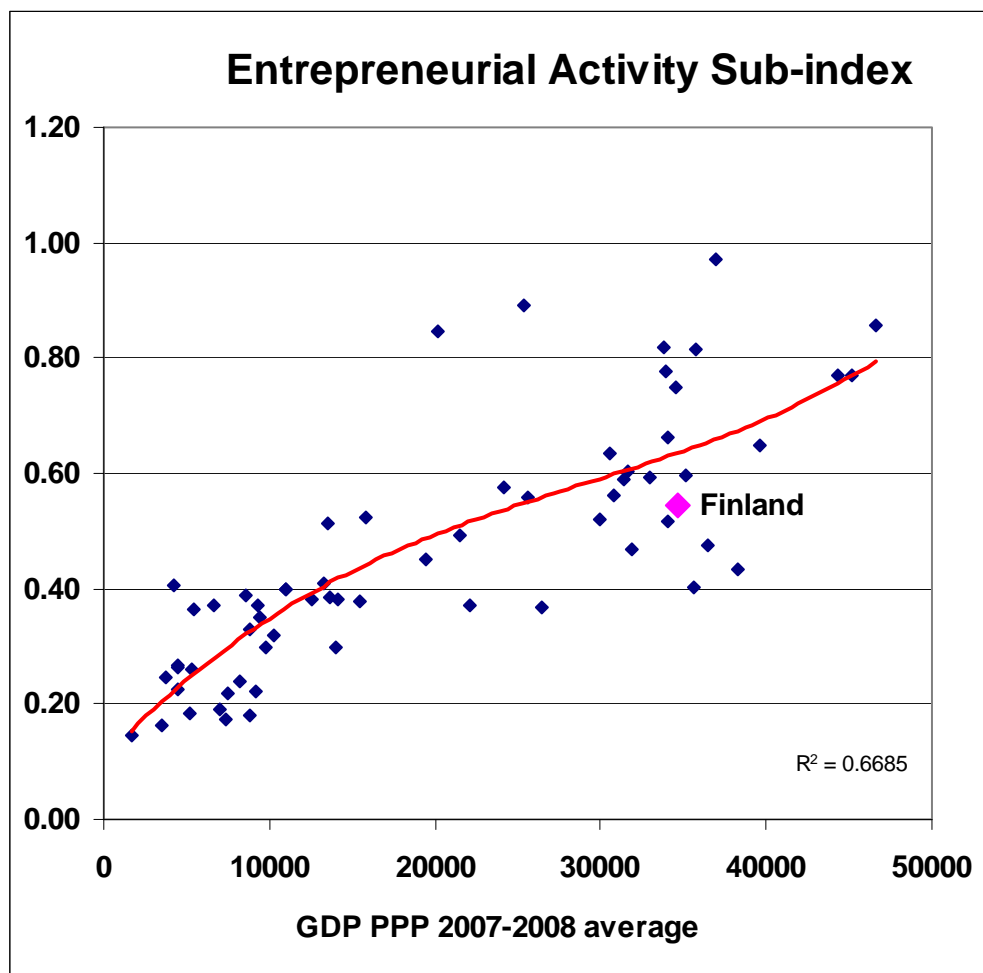
The performance of Finland along the Entrepreneurial Attitudes Index is shown in Table 5. Remember that this index captures adult population attitudes toward, and perceptions of, opportunity perception, risk taking, entrepreneurial skills, social status of entrepreneurs and vicarious exposure. Here, Finland ranks more highly than its level of economic development would suggest, clearly above the trendline. Thus, population-level attitudes, in general, appear to be well developed and positive. In Finland, respondents to the GEM adult population survey report that they have little fear of failure, they perceive good opportunities for entrepreneurship, and they consider that successful entrepreneurs are well respected. Such attitudes are not only positive in absolute terms – they are also positive in respect to Finland’s level of economic development. Overall, and some might say paradoxically, attitudes toward entrepreneurship appear to grow more positive as the overall rates of entrepreneurship go down, both as a function of a country’s level of economic development. In a country-level analysis, therefore, it appears that attitudes are not a major bottleneck limiting high-growth entrepreneurship in Finland.

Table 5. Finland and the Entrepreneurial Attitudes Index



The Entrepreneurial Activity Index is shown in Table 6. In terms of entrepreneurial activity, Finland ranks below the trendline, suggesting that Finland's performance is lagging behind its peers in terms of opportunity-driven start-ups, technology-based start-ups, educated start-ups as well as innovative start-ups addressing relatively uncontested market spaces. This index suggests that technology-based and innovative entrepreneurial activity in Finland does not quite match the positive attitudes, as exhibited among the general population. Note that this index does not capture high-aspiration entrepreneurial activity, which is included in the Entrepreneurial Aspirations Index (see Table 7).

Table 6. Finland and Entrepreneurial Activity Index

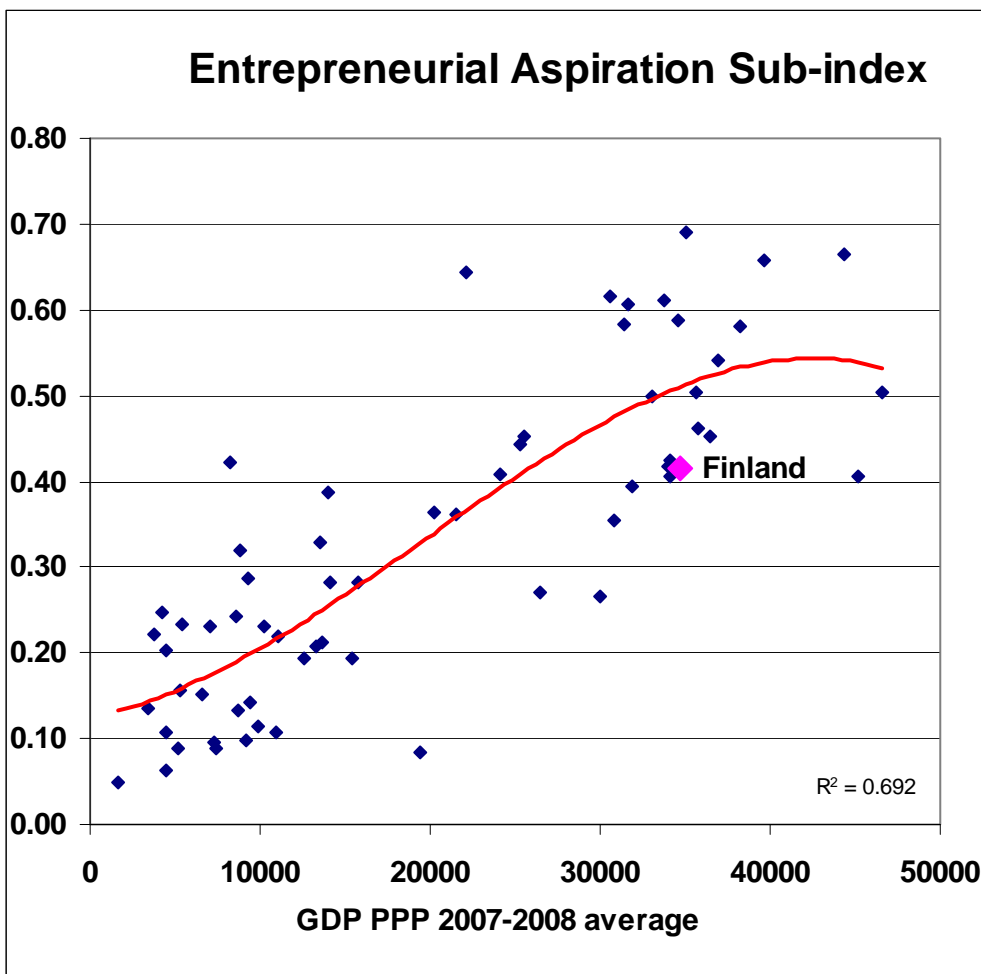


Given that Finland is widely seen as a technology-intensive, innovative economy, it is slightly surprising to observe that Finland does not perform above the trendline in terms of technology-intensive, educated, innovative, and market-expanding start-up activity. The analysis in table 6 suggests that Finland's economic in this regard may be under-performing

relative to its natural potential. Although significant effort continues to be invested in Finland into encouraging high-technology start-ups, this investment does not, in the light of this comparison, appear to be fully translated into entrepreneurial activity.

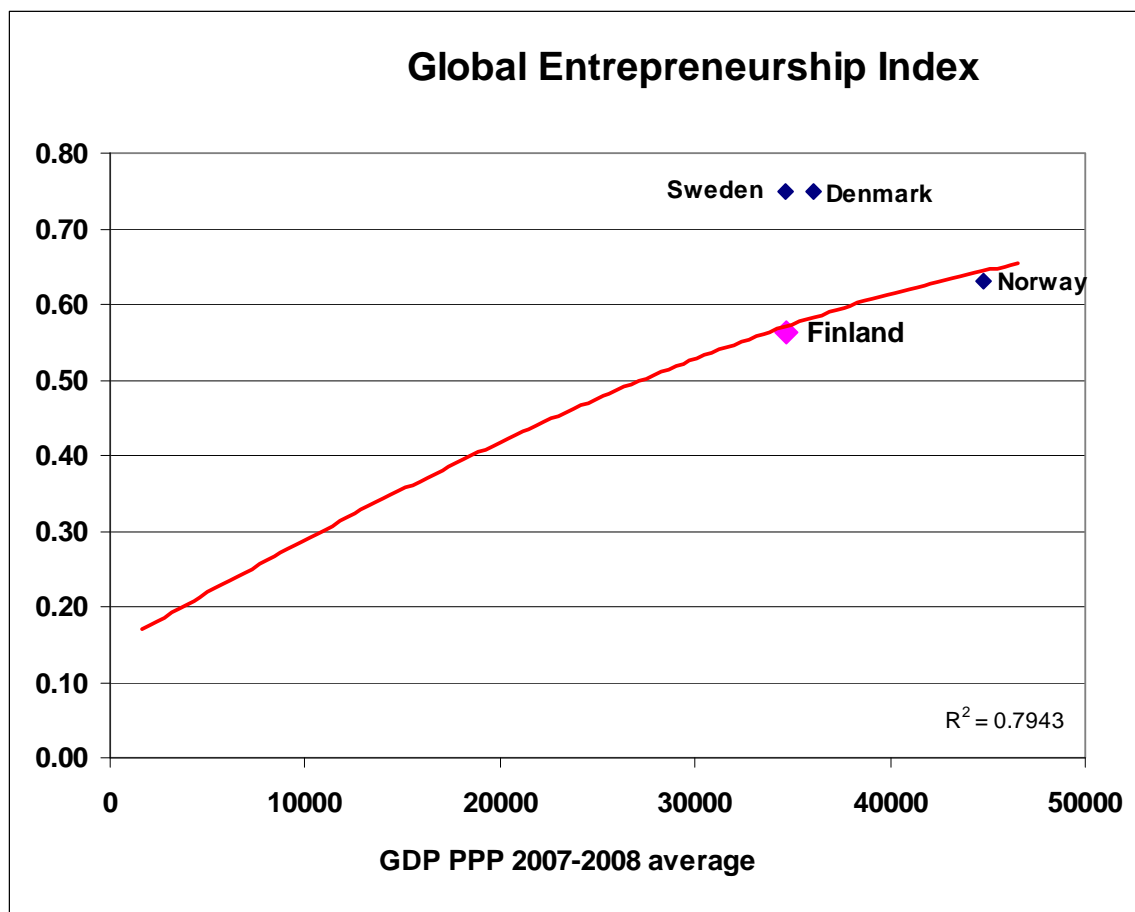
Table 7 shows Finland's performance, relative to all other GEM countries, in terms of entrepreneurial aspirations. This index captures the percentage of entrepreneurial start-ups that introduce new and innovative products, employ new technologies, seek to grow rapidly and to internationalise, as well as micro-angel activity. Finland's performance in terms of entrepreneurial aspirations appears to fall clearly below the trendline, as plotted based on GDP per capita. This aspect, in fact, is the one where Finland lags the most behind its peers, and this component alone is sufficient to virtually neutralise the highly positive attitudes exhibited in the Entrepreneurial Attitudes Index.

Table 7. Finland and Entrepreneurial Aspirations Sub-Index



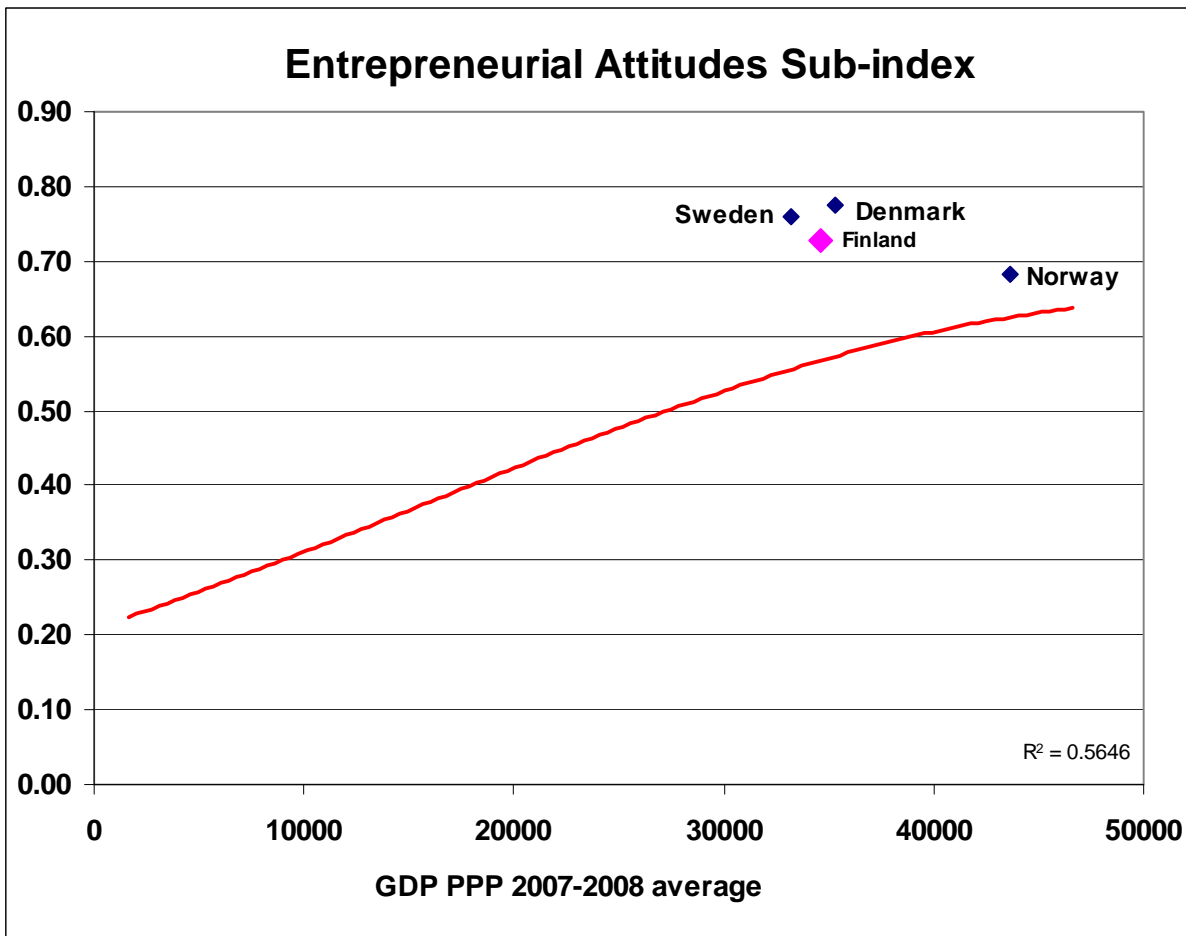
It is noteworthy that this pattern (high on attitudes but low on activity and aspirations) is quite rare and distinctive for Finland. For comparison against the major Scandinavian countries, we plot the three indices showing only Finland, Sweden, Denmark and Norway. This comparison is shown in Table 8. We can see that while Finland and Norway are both on the trendline, Norway's performance is higher, and Sweden and Denmark are clearly above the trendline. Overall, Finland ranks last among the Scandinavian countries in terms of the Global Entrepreneurship Index.

Table 8. GE Index comparison between Fin, Swe, Den, Nor



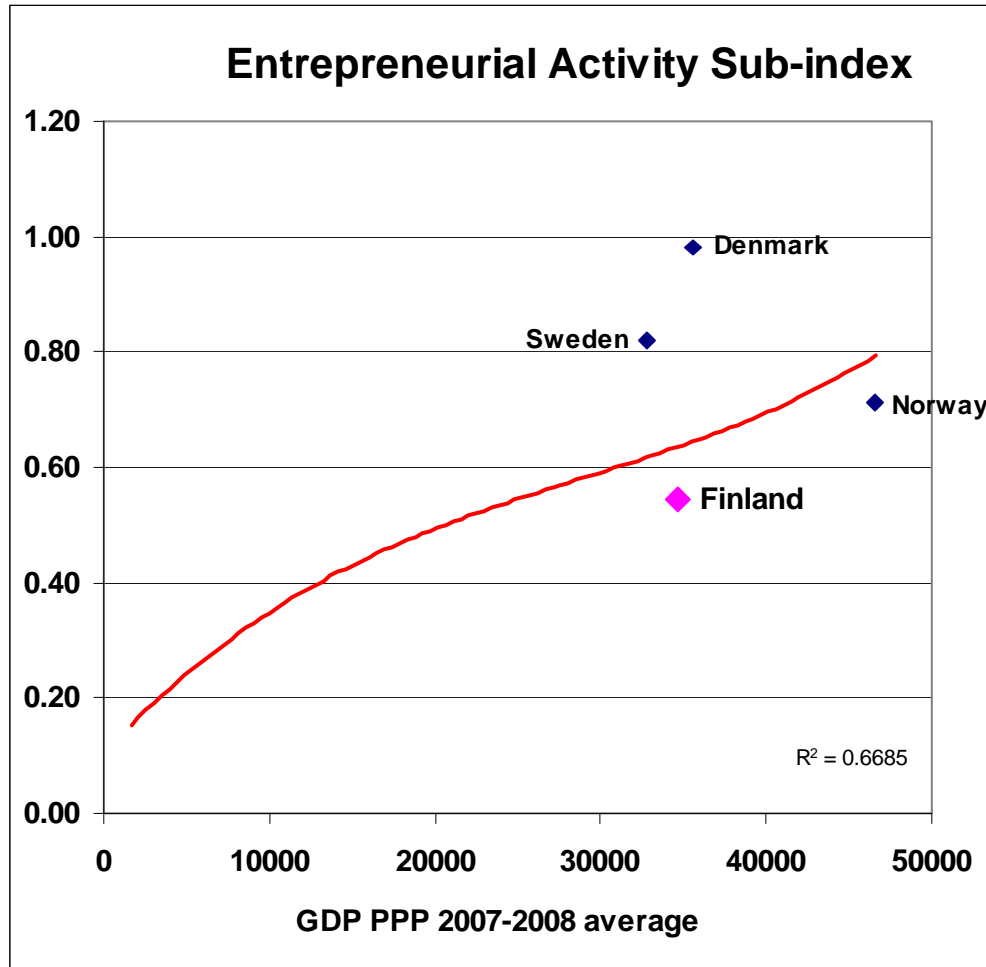
Entrepreneurial attitudes among the Scandinavian countries are compared in Table 9. Here, the behaviour of the Scandinavian countries appears quite similar, with all countries exhibiting attitudes that are clearly above the trendline. All Scandinavian countries exhibit positive attitudes toward entrepreneurial risk-taking and entrepreneurship.

Table 9. Entrepreneurial Attitude Index comparison between Fin, Swe, Den, Nor



Entrepreneurial activity index values among the Scandinavian countries are compared in Table 10. Here we observe major differences among the Scandinavian countries, with Denmark and Sweden positioned well above the trendline, whereas Finland and Norway are positioned below the trendline. However, Norway's positioning in terms of the entrepreneurial activity index value is higher than that of Finland's. Finland's score on the entrepreneurial activity index is clearly below that of other Scandinavian countries, unlike its score on attitudes toward entrepreneurship. In particular, Sweden and Denmark appear able to convert their technological and innovation potential much more efficiently into entrepreneurial activity than Finland is able to.

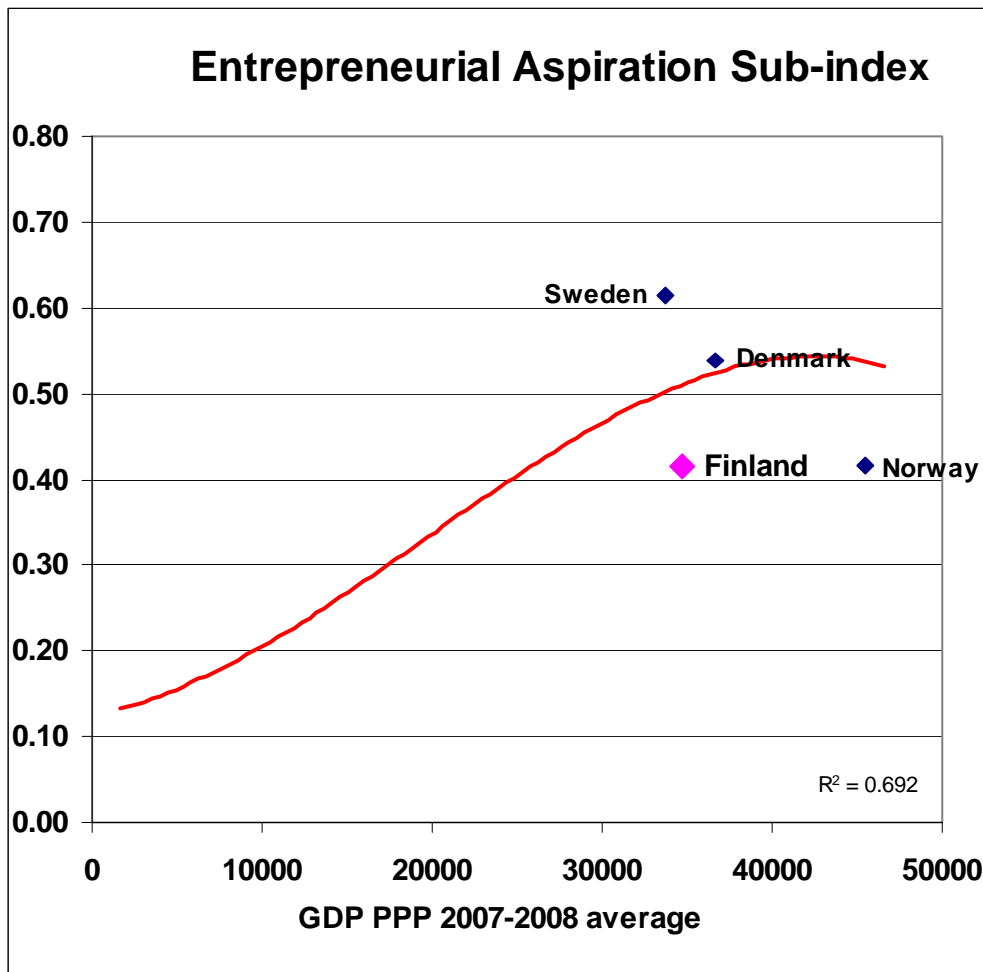
Table 10. Entrepreneurial Activity Index comparison between Fin, Swe, Den, Nor



Finally, entrepreneurial aspirations are compared in Table 11. A similar pattern is observed as in the case of entrepreneurial activities, with Sweden and Denmark positioned clearly above the trendline, whereas Finland and Norway lag below the trendline, at the same level. In particular, Finland's performance in terms of entrepreneurial aspirations.

The comparison against Sweden is particularly informative, given the cultural and industrial similarities of the two countries. Both Finland and Sweden have scale-intensive and engineering-intensive industrial bases. Yet, Sweden exhibits much greater entrepreneurial aspirations than any of the other Scandinavian countries, with an entrepreneurial aspiration level that is 50% higher than that of Finland.

Table 11. Entrepreneurial Aspiration Index comparison between Fin, Swe, Den, Nor



Summarising, the comparison among the Scandinavian countries confirms that Finland lags behind the trendline and its most comparable peers in terms of the quality of its entrepreneurial activities as well as in terms of the aspirations exhibited by its entrepreneurial ventures. In terms of entrepreneurial attitudes, Finns rank well above the international trendline, and the problem seems to be in converting positive attitudes into high-quality entrepreneurial activity.

A final view into Finland's performance is provided by an overview of individual index components. These are shown in Table 12. In the table, different colour codes are used, based on whether Finland ranks in the top tier (green), middle tier (yellow) or bottom tier (red) among the GEM countries. Note that this colour system somewhat biases the comparison in Finland's favour, because Finland's high GDP per capita income means that the benchmark values should be higher for Finland. Thus, any colour codes other than green should be considered as indicative of quite mediocre performance.

In Table 12 we see that Finland exhibits mediocre performance in terms of technology start-ups; educated start-ups; high-growth aspirations; the use of new technologies; internationalisation orientation; and micro-angel activity. Importantly, Finland appears to lag the most behind the trendline in terms of educated start-ups and high-growth aspiration start-ups.

Table 12. Normalised scores of index components

Components of Entrepreneurial Attitudes Sub-index (normalised scores)					
	Opportunity perception	Start-up skills perception	Acceptance of risk	Vicarious exposure	Status of entrepreneurs
Finland	0.61	0.81	0.78	0.65	0.84
33% percentile	0.34	0.41	0.35	0.17	0.28
67% percentile	0.60	0.64	0.68	0.40	0.57
Components of Entrepreneurial Activity Sub-index (normalised scores)					
	Opportunity start-ups	Technology start-ups	Educated start-ups	Competition	
Finland	0.76	0.46	0.39	0.66	
33% percentile	0.40	0.26	0.33	0.42	
67% percentile	0.72	0.46	0.60	0.60	
Components of Entrepreneurial Aspirations Sub-index (normalised scores)					
	New product introduction	New technology use	High-growth aspiration	Internationalisation orientation	Micro-angel activity
Finland	0.95	0.46	0.37	0.42	0.16
33% percentile	0.09	0.26	0.33	0.27	0.10
67% percentile	0.32	0.48	0.53	0.51	0.31

3.3. Conclusions

The comparison between Finland against other middle- and high-income economies suggests that Finland's prevalence rate of high-growth entrepreneurial activity lags significantly behind most of its European and all of its Scandinavian peers. In the light of the GEM data, Finland exhibits a low prevalence rate of high-growth entrepreneurial activity overall, ranking alongside Greece, Italy, Spain, France, Japan and Belgium. This cannot be considered good performance, given that Finland's adult-population prevalence rate of high-growth entrepreneurship is only half of what can be considered good European level.

Tellingly, the economy most similar to Finland's, Sweden, exhibits a high-growth entrepreneurship rate that is almost double that of Finland. This observation rules out the hypothesis that industry structure would be the main determinant of high-growth entrepreneurial activ-

ity in a given country. Given that Sweden has similar industry structure, similar demographics, similar, and if anything, less incentivizing fiscal regime, and similar social welfare systems to Finland's, it is difficult to point to these factors as potential explanations to Finland's low rate of high-growth entrepreneurship.

It is tempting to use the word 'paradox' to describe Finland's unsatisfactory performance in high-growth entrepreneurship. Finland is a World leader in terms of per-capita investment in R&D. Finland has a well-functioning educational system. Much effort has been invested in recent years to streamlining the regulatory regime and to providing greater fiscal and public incentives for entrepreneurship. Also Finland's emphasis on engineering-intensive industries and applied research should promote the creation of high-growth entrepreneurial ventures. From a national innovation system perspective, therefore, it is difficult to pinpoint the exact causes for the apparent absence of growth ambitions within Finland's population of entrepreneurs.

In this study, it is possible only to speculate about the reasons for Finland's low rate of high-growth entrepreneurship, as the available data does not permit a more fine-grained analysis. Possible explanations to the 'Finnish Paradox' (i.e., relative absence of high-growth entrepreneurship in spite of structural conditions that usually favour high-growth entrepreneurial activity) include data issues, cultural issues, insufficient experience, crowding-out effects and deficiencies in the support system.

This analysis has used one major source of data, the Global Entrepreneurship Monitor survey, because it provides the only internationally standardised and high-coverage benchmark of entrepreneurial activity within nations. While GEM is internationally highly regarded for its quality (Ardagna & Lusardi, 2008; Dreher & Gassebner, 2007), it is possible that its measures would somehow under-estimate Finland's rate of high-growth entrepreneurship. GEM's is a measure of high-growth aspirations rather than actual growth performance (for a full account of the GEM method, see Reynolds et al., 2005). The use of this measure can be justified by the fact that aspirations are a necessary, if not sufficient, condition for growth: although aspiration does not guarantee growth, absence of aspiration virtually guarantees absence of growth. Aspirations also provide a good measure of behavioural effects of national structural conditions, as opposed to selection effects (Autio & Acs, 2009). It is, nevertheless, advisable to keep in mind the limitations of this measure.

Although the Entrepreneurial Attitudes Index suggests that Finland ranks highly in terms of attitudes towards entrepreneurship, this index does not measure attitudes toward growth in particular. However, there appears to be little reason to assume that the Finns' attitudes toward high-growth entrepreneurship would be dramatically different. Even then, it is possible that cultural issues may inhibit high-growth entrepreneurial activity in Finland. Positive attitudes towards the behaviours of others do not necessarily translate into personal initiative by the focal person. Also, importantly, industrial traditions matter for economic behaviours, and traditions can cast a long shadow. Compared to Sweden, Finland's economy internationalised relatively recently. As an economy, Sweden can draw on at least half a century's worth more experience of successful entrepreneurship, as compared to Finland. High-growth entrepreneurial activity remains a relatively recent phenomenon in Finland, which means that experience on how to foster high-growth entrepreneurs has not have had much time to accumulate. Examples of successful high-growth entrepreneurs, although increasing in numbers, still remain relatively rare. As experience matters for high-growth entrepreneurship, Finland's unsatisfactory performance in this domain may boil down to a shortage of traditions and experience.

One also should not rule out crowding-out effects. Although the rate of high-growth entrepreneurship is rare, Finland has managed to create a rather impressive number of 'traditional' industry incumbents, most notably in electronics, engineering and forest industry sectors. One might argue that having a high rate of indigenous high-growth entrepreneurship does not really matter, as long as investments in education and R&D are translated into high-productivity industrial activity through other means. As regards the crowding-out effect, Nokia in particular is often evoked as a potential explanation to Finland's low rate of high-growth entrepreneurship. However, the crowding-out explanation, while undoubtedly contributing to the phenomenon, would provide too facile an exit of the dilemma. Even though incumbents increasingly source technologies from where they can best access them, a healthy domestic base of technology-intensive, high-growth ventures is key for preventing the hollowing-out of the national economy. Thus, the presence of Nokia in the Finnish economy, however beneficial in itself, does not alleviate the responsibility of building and maintaining a strong indigenous base of new, growing ventures. If the likes of Nokia are unable to rely on a strong domestic technology base for their diversification efforts, there is a danger that they

will have to follow their technology sources abroad. Also, while Nokia undoubtedly employs many potential high-growth entrepreneurs, it should also provide a fertile source of spin-off ventures to the Finnish economy. Judging from the poor performance of Finland in terms of high-growth and technology-intensive entrepreneurship, the spin-off potential of Nokia, and that of other incumbents like it, does not appear fully exploited.

Finally, one may rightfully ask whether the 'Finnish Paradox' might, at least in part, be due to an ineffective support system. While this aspect is better answered by the review of the Finnish equity funding industry, there do not appear to be any glaring gaps in the Finnish innovation system in this regard. Compared to most of its peers, the Finnish support system for SMEs and high-growth entrepreneurship appears to be in par if not better developed. In particular, the recent years have witnessed an increasingly explicit focus on high-growth ventures in the Finnish SME support system. Two notable examples are the High-Growth Entrepreneurship Programme (kasvuyrittäjyysohjelma) and the Young Innovative Ventures Programme (Nuoret innovatiiviset yritykset). Both of these programmes meet the standards of best practice, as defined in the recent EU review of policies to support high-growth entrepreneurship (Autio et al., 2008), in that they:

- apply a highly selective, often proactive approach to the selection of target SMEs
- stage their support according to the achievement of agreed upon milestones
- provide extensive, customised, hands-on support

However, the selection of these best EU practices does not refer to *the performance* of the high-growth entrepreneurship policies. As the above initiatives are quite recent, their impact would not yet show in the analysis results.

In conclusion, while the comparison of Finland against its comparable peers has highlighted a relative degree of underperformance in terms of high-growth entrepreneurship, the reasons underlying this underperformance remain unclear. At this point, the best guess is that explanations should be sought in culture, industrial traditions and systemic experience in high-growth entrepreneurship. None of these potential causes alone appear compelling, however.

4. POLICY IMPLICATIONS

As the causes underlying the 'Finnish Paradox' remain unclear, it is difficult to propose specific policy prescriptions. Also, empirical research into the drivers of high-growth entrepreneurial activity in nations remains very much in a nascent stage (Henrekson et al., 2008; Hoffmann & Junge, 2006; Levie et al., 2008). The limited empirical evidence appears to point to both selection and behavioural effects of policy in relation to high-growth entrepreneurship. Selection effects have to do with the self-selection of individuals into high-growth entrepreneurship. For this mechanism to be pertinent, individuals' entrepreneurial growth aspirations would be mainly determined by the trade-offs they face when making career choices (Cassar, 2006; Cassar, 2007). Individuals that are highly endowed with high human and social capital, for example, would be inherently more growth-oriented than less endowed individuals, because the opportunity costs associated with the allocation of valuable human and social capital into an entrepreneurial venture would force the individual to pursue higher returns for her investment. Consistent with this explanation, the GEM data shows that highly educated and high net-worth nascent entrepreneurs⁵ indeed exhibit higher growth aspirations than others (Autio, 2007). On the other hand, the behavioural effect operates on individuals who have already self-selected into entrepreneurship. For the behavioural effect to be in operation, individuals should be more or less equally likely to pursue (or not to pursue) growth, providing favourable external conditions. In the behavioural perspective, individuals would react to external contingencies rather than opportunity costs and trade-offs associated with career trade-offs.

While both selection and behavioural effects are likely to be in operation in any economy, the policy measures required to address each would be quite different from one another. In a selection view, the crucial point of policy is to attract the right individuals to choose entrepreneurship as their occupational choice. Because individuals with a high human capital (i.e., high education and valuable work experience) and high social capital (i.e., strong social

⁵ In the case of new entrepreneurs, this inference would be more difficult to make, as selection effects could not be ruled out.

connectivity that ensures resource mobilisation efficacy and access to information about opportunities) are more likely to exhibit high-growth aspirations, the key for raising the prevalence rate of high-growth entrepreneurship becomes enticing such individuals to choose the entrepreneurial career option. In practice, this could mean, for example, designing the educational system to infuse students with entrepreneurial skills and attitudes, as well as to provide encouraging role models. Important for policy measures designed to enhance the selection effect is to make sure that they are targeted towards the section of the population that is the most likely to experience significant opportunity costs associated with the occupational choice. This would mean, for example, prioritising the teaching of entrepreneurial skills and attitudes in higher educational institutions. Selection effects could also be created by enhancing the initial entry to entrepreneurship by high-human capital individuals. This could be achieved, for example, by initiatives to facilitate career transitions by high-human capital individuals – such as, e.g., secondment schemes to enable managers and academics to take a temporary leave of absence to pursue an entrepreneurial idea.

Behavioural effects can be enhanced by manipulating the incentives, both external and internal, available for existing entrepreneurs. External incentives would comprise all measures that alter the balance between costs and benefits associated with new venture growth. In this logic, behavioural effects could be enhanced, for example, by providing fiscal incentives for high-growth entrepreneurial firms while alleviating or at least staging costs that kick in with increased firm size. An important category of behaviour-enhancing mechanisms could comprise measures designed to reduce the costs of business closure, in an acknowledgment of the fact that high-growth firms are inherently more volatile than low-growth firms. Internal incentives could be enhanced, for example, by measures designed to enhance the growth motivations and growth self-efficacy of entrepreneurial firms. Efficient policy initiatives in this regard could include, for example, measures designed to inspire entrepreneurs to pursue for growth by promoting experience sharing between successful high-growth entrepreneurs and aspiring ones.

There is some reason to think that the unsatisfactory performance of the Finnish innovation system in high-growth entrepreneurship may have more to do with selection effects than behavioural effects. The attitudes toward entrepreneurship are positive in Finland, yet Finland

appears to lag behind peers in terms of technology-intensive and high-growth activity. To the extent that attitudes drive behaviours, this pattern could be interpreted as a sign of selection. This would mean that, while continuing to provide support geared to enhance the growth motivations and prospects of existing entrepreneurs, also measures designed to induce cultural changes that prompt individuals endowed with high human, social and financial capital to pursue entrepreneurship as an occupational choice. Such cultural changes would be most likely induced through long-term investments into making the educational system more conducive and supportive of the entrepreneurial occupational choice.

REFERENCES

- Ács, Z. & Szerb, L. 2009. The global entrepreneurship index (GEINDEX) and the stages of economic development, Imperial College Business School Working Papers. London.
- Acs, Z. J., Parsons, W., & Tracy, S. 2008. High-Impact Firms: Gazelles Revisited (manuscript). In S. O. o. Advocacy (Ed.), SBA Reports. Washington, D.C.: SBA Office of Advocacy.
- Ardagna, S. & Lusardi, A. 2008. Explaining International Differences in Entrepreneurship: The Role of Individual Characteristics and Regulatory Constraints. Boston: Harvard University Department of Economics.
- Audretsch, D. B. 2002. The Dynamic Role of Small Firms: Evidence from the U.S. Small Business Economics, 18(1-3): 13-40.
- Autio, E. 2007. GEM 2007 Report on High-Growth Entrepreneurship, GEM Global Reports. London: GERA.
- Autio, E. & Hoeltzl, W. 2008. Europe Innova Gazelles Panel Summary Report. In E. Innova (Ed.), Europe Innova Panel Reports. Brussels: EU DG Innovation.
- Autio, E. & Acs, Z. 2009. Institutional influences on strategic entrepreneurial behaviors, Imperial College Business School Working Papers. London.
- Birch, D., Haggerty, A., & Parsons, W. 1997. Who's Creating Jobs? Cambridge, MA: Cognetics.
- Cassar, G. 2006. Entrepreneur opportunity costs and intended venture growth. Journal of Business Venturing, 21(610-632).

- Cassar, G. 2007. Money, money, money? A longitudinal investigation of entrepreneur career reasons, growth preferences and achieved growth. Entrepreneurship & Regional Development, 19(1): 89-107.
- Delmar, F., Davidsson, P., & Gartner, W. B. 2003a. Arriving at the high-growth firm. Journal of Business Venturing, 18(2): 189-216.
- Delmar, F. F., Davidsson, P., & Gartner, W. B. 2003b. Arriving at the high-growth firm. Journal of Business Venturing, 18(2): 189-216.
- Dreher, A. & Gassebner, M. 2007. Greasing the Wheels of Entrepreneurship? Impact of Regulations and Corruption on Firm Entry: SSRN.
- Henrekson, M. & Johansson, D. 2008. Gazelles as Job Creators—A Survey and Interpretation of the Evidence. Small Business Economics, in press.
- Hoffmann, A. & Junge, M. 2006. Comparing the Number of High-Growth Entrepreneurs Across 17 Countries, Fora Working Papers. Copenhagen: FORA.
- Höltzl, W. 2006. Gazelles Scoping Report, Europe Innova Scoping Reports. Wien: WIFO.
- Höltzl, W. & Friesenbichler, K. 2008. Final Sector Report Gazelles. In E. Innova (Ed.), Sector Reports. Vienna: WIFO.
- Levie, J. & Autio, E. 2008. A Theoretical Grounding and Test of the GEM Model. Small Business Economics, 31(3): 235-263.
- Murray, G. C., Hyytinen, A., & Maula, M. V. J. 2009. Growth entrepreneurship and Finance, in progress. Helsinki.
- Pukkinen, T., Stenholm, P., Heinonen, J., Kovalainen, A., & Autio, E. 2007. Global Entrepreneurship Monitor 2006 Finland Executive Report, GERA National Reports. London: Global Entrepreneurship Research Association.
- Reynolds, P. P., Bosma, N., & Autio, E. 2005. Global Entrepreneurship Monitor: Data Collection Design and Implementation 1998–2003. Small Business Economics, 24(3): 205-231.
- Storey, D. J. 1994. Understanding the Small Business Sector. London, UK: Routledge.
- van Praag, M. C. 2007. What is the Value of Entrepreneurship? A Review of Recent Research. Small Business Economics, 29(4): 351-382.