# Policies to support High Growth Innovative Enterprises

Final report from the SESSION II of the 2014 ERAC Mutual Learning Seminar on Research and Innovation policies

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by

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Final report from the 2014 ERAC Mutual Learning Seminar (MLS) on Research and Innovation policies: SESSION II. This work was funded by the European Commission (DG RTD) as part of the expert group supporting the policy learning activities of the European Research and Innovation Area Committee (ERAC) in 2014.

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# 1. Introduction

A growing amount of empirical evidence demonstrates that a few percent of enterprises which exhibit high growth, significantly contribute to job creation.[1,2] The positive effects of these "high growth enterprises" are not limited to employment alone. They account for a large share of job creation, exhibit above levels of productivity, export-orientation and internationalisation and contribute to the growth of other enterprises in the region.[3,4,5]

A strongly disproportional impact of high growth firms on the economy resulted in a political focus on these companies – their role is emphasized in Europe 2020, Innovation Union as well as in Council Conclusions on Innovation Union.[6] A share of fast-growing firms in innovative sectors (high growth innovative enterprises, HGIEs) has recently been proposed by the European Commission to be a part of the new Indicator of Innovation Output.[7]

High growth innovative enterprises were also in a focus of discussions at the 2014 Mutual learning seminar (MLS), organised within the frame of European Research Area and Innovation Committee (ERAC), a strategic policy advisory committee providing strategic input to the Council, the Commission and Member States on research and innovation issues. It had consequently focused on the innovative subset of high growth firms.

This paper builds on the background materials prepared for the previous MLSs[8,9] and on some recently published papers and reports. It summarizes the replies of the policy makers to the questionnaire,[a] presentations by prof. Colin Mason (Adam Smith Business School, University of Glasgow), dr. Stephen Lilischkis (empirica Communication and Technology Research, Bonn) and Thomas Blomgren-Hansen (Agency for Science, Technology and Innovation, Denmark) and discussions at the Mutual learning seminar 2014.

# 2. Themes selected and issues discussed at the MLS

## 2.1. Characteristics of High Growth (Innovative) Enterprises

A growing number of scientific papers are dedicated to high growth enterprises, yet various studies use different terminology as well as methodologies. The firms are usually referred to as high growth or high impact firms. Gazelles are a specific, less than five years old subset of high growth firms, although the term is sometimes also used to describe high growth firms in general.

In addition to the terminology, the studies use vastly different methodologies. High growth

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a Replies to the Questionnaire were received from AT, Brussels, Flanders, Walloon, CH, CZ, DE, DK, EE, FI, FR, IE, LT, MT, NL, NO, SE, SI, UK. The list of measures is based on empirica (empirica/Dialogic/FHNW 2013b). The questionnaire is available from http://era.gv.at/object/document/1195/attach/_3_SIP_MLS_introductory_paper_questionnaire.pdf may relate to growth in employment, sales, value added, productivity, etc. Growth can be measured in relative or absolute terms. Even if relative growth is measured, it may be expressed as percentage change, taking log-differences, etc., or may combine absolute and relative change in one number.[2] Studies also differ in growth requirement (e.g. 10 or 20% growth in employment per year), number of employees at the beginning of the period, time periods and whether only organic growth is considered, or also growth through acquisition. In addition, studies may also focus on different sectors, firm sizes and geographical coverage.[4]

The number of different approaches is partly due to the fact that the methodology used depends on the research question being addressed. The fact that this is a relatively young research topic plays a role as well. In 2006 Eurostat and OECD proposed a definition, according to which High-Growth Firms, as measured by employment (or by turnover), are enterprises with average annual growth in employees (or in turnover) greater than 20% a year, over a three-year period, and with ten or more employees at the beginning of the observation period.

A share of High Growth Innovative Enterprises (HGIEs) has recently been proposed by the European Commission to be a part of the new Indicator of Innovation Output.[10] Indicator of Innovation Output considers as HGIEs the firms with 10 or more employees and an average employee growth of more than 10% per year, over 3 years. Sector-specific innovation coefficients are used, reflecting the level of innovativeness of each sector. These coefficients are weighted with sectoral shares of employment in fast-growing enterprises. This definition of the Innovation Output indicator is also underpinned by a recent Eurostat data collection.

Different methodological approaches may have a profound effect on the results of the studies, which are consequently difficult to compare, evaluate and synthesize. Research biases and methodological problems were recently reviewed by Coad,[2] who nevertheless concluded that some findings are robust enough to be presented as "stylised" facts. Several of them speak against common assumptions about what high growth firms are and how they operate, which is why they are referred to as "myths"[11], while another study[12] lists them under characteristics of high growth innovative firms.

Some of these stylised facts, myths and/or characteristics are reviewed here as characteristics, although a general observation can be made that high growth enterprises are a very diverse group, mostly characterised by the lack of common characteristics. Where appropriate, the opinions of the policy makers during the MLS 2014 are included.

**High growth innovative companies tend to be young, but are rarely recent start-ups.[2,11,12]** While high growth companies are younger than the average enterprises, they are very seldom gazelles. In a study of HGIEs[a,12], only 1% of HGIEs were younger than five years,

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a 580 companies from 32 innovative sectors in Germany, France, the United Kingdom, Poland, Switzerland, the USA, while the majority of the enterprises were older than ten years and every fourth was older than 25 years. As commented by AT, it is not surprising that the share of gazelles is very low, as we have to assume that growth in companies is depending on a high degree on managerial skills and the experience of the entrepreneur or the management team, as occasionally the whole business model of the enterprise has to be changed. Similar is true for recent spin-offs from research institutes or universities.

The low shares of gazelles question the rationale behind the vast majority of high-growth support measures, such as business incubators, start-up support programmes and seed start up financing, as most of the HGIEs fall outside the scope of these measures.[11,12,13] Some academics argue that encouraging start-ups in general is lousy public policy[14] and that policy makers should focus instead on supporting the small subset of new businesses with high growth potential.[14] On the other hand, increasing the volume of start-ups may be an effective way of generating more high growth companies.[4,15] Botham[15] argues that "policies for high growth and high tech new starts need to build on policies for increasing the volume of new starts. The volume and quality approaches are not mutually inconsistent. A successful strategy for increasing quantity is perhaps a prerequisite for increasing quality." He acknowledges that there may be an argument for a more explicit focus on the innovative market segment.

**HGIEs may be of all sizes.[2,12]** Most of the HGIEs were found to be small to medium enterprises, with large companies comprising less than 10%.[12] In his review Henrekson[4] concluded that while high growth companies are not necessarily small and young, young age appears to be more important than small size. Relative importance of SMEs among the high-growth companies depends on the choice of growth indicators – they are favoured when relative increase in employment is used as a measure.[2] When a different growth indicator was used, about half of the employment among the so called "high-impact firms" was located in large firms with more than 500 employees.[b,16] It can be concluded that while most high growth companies are small, there is an important group of large companies among them which account roughly for half the total impact.

Just as this finding is less robust than the previous one, it also has less of an effect on current policies in support of HGIEs, which mainly focus on SMEs. The view of the majority of policy makers, who responded to the questionnaire, was that small and young companies are more likely to experience barriers regarding finance, access to skilled labour, knowledge and others, which is the rationale behind their public intervention (AT, DK, LT, NO, Flanders, Brussels).

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South Korea and Japan whose number of employees had grown at least one third in three consecutive years in the past five years were surveyed. For Poland, the target was revised to 22% in the past two years. The size threshold for enterprises to be included was ten employees at the beginning of the growth period.[12]

b In high impact firms sales and employment growth quantifier (product of a firm's absolute change and percent change in employment) double over a four year period.

**A small share of HGIEs are spin-offs/spin-outs and the minority of these originate from public research institutions.**[11,12] Policies often focus on the spin-offs from research organisations. However, spin-offs constituted only 3% of HGIEs, out of which a large majority were spin-outs from another company, rather than a public research institution.[12] As remarked by Colin Mason, university research is, or should be, focusing on products, markets and technologies of the future, not of today. It is therefore probably not surprising that businesses based on university research do not achieve fast growth, as their markets are small or do not exist. Together with their generally poorer knowledge of entrepreneurship and management skills, this may also contribute to the fact that the performance of company spin-outs in terms of sales growth and survival rates is considerably higher than in the case of spin-offs from public research institutions.[17] The strong focus of public policies on university spin-offs through incubators, start-up programmes, knowledge transfer and commercialisation programmes is thus felt to be exaggerated, when high-growth interrelationship is considered.[11,12] As DK pointed out, "the important issue here is high growth and not origin". Contrary to this, Brussels region emphasized that in their region, "HGIE are mostly spin-offs coming out from regional universities. They are often the results of publicly RDI funded projects at the universities", which is the reason behind the strong policy focus on spin-offs in the region.

**HGIEs exist in all sectors.**[2,11,12] The shares of HGIEs per industry did not differ much and were lower that 7% in all innovative industrial sectors included in the study.[12] This evidence speaks against a common belief that high-tech firms are more likely to achieve high growth. Contrary to this, the studies found that high-growth firms are almost equally present in high-tech and low-tech sectors.[18] Within the whole cohort of high-growth firms in UK, only around 15% were operating in high technology sectors.[19] Whilst many high-growth firms have been found to be highly innovative and engaging regularly in innovation activities, they do not necessarily have extensive R&D activity, nor do they typically seek to protect any intellectual property.[11] This suggests that prioritising e.g. manufacturing or high-technologies might not necessarily be the most effective approach for increasing the share of HGIEs in a specific country. However, as emphasized by SI, since the needs of the HGIEs are sector and country/region specific, a focus on the support of HGIEs might be justified in Smart specialisation areas prioritised by the regions.

**Growth is episodic in nature.**[2,11,12] According to Brown, Mason and Mawson,[11] common misbelief is that high growth firms experience steady linear growth, while in reality, rapid growth is erratic, unpredictable, sporadic and often of limited duration. Growth of almost half of the HGIEs interviewed in the empirica/Dialogic/FHNW study[12] started in the last five years. This feature makes these firms a moving target, which is very difficult to address with specific policy interventions. As Coad[2] states, "this is an extremely important and underappreciated finding that questions the value of high growth firms as vehicles for public policy".

In addition, as emphasized by Colin Mason, population of high growth enterprises is constantly changing. AT commented that due to this the new IUS indicator (3.1.3) on employment in fast growing enterprises in innovative sectors has to be challenged since it insinuates - from a politician's point of view - a steadily growing number of HGIEs.

**Different growth criteria result in different firms and have different macroeconomic effects.**[2]

Issues such as the choice of criteria according to which the potential HGIEs are selected are important. They may include high growth rates or growth in absolute numbers, and may focus on employment, sales, value added, productivity or a combination of these. The the choice of criteria may have a different macroeconomic effect and may result in a focus on different enterprises.[2] However, it was emphasized by IE that for Forfás-supported firms in Ireland, substantial overlap was found for turnover-based and employment-based high growth firms.

It had been proposed that high growth in absolute employment could be the choice if the goal is to quickly reduce unemployment, while relative growth in productivity could be used if economic policy targets long-run economic growth,[2] as promotion of fast growth in employment may come at a cost of reduced productivity growth.[20] According to Bravo-Biosca,[21] policy makers should not only focus on employment of high growth firms since "they are not on their own sufficient to address the wider failure to thrive and failure to shrink that hampers Europe's productivity performance."

There are many open methodological questions regarding HGIEs, including the challenge of defining/selecting the right HGIEs. Moreover, research findings summarized here point to certain characteristics of HGIEs which raise doubts about the appropriateness of some of the activities in their support. Namely, policies tend to focus on high-technology areas, despite the fact, that HGIEs are typically not over-represented in these areas. There appears to be an excessive emphasis on start-ups, although only very small shares of HGIEs are gazelles. Spin-offs from public research institutions also appear to receive more attention than warranted based on the share of such enterprises within the cohort of HGIEs.

There may be a number of reasons for such a misalignment between policies and characteristics of HGIEs. It may be due to insufficient understanding of characteristics of the HGIEs or due to the indiscrimination between policies supporting growth of enterprises and those supporting high growth firms. On the other hand, policy makers often follow more than one policy objective when designing their support measures. For example, a focus on high-tech or some other sectors may be a strategic priority of a country, which is then also reflected in the thematic policies when targeting HGIEs.

## 2.2 Policies to support future HGIEs and existing HGIEs

From the review of the facts and myths about the high growth innovative firms it can be concluded that they are a moving target – different growth criteria may result in different firms and macroeconomic effects, their high growth is not persistent and while they tend to be young, there are not many other characteristics that they have in common. Due to these issues, Coad[2] emphasizes that high growth firms will not be useful vehicles for public policy. He also stresses that not much is yet known about the aggregate implications of having a higher share of high growth firms, while Derbyshire[22] warns against high growth enterprises becoming a new policy obsession. Also, it is suggested that conceptual problems may lead to increasingly positive interpretation of results as one moves from research to policy.[23] On the other hand, it is a fact that a small number of high growth enterprises create a large share of new jobs. As authors of the NESTA report[11] argue, policy makers need to acknowledge the potentials of future high-growth firms and provide interventions that allow such firms to capitalize on these critical growth opportunities.

Design of specific policies addressing potential HGIEs and existing HGIEs is based on the ability of public administration to identify such enterprises. While this is easily accomplished in the case of HGIEs, once the criteria of growth are decided upon, identification of potential HGIEs presents a major problem. At the heart of the design of targeted measures supporting future HGIEs thus lies a challenge of whether they can be successfully identified. The opinions of countries, as revealed during MLS 2014, vary. While some countries believe that at present pinpointing high-growth companies is too difficult to accomplish or not possible at all and have decided to focus on general measures instead, some others have also specific measures that target potential HGIEs (Appendix 1).

The two main policy options are thus:

- a focus solely on improvement of framework conditions, business environment and removal of barriers or, in addition to these activities,

- specific measures, targeting HGIEs.

The following section addresses some of the policies, which are believed to contribute to growth of HGIEs. They are summarised in Table 1.[25]

**Table 1:** Typology of policy areas for supporting HGIEs[25]

| | |
|---|---|
| Framework conditions for innovation and growth | - Taxation, including tax landscape for investors<br>- Finance (public, private)<br>- Education (secondary and higher education)<br>- Publicly funded research |
| Stimulation of innovation demand | - Innovation public procurement<br>- Pre-commercial procurement<br>- Standardisation |

| | |
|---|---|
| | - Product market regulations<br>- IPR management<br>- Support to Internationalisation |
| Financing innovation and growth | - Equity provision<br>- Corporate venturing<br>- Loans<br>- Grants for R&D and innovative activities<br>- Dedicated tax measures |
| An ecosystem for innovative firms | - Science Parks, Incubators<br>- Clusters<br>- Human Networks<br>- Human resources<br>- Mentoring<br>Policies supporting entrepreneurship and high growth<br>- Awareness raising<br>- Skill development<br>- Accelerators |
| Business support services | - Consultancy<br>- Sectoral federations, professional associations<br>- Chambers of commerce<br>- Clubs |

- **Improvement of framework conditions, business environment and entrepreneurial ecosystem**

As suggested by Lilischkis "rather than trying to "pick winners", policy makers should set framework conditions right to prepare a fertile ground for winners to pick themselves",[26] while Colin Mason stressed also the importance the importance of the entrepreneurial ecosystems for the emergence of high growth enterprises.

Based on the survey of responses from HGIEs, Stephan Lilischkis suggested that among the framework conditions, company taxation and labour law are particularly important. Not only were taxation and labour regulations singled out by the HGIEs - in addition to the organisation of product market regulations, they were also recognised as the key economic institutions fostering rapidly growing firms using the theories of competence blocks.[27] The authors suggested that favourable economic institutions are likely to be of particular importance for the emergence of high growth firms due to the sensitiveness of competencies to good institutions and proposed that if policy makers would like to improve conditions for these firms, they need to adopt a broad approach and implement a wide array of complementary institutional reforms.[27] Another study[24] found that financial development, banking competition, and institutions that foster better contract enforcement are associated with a more dynamic growth distribution and a higher share of fast growing and fast shrinking firms, while more stringent employment/labour laws and generous R&D support seems to be associated with a lower number of high growth firms.

Many factors may present obstacles to firm's growth. Recently, the opinions about them were collected from the EU4 HGIEs coming from UK, DE, FR and PL[12]and policy makers, who replied to the MLS 2014 questionnaire. When evaluating replies it has to be kept in mind that barriers to growth are sector and country specific, they may depend on the choice of HGIE criteria and are likely to differ between potential HGIEs and existing HGIEs. As emphasized by AT, studies "show that information on the perception of innovation barriers for high growth firms provides no policy information since results are different depending on definitions of HGIE and time periods."

Assessing the results, it can be observed that access to finance and skilled labour ranks high in the opinion of both groups, existing EU4 HGIEs and policy makers. To the contrary, the importance of bureaucratic hurdles was emphasized by the HGIEs, while the large majority of policy makers had not identified them as a major problem. CH remarked that "over 99 per cent of private sector companies in Switzerland are SMEs and that they employ two thirds of the working population. Also, when compared to the large firms, SMEs are more heavily affected by administrative burdens and financing issues. These two points are regularly mentioned as an obstacle to growth of Swiss SMEs". On the other hand, non-entrepreneurial culture and risk of failure was perceived as a problem by some policy makers and understandably not by the successful HGIEs, for which such behaviour is largely uncharacteristic.

When reviewing the perceived needs for specific policies by existing HGIEs[25] and policy makers (Figure 1), the same methodological reservations apply as discussed above. Additionally, it is difficult to distinguish which of the policy areas are more effective in supporting HGIEs. As emphasized by NO, "a broad set of policy interventions are relevant to firm creation and growth. It is difficult to assess the relative importance of different policy interventions. We do not have a common methodology to assess impact across these policy measures. Where the need would be strongest might vary over time depending on both external factors such as economic development and target groups. E.g. during the financial crisis, equity and debt financing played a crucial role and were up-scaled."

41% of the HGIEs replied that they had used specific state support measures and almost all HGIEs had assessed the support as helpful. Among the public policies to support high growth, skills of employees, support to in-house R&D, IPR protection, public-private R&D, support of internationalisation and equity and debt finance were identified as most needed by the HGIEs. It was concluded that "apparently, HGIEs welcome any type of support as long as it improves their balance sheet." [25]

When the question was addressed to policy makers, they generally believed that there is a strong need for most of the measures. They have mostly identified equity finance, internationalisation, grant for R&D and innovation and enhancing the skills and high growth coaching as strongly needed specific public policies in support of HGIEs (Figure 1).

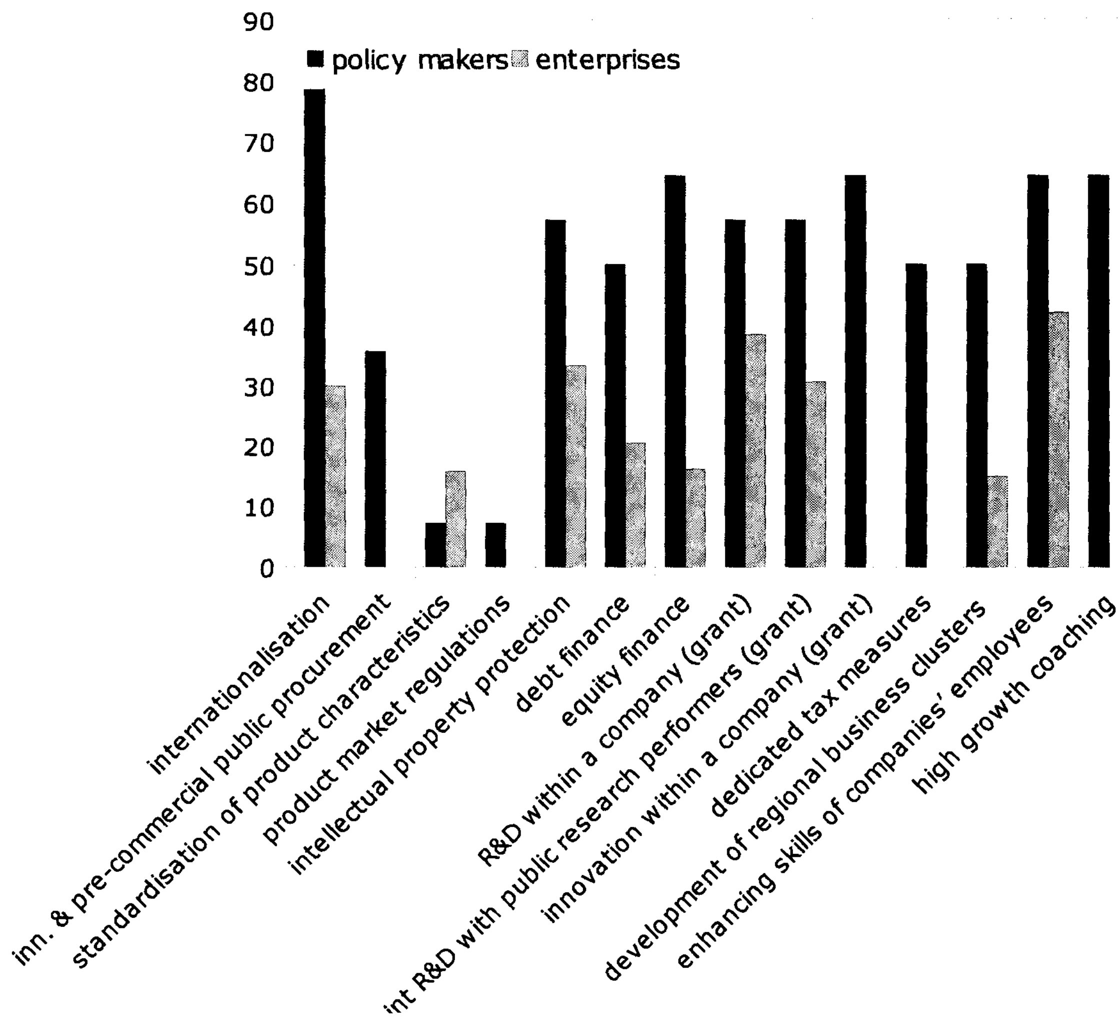


**Figure 1**: Main perceived needs (some need and strong need) for public policy by HGIEs in % of responding HGIEs (EU4; UK, DE, FR and PL)[25] and by policy makers from 17 countries/regions. HGIEs were not asked about the needs for procurement, product market regulations, dedicated tax measures and high growth coaching.

According to HGIEs, difficult access to finance was one of the biggest perceived barriers to firm's growth.[12] Among the various sources of financing, the importance of equity finance, particularly by private venture capital (VC) and angel investors was stressed by most policy makers. They are certainly an important source of funding for HGIEs and may, as opposed to public funds, bring added value such as specialised expertise in management, market entry and internationalisation. On the other hand, as emphasized by Colin Mason, inherent to the VC model is that HGIEs often get acquired. He proposed that stock exchange listings are promoted as an alternative exit. In addition, they may also be an important source of growth capital.

Venture capital funds typically invest in early stage, higher risk companies with growth potentials and global reach, mainly in high technology industries. As emphasized by the speakers in their presentations at MLS 2014, high growth firms are often not very early stage, nor are they predominately found in high-tech sectors. For the majority of HGIEs, debt funding is consequently not only a preferred source of funding, but also a more important one. Policy makers are advised to consider the importance of debt funding for financing of HGIEs.[12] Consideration of alternative sources of expansion capital, such as public listing, crowd funding, peer-to-peer lending and invoice financing is also proposed.[11] In addition to the access to finance for organic growth of HGIEs, IE stressed the importance of the availability of funding for growth through acquisitions.

To the contrary, NO emphasized that one would expect many of the HGIEs would get the necessary financing through private channels. They find it difficult to understand the policy rationale for targeted and tailor-made public support towards HGIEs. The goal is not necessarily to target the HGIEs as such, but rather to foster development of projects that have the potential to develop into HGIEs in those cases where there is a clear case for public intervention and in many cases, the best public policy is to only ensure good framework conditions. According to NO, the government should not crowd out private funding, but to fund firms that are socio- economically profitable (when the cost of the public intervention is included), that are unprofitable from a corporate perspective. In practice, this means that often "second best" projects are supported.

## 2.3 Design and implementation of specific HGIE policies

### *2.3.1. Identifying potential HGIEs*

Design of specific policies addressing potential HGIEs and existing HGIEs is based on the ability of public administration to identify such enterprises. While this is easily achieved in the case of HGIEs, once the criteria of growth are decided upon, identification of potential HGIEs presents a major problem.

Many studies have tried to identify the determinants of firm growth, which could help in identifying potential high growth firms. A review by Coad[2] found that growth does not seem to increase with profits and only marginally with productivity. While innovation has a limited impact on the sales growth rates of average firms, it is much more important for the fastest-growing firms. Growth is also positively correlated with size, exports, education of the entrepreneur and legal form. Despite a number of determinants, which may contribute to high growth, the quality of the correlations are low and do not allow for reliable prediction about the future high growth.[2] Brown, Mason and Mawson[11] also "doubt that a strong predictive capacity exists to precisely spot firms that are about to undertake a period of high growth", but believe that some firms seem to display some "early signs" which give them a higher proclivity to experience a subsequent period of high growth. They suggest that the policy makers look for a short-term period of above average growth (e.g. between 10-30%), or firms which have seen steady, if not very rapid, growth in the past few years, or have undergone a recent major organisational change, adopted a new business model or are seeking growth capital or support for international expansion (not just exporting). Mason[13] acknowledges that identifying these growth trigger points is an extremely challenging task for policy-makers. During the MLS 2014 he stressed that while administrations can't "pick winners", they can set up "HGF identification unit" to identify entrepreneurs with ambition. A key role of such a unit would be to examine the SMEs and identify those with some of the pre-high growth features. IE presented their approach, which is delivered by Enterprise Ireland. In 2006 a scaling team was established with experience and expertise in identifying and devising packages of support to assist high growth firms in growing to their full potential. Criteria used in identifying potential high growth enterprises includes revenue base, growth and profitability, efficiency of business model and scalability of sales (majority is business to business, not business to client) – although employment is a key priority in Ireland, experience has shown that jobs follow growth based on increased sales and revenue. Productivity is much more difficult to measure.

### *2.3.2. Delivery of specific support measures*

Apart from identification of potential or existing HGIEs it is important to consider what kind of targeted policies are needed and how best to deliver support. Stephan Lilischkis emphasized that policy makers should foster key growth factors, such as ability/readiness to target growth and internationalisation, while Colin Mason stressed the need for policies such as finance, strategic advice and support, overseas market entry and leadership development. Among the tools to implement such policies, he stressed the market-pull mechanisms (reflecting importance of end-users in innovation), marketing and, especially, sales support, internationalisation support, leadership development, relational support (advice from peers rather than policy makers and consultants, mentoring from other entrepreneurs), support to recruit and build boards and access to finance.

Having discussed briefly various policies and tools to support HGIEs, it is believed that a pre-defined set of measures, such as access to finances and skills development, can not efficiently address the diverse group of HGIEs. As AT pointed out "the support of HGIEs requires a systematic mix of policies that goes beyond targeted funding or consulting schemes."

The Forfás study, presented by IE has undertaken an examination of the support measures in other countries to promote and support HGIEs. It revealed that direct support measures are focused on the combination of:

- Specialist Coaching – emphasising tailored packages of training, advice, and decision support that is tuned to the developmental stage of the firm and focussed on aiding the targeting, plotting, and realisation of innovation-led growth strategies. Components deemed critical within the coaching provision include:

o Entrepreneurialism – skills and tools focussed on the management team supporting 'opportunity spotting', 'horizon scanning', network building, and 'innovativeness' in the navigation of markets and steerage of firm strategy;

o Management systems – skills and tools enabling management teams to manage resources, financial, human, or material, and coordinate operations in a manner facilitating continuous cycle of operational improvement, product or service development, and opportunity response.

- Access to Finance Packages – incorporating risk-finance (equity, grant, and loan), investment- and credit-readiness interventions;

- Core Skills Packages – providing support in key management domains such as internationalisation, intellectual property rights, human resources, legal, and regulation.

The study also determined that direct support to potential and existing HGIEs needs to be underpinned with wider interventions across the enterprise base to encourage and support the types of innovation behaviours identified as more typical of HGIEs.

In order to be able to deliver such a support, policy makers might have to assume a different delivery approach than is the case with e.g. typical subsidy schemes, which are more familiar to the public administrations. The Forfás study presented by IE has highlighted the following series of key principles for guiding pro-HGIE support initiatives:

- Adopt a 'whole system' approach to the firm, seeking to support innovativeness in the round, as opposed to simply focusing on the establishment of 'discrete' innovation projects;
- Avoid seeking to instil a single, standard model of innovation within the potential high growth enterprises. Reflecting the diversity of high growth firms, innovation solutions and capacity building being offered must be context and firm specific;

- Recognise, and be able to accommodate, the non-linear nature of their growth over the long-term;
- Provide training, advice and decision support that is tuned to the developmental stage of the firm and focussed on aiding the targeting, plotting and realisation of innovation-led growth strategies;
- Support the timing, selection, and utilisation of resources from the public and private sector (including finance, core skills, partners etc.) in response to market opportunity;
- Have a defined set of criteria for formal exit from the support, with transfer on to commercial provision from the market.

Colin Mason similarly argues that interventions should be timely, but also time limited. Support should be tailored, as the firms in this group need different kind of support measures, depending on their sector of performance, size, business cycle, to name a few. This could be achieved with account managers, in regular and close contact with companies and able to identify needs.

Such initiatives require involvement of various support institutions as well as peers from the industry, but also versatile knowledge, skills and past working experiences of the public administrators. In summary, design and implementation of support measures for HGIEs require an innovative and often more flexible public sector, which is also more tolerant to failure associated with higher risk endeavours such as delivery of support to potential HGIEs.

Three countries (DK, IE and FI) have presented their high growth initiatives at the MLS 2014.

**Denmark**

Current Danish initiatives with specific growth focus are Accellerace, Growth fund and Innovation incubators. Accellerace (since 2008) offers advice and funding for small innovative companies. The Danish Growth Fund (since 1992) provides seeds and venture capital for growth companies while the Innovation incubators provide seed and pre-seed capital for young innovative companies. It was stressed that the sheer existence of HGIEs doesn't necessarily make support easy and effective, as they are difficult to identify ex-ante. They are a heterogeneous group of companies and experience unstable and unpredictable growth. So far, limited success is observed with the three measures. Gazelle programme, which offered advice and funding for young growth companies, was terminated in 2010 since the goals were not reached. It was expected that 75% of participators would increase employment by 20% a year over 3 years. Only only 27% met the goal and additional 10% reached the range 13-20%. Poor success is observed from Innovation incubators, with pure financial return 80%, with no significant positive effects observed between the beneficiaries as compared to the match companies in survival rate, turnover and value added. Limited success is observed with Accellerace. It provided advice and funding for 200 companies, have so far raised EUR 72 million in total funding (including 15 million EUR state funding) and have created 400 new jobs. Beneficiaries have an impressive survival rate of 94%. Danish Growth Fund provided 0.3 Billion EUR investment between 2000-2013. Over a 3 year period, 1.1 million GDP increase per million directly invested and 14 new jobs pre million invested are observed. It was emphasized that it is yet unclear whether targeted initiatives are superior to a general improvement of the framework conditions.

**Ireland**

Ireland supports high growth firms with a Scaling programme (since 2006), Leadership for growth programme (since 2008) and Accelerated growth programme (since 2011). Scaling programme is an intensive structured approach with strategic review, peer networks and best practice seminars. In IE, experience has shown that that structured engagement, designed with the companies, based on three principles, is most effective in influencing companies to undertake the changes necessary to scale a high growth firm:

1. The leadership team

2. Exposure to global best practice in conjunction with practitioners i.e. CEOs and teams that have achieved scale.

3. Intensive support to implement this learning though peer networks, advisers and EI supports. Success in terms of high growth is through implementation of the learning. Clients learn from each other (peer to peer) through the Scaling Fora (CEO, CTO, HR Director, CFO), facilitated by Enterprise Ireland meet three times a year with a rotating chair and an agenda agreed by the group. The objective is to learn from each other and create a knowledge community supplemented by discussions with senior leaders from companies that have scaled.

There is also a strong focus of Enterprise Ireland supports for growth- engagement with Enterprise Ireland overseas teams to build exports, collaboration with third level to drive innovation and new product development, funding for growth. These clients deliver a significant return in terms of employment growth in Ireland, exports, R&D intensity and technology transfer.

Leadership for Growth is a programme developed with leading educational providers such as Stanford, IMD and Duke. It is a year-long programme with three one week educational modules, focusing on strategy, innovation, culture, acquisitions, financing for growth and execution.

The Accelerated Growth Engagement focuses on revenue generating start-ups with the goal of accelerating their growth through key revenue milestones of €1m and €5m. The focus is on building their skills in four areas, the CEO skill set (building and leading the team), the CEO network (building the peer to peer network for CEOs from an early stage), product development/International Sales strategy and funding for growth strategy.

The impact of the measures is currently being evaluated by Forfás.

**Finland**

In the last few years the overall emphasis of enterprise policy in Finland has shifted from incumbents to start-ups. The government and its agencies have assumed active roles in promoting risky new businesses and their global expansion. Two specific measures address high growth companies, Growth Track and Vigo Accelerator programme.

TEKES, the Finnish Funding Agency for Technology and Innovation, and five other relevant public bodies participate in a recently introduced Growth Track service, which aims to provide a one-stop-shop for companies seeking quick growth and internationalization. Each company entering the service is assigned a civil servant probing and coordinating public services the company might need. Applications are processed in 6 weeks as companies are treated as special customers. A related Team Finland concept packages public internationalization support both separately and in coordination with the Growth Track service.

Vigo Accelerator programme (since 2009) is the the most ambitious and innovative of the recent policy measures. Vigo is an accelerator program for dynamic startups, launched and executed by Ministry of Employment and the Economy together with public business developers and funders TEKES and Finnvera. It bridges the gap between early stage technology firms and international venture funding. The backbone of the program is formed by the Vigo Accelerators, carefully selected independent companies run by internationally proven entrepreneurs and executives. These Accelerators help the best and the brightest start-ups to grow faster, smarter, and safer into the global market. Accelerators are not consultants, they are co-entrepreneurs who invest in the companies they work with then to guarantee common goals and passionate development effort. Vigo programme offers:

- Funding: Selected start-ups can receive funding from one of the Vigo Accelerators, who also pay a key role in attracting growth funding from other sources.

- Expertise and Experience: Vigo Accelerators' key personnel are highly experienced business leaders with a proven track record in serial entrepreneurship. They offer unparalleled expertise for new enterprises to achieve success.

- Networking and Connections: The program participants maintain broad networks offering a wide range of contacts that can significantly speed up the growth.

- Risk Sharing and Credibility: Accelerators actively participate in business development and carry part of the business and financial risk to improve the quality and the credibility of the companies. Accelerators can take a very hands-on approach.

In the first 4 years of the program, Vigo portfolio companies have raised more than 290 million EUR, of which 220 EUR million is private funding. In the future, a focus is planned on midsize industrial companies (to 10 - 200 million EUR turnover). It is also planned to attract more private funding, by e.g. introducing favourable taxation.

### *2.3.3. Challenges in delivering the specific support*

Delivery of the support to HGIEs presents many challenges to the policy makers. They act on very limited knowledge and identification of the potential HGIEs is far from straightforward

(DK, AT, FI), the companies supported are high risk, while the atmosphere for risk taking is not encouraging (FI). Support needs to be timely, yet public administrations are slow to react. Difficulties are encountered when combining public and private actions (FI). Policy makers also need to acknowledge that actions present high risk for public administration involved in the delivery of the specific support actions.

As mentioned by Stephan Lilischkis and Thomas Blomgren-Hansen, there is currently little scientific evidence about effectiveness and efficiency of specific HGIE support measures.

## *3. Summary of main findings of policy relevance*

- A few percent of enterprises, which exhibit high growth, significantly contribute to job creation. The positive effects of these "high growth enterprises" are not limited to employment alone. They account for a large share of job creation, exhibit above levels of productivity, export-orientation and internationalisation and contribute to the growth of other enterprises in the region.

- A growing number of scientific papers are dedicated to high growth enterprises, yet various studies use different terminology as well as methodologies. These have a profound effect on the results of the studies, which are consequently difficult to compare, evaluate and synthesize. Some findings are nevertheless robust enough to be presented as facts. They point to certain misconceptions about high growth innovative enterprises (HGIEs) which may decrease the effectiveness of some current public policies in support of HGIEs:

  - HGIEs are very seldom new or very young businesses. This questions the rationale behind the high-growth support measures, which focus on start-ups. While some academics argue that encouraging start-ups in general is lousy public policy, increasing the volume of start-ups may be an effective way of generating more high growth companies.

  - Very few are university spin-offs. The strong focus of public policies on university spin-offs might be exaggerated, when high-growth measures are considered.

  - HGIEs are not prevailing in high-tech sectors. Whilst many high-growth firms have been found to be highly innovative, they do not necessarily have extensive R&D activity, nor do they typically seek to protect any intellectual property.

  - HGIEs may be of all sizes. While most high growth companies are small, there is an important group of large companies among them which may account for up to half of the total impact.

  - Growth is episodic in nature. Rapid growth is erratic, unpredictable, sporadic and often of limited duration.

- High growth firms are a moving target – different growth criteria may result in different firms and macroeconomic effects, their high growth is not persistent and while they tend to be young, there are not many other characteristics that they have in common. As a result, some countries believe that at present pinpointing high-growth companies is too difficult to accomplish or not possible at all and have decided to focus on general measures instead, while some others have specific measures that target potential HGIEs. The two main policy options are thus:
  - a focus solely on improvement of framework conditions, business environment and removal of barriers or, in addition to these activities,
  - specific measures, targeting HGIEs.
- Framework conditions believed to be particularly important for high growth innovative enterprises are company taxation, labour law and product market regulations. Financial development, banking competition, and institutions that foster better contract enforcement were found to be associated with a more dynamic growth distribution and a higher share of fast growing and fast shrinking firms, while more stringent employment/labour laws and generous R&D support seems to be associated with a lower number of high growth firms. Among the perceived barriers to growth, HGIEs emphasized access to finance, skilled labour and bureaucratic hurdles. In addition to framework conditions, the importance of the entrepreneurial ecosystems was emphasized.
- Among the various sources of financing, the importance of equity finance, particularly by private venture capital (VC) and angel investors was stressed by most policy makers. They are certainly an important source of funding for HGIEs and may, as opposed to public funds, bring added value such as specialised expertise in management, market entry and internationalisation. On the other hand, inherent to the VC model is that HGIEs often get acquired. It was proposed that stock exchange listings are promoted as an alternative exit, but also as a source of growth capital.
- Venture capital funds typically invest in early stage, higher risk companies with growth potentials and global reach, often in high technology industries. Since high growth innovative firms are not often early stage, nor are they predominately found in high-tech sectors, debt funding is not only a preferred source of funding, but also a more important one for the majority of HGIEs. Consequently, policy makers are advised to consider also the importance of debt funding, while keeping in mind that the government should not crowd out private funding.
- Design of specific policies addressing potential HGIEs and existing HGIEs is based on

the ability of public administrations to identify such enterprises. While this is easily achieved in the case of HGIEs, once the criteria of growth are decided upon, identification of potential HGIEs presents a major problem. It was proposed that certain growth triggers, such as short-term period of above average growth, or firms which have seen steady, if not very rapid, growth in the past few years, or have undergone a recent major organisational change, adopted a new business model or are seeking growth capital or support for international expansion (not just exporting) might help in identification of potential high growth firms. Formation of some form of 'high growth identification unit' may be considered.

- Specific support measures for high growth companies are often a combination of finance, strategic advice and support, international market entry and leadership development. Such measures are found in UK, IE, DK, FI, Flanders, EE and AT.

- Policy interventions should be timely, but also time limited. Support should be tailored, which could be achieved with account managers, in regular and close contact with companies and able to identify needs. These initiatives also require involvement of various support institutions, public and private, and rely on versatile knowledge, skills and past working experiences of the public administrators.

- Delivery of the support to HGIEs presents many challenges to the policy makers. They have to act on very limited knowledge. Identification of the potential HGIEs is far from straightforward, the companies supported are high risk, while the atmosphere for risk taking is not encouraging. Support needs to be timely, yet public administrations are often slow to react. Difficulties are encountered when combining public and private actions, to name a few. Policy makers also need to acknowledge that actions present high risk for public administration involved in the delivery of the specific support actions.

- So far, convincing data demonstrating the effectiveness of various specific high growth support measures are lacking. This is partly due to the fact that several of them were introduced fairly recently and partly due to the methodological difficulties, such as identification of a match group of firms, which have not received public support.

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## *Appendix 1*

Table 1: Answers to the question "*Please list existing specific policy measures in support of HGIEs in your country/regions*". Policies for innovative enterprises in UK, DE, FR and PL were analysed by Lilischkis et al [25].

| Country | name of the measure | description |
|---|---|---|
| **Belgium – Brussels** | SOIB Spin offs | Since 2006. Grants. 32 of projects funded between 2006-2013, 10 companies established. It targets university researchers who wish to establish their own company. The program finances the final phase of preparation of innovative services, products and processes and helps the entity to set up the company (spin off). The funding is addressed to the universities (for researchers-entrepreneurs) (for creation of spin offs) and to the private enterprises (creation of spin outs).<br>Funding is foreseen for 3 years and covers salary for researcher entrepreneur; training in management for the researchers, valorisation costs , demonstration costs and the costs of experimented Manager ( alter ego) who helps the researcher to set up the company. Additionally the grant covers the consulting services linked with the set up of spin off (business plan, financial plan,).<br>As for 2014, Innoviris has granted 32 "Spin Offs in Brussels" projects for 11 mio€ (2006-2013). From these 32 SOIB, we have actually 12 created and functioning companies. |
| | Young Innovative Company | Since 2011. This scheme is dedicated to existing innovative established start-ups that need to elaborate the demonstration phase of their projects and prepare the market entry. This measure exist since 2011 and each year gives the grant of 300k€ |
| | Impulse (business services) | This agency proposes the business services to regional SMEs and to the HGIE in particular (business plan, financial plan, coaching, training in creation of company, specialized coaching on company development). The agency hosts EEN and NCP services in Brussels region. (Dedicated to established innovative SMEs ) |
| **Belgium – Flanders** | Gazellensprong | Since 2011. Support to internationalisation, skill development, consultancy, finance. Scheme targets fast growing enterprises that achieve a cumulative growth of 20% in personnel (starting with a minimum of 10 employees) over a continuous period of 3 years. Actors involved in the implementation: Flemish government, Enterprise Flanders, Business Angels Flanders, enterprise/sector organisations, private consultant offices. In 2012-13 113 enterprises were included. 73% of participating companies are SMEs, around 62% of the participating companies are more than 10 years old, only 29% are industrial players, 45% are service companies. Preliminary evaluation concluded that a steep increase in turnover and employability was achieved. |
| **Belgium – Walloon** | no HGIE specific measures | A number of measures target SMEs and start-ups, but are not targeting mainly HGIEs. |
| **Czech Republic** | no HGIE specific measures | The issue of HGIEs is included in the National Competitiveness Strategy and is a part of the National RDI policy 2015 updated in 2013. HGIEs should be addressed in the national RIS3 as well. |
| **Denmark** | Accelerance | Since 2009/2010. Targets SMEs with growth potential and financing constraints. It has in total worked with app. 200 start-ups and spin-offs. Accelerate, supports start-ups who have a unique product or service and the ambition to take their business further. It also spots, trains and funds startup talents to help them develop faster and cheaper. The staff works dedicatedly to share and enhance their own knowledge on entrepreneurship and business development. It is based on a believe that entrepreneurship can be taught and learned. Some lucky few just happen to be in the right place at the right time, but most successful startups have worked hard for their success. 200 companies helped. 401 jobs created, start-ups have received EUR 72 m in total funding and investments |

| | | |
|---|---|---|
| | The Danish Growth Fund | 1992. Start-ups and spin-offs. Has co-financed 4.500 Danish companies with a total commitment of DKK 12 bn. By providing loans and loan guarantees, DGF aims at alleviating the credit constraints for promising entrepreneurs and SMEs, who lack sufficient collateral and/or track record to obtain a bank loan on normal market terms. And by investing in companies and funds in the venture capital (VC) market, DGF aims at alleviating the finance constraints for innovative entrepreneurs and SMEs who need equity capital to develop and grow their businesses. |
| **Germany** | no HGIE specific measures | A specific HGIE policy is not followed by the Federal Government, since this would imply a "pretense of knowledge" about future growth trends in different target groups. Most funding schemes are widely or completely open for all branches and/or technologies. |
| **Estonia** | Enterprise development programme | Since 2013. Comprehensive support for HGIEs, incl. diagnostics, grants, training, coaching, according to the development needs. It is based on a 2-3 year development contract between the company and Enterprise Estonia. Currently a pilot programme launched, full-scale launch in 2015. |
| | Start-up Estonia | Objective is to promote the creation and growth of enterprises with global ambition. The activities funded are idea validation and investment readiness, early stage investment program, promoting investor networks, training program for founders and angel investors, marketing Estonia as a start-up destination. The expected outcomes of the programme are 400 global start-ups, 50 start-ups acquire >1 MEUR follow-on investment, 50 start-ups generate annual turnover >1 MEUR and 500 high value jobs in Estonia. |
| **Ireland** | Scaling Programme | Since 2006. Currently 60 companies across sectors. €5m+ revenues growing at 20% pa. Intensive structured approach with strategic review, peer networks and best practice seminars. Objective for companies to achieve revenue benchmarks of €20m, €30m, €100m. |
| | Leadership4Growth Programme | Since 2008. 300 compleated. Aims to enhance the strategic leadership capabilities of ambitious CEOs/Managing Directors. Delivered in partnership with IMD Business School, Lausanne, Switzerland (delivery & content) and the IMI (1:1 business advice/coaching). Evaluated under Forfas evaluation in 2013. |
| | Accelerated Growth Programme | Since 2011. 80 companies. Revenue generating High growth start ups. Two year intensive programme with best practice, peer to peer and business advisers with emphasis on leadership development, sales traction and implementation. |
| **France** | no HGIE specific measures | The policies in support of HGIEs are considered important. The activities are focused on promotion of an ecosystem which favours HGIE's development. |
| **Lithuania** | no HGIE specific measures | The Ministry of Economy of Lithuania (MoE) shares the view that high-growth innovative companies are important for economic competitiveness and development. However, the same fiscal and non-fiscal measures and policies are applied to this type of companies as to other innovative companies. At the moment, Lithuanian policies are focused on boosting overall innovation capacities of local companies. Since Innovation impacts the emergence of HGIEs, the MoE believes that an active governmental innovation policy might lead to an increased rate of the emergence of HGIEs in the future. Having in mind that many HGIEs tend to be small and relatively young firms, the MoE Policy measures deal with problems start-ups usually are faced with. |
| **Malta** | no HGIE specific measures | As a country with a very young R&I system which is still at the capacity-building stage, Malta's main priority is that of putting in place a baseline holistic support system. There are no R&I policies specifically tailored to particular types of companies, though it is not excluded that through eventual ongoing policy evaluations and dialogue with the private sector, a more defined need for such policies may be identified and pursued. |
| **Netherlands** | no HGIE specific measures | After extensive research into the topic, NL had decided that rather then trying to accurately capture and predefine the group of HGIEs it would focus on market failures that are likely to hamper growth without having to explicitly identify HGIE first. |

| | | |
|---|---|---|
| **Austria** | Frontrunner | Since 2013. Number of companies involved 15-30. Grant. Aims at Securing / Reaching a front runner position. Targets economically important group of internationally active technology and/or innovation leaders in all sectors. Criteria: Development of business strategy, high risks of projects, new markets, technological and innovative leadership . |
| **Slovenia** | no HGIE specific measures | In Slovenia policies in support of HGIEs are becoming increasingly important. The importance of HGIEs is stressed out for example in Slovenian industrial policy and also in Slovenian Operational Programme 2014 – 2020 (draft). |
| **Finland** | Growth track service | Aims to provide a one-stop-shop for companies seeking quick growth and internationalization. Each company entering the service is assigned a civil servant probing and coordinating public services the company might need. The number of companies participating in the program will reach 150 by the end of 2012. |
| | Team Finland | Team Finland concept packages public internationalization support both separately and in coordination with the Growth Track service. |
| | Vigo Accelerator programme | The current nine Vigos are private companies run by experienced entrepreneurs. They provide contacts, expertise, and funding (some one-third of which comes from public sources) for high-quality and internationally-focused growth companies. The aim of the program is to ripen promising companies for international venture funding. In the first two years of operation, the Vigo portfolio companies raised some 70 million euros in funding. MEE estimates that by the end of 2015 portfolio companies should have attracted some 200 million euros of private funding. |
| **Sweden** | no HGIE specific measures | Swedish national innovation strategy takes a holistic approach to promote high level of knowledge, innovation in all forms and contribution to societal challenges as well as growth. |
| **Norway** | Global Entrepreneurship Training | Since 2009. Run by Innovation Norway, the scheme provides consultancy and networking. In 2012, 25-30 companies were involved. The scheme is specifically targeting "high potential start-ups"/"born globals"/"high growth SMEs". The start-ups are in or about to enter the stage of market introduction. Open for companies from industries including (but not limited to): oil & gas, maritime, ICT, clean tech, renewable energy, medtech and biotech. The selection criteria is proven (or promising) international market potential, potential for high growth and high tech product/service. The scheme has not yet been evaluated. |
| **Switzerland** | no HGIE specific measures | Direct funding mechanisms for firms are mostly non-existent. In view of the liberal Swiss policy approach, the focus on HIGE is misleading as it implies a superior public knowledge with respect to a specific type of seminal firms. |
| **UK** | Growth Accelerator programme | UK has introduced the Growth Accelerator programme (http://www.growthaccelerator.com/) to target support at high growth SMEs (at any stage in their lifecycle) and help to overcome challenges around access to finance, leadership and management, business development and developing and protecting innovation. The Government has set out a plan to developing a tailored, joined up service for small businesses with the potential to grow, so that they can apply for Government support and get a package tailored to their needs. Details are set out in "Small Business: Great Ambition" (December 2013). https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/266212/bis-13-1313-small-business-great-ambition-FINAL.pdf |