



High-Growth SME Support Initiatives in Nine Countries: Analysis, Categorization, and Recommendations

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This study is one of the high growth entrepreneurship studies commissioned by the Finnish Ministry of Trade and Industry and executed as part of the Entrepreneurship Policy Programme of the Government. Several empirical studies confirm the importance of high-growth firms for job creation and economic growth. In order to promote economic growth, new jobs and new growing firms who actually generate employment, are needed. At the aggregate level, growing new firms are required for aggregate job creation. At the firm level, firm-level growth is necessary for the provision of high-quality jobs. In this study we examine policy measures designed specifically for high-growth entrepreneurial firms, in an attempt to understand their anatomy, as well as present theory and recommendations for the design of more effective high-growth entrepreneurship policies. There have been too few studies that would provide a comprehensive treatise on the high-growth firm and its relation to SME Policy and Innovation Policy. The over-reaching objective of this paper is to identify and explore effective policy measures to support high-growth firms.

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Title High-Growth SME Support Initiatives in Nine Countries: Analysis, Categorization, and Recommendations		
Abstract <p>Several empirical studies confirm the importance of high-growth firms for job creation and economic growth. In order to promote economic growth, new jobs and new <i>growing</i> firms who actually generate employment, are needed. At the aggregate level, growing new firms are required for aggregate job creation. At the firm level, firm-level growth is necessary for the provision of high-quality jobs. In this study we examine policy measures designed specifically for high-growth entrepreneurial firms, in an attempt to understand their anatomy, as well as present theory and recommendations for the design of more effective high-growth entrepreneurship policies. There have been too few studies that would provide a comprehensive treatise on the high-growth firm and its relation to SME Policy and Innovation Policy. The over-reaching objective of this paper is to identify and explore effective policy measures to support high-growth firms.</p> <p>The report seeks to identify insights relating to high-growth firms in particular, in an attempt to understand how these insights can be translated into effective support for high-growth firms. The broad objective of study was to find out what governments in different parts of the World are doing in order to promote entrepreneurial firm growth. The research identifies and describes policy and support initiatives specifically aimed at supporting rapidly growing entrepreneurial firm. The aim is to develop frameworks for understanding the anatomy of high-growth entrepreneurship policy measures and develop a framework for categorizing policy practices aimed at high-growth enterprises.</p> <p>The report also publishes a catalogue of growth-oriented policy measures across nine participating GEM countries. Interviews and archival materials were used to collect the data. The most important data was in the form of standard sheets for describing each measure that had been distributed to the team for data collection. The content-based and thematic categorization brought forward interesting results. Summarized, the key findings are: initiatives promoting rapid entrepreneurial growth should be highly selective; should have proactive approach; participation of private-sector actors is preferable; should address managerial motivation and skills; involve highly customized and tailored management development activities; policies require broad-based measures which address multiple aspects of policy design, implementation, and monitoring; at the level of the individual, firm, sector, and society. These policies should be horizontal by origin.</p> <p>MTI contact person: Industries Department/Kimmo Hyrsky, tel. +358 9 1606 2641</p>		
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This report has been written as a joint effort between Erkko Autio of Imperial College and Matthias Kronlund of Helsinki School of Economics. Professor Anne Kovalainen of Turku School of Economics acted as the project supervisor and has contributed to recommendations.



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1 Introduction

1.1 Background

Even though entrepreneurship is a key focus in industrial policy, entrepreneurship as such is not likely to be a magic bullet for economic development. The overwhelming majority of all new firms have only a very limited economic impact, since the majority of new firms will neither innovate nor grow, nor will they even intend to do so (Autio, 2005b). For example, in Finland, the median size of the new firms three years after their start-up was one, i.e. the average firm employed only the focal entrepreneur (Hyvärinen and Rautiainen, 2006). The overwhelming majority of new firms will never actually employ anyone other than the founder. In Finland, only 7% of firms wanted to grow in 2004 (KTM, 2004b).

Studies also show that most new firms do not innovate in the sense of developing new products and technologies or conquering new markets. Most new businesses service a highly local market, most often focusing on small services or small-scale trading with quite established or even ‘old-fashioned’ products (Hyvärinen and Rautiainen, 2006). In Finland, only about 5–10% of new firms can be considered innovative (Rouvinen and Ylä-Anttila 2004).

While self-employment for entrepreneurs clearly is better than unemployment, it is not evident that self-employment is in any way preferable to employment. In fact, employed work may often be socially and economically preferable to self-employment. Larger firms still have many benefits compared to one-man or micro-firms, and studies suggest that the quality of jobs tends to improve, at least initially, as a function of firm size.

The above findings help explain why, in the Global Entrepreneurship Monitor study, the most “entrepreneurial” countries in the world, measured as the degree of self-employment, are developing economies such as Peru and Uganda. In these countries, becoming an entrepreneur is often an issue of necessity rather than choice. In such countries, new firms are hardly an engine for economic growth, even though self-employment probably matters greatly in providing subsistence for important sections of the population.

Several empirical studies confirm the importance of high-growth firms for job creation. In the United Kingdom, 4% of new start-up survivors in the UK were responsible for 50% of jobs created by all new firms 10 years later (Storey, 1994). In the U.S., 3% of the fastest growing firms, so-called “gazelles”, generated over

70% of the new jobs created by new firms between 1992 and 1996 (Birch et al., 1997). Recently, the first GEM global report on “high-expectation entrepreneurship” (Autio, 2005) showed that high-aspiration entrepreneurs representing less than 10% of the population of nascent and new entrepreneurs, were responsible for up to 80% of total expected job creation by all entrepreneurs.

In order to promote economic growth, therefore, what really is needed are new jobs and new *growing* firms who actually generate employment. At the aggregate level, growing new firms are required for aggregate job creation. At the firm level, firm-level growth is necessary for the provision of high-quality jobs. Both of these policy objectives will be better serviced if entrepreneurship support policies are focused specifically on promoting entrepreneurial firm growth. In this study we examine policy measures designed specifically for high-growth entrepreneurial firms, in an attempt to understand their anatomy, as well as present theory and recommendations for the design of more effective high-growth entrepreneurship policies.

1.2 Objectives

Thus far, surprisingly little research has been done explicitly on the needs of high-growth firms and their implications for policy. Most studies either ignore the importance of high-growth entrepreneurial firms for economic growth, or they implicitly assume that most entrepreneurial firms are growth-oriented. There have been few studies that would provide a comprehensive treatise on the high-growth firm and its relation to SME Policy and Innovation Policy.

The over-reaching objective of this paper is to identify and explore effective policy measures to support high-growth firms. To do this, we first review literature on entrepreneurship, in an attempt to understand who starts high-growth firms. Second, we review pertinent literature on strategic management – most notably on the resource-based view of the firm – to examine how and why firms grow. Third, we review policy literature, with a focus on innovation support, as well as on policies that investigate government support to SMEs. The review seeks to identify insights relating to high-growth firms in particular, in an attempt to understand how these insights can be translated into effective support for high-growth firms.

Specifically, we seek to:

- 1 Identify and describe policy and support initiatives specifically aimed at supporting rapidly growing entrepreneurial firms

- 2 Develop frameworks for understanding the anatomy of high-growth entrepreneurship policy measures
- 3 Develop a framework for categorizing policy practices aimed at rapidly growing entrepreneurial companies
- 4 Publish a catalogue of growth-oriented policy measures across participating GEM countries

This project has been carried out in collaboration with eight other country teams that participate in the Global Entrepreneurial Monitor (GEM) initiative. The study was initiated and coordinated by GEM's Finland team, which includes researchers from Helsinki School of Economics, as well as from Turku School of Economics. The central coordination of the study, as well as the analysis and report production, were funded by the Ministry of Trade and Industry of Finland.

2 Development of a High-Growth Firm

There are many stages on the route from an idea to a successful high-growth company. The process can be simplified into discrete steps in a “pipeline” for high-growth firms as depicted in Figure 1.

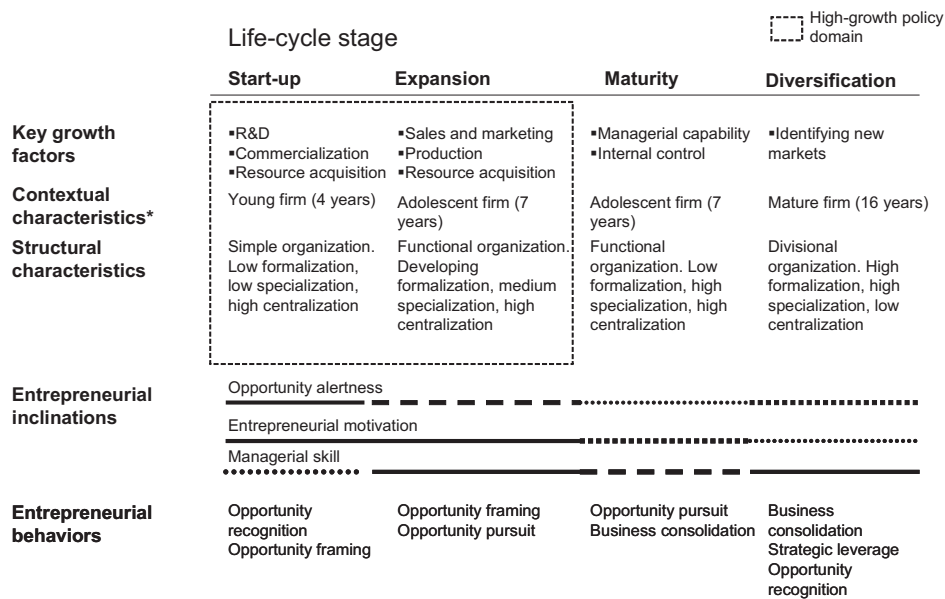


Figure 1. Schematic illustration of stages of growth in an innovation-driven start-up firm

The illustration in Figure 1 is adapted for innovation-driven firms who grow organically. Typically, innovation-driven firms are established to pursue an identified technological opportunity, for which commercial applications are envisioned (Autio, 1997; Clarysse et al., 2004; Vohora et al., 2004). This process is heavily conditioned by the innovator’s own strengths and competencies, as well as his or her professional background (Shane, 2000). However, continued alertness to technological and commercial opportunities is important in the start-up stage for such firms, because for most firms, the first conception turns out to be over-simplistic, and even misleading, and the firm’s business idea needs to be constantly re-shaped to match commercial realities (Autio et al., 1998). Opportunity alertness, as well as entrepreneurial motivation, therefore, are critical entrepreneurial behaviors and inclinations during the start-up stage, whereas only moderate managerial skills are required. Depending on successful translation of the original technology-driven

business idea into the realities of the marketplace, the venture may enter a growth stage, providing reasonable luck, sufficient entrepreneurial motivation to grow the firm, as well as success in legitimization and resource mobilization. During the expansion stage, entrepreneurial motivation continues to be an important precondition, whereas the importance of opportunity alertness is gradually diminished. However, increasing managerial skills are required to initiate, manage, and sustain growth. This is arguably the most difficult stage in any firm's life cycle to manage. After successful growth the firm needs to consolidate its position and gradually start looking for diversification and re-expansion opportunities, perhaps in related fields. These stages, however, fall increasingly outside the scope of entrepreneurship support policies and in the realm of established industrial policy.

A serial view of growth, such as the one presented in Figure 1, is simplistic, in the sense that there are many paths through which growth can be achieved (e.g., through acquisitions and mergers, for example). Not all growth needs to be driven by technological innovation, nor does all growth have to happen organically and from a small initial size. However, a schematic illustration, even if simplistic, lends itself well for the illustration, analysis, and categorization of entrepreneurial growth policy initiatives.

Entrepreneurship is an opportunity-oriented behavioral process initially driven by individuals and teams. This process takes place in a given national, cultural, and industry context, and the process ideally results in a successful growth firm. This implies numerous levels of application and analysis for entrepreneurial growth policy. Each level carries its own constraining and enabling factors. An overview of the different levels of analysis in entrepreneurship support policy is provided in Figure 2.

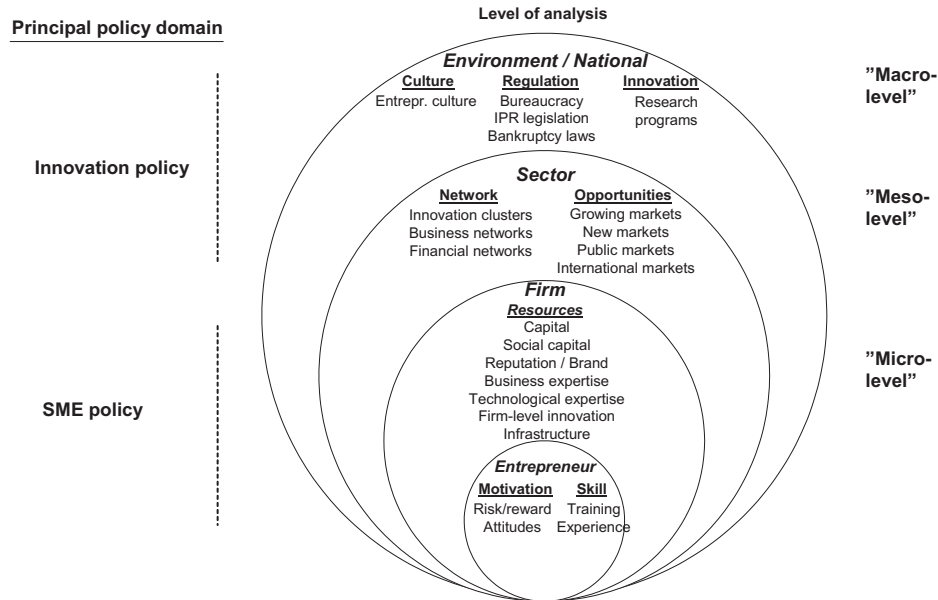


Figure 2. Levels of analysis in entrepreneurship support

Starting up a new firm is most often the decision of an individual entrepreneur(s), and primarily driven by individual motivations, skills, and behavioral inclinations¹. Growth motivation is the result of management team's and individual's attitudes and cognition, which are heavily influenced by available social referents (Wiklund, 1998). Whether or not growth will be successful will depend on the firms' resources, capabilities and strategy (firm-level) but also external market factors (sector and national-level) and technological externalities will affect this process. Internationalization depends on the same factors, but typically requires even greater (firm-level) resources and capabilities than domestic growth does.

2.1 Firm Birth

Entrepreneurs constitute a very heterogeneous group and so do the new ventures they create. In addition to personal traits and motivational dispositions, this heterogeneity is affected by, e.g., family background (Rassan, 1988; Stanworth et al., 1989),

¹ For example, active spin-outs are typically initiated at the organizational, not individual, level, and they may be driven by organizational rather than individual motivations.

education (Evans and Leighton, 1990), current employment status (Blanchflower and Oswald, 1990), and employment history (Keeble et al., 1992; Cross, 1981). However, predicting who will start a firm remains difficult, and most entrepreneurs, when asked, cite unique situational conditions (‘several factors coming together’) as their reason to start a firm (Gartner, 1988).

Even if it were possible to predict who may be more prone to become an entrepreneur, this still provides little insight into why an individual goes about starting a new business, under what circumstances, and what policy-makers can do about influencing his choice. To introduce some order to this complexity, it is useful to clearly distinguish between different levels of analysis behind the creation of new firms, as well as to focus on those issues that policy measures actually can influence.

Starting from the aggregate level, (Verheul et al., 2001) presented an ‘eclectic’ model on entrepreneurship supply, with a focus on various demand and supply factors as the drivers of macro-level entrepreneurship, see Figure 3.



Figure 3. Determinants of entrepreneurship (adapted from Verheul et al., 2001)

In the model, macro-level changes in industrial structure due to globalization and technological development, combined with an increasing diversity in customer demand for products and services, create opportunities for entrepreneurship. On the supply side, individual-level factors such as external resources (e.g. capital), individual ability, and personal preferences of potential entrepreneurs determine the choice to become self-employed. In making this choice, individuals weigh risks and rewards of entrepreneurship against occupational alternatives. Researchers often refer to the demand and supply side factors and “pull” and “push” factors respectively (Storey, 1994).

For the individual entrepreneurial decision, a match between three factors is required (Stevenson, 1996): opportunity, motivation, and skill. There needs to be overlap between all three for action to happen. It is important to recognize that the three factors work together, and overlap between the three is critical. Several authors have emphasized that, for entrepreneurial action, opportunities do not exist

alone as self-standing material realities, but rather, they are ‘produced’ by an entrepreneur-opportunity nexus (McMullen et al., 2006; Shane, 2000; Venkatraman, 1997). Only when, in the presence of entrepreneurial motivation, exogenous opportunities produce a value-adding combination with individual skills and inclinations, entrepreneurial action will take place. The implication of this notion to entrepreneurship policy is that the production of ‘opportunities’ alone, for example, through R&D subsidies, will not necessarily result in entrepreneurial action unless individual alertness (i.e., matching opportunities with skills) and motivation are present. The same confluence of opportunity, motivation, and skill will also dominate entrepreneurial firms’ aspirations for growth.

2.1.1 Entrepreneurial Intentions

Much research has studied the effect of entrepreneur’s personality traits and background on entrepreneurial behaviors (Barreto, 1989; Kaish & Gilad, 1991). Much of this research has not been very successful, and only poor predictive validity has been established. Entrepreneurship does not seem strongly affected by personality. A stronger predictor for eventual behavior has been found in entrepreneur’s *intentions* to start a firm (Krueger et al., 2000). Starting a new firm involves highly complex behaviors, as well as personal and financial investment, and such behaviors may lead to life-altering changes in a given person’s personal life, as well as in her professional situation. Such behaviors, therefore, are not undertaken without significant forethought (Ajzen, 1991).

Unlike behavior, entrepreneurial intentions can be predicted reasonably robustly. Krueger et al. (2000) found empirical support for Shapero’s (1982) ‘Model of the Entrepreneurial Event’, depicted in Figure 4. Shapero’s model described three factors determining the intention to become an entrepreneur: the individual’s general propensity to act, the perceived personal desirability of becoming an entrepreneur, and the perceived personal feasibility to do so.

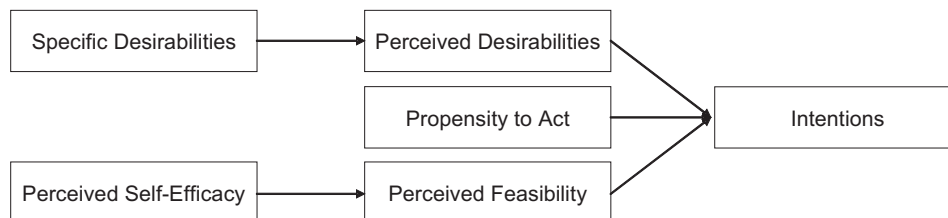


Figure 4. Shapero-Krueger Model of the Entrepreneurial Event (Krueger et al., 2000)

From the policy perspective, a clear advantage of an intentions model is that its key drivers can be addressed through policy action. Perceived desirability is affected by factors such as the perceived risk-return profile of the entrepreneurial option, perceived social desirability of becoming an entrepreneur (as communicated by, for example, positive role models), as well as the perceived positive impact of the entrepreneurial option on a given individual's life situation. Perceived feasibility is the degree to which the individual feels personally capable of starting a business, which in turn is influenced by his perceived degree of self-efficacy. Perceived feasibility is obviously positively influenced by an individual's perception of her own entrepreneurial skills, which can be upgraded by training. Perceived feasibility will also be positively affected by availability of external resources and assistance, as well as by market openness for entrepreneurial ventures. The propensity to act represents personal disposition to act on one's decisions and is the most robust of the three against external influence.

An assumption in intentions models is that human behavior is guided by inertia until something interrupts or displaces that inertia – this is called the “catalyzing event”. The displacement is often negative, such as job loss or divorce, but it can also be positive, such as getting an inheritance or winning in lottery. However, while this “catalyzing event” may trigger individual action, it is unlikely to be the sole source of entrepreneurial intent. Thus, external situational factors tend to affect the *timing* of starting a firm rather than the propensity to act entrepreneurially as such.

2.1.2 Risk Perception

In making the choice about whether to become an entrepreneur, the individual must make an assessment about the expected risks and rewards of her choice. Multiple studies suggest, however, that the financial rewards of becoming an entrepreneur can be quite poor on the average. Self-employed entrepreneurs tend to have lower initial earnings as well as lower earnings growth than in paid employment. Hamilton's (2000) findings suggest that the median earnings differential, compared to full-time employment, is 35% to the disadvantage of entrepreneurs, and this difference is not explained by self-selection due to e.g. low-ability employees choosing self-employment. Also Moskowitz and Vissing-Jorgensen (2002) came to a similar conclusion when they reported that the return to entrepreneurs on financial investment into entrepreneurship (in the form of start-up capital) is not higher than return to investment in public equity. This suggests poor risk-reward relationship, since entrepreneurs' financial assets tend not to be highly diversified, with over 70% of their wealth invested in their firms.

Thus, on the surface, at least, the entrepreneurial option cannot be easily justified by average financial returns to investment. According to Hamilton (2000), entrepreneurs make the seemingly irrational economic choice to invest in their own firms because of the significant non-pecuniary benefits of self-employment, such as perceived autonomy and flexibility. This choice may be not be dissimilar to that of many academics who may prefer the academic lifestyle over an opportunity to earn higher a salary in industry.

Another reason for choosing an entrepreneurial career may be a preference for risk-taking and skewness in the distribution of rewards. This is sometimes referred to as “superstar theory”, and suggests that entrepreneurs may overestimate their chances of survival and growth (Moskowitz and Vissing-Jorgensen, 2002). For example, Cooper et al. (1988) found that 68 percent of entrepreneurs think that the odds of their business succeeding were higher than for other similar businesses, while only 5 percent of entrepreneurs thought that their odds were worse. On the condition that the business survives, the return on the entrepreneur’s investment is indeed higher than for public equity. These findings suggest that entrepreneurs may be unable to reasonably estimate their chances of survival and success, and that they may also be attracted by the skewed distribution of the success curve. A possible policy implication of this finding may be that increased expectation of ‘pocketable’ returns² may lead to increased levels of entrepreneurship.

2.1.3 Barriers to Firm Birth

To the extent that individuals may have positive attitudes towards entrepreneurship but actively choose not to pursue such a career, a number of reasons may be responsible.

High opportunity cost. High opportunity cost may be due to a well-paying current job or generous unemployment benefits that make status quo, i.e. not starting a business, seem beneficial to a potential entrepreneur. This issue is exacerbated when a potential entrepreneur has high fixed costs and current obligations, for example a mortgage, and cannot risk trading relatively stable income for the insecurity of becoming an entrepreneur. Furthermore, in some countries, people may immediately lose certain social security benefits if they choose an entrepreneurial career over paid employment or self-employment.

High risk. This issue is related to opportunity cost in that entrepreneurs will not want to risk their current income for a future that is inevitably uncertain. Further-

2 I.e., returns due to entrepreneur after taxes and other obligations.

more, in the absence of personal bankruptcy laws and since many banks require entrepreneurs to personally guarantee loans granted for their firms, entrepreneurs may be even more reluctant to take on ambitious projects due to the fear that they may accumulate large amounts of personal debt in case of a business failure.

Lack of confidence. Lack of confidence corresponds to the absence of the self-efficacy factor in Shapero's (1982) model which is a prerequisite to entrepreneurial intent.

Stigma of failure. Stigma of failure has often been cited as an important factor inhibiting entrepreneurship. However, there is little solid empirical research data to actually support this contention. It is not clear, therefore, whether it is the social stigma of failure that people fear, or whether it is the economic consequences of failure.

Lack of finance is often quoted as a potential barrier to starting up a firm. Lack of finance may discourage the entrepreneur by decreasing the perceived feasibility of the venture. This is arguably why the entrepreneur's current income and wealth has been shown to affect the creation of new ventures; while a high income increases the opportunity cost of becoming an entrepreneur, a high level of wealth may in fact aid the entrepreneur in financing a start-up and thus improve the entrepreneur's ability.

Bureaucracy and red tape. This issue has often been recognized as a potential barrier to the creation of new firms and several cross-country surveys have been conducted comparing the cost and time to set up a new business. In general, the cost and time required for starting a business and the red tape in running a business have been decreasing over the past decade, thanks to sustained simplification efforts.

2.2 Growth of High-Growth Firms

High-growth firms differ from ordinary entrepreneurial firms in a number of ways. The most important and obvious difference is that high-growth firms grow rapidly. They go through often distinct stages of organizational evolution, and problems and even crisis situations are not uncommon as the organization grows. Many of the growth stages bring predictable problems, and these often necessitate quite sophisticated responses from the growing firm's management. The challenges met and remedies required are typically quite different from those usually seen in non-growing entrepreneurial firms.

An innovative growth firm goes through numerous stages on its way from idea search to market proof, growth platform creation, and eventual scale-up and consolidation. During the process, different thresholds need to be met in order to continue growth (see Figure 5 and Figure 6). The different growth stages cannot be discussed exhaustively here, only some general pointers can be offered.

The process toward an innovative growth firm begins with *exposure to opportunity*. Most new firm ideas emerge as a constellation of market or technological opportunity, on the one hand, and of the entrepreneur's competencies and strengths, on the other (Shane, 2001). Opportunities alone do not create new ventures, nor do entrepreneurs alone. Each new venture represents a unique combination of the entrepreneur's strengths and external conditions. Thus, policy should make sure that opportunities and entrepreneurs have a chance to mix freely in an open system. In practice this means making sure that skilled and competent individuals are aware of the entrepreneurial career choice, they respect this career choice, they are alert to opportunities, and they possess the necessary skills to move forward if a suitable combination is found.

As a promising combination has been created, the *opportunity framing* phase begins. During this phase, an assessment of the feasibility of the opportunity is carried out. This is a process typically carried out by a single individual or a team of individuals, and the opportunity framing phase is characterized by intense social construction, as well as highly personal considerations assessment of career trade-offs. High-potential entrepreneurs in particular tend to be already employed, belong to the upper third household income bracket, and be well educated (Autio 2005). This means that the entrepreneurial decision involves a real career trade-off and high personal opportunity cost. Potential high-growth entrepreneurs tend to be highly mobile and enjoy ample career opportunities. Therefore, policies should address career trade-offs. Given that high-growth firms tend also to be highly volatile (risk increases consistent with potential reward), policies should seek to maximize the entrepreneur's ability to retain potential profits, making sure that no stigma is attached to entrepreneurial failure, as well as minimizing 'entrepreneurial career penalty' resulting from under-valuation of entrepreneurial career experience by established employers.

During the *pre-launch* phase, the necessary resources are identified and accessed. As this phase is routine new firm start-up, the necessary policies in this stage are dominated by quite conventional resource provision policies. Policy should make sure that the necessary resources are available for high-potential entrepreneurial start-ups. The higher the growth potential of the new venture, the more sophisticated business services are usually required. Because of this, high-potential start-ups tend to draw on private-sector business services more than low-potential start-ups. For example, public-private partnership and the encouragement of

private-sector business services, business angel funding, and venture capital funding are emphasized for high-potential start-ups more than for low-potential start-ups.

During the *market launch* phase, the new venture undergoes the customary legitimization and market acceptance test that any new firm inevitably must go through. This phase, as such, is similar to all firms, even though more innovative (and potentially, more growth-oriented) firms may have to struggle more for market acceptance, particularly when the business model is novel. From the policy perspective, the needs of high-potential new ventures would not differ much from those of any new firm, with an emphasis being on facilitating market entry (reducing and removing barriers to entry), and simplifying the regulatory framework ('red tape') for new market entrants. Reduction of compliance costs is important for any new firm, although high-growth ventures face particular compliance issues as their size and organizational complexity increase.

Phase	Opportunity exposure	Opportunity framing	Pre-launch	Market launch
Threshold	<i>Opportunity recognition</i>	<i>Entrepreneurial commitment</i>	<i>Launching platform</i>	<i>Legitimacy</i>
Critical factors contributing to threshold achievement	<ul style="list-style-type: none"> • Market and industry knowledge • Knowledge of customer needs • Identification of a route to market • Commercial and entrepreneurial incentives • Alertness to entrepreneurial career choice 	<ul style="list-style-type: none"> • Estimation of initial opportunity size, feasibility • Estimation of resource requirements • Estimation of career, life impact • Identification of feasible business model 	<ul style="list-style-type: none"> • Business planning • Resource mobilization and access: Facilities; management team; finance; technology; complementary assets; business services • Pre-acceptance by supply chain and customers 	<ul style="list-style-type: none"> • Firm launch • Establishment of business relationships • Testing and consolidating a business model • Creating administrative and fiscal routines • Building momentum and market share
Policy implications	<ul style="list-style-type: none"> • Strengthen "entrepreneurial alertness", opportunity identification skills • Strengthen population entrepreneurial competence • Promote entrepreneurial career choice 	<ul style="list-style-type: none"> • Strengthen opportunity evaluation skills, entrepreneurial competence • Reduce entrepreneurial career trade-offs • Secure availability of resources, business services 	<ul style="list-style-type: none"> • Facilitate resource provision, seed finance • Provide business infrastructure • Provide advice • Facilitate social capital, networks • Facilitate small-large firm relationships • Facilitate market entry 	<ul style="list-style-type: none"> • Reduce compliance costs • Trim, streamline regulatory framework • Provide advice, consulting service

Figure 5. Four Phases of Innovation-Driven Firm Emergence

Even though some of the emergence phase challenges are distinctive for high-potential entrepreneurial ventures (notably those concerning entrepreneurial career choice and related trade-offs for high-potential entrepreneurs), most of the challenges of this phase are not unique to start-up ventures. This is not the case for the growth phase, the dominant challenges of which are listed in Figure 6. As the high-potential venture embarks on a trajectory of rapid growth, its dominant chal-

lenges diverge from those of low-growth ventures in ways that are both distinctive and often in conflict (from a policy perspective) with those of low-growth ventures.

The growth trajectory of high-potential ventures in Figure 6 identifies four critical phases and related thresholds, each of which present distinctive challenges for high-growth entrepreneurship policy. During the *market proof* phase, the business model of the new venture is established and validated. In innovative new firms, the first venture idea is only seldom the one that provides the platform for future growth. More often than not, the initial idea turns out to be simplistic, even naïve, and founded on unrealistic and even false assumptions concerning how the market will behave and how well the rest of the business system will accommodate the new venture. The more novel the venture idea, the less researchable its market tends to be, and the more experimentation and trial-and-error learning is required during the market proof stage. Therefore, policies should seek to ensure sufficient flexibility so as to enable search and experimentation. In practice, flexibility can be enhanced in, e.g., employment relationships. An important component of venture flexibility is facilitation of exit (e.g., reduction of bankruptcy costs) as unviable ideas are weeded out from the market. Compliance costs may also impose important impediments to flexibility. Experience-based mentoring support by, e.g., business angels, is often required for effective search and experimentation.

Once the business model concept has been validated, the *growth framing* phase begins. During this phase, the necessary prerequisites for a platform for future scale-up and growth are put in place. This phase is similar to pre-growth planning phase, as resource identification and access are dominant tasks. The distinctive activity in this phase is the identification of growth trajectories along technology, market, and organizational scale-up dimensions. Planning for these is demanding and requires deep strategic insight and managerial experience. Such insight and experience often cannot be easily nurtured by public-sector organizations due to incompatible incentive structure, and private-sector input is therefore necessary. The policy-maker may nevertheless contribute to this stage, by, e.g., providing training in opportunity evaluation and business planning skills, by removing regulatory barriers to growth, and by soliciting the creation of private-sector growth resources (e.g., venture capital) and related business services.

During the *scale-up* phase, the growth plans are executed. The necessary resources for growth are mobilized and put in place, and market and organizational expansion is implemented. This is a very dynamic and demanding phase, during which the organizational complexity of the new venture increases dramatically as a function of its size and external compliance requirements. As the growing venture goes through various organizational growth stages, the management of organizational transitions becomes a crucial success factor as additional layers of complexity are

added to the organization. The possibilities of the public-sector support provider to contribute to the management of such transitions are limited, other than facilitating access to mentoring support and private-sector business services. On the other hand, the policy-maker can make an important contribution to growth by ensuring that compliance requirements are not imposed immediately on the rapidly growing venture, as this passes through thresholds of new compliance requirements. For example, ‘honeymoon’ periods could provide an effective way of facilitating the multiple organizational transitions of the growing venture. Also, support for internationalization is important in this phase.

During the *consolidation* phase, the gains of rapid growth are locked in, and the successful venture becomes a going concern within its size class. Organizational consolidation, consolidating market positions, and putting in the necessary structures for regulatory compliance are the dominant tasks in this phase. The tasks of the policy-maker are more limited in this stage and seldom extend beyond ensuring that a functioning IPO market is in place.

Phase	Market proof	Growth framing	Scale-up	Consolidation
Threshold	<i>Concept validation</i>	<i>Growth platform</i>	<i>Growth</i>	<i>Sustainability</i>
Critical factors contributing to threshold achievement	<ul style="list-style-type: none"> • Local search, experimentation, business model adjustment • Customer commitment • Sustainable cash-flow • Business model acceptance • Going concern status 	<ul style="list-style-type: none"> • Growth opportunity framing • Identification of market and customer growth trajectory • Identification of product-service development trajectory • Identification of asset scale-up trajectory • Identification, quantification of scale-up resources 	<ul style="list-style-type: none"> • Growth resource mobilization and access: Management team succession; board expertise; venture finance; workforce • International market access • Building up organizational systems and resources 	<ul style="list-style-type: none"> • Organizational consolidation • Regulatory compliance • International market positioning
Policy implications	<ul style="list-style-type: none"> • Reduce compliance costs • Regulatory simplification • Enhance resource flexibility (flexible job relationships) • Provide mentoring support • Reduce cost of exit, bankruptcy cost 	<ul style="list-style-type: none"> • Strengthen business opportunity evaluation skills, strategic planning competence • Remove regulatory barriers to growth • Solicit private-sector growth resources and business services 	<ul style="list-style-type: none"> • Smoothen compliance requirements • Provide support for internationalization • Facilitate experience exchange • Facilitate private equity market 	<ul style="list-style-type: none"> • Facilitate IPO markets

Figure 6. Four Phases of Innovation-Driven Firm Growth

3 Study Design

Our broad objective in this study was to find out what governments in different parts of the World are doing in order to promote entrepreneurial firm growth. Our focus was specifically on growth-oriented policy measures, not on generic entrepreneurship promotion measures. By collecting primary empirical data on such policy initiatives, we hoped to develop a broader understanding of the range of policy measures applicable to entrepreneurial firm growth, as well as to develop models and frameworks that can be used to classify and categorize growth-oriented policy measures. By comparing emerging categorizations against received theory on entrepreneurial firm growth, we also hoped to pinpoint gaps in existing service provision for entrepreneurial growth firms, as well as to understand how policy emphasis might differ according to national and economic context. Finally, by comparing successful policy measures, we hoped to be able to generate good practice advice for public policy-makers, as these strive to promote economic growth through entrepreneurship.

3.1 Organization of the Study

To develop comprehensive materials from a broad range of countries, the project was organized as a self-organizing collaboration among research teams participating in the Global Entrepreneurship Monitor (GEM) initiative (www.gemconsortium.org). The GEM initiative is a global, non-profit consortium whose purpose is to collect and analyze data on national- and regional-level entrepreneurial activity in its participating countries. All research teams are participating in GEM on a voluntary basis, and the bulk of research funds is raised nationally by the participating teams.

As the present study uses the GEM organizational structure, the participation of the teams was completely voluntary and based on self-selection. Funding for coordination and analysis was raised in Finland, with the Finnish Ministry of Trade and Industry sponsoring this study as well as the study report. All participating teams collected data in their respective countries using centrally designed interview and data templates. The country-specific examples of policy initiatives are contributed by each country's GEM team. The contributing teams are listed in Table 1.

Table 1. Participating Teams and Contact Persons

Country	Participating institution	Team leader	Team researcher	Main sponsor
Australia	Swinburne University of Technology	Kevin Hindle	John Yencken	Westpac Banking Corporation
Brazil	Instituto Brasileiro da Qualidade e Produtividade no Paraná	Marcos Mueller Schlemm	Paulo Alberto Bastos	SEBRAE
Finland	Turku School of Economics	Anne Kovalainen	Mathias Kronlund	Ministry of Trade and Industry
Hong Kong	The Chinese University of Hong Kong	Bee-Leng Chua	Hugh Thomas	Trade and Industry Department
Hungary	University of Pecs	Laszlo Szerb	Csapó Krisztián	Ministry of Economy and Transport
Italy	Bocconi University	Guido Corbetta	Alexandra Dawson	Bocconi University
Netherlands	EIM Business & Policy Research	Sander Wennekers	Jolanda Hessels	Dutch Ministry of Economic Affairs
Spain	Instituto de Empresa	Ignacio de la Vega	Alicia Coduras	Fundación cultural Banesto
UK	University of Glamorgan	David Brooksbank	Elin Aaron	Welsh Development Agency

The authors would like to express their thanks to all contributing teams and their sponsors.

3.2 Data Collection Methods

Both interviews and archival materials were used to collect the data. A case description template was designed to guide the interviews and archival search. The template focused on the following issues:

- Organization of the policy initiative (participating institutions, affiliations, responsible organizers, incentive structures, performance metrics and monitoring, resources, etc)
- Focus (resource type, growth mechanism, venture life cycle stage, region, sector, etc)
- Performance and results: numbers of firms, achieved growth rates, notable graduates, received VC funding, other measures (both quantitative and qualitative) of the success of the support initiative
- Lessons learned from past experience: what was found to work well, what was changed, how would the initiative be changed today

These were triangulated with archival data, using the web as the primary source.

The teams were instructed to pick successful cases of policy initiatives dedicated specifically on high-growth entrepreneurial firms. The sample is thus non-random and not representative. However, it does provide a good overview of those policy initiatives that are considered novel and successful. The snowballing technique was used to track exemplary policy initiatives, thereby ensuring that we have a good representation of the “top-end” of the policy spectrum. The sample is thus biased, yet representative in relation to the questions of interest.

3.3 Empirical Sample

The material was collected between October 2005 and June 2006. The most important data was in the form of standard sheets for describing each measure that had been distributed to the team for the collection of the data. After that, the information on each measure was codified into a standard excel sheet. Since this step required discretion in terms of interpreting the measures, the codified information was distributed to each team and the teams were given a chance to confirm or make edits to the information.

Eisenhardt (Eisenhardt, 1989) recommends the use of theoretical sampling when building theory from case study research. In theoretical sampling, variance is forced along key dimensions of theoretical interest. Even though our purpose is not the creation of actual theory, but rather, illustrative frameworks, our sample nevertheless depicts good variance along key dimensions of interest. The distribution of our cases along the dimensions of interest is shown in and in Table 2 and in Table 3. The legends are provided in Table 4.

The rows in Table 2 and Table 3 list the core dimensions of interest, or key characteristics, of the sample cases. The sample cases are shown in columns, grouped by country. The countries are listed in alphabetical order. The dimensions are as follows.

The **public-private** dimension indicates the degree of private-sector participation in the policy initiative. Five different degrees of participation are distinguished: public; mix public (emphasis on public sector); mix equal; mix private (emphasis on private sector); private, as shown in the legends, in Table 4.

The **principal unit of analysis** indicates the level at which the initiative is focused: entrepreneur; firm; sector; national.

The **high-growth or SME focus** indicates the selectiveness of the initiative, in terms of focus on SMEs in general or on high-growth firms in particular.

The **firm life-cycle stage** distinguishes between seed; start-up; early growth; expansion; and maturity.

The **principal type of monetary support** indicates the form of funding provided.

The **principal type of non-monetary support** distinguishes between advice; mentoring; training; networks; and infrastructure support.

The **principal monetary bottleneck addressed** distinguishes between cash; business angels (BA); venture capital (VC); and debt.

The **principal non-monetary bottleneck addressed** distinguishes between networks; business expertise; technological expertise; firm-level innovation; IPR; infrastructure; international market access; and ‘integrative’ (integrative referring to a combination of several of the above).

The **industry or technology sector** makes a distinction between ‘knowledge’; technology; ICT; manufacturing; services; and specific industry sectors. ‘Knowledge’ indicates a broad focus on knowledge-intensive sectors, including both technology sectors and knowledge-intensive services. ICT is a sub-set of technology sectors. ‘Manufacturing’ indicates manufacturing activities in general, regardless of the sector. The same applies to services.

In terms of outcomes and objectives, a number of characteristics were recorded.

The **qualitative assessment of success** is based on the assessment of the country teams, as well as archival data. Because many initiatives are quite young, and because it takes time to see whether a given venture is able to achieve sustained growth, qualitative and subjective metrics are used. These are indicative only.

Four **objectives** of the initiative were distinguished:

- increase the number of entrepreneurial growth firms
- increase the growth motivation of existing firms
- improve the growth success of aspiring growth firms
- improve success in internationalization

Even though all dimensions identified distinct categories, the focus of individual initiatives often covered more than one category, depending on the dimension concerned.

Table 2. Distribution of the Sample Cases on Key Dimensions

	Australia				Brazil				Finland				Hong Kong			
	1	2	3	4	5	6	7	8	9	1	2	3	4	1	2	3
Basic facts																
Year started	1992 1998 2002 2004 1999 1992 1990 1985 1980				2000 2004 2001				2005 2003 2002 2002				2001 2000 1993 2001			
Privately or publicly funded	A C B C B E B A A				D A A				B A A D				A A A A			
Inputs																
Principal unit of analysis	A A A A A A A A				A B A				A A B A				C A A A			
High growth or SME focus	AA AA AA BB AA AB BB BA				BA AA AA AA				AA AA AB AA				BB AA AA AA			
Firm life-cycle stage	BC CD AB CD BC CD ABC DE				D CD DE				BCD CD A ABC				AE AB CD ODE			
Principal type of monetary support	A A C D F D F C				A C D				A C				D B A			
Principal type of non-monetary support	G				H				C				J			
Principal monetary bottleneck addressed	C C C				B C				C				B			
Principal non-monetary bottleneck addressed	F				H FH H GH K				H GH				H			
Industry or technology sector addressed	D C A A A A				A G A A				C CE E				C A C C			
Outputs																
Qualitative assessment of successfulness	2 1 - 1 1 2 1 2 1				2 2 2				- 2 2 1				2 3 4 2			
More entrepreneurial firms	Y N Y Y Y Y - Y				N Y Y - Y				N N Y N				- Y Y Y			
Increased growth motivation	N Y Y Y Y - Y				- -				- N N				N N N N			
Improved growth success	Y Y N - Y - Y				- Y - Y				- Y N Y				- - Y Y			
Improved internationalization success	Y - N - N - -				- - -				N Y N Y				N N N N			

Table 3. Distribution of the Sample Cases on Key Dimensions

	Hungary								Italy					NL	
	1	2	3	4	5	6	7	8	1	2	3	4	5	1	2
Basic facts															
Year started	2005 2004 2004 2002 2002 2003 2005 2004								1999 2004 1984 2002 2005					2006 2004	
Privately or publicly funded	A A A A B A A A								A B A A A A					A A	
Inputs															
Principal unit of analysis	A A A A A A A D								A A A A D					A A	
High growth or SME focus	AA BB AA AB AB AB								AA AA AB AA AB					AA AA	
Firm life-cycle stage	BC A-E A-E BC D D A-E								BC BC BC BC BC					A-E BC	
Principal type of monetary support	A D D A A B B D								A D A					BE	
Principal type of non-monetary support	C C C C C D								K G C					J GJ	
Principal monetary bottleneck addressed	G F								J F FJ					H	
Principal non-monetary bottleneck addressed	C A A D A A A A								B C C C C					G C	
Industry or technology sector addressed															
Outputs															
Qualitative assesment of successfulness	1	2	2	1	2	2	2	2	2	2	4	3	-	1	1
More entrepreneurial firms	N	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N
Increased growth motivation	Y	-	-	Y	-	-	-	Y	-	N	N	N	N	N	-
Improved growth success	Y	-	-	Y	-	-	-	-	Y	Y	-	-	-	-	Y
Improved internationalization success	-	-	-	-	N	-	N	-	N	N	N	N	N	N	N

Table 4. Categories of Key Dimensions in the Sample Matrix

Privately or publicly funded Public Mix public Mix equal Mix private Private	A B C D E	Principal type of non-monetary support Advice Mentoring Training Networks Infrastructure	G H I J K	More entrepreneurial firms Yes Possibly No	Y - N
Principal unit of analysis Entrepreneur Firm Sector National	A B C D	Industry or technology sector addressed All Knowledge-based Technology ICT Manufacturing Services Specific sectors	A B C D E F G	Increased growth motivation Yes Possibly No	Y - N
High growth or SME focus High growth SMEs All SMEs All high growth firms All firms	AA AB BA BB	Qualitative assessment of successfulness Very successful Successful Somewhat successful Not successful n/a	1 2 3 4 -	Improved growth success Yes Possibly No	Y - N
Firm life-cycle stage Seed Start-up Early growth Expansion Maturity All	A B C D E ABCDE	Improved internationalization success Yes Possibly No	Y - N		
Principal type of monetary support Equity Loan Grant Subsidy Guarantee Tax concession	A B C D E F				

3.4 Sample Descriptive

Most of the initiatives in the sample are quite young, presumably reflecting the recency of governments' realization of the importance of high-growth entrepreneurial activity for economic growth, as well as the generally limited life-span of policy initiatives. Of the self-selected cases, 75% were launched in year 2000 or later. The longest-lived initiatives were the Australian Export Market Development Grant (launched circa 1980); the Italian Business Innovation Centre (BIC) initiative; and Australian R&D Tax Concession policy.

All initiatives involved **public funding**. Only three of the 47 initiatives reported had either equal or dominating financial participation by private funds. The privately-funded initiatives in the sample were the Spanish Red de Pymes Innovadoras (Innovative SME Network – started in 2005); the Southern Italy High-Tech Fund (started in 2005); and the Australian Innovation Investment Fund. Two of these, thus, are funding initiatives involving VC participation. The Red de Pymes Innovadoras is a part of a project by the Banespyme School of Banesto Cultural Foundation to catalyze growth in entrepreneurial firms. This initiative encourages networking between SMEs through the web and creates publications and TV programs on growth and digitalization.

In terms of unit of analysis, the majority of the initiatives reported were **firm-level** initiatives (36 of the 47 initiatives). Another 7 initiatives focused primarily on the entrepreneur, and only 4 out of 47 reported initiatives were either national or sector-based. The national and sector-based initiatives were the Spanish Red de Pymes Innovadoras (with a focus on promoting high-growth entrepreneurial culture); Australian Pooled Investment Funds (with a focus on promoting funding through tax concessions); Australian Cooperative Research Centers (with a focus on the early part of the innovation process); and the Hong Kong Applied Science and Technology Research Institute (with a focus on promoting innovative applied research and the transfer of this R&D to fuel firm-level growth).

Consistent with the sampling criteria, some 60% of the initiatives focused exclusively on high-growth SMEs, whereas the rest were not exclusive in their focus.

The initiatives reviewed covered **all growth stages**, from pre-seed to maturity, with the greatest single focus being on start-up and early growth. Also, the majority of the initiatives covered more than one life-cycle stage. There was less focus on the mature end, with 4 initiatives focusing on this stage. An illustrative example of these is provided by the UK – East Midlands High-Growth Company Support Programme, Business which provides coaching for established SMEs (sales from 3 to 10 Million GBP) that are estimated to have a growth potential of 20% per an-

num over 5 years. The initiative provides a company health check, mentoring advice, and links to other support measures.

In terms of **monetary support**, the cases represent all forms of support, ranging from business angel funding to venture capital to grants and debt. Monetary support was present in the majority of the initiatives reviewed, underlining the perceived importance of this support measure.

In terms of **non-monetary support**, this was an element that was less frequently present in the cases reviewed. The most important forms of non-monetary support were advice and mentoring services.

4 Case Descriptions

The case descriptions are grouped by country. Each case description first provides basic case characteristics. For each case we have sought to provide a reasonably detailed description of the initiative, as well as an account of outcomes and lessons learned. As the information obtained for different cases varied, the case descriptions vary in length.

4.1 Australia

4.1.1 Commercializing Emerging Technologies (COMET)

<http://www.ausindustry.gov.au/index.cfm>

The COMET program is very successful program started by the Australian department of industry, tourism, and resources in 1999. The program sponsors the commercialization of new technologies by subsidizing business development services for technology-based ventures.

Description

The program provides subsidies of 80% for business development activities such as marketing, commercialization, and IPR management services to individuals (e.g. researchers) and small firms in their early stages who want to commercialize a new technology and target significant growth. Examples of supported activities include business plan market research, product trials, and patenting. The program is competitive and offers services through a network of affiliated private sectors advisors. The criteria on which applicants are judged are that they: (1) Are looking to grow substantially through commercialization of an innovative product, process or service; (2) Have identified weaknesses that are preventing them from implementing a commercialization strategy; and (3) Are unable to fund activities to address these weaknesses.

The annual budget for the program is 6,5 MEUR, and the typical size of support is 50 kEUR (64kAUD) per firm or project. A 50% subsidy for an additional 64kAUD can be obtained in a second stage of the program. The program targets all technology sectors.

Results and Lessons Learned

Thus far, the program has assisted 300 firms. The program has been extended and expanded and was rated as very successful in an independent review prior to its continuation. For example, in the five years to July 2004, firms supported under COMET raised around \$275 Million in capital and created over 500 strategic alliances, licenses, and other agreements to enable their businesses to grow. The program has also been shown in surveys to increase the motivation of participating firms. However, there has been a shortage of experienced people in specialist areas that can assist the firms over the full 12 months of support. The network of affiliated advisors is currently being expanded to cover a larger area of expertise.

4.1.2 Co-Operative Research Centres

www.crc.gov.au

The Co-Operative Research Centres program was started by the Australia Department of Education, Science and Training in 1990. The program attempts to bridge the gap of research commercialization by sponsoring partnerships between public research institutions and the research units of private firms.

Description

The program works by establishing joint private-public research partnerships in select strategic sectors and technologies. There are approximately 70 established co-operative research centers in 6 sectors: environment, agriculture, ICT, mining, medical science, technology and manufacturing.

The CRC program addresses the issue of turning research into innovations and marketable products and services. The fundamental idea is to “bring together researchers and research users” in the form of universities and private firms, and thus work as a bridge from basic research, via applied research, to commercialization. An example of a CRC is the Cooperative Research Centre for Greenhouse Gas Technologies. In the centre, researchers from 7 universities and research centers collaborate with research from 6 private firms such as BHP Billington, BP, as well as governmental agencies to create a leading research organization in the field for developing technologies that reduce carbon-dioxide emissions.

The program also has a strong education component through which it strives towards training skilled graduates in the targeted technologies.

The government is the main financier of the research, but there is also considerably participation by private firms. Over 12 years, 5.8 billion EUR has been committed to the program and approximately 600 firms and projects have been supported.

Results and Lessons Learned

A recent rigid and conservative review of the program showed that “the Australian economy’s overall performance has been considerably enhanced when compared to the performance that would have incurred in its absence”.

The program can be seen as a step towards establishing a certain critical mass of researchers and resources to be able to successfully develop new technologies in important sectors. While the research centers typically do not involve small firms or new start-ups, the program has a solid record of generating spin-offs with high survival and growth rates.

However, while some important steps towards more effective research commercialization have been taken with the program, a recent evaluation noted that in ‘submissions, discussions and consultations there was a strong view that the CRC Program should have a much greater orientation towards commercialization’ and thus have a greater focus on delivering industrial, commercial and economic outcomes. Therefore, for the selection rounds in 2006 and 2008, CRC applicants are required to demonstrate clear paths to commercialization and utilization and strong industry commitment; contributions by partner organizations must at least match program funding; and CRCs are also required to describe their contribution to achieving the National Research Priority Goals.

The Australian government has committed an additional 65 MAUD over six years to the program from 2005–2006.

4.1.3 Innovation Investment Fund

<http://www.ausindustry.gov.au/index.cfm>

Innovation Investment Fund is a venture capital scheme created by the Australia Department of Industry Tourism and Resources in 1998. Through this program, the government co-invests in early-stage equity companies together with private venture capital funds. The scheme has been considered very successful.

Description

Under the program, the government has licensed nine private sector venture capital managers to provide venture capital to small, technology-based firms at the

seed, start-up or early expansion stages of development. About one third of the capital is provided by private investors or VC funds, while the government provides the remaining share.

The aim of the scheme is threefold: First, to encourage the growth and development of new technology-based firms through the supply of venture capital; Second, to develop a self-sustaining early-stage VC market in Australia; Third, to develop experienced fund managers that knowledgeable in early-stage VC investments.

The program provides for asymmetrical payoff, benefiting private investors. In the first stage, both the government and the private sector investors receive an amount equivalent to their subscribed capital and interest on that capital. Any further capital gains are shared on a 10 per cent to 90 per cent basis between government and private sector investors. The private investor component is shared with the fund manager as a performance incentive.

The program was started in 1998 by the Australia Department of Industry, Tourism and Resources. The size of the funds is currently 65 Million EUR, of which the government has contributed the equivalent of 44 Million EUR. The government plans to invest 7.8 Million EUR during 2006.

Results and Lessons Learned

Approximately 75 firms have received funding through the program. The program is currently being evaluated but can generally be considered successful. The government has made a profit on its share of investment.

Nevertheless, although the program has been designed to be a scheme that supplies venture capital to early-stage firms, in practice, most participating firms have been in later stages of development. There have been criteria for what type of firms that can be invested in through the scheme, but due to investor risk aversion, the invested capital has tended to go towards as late a stage as possible. Therefore, for the continuation of the program, the scheme is being redesigned in order to support earlier stage firms to a greater degree.

4.1.4 Commercial Ready Program

www.ausindustry.gov.au

The Commercial Ready Program was started in 2004 by AusIndustry of the Australia Department of Industry Tourism and Resources. The program offers grants

to SMEs for commercialization activities, and it has been regarded as very successful.

Description

The Commercial Ready Program provides competitive merit-based grants to SMEs for commercialization activities, for R&D with high commercial potential, and for proof-of-concept activities. The program supports both R&D in new ventures as well as applied research leading to new innovations by established SMEs.

The aims of the program are to support Australian businesses in the technology sector to develop innovative products, processes and to encourage collaboration between industry and research institutions.

The grants range from 30 000 EUR to 3 Million EUR, and they require matching contributions by the receiving firms. Thus, they can be considered subsidies for commercialization activities. Projects can be supported for up to three years.

The program is exclusively targeted at SMEs in any stage of development; but the grants are not available to large companies.

The program was started in 2004 by AusIndustry, which is part of the Australia Department of Industry Tourism and Resources. The annual budget of the program is 120 Million EUR until 2011.

Results and Lessons Learned

In 2005–06, 600 firms were supported through the program. The average support was approximately 200 000 EUR per firm.

The program is generally considered very successful. It is very highly regarded by firms, and there are more applicants than funds available.

However, due to the requirement of matching contributions, access to the program is in effect limited to firms that already have significant financial resources. It is thus rarely accessible for very young firms that do not already have a steady cash flow. An exception is start-up firms that have already received some type of VC financing, for whom the Commercial Ready program can function as a supplementary source of funding.

Nevertheless, the program is particularly useful to SMEs in the expansion stage, e.g. to assist in the funding of product customization activities for a new market. It can thus contribute to an increased growth motivation for established SMEs by facilitating the continued development of new products and product lines.

4.2 Brazil

4.2.1 Pappe – Program for Supporting Research in Enterprises

www.finep.gov.br/programas/pappe.asp

The Pappe Research Support Program was started by FINEP (the Brazilian Financing Agency for Studies and Projects) in 2004. This successful program aids innovation and commercialization by providing grants to researchers and individuals in small firms for product development activities.

Description

The program provides research grants for researchers for collaboration efforts with small companies for new product or process development. The receiving researcher does not need to supply matching funds. The program is similar to the Small Business Innovation Research Program (SBIR) in the US.

The supported researcher must be affiliated with a small firm in a technological sector, and the supported projects should be in pre-commercialization phase. By fostering interaction between researchers and small firms, these firms can be used as vehicles for bringing innovations to market. The program targets the manufacturing sector with an emphasis on high-technology products.

The annual budget for the program is 66 MEUR. FINEP carries out the program in collaboration with the S&T Foundations in 20 States, which select projects to be funded locally and provide matching funds.

Results and Lessons Learned

The program has generally been regarded as successful. In the year from 2004 to 2005, 537 firms were supported.

Compared to other research commercialization programs that often benefit large firms, Pappe focuses on supporting the development and the innovative activities of small firms. Another interesting aspect is that the grant is provided to the researcher and not to the firm.

While a national program, the PAPPE program execution is administered at the regional level. The building of networks between state- and regional-level innovation support activities has been seen as an important goal in the project. Thus, be-

sides fostering interaction between researchers and high-tech based firms for developing innovative projects, it is expected that PAPPE will contribute to the convergence and consolidation of the local and national innovation systems.

4.2.2 PROGEX – Export Technology Support Program

www.cetec.br/progex/

The PROGEX export technology support program was started by the Brazil Ministry of Science and Technology in 2001. The program aims to improve the technological capabilities of export-oriented SMEs. The program has been successful in significantly increasing the value of exports of participating firms.

Description

PROGEX is a federal program established to stimulate Brazilian exports through micro and small companies by improving the technological capacity of these firms. The goal is to increase Brazilian exports and to substitute imports. The target group is firms in all industrial, arts, and crafts sectors, who are in the expansion and maturity stages of development, and who already export or are planning to expand to international markets.

The program aims to reduce technical barriers to trade by subsidizing various technological costs related to entering foreign markets. Examples of costs include technology consulting, logistics planning, and product modifications to meet the requirements of foreign markets. For example, the program can provide approximately 8 000 EUR per product adjustment for a particular market. Adjustments can include, e.g., changes to design and packaging or adaptation and compliance to international technical and quality standards.

The annual budget for the program is 7.8 MEUR, and more than one hundred firms are supported annually.

Results and Lessons Learned

The program is deemed to have been successful in increasing exports of the participating SMEs significantly, in opening up new international markets, and in generating new exporting companies. So far, the program has assisted 270 firms.

The program may be considered successful in that can tangible enable firms to reach new markets with their products by, e.g., meeting required quality standards.

The program is distinctive because of its narrow focus on technical compliance. Hence, the program assumes growth potential and related managerial ability.

Nevertheless, the program takes a traditional approach to internationalization and does not as such seem to recognize the special needs of born global firms. Furthermore, this type of measure may be most suitable in emerging economies where the technological capability of SMEs is still catching up with the most developed nations.

4.3 Finland

4.3.1 Growth Firm Service

no website

The Growth Firm Service was started in 2003 by the Finnish Ministry of trade and industry. The program aims to proactively identify firms and entrepreneurs with a high growth potential and direct these to appropriate services offered by the various public agencies that support SMEs and innovation. This successful program is implemented as a cooperative effort between these agencies, and it is coordinated by the private SME Foundation PKT.

Description

The goal of the program is to act as a “one-touch shop” for public services relevant to growth firms. There are four major public agencies that offer services to SMEs in Finland, and through the contact with a business consultant in one of these agencies, a firm can get information about and be referred to appropriate services offered by all the agencies. These institutions are Finpro (Internationalization services), Finnvera (State-owned financing company), SITRA (Finnish National Fund for Research and Development), and TE-keskus (Regional Employment and Development Centres).

Consultants in all of the agencies proactively seek to identify promising growth firms. When identified, the consultant offers a growth analysis session with the firm, and based on the growth analysis, specific needs for achieving growth are prioritized and appropriate services from the four participating institutions are enlisted.

In total, there are approximately 100 different support services that can be offered by the participating institutions to the firms. The majority of these support measures concern financing, since financing is the main activity for 3 of the 4 participating institutions, while the fourth institution is focused on support for internationalization.

The target group is SMEs with a high-growth potential in all sectors. Nevertheless, most participating firms are technology companies, since these companies often may be more interested in the services that are being offered. These firms are often in the expansion stages of development since firms younger than this may not yet be recognized (“on the radar screen”) of the public business consultants. The younger firms are often born globals or firms with a strong technology-focus.

The program was started in 2003, and each consultant or service is financed by the respective institution. It is thought that approximately 300–400 people spend around 10–15% of their time on offering growth services. The cooperation between institutions is coordinated by the private SME Foundation PKT and financed by the Finnish Ministry of Trade and Industry. The budget for the coordination and follow-up of the program is 0.5 Million EUR per annum.

Results and Lessons Learned

The growth firm service is distinctive because of its explicit and sole focus on high-growth firms. The program is still being phased in, and it has been approximately one year in operation. So far, 300 growth firms have been identified and received a growth analysis through the program. This corresponds to approximately one firm per consultant. It is thus clear that the number of firms that are supported through the program has room to grow significantly, although no target for the number of firms to be processed has been set. The total population of potential growth firms in Finland is estimated to be in the range of 2 000–30 000, depending on the definition of growth. The growth rates of the participating companies has not been analyzed yet, but an analysis will be carried out when enough time series data is available.

The program is generally considered to be successful. The participating firms have been very happy with the service, especially with the aspect of firms being approached proactively and provided with a single contact person instead of one for each institution. Only few firms have declined the growth analysis, arguing that they do not need any of the services that the four participating institutions have to offer. This evaluation is based on feedback from business consultants. A more thorough qualitative evaluation will be carried out this year.

A key lesson has been that the coordination of four strong institutions is quite difficult. Each institution has different working methods, values, and they may have

different objectives. It has also proven difficult to engage all of the regional institutions and business consultants in the program, and there is a large spread in the degree of activity. Furthermore, the ability of consultants varies. This is important, since the success of the program depends on the quality of consultants employed in approaching firms.

The current focus in developing the program is on further strengthening commitment among the participating institutions, spreading good practice among participating institutions, and thus evening out regional differences. Efforts are also being invested in reaching out for companies that do not rank among the primary clients of the four participating institutions; these include, e.g., mature companies that have a renewed motivation to grow. In the future, the concept could be further developed to cover not only financing for R&D which is the current focus, but also e.g. marketing and sales and other financial needs of the participating firms.

In all, the measure is quite original in that it acts as an interface to all services of the major public support institutions and is proactive in locating high-growth potentials and directing them to appropriate services. The practice can thus be similarly appropriate in cases where there is a network of disparate public organizations offering support services.

4.3.2 INTRO

www.tuli.info

The INTRO program was started in 2002 by the SITRA, the Finnish National Fund for Research and Development. This very successful program seeks to correct perceived market inefficiency by working as an interface between entrepreneurs and private investors (business angels). The program offers an online marketplace and a trade-show for business ideas, advice on business plans, and courses and workshops in private equity investments for both entrepreneurs and investors.

Description

The main purpose of the program is to facilitate contacts between investors, primarily business angels, and entrepreneurs. This is realized through an online contact forum and an annual tradeshow where young firms and new entrepreneurs can present their business ideas to potential financial backers. All entrepreneurs and investors are required to sign non-disclosure agreements. In order to participate, the potential investors must be classified as “professional investors” by their

wealth. The program also provides training in e.g. early-stage financing, contracting, and valuation to entrepreneurs and investors.

In addition to facilitating contact between investors and entrepreneurs, the program can also co-invest with business angels in firms to up to 50% of the total investment. When needed, the program can also support the formation of syndicates between several private and public investors.

The aim of the program is to promote the investment readiness of early-stage and growth businesses and facilitate access to early financing rounds. The program also supports the development of a private venture capital and business angel market in Finland. A secondary goal is to reduce the cyclical nature of the venture funding market.

The program supports growth-oriented firms in knowledge-based sectors, such as service or technology. The participating firms are typically in the seed or start-up stage. Some early-growth stage companies have also participated, but a requirement for participating is that the firms have not yet received external funding.

The program was started in 2002 and is run and funded by the Finnish National Fund for Research and Development (Sitra). The budget of the program is 1.2 Million EUR for coordination, and in addition, the fund invests 1 Million EUR annually in start-ups. This funding is matched annually by approximately 4 Million EUR of private investment.

Results and Lessons Learned

So far, 150 firms have participated in the program, of which 30% have raised financing. Last year, 40 firms participated in the program, and 14 of these received financing. On average, the firms raise 350 000 EUR per funded firm. This equity investment is typically supplemented with public capital loans and research grants, bringing the typical total financing up to approximately 1 Million EUR per firm.

In total, 300 business angels participate in the program. Of these, 60% participate actively in screening deals. As a group, the business angels have declared that they are prepared to invest up to 40 MEUR in young firms.

The program is considered very successful. One measure of success is that 5 participating companies have raised over 10 MEUR in subsequent private financing rounds. One example of these is the mobile game software firm Sumea Interactive.

One success factor has been a relatively high degree of selectivity in the program. Only 40 companies are chosen annually in the program. It is estimated that this number represents virtually the totality of new ventures that really have a high-

growth potential in Finland. The program has recognized that the most promising entrepreneurs and the most promising business ideas tend to get access to venture financing right away without the help of the support program. Nevertheless, there is a need for a program for the high-growth potentials that are “just below” the star firms, and these may be appropriately funded by business angels.

Furthermore, the program has recognized that it is not enough to get just any financing; firms need enough financing to realistically enable growth in the markets they target. Therefore, the goal of the program is to raise at least 300 000 to 500 000 EUR per firm.

The program considers private investment by business angels as superior to public funding of young firms. Business angels have been recognized as more effective in screening and choosing the firms that have the highest potential for growth. In addition to the invested capital, business angels also often have much to contribute to young firms in terms of business knowledge. The program also thinks that there exists no “financing gap” of early-stage firms as long as the firms are of high enough quality. This is illustrated by the fact that in 80% of the deals that the program broker, business angels contribute all of the capital. In only 20% of the deals, a syndicate with Sitra is needed in order to raise enough financing.

The program has also recognized the importance for of being quick, flexible, and relatively independent in its decision-making. This is accentuated by the fact that the time-to-market is critical in many of the targeted sectors, and firms therefore need to find funding quickly in order to achieve success. In addition, all employees involved in the execution of the program have been recruited from industry. As a result, they have a good understanding of what both firms and investors require in finding commonly agreeable deals.

Another issue that has been identified is the need for raining for both entrepreneurs as well as business angels on early-stage financing and valuation. The program initially focused on training entrepreneurs, but it was realized that due to the complexity of many private equity investments, business angels require training too in order to fund new start-ups. In the program, entrepreneurs and investors attend the same training session, which facilitates the formation of a joint understanding and standards.

Business angels have also, in contrast to conventional wisdom, been found to not be home-biased. Therefore, there has been no need to divide markets regionally. On the contrary, the program sees a future with Nordic and Baltic cooperation around early-stage financing.

While the program is ongoing, consolidation with other support measures is expected in the future.

4.4 Hong Kong

4.4.1 Hong Kong Applied Science and Technology Research Institute (ASTRI)

www.astri.org

The Applied Science and Technology Research Institute was founded by the Innovation Technology Commission of the Hong Kong Government in 2000. The institute supports technological innovation in Hong Kong and stimulates spin-offs by conducting “mid-stream R&D” in 5 select technological fields.

Description

ASTRI performs R&D with the aim of transferring technology to commercialization. The institute currently focuses on five research areas: photonic technologies, integrated circuit design, Internet software, wireless communications, and biotechnology. ASTRI currently employs 250 researchers, and the number of researchers is expected to grow to 800 within a few years. The institute is primarily funded by the government, and it cooperates with private firms on technology commercialization.

ASTRI has been explicitly set up to do “midstream R&D”, i.e. be a link for technology transfer from basic research carried out at universities to commercialization in the local industry. Through its R&D activities, the institute strives to elevate the technological level of industry in Hong Kong, and, by encouraging spin-offs, function as a spawning ground for technology entrepreneurs. By directly involving expertise from industry in the development and licensing the results, ASTRI strives to conduct research that has a high degree of customer focus and applicability in industry.

Other goals of ASTRI are to enhance Hong Kong’s human resource development and be a focal point for attracting outside R&D personnel to work in Hong Kong. Researchers at ASTRI with knowledge in a specific technology domain are expected to transfer to industry.

The annual budget for the institute is 9.5 MEUR.

Results and Lessons Learned

Previously, ASTRI focused on incubating and spinning off start-ups with the support of venture capitalists. However, the mode of operation has since changed to-

wards being a R&D institute for industry participants. This change was called for since the institute did not want to compete with incumbent firms through its own start-ups.

Under the new model, which has been in operation since 2004, the focus is on developing new technologies and supporting the commercialization of these technologies through licensing agreements. The institute under this model has generally been considered successful. For example, 15 technology licenses have been transferred to the industry; especially technologies related to photonics. The target is to reach 100+ licenses per year.

ASTRI is quite similar to the Cooperative Research Centres program in Australia in that it brings together researchers from public institutions and collaborates with private firms in order to target innovation in a number of select sectors. Nevertheless, while the institute clearly enhances the technological level in Hong Kong, the link between the ASTRI program and small firm growth is hard to explicate. For example, there have hardly been any spin-offs created as a result of the new technologies. Furthermore, the operation model to carry out “midstream R&D” assumes a linear model of innovation. There is also a danger that public research in these technologies only substitutes private investment in R&D.

Although the institute has collaboration with universities, this cooperation has not met expectations. One explanation for this is that ASTRI’s research focus is on application, and universities have few incentives to conduct applied research since their funding is based on doing basic research and training students.

ASTRI illustrates the importance of concentrating efforts on select sectors in order to create a critical mass in R&D. It has also been found important to keep a balance between public accountability and public management for industry support schemes in order not to stifle programs through over-bureaucratization.

4.4.2 Hong Kong Science & Technology Parks (HKSTP) Incubation Program

www.hkstp.org

The Hong Kong Science and Technology Parks (HKSTP) is a result of mergers between several incubation centers and technology parks in Hong Kong. HKSTP in its current form was founded in 2001 and is sponsored by the Hong Kong government. The program has been successful in combining incubation and technology park facilities and thus encouraging clusters around several technologies with both young and established firms.

Description

HKSTP is a government-owned corporation which runs an incubation centre and a science park. There are currently 216 tenants in the science park and 90 in the incubation centre. The industries represented include electronics, biotechnology, precision engineering, and information and communications technology. The incubation center targets firms in the start-up and early growth phases, and the science park caters to firms that are already in the expansion or maturity stages of development. In addition to infrastructure and facilities, HKSTP also offers management, marketing, and consultancy services to tenants.

HKSTP is funded mainly through rents and other income; nevertheless, HKSTP incurred an operational loss of 4 MEUR in 2004.

Results and Lessons Learned

HKSTP has been successful in supporting the growth of young firms as well as in creating clusters of technology firms. Of the incubatees, about 10–15% tend to do quite well. Nevertheless, only few high growth firms have emerged from the incubation program. Among 201 companies listed on the Hong Kong Growth Enterprise Market (GEM), only three GEM-listed companies are graduates of the incubation program of the predecessors of HKSTP: the HKITCC and the Incu-Tech Program.

What the HKSTP seems to do well is that it co-locates both young and more mature companies by providing both incubation facilities as well as facilities for mature firms (e.g. Philips is one of the more recent new tenants). HKSTP is currently also expanding its facilities to be able to house more tenants.

A lesson learned during the course of the program is that all services must be charged for appropriately or they will be abused by tenants. In addition, the incubatees should be monitored in order to ensure that they are continuing to perform well.

The HKSTP is almost self-sustaining, and so it may be considered an efficient use of governmental funds. However, HKSTP has suffered from management problems. The most visible symptom is frequent change in top management. In 5 years, there have been 3 CEOs for the HKSTP.

4.5 Hungary

4.5.1 Corvinus International Investment Ltd

www.corvinusen.siteset.hu

The Corvinus International Investment program was started in 1997 and was taken over in 2005 by the Hungarian Development Bank. This program primarily equity capital for Hungarian firms who wish to expand internationally. The program is considered very successful.

Description

Corvinus International Investment provides funding for co-investments with Hungarian companies abroad. Corvinus can either co-invest in Hungarian firms' subsidiaries abroad, assist Hungarian firms to develop appropriate business strategies in order to facilitate access into international markets, and contribute capital towards investments that enhance the competitiveness of these firms. The aim of the investments is to facilitate foreign direct investments by Hungarian companies, in order to create, acquire, or develop ventures abroad.

Funding is provided primarily in the form of equity investments, but also loans or guarantees may be available. Prior to making the investment decision, the program may also assist the applicant firms in developing their business plans.

The fund addresses innovative high-growth SMEs, which already have a registered patent. These firms receive help in bringing their innovations to the market and in raising venture capital.

The maximum investment in each firm is around 1 MEUR, for a stake representing 10 to 49 % of the firm. The planned duration of the investment is up to 10 years. The fund seeks to be self-sustaining and only finances "economically feasible projects" at "market conditions".

A total of 6.8 MEUR is planned to be invested this year. The fund employs 7 staff.

Results and Lessons Learned

In 2005, the fund received 50 applications for funding. Of these, 12 business plans have been developed further, and 7 projects have been approved. In the future, the fund expects to finance 8–10 projects per annum.

The program has been regarded as successful, since it fills a gap in the funding of firms that want to expand internationally.

Venture capital has been almost completely absent in the Hungarian economy, inhibiting the pace of innovation and new firm growth. The program expects that by increasing the availability of venture capital, a steady flow of new firms can be created annually by increasing the motivation to grow as well as improving growth success.

A selection criterion of the program is that the supported firms must have a patent-protected technology. The program does not provide funding for pre-patent R&D or for the patenting process.

While the fund initially concentrated on the biotechnology sector, it is now open to firms in all sectors and industries.

4.5.2 Information Technology Venture Capital Fund

www.rfh-rt.hu

The Information Technology Venture Capital Fund is a venture capital fund for investment in ICT firms. It was founded in 2002 by Regional Development Holding, a state-owned company. The program has been successful in filling a financing gap for technology-based young firms and in encouraging the expansion of these firms.

Description

The Information Technology Venture Capital Fund provides VC capital for equity stakes in firms in the ICT sector. The fund explicitly targets high-potential ICT firms in the start-up and early growth stages. While the fund primarily provides capital, it can also offer limited management assistance.

When making the investment decision, the fund prefers investments that may create employment, improve technology infrastructure, or create export opportunities. The fund is profit-oriented and state-owned through Regional Development Holding.

Since 2002, 10.7 MEUR has been invested. The fund employs 4 staff.

Results and Lessons Learned

In 2004 and 2005, there have been a total of 40 applicant firms of which 8 have been supported (4 per annum).

The program has been regarded as successful in providing capital for high-growth firms. A success story is game software development firm Stormregion Ltd.

Nevertheless, the fund has a strong regional development focus which may conflict with the aim to find the highest-potential firms.

Another interesting aspect is that Hungary has considered two venture capital programs to be the most successful measures for high-growth firms in the country. This indicates that the supply of capital, especially in early-stage investment, is scarce in Hungary, as compared to the more developed western economies.

4.5.3 VIVACE Program of the Hungary Patent Office

www.hpo.hu/English/

The VIVACE program was founded in 2004 by the Hungary Patent Office and is funded by the Hungarian government. The program offers mentoring and advice on patenting and intellectual property, and it has been considered successful in raising the patenting rate of Hungarian SMEs.

Description

The VIVACE program provides mentoring and advice on patenting by IP experts for SMEs. The advisory services can include information on e.g. patents, supplementary protection certificates, plant varieties, utility models, trademarks, geographical indicators, designs, and copyrights. The program also provides a telephone help-line on IP protection, education schemes in intellectual property for attorneys and other courses, an e-learning package, as well as promotional activities for patenting.

The goal of the VIVACE program is to heighten the awareness of the intellectual property system among small and medium-sized enterprises (SMEs) and develop an “IP culture” among firms in any life cycle stage. Thus, the program tries to alleviate a bottleneck to growth caused by inadequate protection of intellectual rights.

The program is targeted at all SMEs in all sectors. Nevertheless, a focus on the technology sector is implicit.

The program was founded in 2004 and is administered by the Hungarian Patent Office and funded by the government. The annual budget for the program is 419 000 EUR, and it employs 5 staff.

Results and Lessons Learned

So far, 1 500 firms have been assisted through the program. Last year, 500 firms were supported.

The program is generally regarded as successful. The program has increased the patenting rate among SMEs, which is important as patents are considered increasingly important for the growth of technology-based SMEs. For example, with protected intellectual property, SMEs and entrepreneurs can more easily obtain venture capital or business angel funding.

The program has also been successful in increasing the awareness about the rights that are possible to obtain through intellectual property. An expected goal for the program is also to increase the technology licensing activity among SMEs. Nevertheless, while patenting is seen as an important driver of innovation and competitiveness for SMEs, the direct influence of the program on growth has been difficult to measure.

A lesson learned has been that although the Hungarian patent activity has dropped since the 1980s, it is possible to positively influence the patenting trend through direct measures.

4.6 Italy

4.6.1 I3P (Incubator of the Turin Politecnico)

www.i3p.it

The I3P incubator was started at the Turin Politecnico in 1999. It is co-financed between 6 partner institutions. The program is a successful example of a university-affiliated incubator based on a broad regional cooperation.

Description

The incubator is linked to the Torino Politecnico and targeted at students, recent graduates, and employees of the university. I3P was the first incubator in Italy linked to a university. The incubator provides infrastructure in terms of offices, seed capital through an affiliated VC fund, professional business services, as well as visibility for its tenants. The services are offered at a subsidized price. The physical space consists of offices in the Torino Politecnico. The incubator also organizes a “Start Cup”, a business plan competition for business ideas.

The incubator is targeted at knowledge-based firms, which are in practice technology firms with an emphasis on ICT. The incubator upholds a high degree of selectivity for the incoming firms. Approximately 10% of all applicants will eventually enter the incubator. Incoming firms must demonstrate their ability to develop knowledge-based projects and need to be less than one year old, i.e. in the start-up stage. The firms can stay in the incubator for up to three years.

The funding of the incubator is shared equally between six public or non-profit institutions: Politecnico di Torino, Provincia di Torino, Camera di Commercio di Torino, Finpiemonte, Comune di Torino and Fondazione Torino Wireless. The seed capital is provided through the Piemontech Fund, which is part of Fondazione Torino Wireless.

Results and Lessons Learned

So far, 69 firms have been housed in the incubator, and 8 new projects are expected in 2006. As of May 2006, there were 36 firms in the incubator. In addition, 18 projects that were offered training and mentoring as part of a “pre-incubator” program lasting for 3–6 months.

The incubator is regarded as successful. In 2004, it received the “Best Science-Based Incubator Award” by the Dutch Science Alliance organization. The incubator has spawned many new firms with an exceptional survival rate in the technological sector: out of the 50 firms that were created in the period 2000–2005, only four have gone out of business. One may wonder if this survival rate is even too high, given that high-growth ventures are also highly volatile. In total, the firms have created 220 new jobs and the firms have a total turnover of 8 MEUR per year.

The key strengths of the program have been the closeness to the university as well as the high selectivity of the program, which has resulted in a high survival rate. The program is also a good example of broad cooperation between various regional institutions.

4.6.2 Piemontech VC Fund

www.piemontech.it

The Piemontech VC fund was started in 2004 to support ICT start-ups in the Piedmont region. The fund provides investments of up to 200 000 EUR for start-up funding. Fondazione Torino Wireless, a publicly founded foundation, is the principal institution behind the fund and the fund is also associated with the I3P incubator. The fund upholds very strict criteria for financing and has so far been considered successful.

Description

PiemonTech is a small venture capital fund, investing from 20 kEUR to 200 kEUR for a 20–35% equity stake in Piedmont start-up companies. The fund also provides advice and consulting support, e.g. regarding strategy formulation, new customer identification, and human resource management. The aim of the fund is to promote innovation and foster growth and development in the high technology industry in Piedmont while generating acceptable financial returns to the fund.

The Piemontech fund concentrates its funding and non-financial efforts selectively on a relatively small number of firms. The fund targets innovative start-ups and young firms in the technology sector; mainly ICT, but also to some degree biotechnology, advanced mechanics, and high value added services. In order to obtain funding, firms must have a high growth potential and aim at international markets. Investments are expected to typically last 4–5 years.

The fund is associated with the I3P incubation centre and operated by Fondazione Torino Wireless, a publicly funded foundation, which owns around 50% of the fund. Many other partner foundations and firms own minority shares and participate in the management of the fund, including the I3P incubation centre, Eurofidi, and Unione Industriali di Torino.

The annual budget is 2.5 MEUR, and this is expected to increase to 5 MEUR in the next year and a half. Two full time staff work with administration, and the fund involves its network partners for evaluating proposals.

Results and Lessons Learned

So far, the fund has made 12 investments out of 600 proposals. This implies a 2% funding ratio, which is quite similar to that of private VC funds. The goal is to create a portfolio of 40–50 firms in total.

The fund has been regarded as successful in enabling growth through the capital it provides.

While it is too early to evaluate the growth rates of the portfolio firms since the first investments were made 1.5 years ago, there are many positive signs. Out of the 8 first firms, 6 were funded have transitioned from the R&D stage and are now generating revenues, and none of the funded firms have gone out of business. There are also negotiations about second-round financing with some firms, which is also a positive signal.

Another sign of the success of Piemontech is an increasing number of applications and an increased interest among entrepreneurs who apply to the fund. This goes

hand-in-hand with a growing awareness of VC funding in Italy and the Piedmont region as a whole. Entrepreneurs who apply to the fund appear to be better trained and prepared when they approach VC funds than they were 1.5 years ago, which also indicates an improvement in the quality of demand of venture capital.

Compared to many other public policies in Italy which fund a larger part of the applicants, Piemontech can apply stricter criteria and thus uphold a higher quality level among the funded firms. This ensures that the resources of the fund are spent effectively on firms that have a clear growth strategy and target international markets, and thus should achieve a larger impact.

Another key to success has been the network of public and private partners cooperating around the fund. Although Piemontech is a relatively small fund, the network around it is continuously growing, e.g. in terms of the universities and research centers from which the fund receives proposals.

4.7 Netherlands

4.7.1 Mastering Growth Program

[no website as yet]

The Mastering Growth Program is one of the few initiatives around to focus on the initiation and management of growth from a managerial perspective. This is one of the few initiatives to ask two crucial questions: (1) “How can I initiate growth in my firm?”; and (2) “How can I manage rapid organizational growth?” The program was started in 2006 and is financed by the Ministry of Economic Affairs. The program arranges training events for entrepreneurs who have growth expectations.

Description

The program supports “master-classes”, in which ambitious entrepreneurs with growing companies learn from each other (through interactive case studies and experience sharing) about how to achieve high growth, e.g. in terms of funding, human resource management, strategic planning, and growth management. These workshops provide an opportunity for entrepreneurs to share notes and ideas, and these are combined with tailored lectures on growth. The classes are implemented by the management academy De Baak and the national innovation agency Syntens.

The goal of the program is to improve both the motivation to grow, as well as the management skills of the participants. The classes are aimed at leaders of firms of all sizes and in all stages of development. The common denominator is that the entrepreneur should be ambitious and aim for growth. The courses are carried out in 4 different regions, and there are four different modules that target firms of different sizes: start-up (<15 employees); moderate growth (15–35 employees); fast growth (> 35 employees); and large firms (>250 employees). The program focuses specifically on a few select sectors, including human health, agriculture & food, manufacturing, logistics, construction, and creative industries

Each participant is charged 3 000 EUR for participation in the program, and the courses are subsidized by the Ministry of Economic Affairs. The budget for the co-financing is 250 000 EUR.

Results and Lessons Learned

Although the program has just been started, there are high expectations attached to the program.

An innovative aspect of the program is that the participants primarily learn from one another. Any training input is highly customized and application-oriented, and input and feedback is actively solicited from participants in interactive sessions. The program thus seeks to achieve sharing of tacit skills and experiences, which is often overlooked in formal training programs. A good concept of the program is that it divides entrepreneurs leading firms of different sizes and growth prospects in different groups, as each group is expected to have somewhat different needs and be facing different growth constraints. The program expects 10–15 firms to participate in each of the 4 modules in every region, i.e., a total of approximately 200 in the country as a whole.

To a larger degree than many other programs, this program aims to improve the skill and motivation of the entrepreneurs. It could be argued that more programs could benefit from focusing on the improvement of the motivation and the sense of self-efficacy of the entrepreneurs instead of focusing on firm-level resources, as it is mainly the entrepreneur who is responsible for initiating and maintaining a growth process in the firm.

4.7.2 TechnoPartner Program

www.technopartner.nl

The TechnoPartner program was started in 2004 as a joint initiative between the Dutch Ministry of Economic Affairs and the Ministry of Education, Culture, and

Science. The program is a result of merging and substituting a number of earlier support initiatives of the ministries into one, comprehensive program. The program attempts to increase both the supply and demand of venture capital, and as such it has been regarded as very successful.

Description

The TechnoPartner program is a comprehensive approach to improving access to venture capital and business angels. The program consists of four subprograms, each contributing to this end:

- 1 Knowledge Exploitation funding program – Provides grants for research commercialization, such as help with patents and pre-seed financing for researchers
- 2 Seed facility – Provides a subsidized loan for co-investment in early stage firms that improves the risk-return ratio for private investors
- 3 Certificate – Assesses the business outlook for young firms and may award a certificate for the firm combined with a loan guarantee of 80% for up to 100 kEUR loans to firms that qualify for the certificate. The program thus reduces the risk for banks financing high-growth SMEs and thus facilitates access for entrepreneurs to bank financing
- 4 Business Angel Program – Upholds an information service for “virgin angels”, for example on contracting and monitoring rights. Virgin angels are potential new business angels that want to invest in young SMEs.

The program is mainly targeted at supporting the supply of early stage capital, whether that is through public grants, banks, business angels or venture capital funds. This is expected to benefit innovative technology firms in the seed, start-up, and early growth stages.

The budget for all of the four subprograms is a total of 85 MEUR over 4 years. There are 6–7 staff directly working with the program.

Results and Lessons Learned

In 2005, seven Venture Capital funds (out of 14 applicants) were supported through the seed facility. Similarly, seven research ideas were sponsored through the Knowledge Exploitation program. A total of 23 firms were certified for loan guarantees.

The major benefit of the program is that it takes a multi-angle view of financing to SMEs, and aims at encouraging investments in young technology start-ups by new business angels, banks, as well as venture capital funds. As such, it seems like a promising approach. For the earliest stage ideas (research commercialization), the only appropriate mode of financing has been considered to be grants since the risk-return ratio in these types of investments is the least attractive for private investors.

4.8 Spain

4.8.1 Contest of Ideas for the Creation of Technological or Science-Based Industries

www.parquecientifico.uc3m.es/emprende/

This contest is a competition for technology-based business ideas in the Madrid region. The competition is targeted mainly at young university students. The initiative was started by the University Carlos III and Technological Park of Leganés in 2004.

Description

The contest consists of an annual competition for technology- or science-based business ideas. The aim of the contest is to promote innovative business concepts and young entrepreneurs in Madrid and encourage the commercialization of R&D.

The prizes for the winning concepts consist of three aspects. First, there is a money prize for the top four concepts. Second, the top concepts will be offered the incubation services of the Leganés Technological Park for free for six months, including supplementary services such as training, legal consulting, taxes assessment, administration, and access to financial channels. Third, the top concepts will gain visibility through media coverage.

The competition is mainly addressed at university and MBA students in their final year. The initiative targets the seed stage of forming a new business venture, and there is an explicit focus on business concepts in the technology sector.

University Carlos III and the Technological Park of Leganés arrange the competition, and the competition involves around 20 part-time staff. The yearly monetary prizes total 30 000 EUR, of which the number one concept receives 12 000 EUR.

Results and Lessons Learned

Between 2–4 business ideas are promoted annually in the competition. So far, 12 projects have been promoted.

The initiative is generally considered very successful. Some new firms have been created. However, there exists very limited data on their growth.

Also the externalities of the initiative are deemed to be significant. Most important is the degree to which the competition can raise the awareness of and interest in an entrepreneurial career. These effects have been considered very important in Spain, as very few young people in Spain seem interested in an entrepreneurial career.

4.8.2 Embryo Project - Program for University Entrepreneurs

observatorio.umh.es/embryo

The Embryo Project is a program started in 2000 by the University Miguel Hernandez. The program seeks to encourage students to become entrepreneurs, through courses, mentoring, and seed funds. The program is co-financed by the European Commission.

Description

The Embryo project provides training, advice, and access to entrepreneur networks for potential technology entrepreneurs at the University Miguel Hernandez. The university provides both the infrastructure needed to develop and coordinate the Embryo firm and offers courses and counseling in business skills for researchers.

The program focuses on three issues: (1) the identification of entrepreneurs with a university background; (2) the promotion and development of their entrepreneurial skills; and (3) the development of a local expert infrastructure in order to give support to new technology ventures. The program takes an integrative view on entrepreneurship and tries to address a range of aspects from opportunity identification and motivation to issues of monitoring and control once a firm has been set up.

The program has been in effect since 2000 at the University Miguel Hernandez de Elche and is financed mainly by the European Commission. There are two full time employees involved in managing the program.

Results and Lessons Learned

Since the inception of the program, there have been 74 (in 2005: 14) start-ups and 4 (1) spin-offs participating in the program. An example is NutraCitrus. Within the start-up firms, 150 new jobs have been created.

There are 7 412 students enrolled in an entrepreneurial club at the university, and the program has had 1 068 participants in its motivation and training activities.

The program is regarded as very successful. It has spawned new entrepreneurs and increased the motivation to grow and the skills to do so.

One lesson learned is the importance of developing a local network of entrepreneurial partner in the form of experts, mentors, and partner firms. By doing so, it also increases the impact of the program in a cost-efficient way. The program has also recognized the importance of gaining the acceptance of the university board to develop the program to suit the needs of entrepreneurs and network partners.

What sets this measure apart from many other measures is that it focuses on the individual level, in identifying and motivating the entrepreneur. This approach could be worthy of more policy attention.

4.8.3 Prestecs Participatius del CIDEM – Participative Loans

www.cidem.com/cidem/cat/actualitat/noticies/2006/03/306prstecscapitalconcepte.jsp

Prestecs Participatius del CIDEM is a new public venture capital fund for young firms and spin-offs in Catalonia. The fund is a collaborative effort between six universities. It is funded by the Catalonia Investment Promotion Agency. The fund offers seed-stage loans and start-up equity investments.

Description

The venture capital fund offers two types of financing for the seed, start-up, and early growth stages for technology-based firms. First, firms can be granted a so-called concept capital of up to 100 kEUR as a subsidized participative loan. Second, firms can get seed capital of up to 300 kEUR as an equity stake in the firm in order to accelerate growth during the early growth stage. The program can also refer firms to venture capitalists for additional funding.

The target group of firms is high-growth start-ups in the technology sector. There is a maximum age limit of 2 years for the participating firms.

Six universities in Catalonia cooperate around the venture capital fund. The main part of the capital comes from the public Catalonia Investment Promotion Agency.

The annual budget of the fund is 2.6 MEUR (2006), and it involves more than 25 staff.

Results and Lessons Learned

In May 2006, three firms had been funded. The expectation for the full year is that 26 firms will receive funding. It is too early to pass any judgment on the success of the program. The expectations are high, though. One supported company, that has already seen growth, is Activery Biotech.

The fund represents a good example of cooperation between universities, government agencies, and entrepreneurs. As such it may also give participating universities an incentive to further encourage entrepreneurship and commercialization of research.

4.9 United Kingdom

4.9.1 Gateway2Investment (g2i)

www.g2i.org

The Gateway2Investment (g2i) program was started in London in 2005. The program helps innovative firms become “investment-ready” through a three-stage program that involves self-assessment, training, and mentoring. All 42 universities in London participate in this very successful program which is lead by Grant Thornton and financed by the London Development Agency.

Description

The program provides help and assistance to innovative firms to become investment-ready. The program consists of three stages, where after each step some firms are selected for more comprehensive support in the next step. The program starts with entrepreneurs making a self-evaluation of their firm’s investment-readiness. This self-evaluation is aided by the diagnostic software package Gauntlet. Later-stage support is provided through individual and group workshop ses-

sions as well as through mentoring sessions where e.g. investment propositions and business plans are developed. No grants are given out, but the aim of the program is to aid participating companies to become viable and attractive investment opportunities for private investors.

The program targets firms in the technology sector (e.g. biotech, ICT, energy, environmental technologies) which have passed the seed stage and are looking for investors to finance growth. Typically, companies that participate in the program are not new. The goal of the program is that each firm would be expected to raise financing of at least £ 0,5 Million within a 12-month period.

The program is a three-year project which is principally financed by the London Development Agency. The financial advisory firm Grant Thornton is the lead delivery partner and thus in charge of the day-to-day running of the program. Private-sector partners provide advisory services and software at a discounted price or for free, which reduces costs.

The budget for the 3-year period from 2005 to 2008 is approximately 2 MEUR in total. There are 2,5 core staff members at Grant Thornton who are working exclusively on g2i, and around 20 others are drafted when needed.

Results and Lessons Learned

So far, 169 companies have support for 2h or more while a smaller number has received more intensive support. 13 companies have raised outside capital, 10 Million EUR in total (between 0,2–2 Million EUR per firm); the target for the program is to raise 50 Million EUR for the participant firms by 2008. So far, the firms have created 117 new jobs.

The program is considered very successful. It has a proven success of successfully obtain VC financing for firms. As there are new big investments in currently in the pipeline, the program thinks that it will meet its targets.

The program has recognized that a lack of financing is not a problem in London, but instead the knowledge and skills about how to access the finance is the bottleneck. By acting as a gateway for firms to access financing, the program thus represents a good example of how to improve demand for venture capital in an area where fewer or no measures are needed to improve the supply side. In that it is similar to the INTRO program in Finland which is also built around the idea that there is no supply-side financing gap, but that the cause of the scarcity of early stage investments is on the demand side as entrepreneurs are not aware of how to turn their firms into attractive investments.

Another lesson learned is the importance of managing the participating firms' expectations concerning the firm's journey through the program. A related lesson is the importance of making sure that programs are fully thought through and robust at the time of launch in order to generate goodwill and momentum.

4.9.2 High-Growth Start-up

www.yorkshire-forward.com

High-growth Start-up is regional project (Phase 1: 2001–2004; Phase 2: 2004–2009) started by the Business Link organization in South Yorkshire in 2001. The program is co-financed between the EU and the Yorkshire Forward Development Agency. The program provides coaching and mentoring by former entrepreneurs to growth-oriented start-ups in the region. The program is generally considered very successful, and it has assisted several hundreds firms that have created close to 2000 jobs.

Description

The program provides up to 18 months of pre-start and start-up mentoring and coaching support for high-growth start-up firms. The mentors will assist the firm in making a plan for growth, and they also broker appropriate support for the business to overcome any identified challenges. The mentors used are usually experts in the particular business sector and have experience of starting and growing their own businesses.

The program also aims to stimulate the enterprise culture by helping to identify and develop business opportunities, support businesses that are capable of achieving high levels of growth, and remove barriers to growth for these firms. The overall goal of the sub-regional program is to make South Yorkshire the best place to start and grow a business in the United Kingdom.

The program is targeted at 'high-growth companies', which are defined as start-up firms that target a turnover of approximately 400 000 EUR by year two. The prioritized sectors are technology (e.g. biotech, advanced manufacturing, environment, and energy technologies) and professional services.

The current second phase of the program will run from 2004 to 2009. Nine private sector organizations based in South Yorkshire have been contracted for the delivery of the support. The program employs 7 staff, and the total annual budget is 2.5

MEUR. The program is co-financed by the Yorkshire Forward Development Agency and the European Regional Development Fund.

Results and Lessons Learned

During the first phase of the program in (2001–2004), 595 start-ups were supported, and these firms have created a total of 2010 jobs. For the second phase of the program (2004–2009), the target is to support 295 start-ups creating 1744 jobs. Last year, 150 firms were supported.

South Yorkshire has historically had a low rate of entrepreneurship in the region, but the program has generally been considered very successful in increasing the level of growing new firms. One success story is the DVD software company ZOOtech.

A reason for the success has been that the program focuses on unblocking progress and providing the firms with the managerial skills and insight that they need for growth. Another important success factor is that mentors have private-sector experience from entrepreneurial activities. In many other programs, business coaches tend to be publicly employed or do not necessarily have personal experience from starting and running a firm.

A lesson learned has been that entrepreneurs need to be shielded from data collection requirements and bureaucracy that often may accompany national and European support programs. The program also must ensure that all interaction with entrepreneurs is timely and based on the client's time and availability and not on the needs of the support organization.

For the development of the project, the program is trying to design and implement a new diagnostic process that allows the program to identify certain entrepreneurial traits that give projects greater success.

4.9.3 Mustard.uk.com

www.mustard.uk.com

The Mustard.uk.com program was started in the West Midlands, UK, by the two public organizations Advantage West Midlands and BusinessLink in 2000. The program is co-financed by the E.U., and it offers business coaching and subsidized private consultancy services to nascent entrepreneurs and young start-ups. The program has been regarded as very successful.

Description

The program refers firms to and subsidizes private consultancy services (e.g. in management consulting, law, accounting) for new nascent entrepreneurs and start-up firms. The firms should have a target of at least 250 kGBP turnover in their second year and be willing to locate in the West Midlands region.

In addition to access to subsidized consultancy services, available support includes workshops for start-ups and nascent entrepreneurs, access to a business opportunity database, and mentoring services for young firms through a dedicated business coach. Support is provided for up to 18 months, but can be extended for up to 36 months.

The program aims to aid the start-up of new growth-oriented firms by facilitating access to business expertise for entrepreneurs and firms in the seed and start-up stage. While the program is not limited to firms in any specific sectors, the priority sectors are creative industries, food, and tourism.

The program was started in 2000, and it is run by the Advantage West Midlands and Business Links in the West Midlands organizations, and co-financed with the European Regional Development Fund. The budget is 2,6 MEUR per annum, and the program employs 3 full time staff in the central management team and 15 managers working as business coaches across the region, plus contracted private sector consultants.

Results and Lessons Learned

Since the inception of the program, approximately 2000 firms have been supported. Last year, 300 firms were supported. The current average size of the companies that have participated in the program is 400 kGBP in turnover and 8 employees. Some star companies have grown to over 100 employees.

The program is generally considered very successful. The reasons for success have been a clear and independent brand identity of the program, a focus on nascent entrepreneurs who are already in employment, the co-pay system for the services, and a good quality control of the private sector partners.

A brand identity is especially important since many in the target audience have traditionally had a skeptical or outright negative perception of government support programs. It is of great importance to let the program be quite independent from government and have a high degree of interaction private sector partners such as banks, financial advisors and consultants that are well respected by the target audience.

Also important is the insight that potential high-growth entrepreneurs may often be employed, and therefore need support and guidance on their career change path to self-employment. Having a co-pay system for the subsidized services challenges and motivates the clients.

Finally, only private sector partners that have gone through a quality assurance process are involved in the program. This ensures that the clients get what value for their money and time investment in the program.

A lesson learned has been the importance of looking at the needs of each individual business and entrepreneur and tailor the support for that business. This involves packaging the right solutions, with the right consultant and the appropriate coaching. There is no one-size-fits-all in supporting new growth-oriented firms.

4.9.4 West Yorkshire Ventures

www.wyventures.co.uk

The West Yorkshire Ventures program was launched by the West Yorkshire Enterprise Partnership organization in 2005. The program provides business coaching for firms with high-growth potential through its own consultants. The program is considered very successful.

Description

The program offers business coaching through its own consultants and provides financial support for professional services based on a diagnostic analysis of the firm's needs. The level of funding for the services depends on the firm's likely level of growth and the type of activities to be undertaken. Advice and coaching is provided for up to 24 months, and financial support for professional services is provided for up to 12 months. The program also arranges training and networking events for entrepreneurs.

The aim of the project is to ensure that high-potential firms have the most appropriate and substantial support needed to assist their business development, and thus create sustainable jobs in the region.

In order to be eligible for support, the firm must be an SME based in the West Yorkshire region, which targets a turnover of over 1.5 MEUR within three years. There is an implicit focus on the start-up and early growth stages of development.

The program is open to all sectors, with the exclusion of franchisees, real estate, and professional services.

The program is similar to the South Yorkshire program, with the difference that this program relies on its own consultants for coaching while the South Yorkshire program contracts private organizations for coaching.

The annual budget of the program is 1.78 MEUR, and it is co-financed between the Yorkshire Forward agency and the European Regional Development Fund.

Results and Lessons Learned

So far, 566 businesses have been supported through the program. These firms have created 920 jobs.

The program is generally considered very successful in assisting firms to achieve growth. However, the number of jobs created per firm is quite small, or on average less than two per firm. The program is still new, and it may thus be too early to judge the development of supported firms.

A lesson learned is the need for the program to be flexible and adapt to the varying needs of high-growth entrepreneurs and understand entrepreneur's dislike of bureaucracy. Equally important is to manage intermediaries (i.e. organizations that refer firms to the program) in order to achieve a flow of high-caliber clients, and to ensure that the advisors are competent and can thus be able to build credibility with clients.

4.10 Categorization of the Cases

The review of policy initiatives addressing high-growth entrepreneurship enables us to distinguish between several categories of policy initiatives. In the review above, it is clear that one set of policy initiatives focus on enhancing the infrastructure for innovation, through institutional and infrastructural arrangements. Such initiatives aim to increase the creation of technology-driven opportunities for the creation of high-growth entrepreneurial ventures, without necessarily directly attempting to promote such ventures themselves. Such infrastructural arrangements include, e.g., science parks, university technology transfer centers, and commercialization-oriented applied research institutes. These initiatives often cross the border between innovation and entrepreneurship policy, and cross-policy coordination is therefore required.

Several of the initiatives could also be considered market-creation initiatives, the aim of which is to catalyze the provision of resources and business services for growing entrepreneurial firms. Dedicated venture capital funds and, e.g., business angel networks fall into this category. As the ultimate aim of such initiatives is to correct market failure, close collaboration with private-sector actors is necessary.

Dedicated support initiatives offer a broad range of advice, training, mentoring, and strategic planning services, the aim of which is to improve the managerial capabilities of participating firms. Quite often such initiatives have a market-organizing function, which they attempt to implement by combining services from several service providers into one package. Active participation by private-sector operators is often solicited, for both competence and credibility reasons. Dedicated support initiatives tend to be quite selective in character, imposing various criteria for qualification.

General policy initiatives aim at influencing broad macro-economic conditions that influence high-growth entrepreneurial activity. Such policy initiatives may address virtually any facet of the socio-economic environment, ranging from the promotion of a culture for high-growth entrepreneurship to fiscal policy measures, deregulation, and labor force policies. Such initiatives are seldom strictly focused on high-growth entrepreneurial ventures but tend to address entrepreneurial culture, motivation, and firms in general.

The policy initiatives reviewed can also be categorized in a more detailed way, based on their activity content. This grouping is shown in Table 5. Within these groups, the measures tend to have similar aims, address firms in similar stages of development, and address similar types of bottlenecks.

Table 5. Content-Based Categorization of High-Growth Entrepreneurship Support Measures

Category	Support measures
BA and VC access	Gateway2Investment (g2i) [UK / London] INOVAR Venture capital program [Brazil] INTRO [Finland] TechnoPartner Programme [Netherlands]
Business coaching	Commercialising Emerging Technologies (COMET) [Australia] Enterprise Hub [UK / South East] Growth Firm Service [Finland] High-growth company support programme [UK / East Midlands] South Yorkshire High Growth Start-up [UK / South Yorkshire] West Yorkshire Ventures [UK / West Yorkshire]
Business idea competition	Contest of ideas for the creation of technological or scientific-based industries [Spain / Madrid]

Commercialization subsidies	Commercial Ready program [Australia] Small Enterprise Research Assistance Program (SERAP) [Hong Kong]
Consulting subsidies	Emprecan (Programa Emprendedores de Cantabria) [Spain/Cantabria] High Growth Programme [UK / Wales] Mustard.uk.com [UK / West Midlands] Support of access to advanced level consultancy services – ECOP 2.2.2 [Hungary]
Entrepreneur training	Mastering Growth Programme [Netherlands] Red de Pymes Innovadoras (Innovative SME Network) [Spain]
Entrepreneur spawning	Embryo Project – Programme for University Entrepreneurs [Spain / University Miguel Hernandez]
Incubation and technology parks	Hong Kong Science & Technology Parks (HKSTP) incubation program [Hong Kong] I3P (Incubator of the Turin Politecnico) [Italy / Piedmont] Incubatore Tecnologico Genova [Italy / Liguria]
Internationalization financing	Corvinus International Investment [Hungary] Export Market Development Grant [Australia] PROGEX National program of technology support for export [Brazil]
Loan subsidies	For the prosperous Hungary enterprise development credit program [Hungary]
One-stop information shop	BIC (Business Innovation Centres) [Italy] Information Industries Bureau [Australia]
R&D tax cuts	R&D Tax Concessions [Australia]
Research commercialization centers	Co-operative Research Centres [Australia] Hong Kong Applied Science and Technology Research Institute (ASTRI) [Hong Kong]
Research commercialization grants	PAPPE – Program for Supporting Research in Enterprises [Brazil] Research into Business (TULI) [Finland]
Technological development subsidies (equipment)	Development of the technical and technological background of SMEs – ECOP 2.1.1 [Hungary]
Technological development subsidies (IP)	VIVACE program of the Hungary Patent Office for SMEs [Hungary]
Venture capital (equity) subsidies	AISP – Strategy for the financing and service system of innovative start-up companies [Finland] Innovation Investment Fund (IIF) [Australia] Southern Italy High-tech Fund [Italy / Southern Italy]
Venture capital (tax) subsidies	Pooled Development Funds (PDF) [Australia]
Venture capital funds	Applied Research Fund (ARF) [Hong Kong] Information Technology Venture Capital Fund Manager [Hungary] KVFP Venture capital investment [Hungary] Piemontech VC fund [Italy / Piedmont] Pre-seed fund [Australia] Prestecs Participatius del CIDEM – Participative loans [Spain / Catalonia] SME development capital program [Hungary]

The categories in Table 5 can be grouped thematically, as in Figure 7 below.

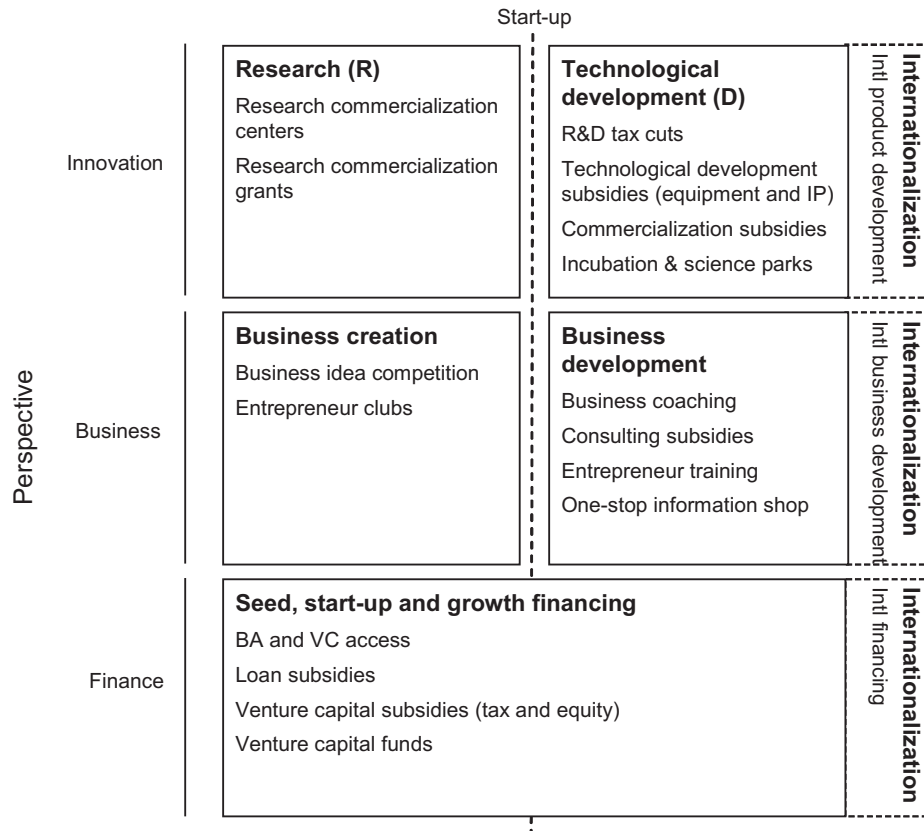


Figure 7. Thematic Categorization of High-Growth Entrepreneurship Support Measures

The first broad thematic separation of measures that can be made is among measures that target firms (post start-up); and measures that target the process before a firm has been created, e.g. by supporting promising research or encouraging entrepreneurs (pre start-up). The second broad separation of measures can be made between those types of measures that have traditionally been the focus of innovation policy, and those that have been the focus of SME or industrial policy. There are also types of measures that focus on the financial market as an enabler for firm growth, and these cannot as such be considered to part of neither the traditional innovation or SME policy perspectives, and thus form a third perspective.

The purpose of these categorizations is to map the various policy initiatives that can be undertaken to address high-growth entrepreneurial activity. The categorizations also show that effective policy addressing high-growth entrepreneurship will have to cross the traditional boundaries of policy silos. For example, measures aimed at universities and the research sphere (e.g., the creation of commercializa-

tion-oriented applied research institutes) would naturally fall into the realm of innovation policy. Business development activities, such as business coaching and entrepreneurship training, would naturally fall into traditional SME policies. Measures intended at catalyzing a functioning venture capital market would likely also involve fiscal policies. In many countries, support for internationalization is treated as a function separate from SME policy. In Finland, for example, the Finnish Foreign Trade Association has long been organized under the Ministry of Foreign Affairs. The production of potential new entrepreneurs would entail close collaboration with education policies. Because high-growth ventures are volatile, labor policy regulations may have to be addressed in many countries. This all suggests that a balanced policy effort to raise the level of high-growth entrepreneurial activity would have to cross policy departments and be coordinated at a high level. High-growth entrepreneurial activity therefore presents quite unique challenges for policy-makers.

4.11 Common Features

The principal common denominator for almost all of the successful measures listed is that they are quite new. Although some date from the 1990's, the large majority of the measures listed have been implemented within this decade. This feature is probably due to three main factors. First, the teams may be inclined to focus on initiatives that are novel, as novel initiatives are easily perceived (for good reasons) as more innovative. Second, the novelty of the cases may be due to the natural life cycle of policy initiatives. Policy measures (other than permanent institutional structures such as export promotion agencies) tend to have a limited life cycle. In fact, many of the new successful measures have also been introduced to replace older measures, and in doing so represent good examples of policy learning. Policy adjusts continuously, as illustrated by the fact that many of the successful measures are as new as from 2005 or 2006. While the newest measures still may not have proven themselves, the expectations for these new measures is high which in turn is a result of a high level of ambition among policy makers. Third, the newness of the initiatives reviewed is probably also partly due to an increasing awareness among policy-makers of the importance of high-growth entrepreneurship in general, as well as of the need addressing the special needs of high-growth firms. Data highlighting the importance of high-growth entrepreneurship is, in fact, quite recent.

In spite of recent interest, the initiatives focusing explicitly and exclusively on high-growth firms were surprisingly few. It is perhaps not a coincidence that those cases were reported in the more 'mature' policy-making contexts, such as the United Kingdom, the Netherlands, and Finland. The development of indus-

trial and SME policies in these countries is quite advanced, allowing for greater policy learning. Also, national contexts differ, so it is not surprising that in Brazil, the emphasis would be more on strengthening the technological base of entrepreneurial ventures, and in Hungary, one would report more initiatives geared to kicking off the national venture capital industry. On this basis, we may consider initiatives such as Finland's Growth Firm Service, the Netherlands's Mastering Growth Program, and United Kingdom's High-Growth Start-Up initiative to represent more 'advanced' policy measures, which may draw on greater policy experience and learning. Note that this statement does not represent a judgment of the relative quality of different programs, and appropriate policy measures are always dictated by specificities of the national and regional economic and cultural context.

Another commonality is the quite limited cooperation between private and public institutions. The policy initiatives are dominated by public-sector -driven initiatives that are geared to correcting perceived market failures, notably in venture capital and equity financing. Also, the initiatives reviewed are dominated by a focus on research commercialization activities, which provides another natural niche for public-sector operators to focus on. Even so, one may wonder if the balance between public and private sector participation is optimal, given that the role of private-sector business services is increasingly emphasized for high-growth firms. In our review, the more successful cases appeared to actively solicit private-sector participation. This is important, because much of the knowledge required to actually solicit and manage rapid organizational growth in entrepreneurial firms is tacit and operator-specific (e.g., experience-based knowledge; contacts to key industry players; ability to identify and mobilize key external resources). It is difficult for public-sector operators to develop such knowledge and resources, because their public-sector mandate effectively prevents them from participating in the day-to-day management of growing ventures. Private-sector participation is therefore important, and the problem becomes of finding the right forms for it. Although the appropriate role for private-sector participants may not be in financing or in coordinating support programs (they have little incentive and little skill to do so), they can be involved successfully in, e.g., screening deals (e.g. as in INTRO in Finland), in providing credibility to the programs (e.g., TechnoPartner Program in the Netherlands), or in offering discounted professional services for young firms (e.g., Mustard.uk.com in the UK).

It is evident that some of the measures have been founded as a result of available funding from the European Union. While European funding has given good results, policy-makers should be mindful of ensuring sufficient local responsiveness. The most innovative policy initiatives often seem to have been initiated at a local level, and they appear highly tailored to local specific needs (see, e.g., the Red de Pymes Innovadoras of Spain). However, also the European Union funding can

give rise to successful, well localized programs, such as the Mustard.uk.com program in the UK.

Overall, there seems to be an over-emphasis on technology sectors, although some successful programs are realizing this bias and are trying to break this pattern. At the moment, many initiatives seem to subscribe to the notion that rapid growth is most likely in technology-push situations, and the production of new technologies is key for economic success. While undoubtedly important, investment in technology production and commercialization alone does not necessarily guarantee success, however. Studies suggest that the greatest opportunities for rapid entrepreneurial growth can be found in business services, at least where the more mature economies are concerned (Autio, 2005a). An over-emphasis on technological innovation may therefore be inefficient, if local sophisticated demand is not sufficient. In fact, some economists suggest that the benefits of innovation may be more likely to accrue to the users of new technologies, as opposed to their creators. This suggests that also the application of novel technologies should be given due attention, e.g., in the form of novel business models and ideas. For all these reasons, a single-minded focus on technological innovation may give sub-optimal results.

A strong emphasis on technological innovation also helps highlight what appears to be missing in the policy initiatives reviewed. Most policy initiatives emphasized technology sectors almost to the exclusion of other sectors, such as business services. This emphasis does not seem consistent with the fact that rapid entrepreneurial growth is in no way confined to technology sectors, with business services probably offering even greater opportunities for rapid entrepreneurial growth. One may wonder if, for example, Hong Kong might not benefit from a more explicit and sustained focus on developing business service activities so as to leverage its gateway role in relation to the Chinese market. While a number of initiatives did include knowledge-intensive services in their focus, not a single initiative specialized in these. Perhaps for this reason, not a single initiative provided a specific focus on franchising, which provides important growth opportunities for service businesses. Overall, it seems that, while the reviewed policy initiatives are undoubtedly competently executed, policy-makers could develop more creative and imaginative approaches to catalyzing and supporting entrepreneurial growth. An over-emphasis on technology may have caused many policy-makers to neglect important opportunities in other sectors. In addition to technological innovation, important growth opportunities are created through economic re-structuring, and dedicated policy measures addressing such opportunities may well have more far-reaching benefits for macro-economic adjustment and national competitiveness.

Another bias in the reviewed initiatives is the dominant focus on universities and HIEs as a source of potential high-growth entrepreneurs. Even though studies show that high-growth entrepreneurs do have advanced education, studies also

suggest that it is relatively rare to start high-growth firms direct upon graduation. The highest rate of high-growth entrepreneurs has been reported in the age group of 35–44 years, among individuals who already have a job. This suggests that professional job experience, and perhaps individual social capital accumulated with it, is important for the successful identification and exploitation of entrepreneurial growth opportunities. Against this background, it is interesting that none of the reported initiatives focused on spin-offs from industrial companies (rather than universities). Policy initiatives targeting industry spin-offs might well prove effective.

Finally, the reviewed initiatives overwhelmingly belonged to a single agency or policy department. Initiatives involving several agencies or policy departments appear to be rare, suggesting insufficient collaboration between, e.g., innovation and entrepreneurship policies. Also, none of the initiatives reviewed depicted links to broader macroeconomic policy, for example, to fiscal policies. Because innovation-driven ventures often cross policy domains (in this case, innovation, educational, and SME policies), coordination across policy departments appears necessary. One may wonder if, for example, a tighter coupling of university curricula with entrepreneurship initiatives might not lead to a greater output of academic entrepreneurs.

In summary, while our review resulted in the identification of altogether 47 policy initiatives which had at least some focus on high-growth entrepreneurial activity, dedicated initiatives with an explicit focus on high-growth entrepreneurship remain surprisingly rare. The selection of initiatives also suggests a dominant focus on market failure correction (in particular, the activation of an indigenous venture capital industry), as well as on entrepreneurial activity driven by technological innovation. While such a focus is justified, it does leave several important areas insufficiently covered. The small number of dedicated high-growth policy initiatives, as well as the apparent lack of coordination across policy departments, suggest that much remains to be done in order to develop effective and far-reaching policy initiatives for supporting high-growth entrepreneurial activity.

4.12 Good Practice Lessons

The reviewed examples of high-growth entrepreneurship support are wide-ranging in terms of their focus, and universally applicable good practices may not be possible. However, the reviewed cases offer several intriguing details and insights, some of which may be applicable in other contexts. We summarize these in below.

From the cases, as well as the preceding literature review, it appears evident that any initiative seeking to promote rapid entrepreneurial growth must be highly se-

lective, when choosing participating firms and individuals, even to the point of exclusivity. Only a very small minority of all entrepreneurial ventures are motivated and able to achieve rapid growth. A non-exclusive support philosophy, under which a little support is given to everyone, is only poorly suited to addressing high-growth entrepreneurial ventures. Many of the reviewed initiatives were indeed selective and apply quite rigorous criteria for qualification. Obviously, the degree of selectiveness should vary according to the general focus of the support initiative, with innovation and R&D-oriented initiatives being less selective, and initiatives focusing on more mature ventures being more selective. The further a given venture has progressed in its development path, the more accurately its growth potential, ability, and motivation can be independently verified, and the more rigorous the selection criteria that can be applied.

Some initiatives, such as Finland's Growth Firm Service, proactively approach potential high-growth firms for support. Instead of waiting for the firm to approach them, the service actively scans the environment for potential high-growth firms with the idea of developing individually customized support packages for these. Such an attitude, also manifest in some other examples, represents a major reversal of the traditional SME support philosophy, under which SMEs approach support initiatives to seek solutions to perceived problems and needs. A proactive approach enables the agency to implement a highly selective approach, as well as to address emerging needs even before these are necessarily felt by the client venture. A proactive approach is entirely consistent with the fact that only a small minority of all entrepreneurial ventures are both motivated and able to achieve rapid growth. In addition to enhancing selectivity, a proactive approach may also help address growth motivation, as such an approach by a reputed support agency may also represent an independent validation of the venture's potential for the focal entrepreneur. A proactive approach is not completely without risks, however. The policy-maker can easily fail to identify prospective high-potential firms. A proactive and selective approach may also give rise to abusive and even coercive practices, as it does place significant power and influence in the hands of the support agency. Excluded firms may complain of discrimination. Therefore, a proactive approach should be implemented carefully in order to maintain transparency, responsiveness, and flexibility, as well as to prevent abuse.

In policy initiatives that are in active contact with growth-oriented entrepreneurial firms, an active participation of private-sector actors is manifest. This participation not only serves to introduce experience-based, often tacit skills in instilling and managing rapid organizational growth, but it also serves to enhance the street credibility of the initiative. Street credibility is crucial for attracting the participation of truly high-potential firms, as these often tend to shun public support as inefficient and not sophisticated enough to deliver tangible value. To attract the right participants, it is important to establish an image of exclusivity, competence, and profes-

sionalism. If a dedicated policy initiative fails to establish these at the outset, this failure may turn out difficult to correct later. This is because the participants of the support initiative also generate an important portion of the value of the initiative, particularly in initiatives involving active experience sharing between aspiring growth ventures. A well-executed launch of the initiative, perhaps combined with proactive selection of participants, can thus be crucial for subsequent success.

Because achieving growth may take time, and because high-growth firms are volatile, a sustained and focused effort is necessary, one which is also prepared to accept casualties. Initiatives that directly address high-growth firms should be narrow in focus and sustained in effort. Because the management of organizational growth is very demanding, a major emphasis should be placed on the development and sharing of managerial competencies, based on an interactive approach and the participation of seasoned managers with a deep experience in the management of growth ventures. The skills of managing rapid growth cannot easily be taught without first-hand experience, and getting access to the right resources requires contacts and social capital, the kinds of which are not easily acquired by public-sector organizations.

In summary, dedicated initiatives addressing high-growth entrepreneurship should:

- be highly selective, particularly when addressing later stages of venture development
- require strong growth motivation from participants
- be proactive in inviting prospective growth firms
- consistently address managerial motivation and skills
- involve close collaboration with private-sector service providers
- nurture an image of professionalism, competence, and a certain degree of exclusivity
- implement sustained and focused development efforts
- involve highly customized and tailored management development activities that involve experience sharing and apply an interactive approach
- link grants and participation to growth aspiration and achievement of milestones
- be prepared to accept casualties
- involve seasoned managers who have experience in rapid growth.

4.13 General Lessons for Policy

There are a number of notable things we can learn from these cases. First, firms that want to grow have many needs and they need to be dealt with flexibly and quickly. Entrepreneurs are short on time and don't want to be standing in line waiting for bureaucratic processes to take their due course. Therefore, programs need to have sufficient autonomy to reach their objectives, be quick and flexible, and be able to address as large a range of needs as possible for the entrepreneur. While it is both clear that entrepreneurs do not want to deal with many separate offices and programs, and it is equally evident that one measure cannot do everything for all types of entrepreneurs, a suitable organization of programs would be that each program would cater to a specific group of entrepreneurs (e.g. nascent entrepreneurs) or firms (e.g. technology start-ups) and through their own programs or through referrals to other agencies handle all needs of this target group.

It is also important to effectively make use of networks of both private and public organizations when designing and implementing support measures. By doing this, the measure can benefit from the expertise, reach, and reputation of all the organizations and thus gain a higher visibility and credibility. Network-building is especially important when implementing regional measures – Piemontech in Piedmont and the Participative Loans program in Catalonia are good examples – but cooperation between a range of public and private partners should be utilized to a higher degree also on the national level.

A related issue is the importance of improving the perception of government support programs generally, as they may often have a poor image in the eyes of entrepreneurs. Steps towards this include the need to make programs more independent, flexible, and, as noted above, involve respected private-sector partners that add their expertise to the program. Public programs should also aim to recruit and involve more people from industry and especially former entrepreneurs in the planning and execution of the programs to ensure that they have a deeper understanding of the entrepreneur other private partners.

In the future, more measures of the type that are targeted at improving the motivation and skills of the entrepreneur are needed. These measures address the critical issue of actually encouraging and supporting the entrepreneur's behavior to start a growth process, and are a pre-requisite for the measures that support firms to grow process to have an impact and be successful. There are many measures of this latter type which support firms that already have a motivation to grow significantly, but getting entrepreneurs to that stage should be one of the major future foci when planning new support measures.

5 Conclusions and Policy Recommendations

5.1 From Entrepreneurship Policy to High-Growth Entrepreneurship Policy

Entrepreneurship has many faces. Some faces matter more than others in economic terms. This should be taken into consideration in entrepreneurship policy. The time for generic entrepreneurship policy has passed, and new focus and sophistication needs to be introduced in policy-making and implementation in order for economies to take full advantage of their entrepreneurial potential.

Acs (2001) observed that entrepreneurship policy covers several levels of analysis or “layers” of the society, from the individual entrepreneur to the national economic and societal context (Figure 8). Comprehensive entrepreneurship policy, therefore, should also be multi-layered. Policies addressing one level alone may not lead to successive outcomes, if other layers are neglected. Measures aimed at providing funding for high-growth new ventures may find little opportunity to fund growth if the right individuals are not persuaded to make the entrepreneurial choice. Measures aiming at reducing compliance costs will have little effect on growth if the motivation and opportunities for growth are absent. Only a balanced palette of policy initiatives, tailored to suit the national economic and social context, is likely to make a difference for high-growth entrepreneurship.

	Goals	Targets	Instruments
Agent – Occupational Choice Policies	More Effective Entrepreneurs	Individuals	- create awareness - entrepreneurship training - facilitate networks
Business – Enabling Policies	Continuous Innovation	New Firm Formation	- finance - regulatory relief - SBIR - science parks - tech commercialization
Economy – Supporting Policies	Economic Growth	Institutions – Universities Government Corporations	- R&D - higher education - venture capital
Society – Social Policies	Equal Opportunity	Wealthy Individuals	- philanthropy - taxes - social pressure - legal structure

Figure 8. Four Facets of Entrepreneurship Policy (Acs 2001)

As is evident from our theory review, as well as from the policy initiatives reviewed, high-growth entrepreneurial activity can be radically different from general entrepreneurial activity. Some of the differences can be so drastic that they may give rise to conflicts and trade-offs between traditional SME policy and policies directed at high-growth entrepreneurial ventures. The fundamental source of trade-offs is the choice between *quantity* and *quality* in entrepreneurial activity. In general, SME policies are concerned with increasing the number of people who start new firms, as well as providing a stable and smooth operating environment for small firms. The key SME policy goals, thus, are quantity and stability. In contrast, policies aimed at fostering high-growth entrepreneurial activity tend to emphasize quality and dynamism. This leads to important trade-offs, and even conflicts, especially where resource provision measures are concerned. Important differences and trade-offs between SME and high-growth entrepreneurship policies are listed in Table 6 below.

Table 6. Differences Between SME and High-Growth Entrepreneurship Policies

	SME Policy	High-Growth Entrepreneurship Policy
Policy Goals		
- objectives in relation to entrepreneurs	Entice more people to become entrepreneurs	Entice the right people to become entrepreneurs
- objectives in relation to entrepreneurial firms	Increase the number of new entrepreneurial firms	Increase the growth of entrepreneurial firms
- objectives in relation to operational environment	Facilitate the environment for small business operation	Facilitate the environment for entrepreneurial firm growth
Resource Provision		
- source	Mostly from public sources	Combination of public and private sources
- type of financial resources	Grants, subsidies, soft loans	R&D loans and innovation grants, business angel finance, venture finance, IPOs
- dominant service	Basic (standard) advice for firm creation, business planning, small business operation	Experience-based advice for venture finance; strategic planning; internationalization; organizational growth
- resource distribution principle	Ensure equal access for everyone (resource spread)	Select promising recipients (resource focus)
Regulatory Emphasis		
- life cycle focus	Remove bottlenecks to new business entry	Remove bottlenecks to entrepreneurial firm growth
- compliance bottleneck addressed	Reduce cost of compliance for small businesses	Smooth compliance requirements for growing firms
- fiscal regulations	Reduce VAT for small firms	Accommodate dramatic changes in firm scale; treat share options neutrally
- attitude toward failure	Avoid failure, bankruptcy	Accept firm failure and bankruptcy, but reduce the economic and social cost of these
- links to other policy domains	Industrial policy, social policy, labor policy	Industrial policy, innovation policy, labor policy

As governments struggle to create jobs, entrepreneurial firms are often seen as an easy way to service this objective. We suggest, however, that campaigns to encourage more people to become entrepreneurs are only half correct. Even though, for example, campaigns to seduce unemployed persons to start new firms may service valuable social policy goals, they are not likely to be very effective in fostering job creation. Effecting rapid organizational growth is demanding and often requires significant professional social capital. Therefore, it is important to get the right people to start new firms.

Another overriding, but perhaps slightly misguided policy emphasis is the focus on facilitating small business operation. Because small firms have smaller resources, they experience greater difficulty in achieving compliance with laws and regulations. For this reason, much policy emphasis has been directed at reducing red tape and compliance requirements for small firms. While justified as such, measures aimed at facilitating small business operation may even become counterproductive if not complemented with measures aimed at removing regulatory barriers to growth. In Germany, for example, many firms choose not to grow beyond the size of 49 employees because of added administrative burdens that become in force after this threshold. If the various compliance requirements kick in too suddenly or in too rigid fashion, this may create disincentives for organizational growth and inhibit high-growth entrepreneurial activity.

Perhaps the most important conflicts between SME and high-growth entrepreneurship policies are associated with resource provision. Because of the general SME policy goal of creating more entrepreneurial firms, publicly funded resource provision initiatives often seek to provide at least some level of support for everyone. However, we suggest that providing a little help for everyone may not be compatible with the objective of effecting entrepreneurial firm growth. Only a small number of new firms have the potential for rapid growth. The support needs of such firms may be highly demanding, however. Therefore, resource focus is more important for high-growth entrepreneurship policy than resource spread. This requirement may bring high-growth entrepreneurial policies in conflict with traditional SME policies, since investing more support on fewer firms implies obvious trade-offs for resource allocation. In Finland, for example, the per-capita number of venture capital investments (counted as the number of firms receiving venture capital funding) is the highest globally, mostly because there are numerous government-driven venture capital initiatives in the country. If one looks at the amount of venture capital received per firm, Finland ranks behind India. Clearly, Finland's government-driven policy objective of creating more firms with venture capital has given rise to a situation in which investment per firm is sub-optimal, and the return on invested funds suffers.

Especially in countries with high unemployment (such as many European Union countries), entrepreneurship policy objectives are often linked with social policy

objectives. Entrepreneurship (or, rather, self-employment) is seen as a means of creating work for unemployed persons, as well as a means of re-invigorating economically depressed regions. While such objectives may be worthy as such, they may not be alone, effective in terms of fostering economic growth. A more appropriate policy link for high-growth entrepreneurship policies, therefore, might be found in innovation policy. Indeed, an emphasis on high-growth entrepreneurial activity suggests a policy mode in which innovation and entrepreneurship policies are closely coordinated.

5.2 Policy Recommendations

Emphasis on Quality, Not Quantity

In entrepreneurship, quality matters. Even though the importance of high-growth entrepreneurs has been widely substantiated in empirical research, government policies still tend to focus on entrepreneurship in general, and policies dedicated to high-growth entrepreneurial activity remain few. Entrepreneurship policies tend to be general, unfocused, and emphasize numbers rather than quality. Enhancing the economic impact of entrepreneurship policies requires broad-based measures which address multiple aspects of policy design, implementation, and monitoring; at the levels of the individual, firm, sector, and society.

5.2.1 Policy Design and Monitoring

Horizontal Policy Programs to Address High-Expectation Entrepreneurship

As concerns policy design, the multi-faceted nature of the entrepreneurial process means that a single policy department, or a single policy initiative, is unlikely to produce lasting results. To comprehensively address high-growth entrepreneurship, broad-based collaboration between multiple policy departments and ministries is essential. This implies that policies targeting high-growth entrepreneurial processes should be targeted horizontally, rather than vertically. High-growth entrepreneurial policy design should be organized in the form of governmental policy programs for high-growth entrepreneurship, extending across multiple policy departments and involve active participation across SME; innovation; education; labor, and fiscal policy departments.

Such a broad-based policy design requires active supervision and monitoring at the highest level of government. Government departments often exhibit resistance

to broad-based policy initiatives that cut across policy departments. To effect the requisite collaboration across policy departments for an effective program, the horizontal program should be supervised by a board consisting of high-level government ministers, preferably chaired by the Prime Minister, and involving high-level participation from key government agencies responsible of implementing SME, innovation, education, fiscal, and labor policies. The program should be made a central element of the standing government's policy program, and the board should have sufficient influence over the government budget in order to push through broad-based policy initiatives. Sufficient political weight is also important because highly targeted policy initiatives are open to criticism by those excluded from their scope. It is clear that an initiative of this nature is not feasible unless sufficient political will is mobilized behind it.

Systematic Monitoring the Climate for High-Growth Entrepreneurship

An important aspect of getting entrepreneurship policies better focused on supporting high-growth entrepreneurial activity concerns monitoring of policy effectiveness. A typical metric for measuring the success of government entrepreneurship policy is the number of new firm births (sometimes balanced with firm deaths) over a given time period. Most governments still lack the ability to track unit-level firm growth over time, and virtually no government actively monitors numbers of high-growth policies. In the absence of publicly reported performance metric for high-growth entrepreneurship, there is a danger that policy measures will continue to focus on quantifiable outputs, such as overall numbers of firms created.

A complicating aspect of policy monitoring is that growth, even rapid, takes time. It takes even longer to determine whether a given growth case was a temporary burst, or whether the growth actually gave raise to a viable, sustainable business. This difficulty should not be cause for abandoning all policy monitoring efforts, however. Even though producing unit-level growth may take time, and verifying the sustainability of growth certainly does, there are medium-term metrics that can be readily employed to monitor progress toward high-growth entrepreneurial environment. Entrepreneurial intent provides one such metric. Even though intent does not always lead to activity, it does provide one of the more robust predictors of it. Intent is a direct measure of entrepreneurial motivation, and it should also be associated with a higher alertness to entrepreneurial opportunity. Because entrepreneurial intent is the function of both social desirability, as well as perceived entrepreneurial skills, it should be directly influenced by policy initiatives designed to strengthen these two aspects of the entrepreneurial climate. Governments should continuously monitor entrepreneurial intent, particularly among population cells where the prevalence of high-growth entrepreneurial activity is particularly high (e.g., male; well educated; high income; 35 to 44 years old).

In addition to direct entrepreneurial intent, also the social desirability of entrepreneurship, as well as perception of entrepreneurial feasibility (or entrepreneurial skills) should also be continuously monitored, as well as addressed, by government policy. As a specific tangible measure, the effect of university education on the entrepreneurial intent of university students should be monitored at the university level, by monitoring students' perceptions both at entry and exit phases of university education. Basic knowledge on business start-ups and business plans should be integrally involved in university curriculum.

Monitoring efforts should also focus on existing entrepreneurial firms and regions. Governments should monitor both growth aspirations of existing entrepreneurial firms, as well as realized growth. This calls for the strengthening of capabilities in national statistics offices, as monitoring of unit-level growth requires longitudinal firm-level data. Such a capability already exists in many countries, but firm-level growth performance metrics are few and not consistently used. Overall, developing the capability of national statistics offices to monitor both growth intent and growth performance on a regular basis should be a priority for national policies that address high-growth entrepreneurship.

5.2.2 Policy Implementation

As concerns policy implementation, close collaboration between policy departments is again emphasized. The need for coordinated measures arises both from the multi-faceted nature of the high-growth entrepreneurial process, as well as from the time lags involved. Coordinated policy measures should span the entire spectrum from basic and applied research to venture growth and consolidation. Coordination is also required between different levels of policy action (i.e., measures targeted at individuals, teams, firms, regions, and the national context).

Need for Orchestration

All too often, innovation, SME, and educational policies are designed and implemented in separate policy silos, with little or no coordination between these. Administrative barriers create obstacles in knowledge spread and innovative collaborative solutions for policy implementation. A particularly relevant domain of collaboration involves SME, innovation, and educational policies. It is not uncommon for innovation policies to seek to address high-growth and innovative firms without collaborating with relevant SME support initiatives. As regards educational policies, even when these do address entrepreneurship, they tend to neglect high-growth entrepreneurship, and they fail to take a longitudinal view on the lengthy formative process of high-growth ventures. It is probable that a better co-

ordination among policy initiatives would result in a more comprehensive and longitudinal coverage of the early phases of the process of creating innovative new firms, extending from research-based innovation to team building and to start-up activities. Policy measures should be orchestrated such that they address all stages of the entrepreneurial process from opportunity exposure to market launch to eventual growth and consolidation. Here, 'orchestration' means making sure that there are no gaps in policy coverage, the timing and objectives of different policy measures are complementary and consistent, undue overlap is removed, and the different levels of policy implementation (individual, firm, regional, national) are harmonized. This level of coordination can be achieved if coordination is taken seriously at a high enough level in the policy-implementing apparatus.

Focus on Universities and HIEs

One natural context for the implementation of orchestrated policy measures is provided by universities and other HIEs, because many processes involving the creation of high-growth firms tend to revolve within and in the vicinity of universities. Universities are where much independent technological, biomedicine and all knowledge-based research activity takes place. Founders of high-growth entrepreneurial ventures are likely to be well educated. Universities often participate actively in innovation policy initiatives, such as targeted R&D programs, which increasingly emphasize the creation of start-up firms as one explicit goal. Universities and HIEs are also, by definition, educational institutions. This combination makes universities and HIEs a natural focus point of high-growth entrepreneurship policy, even though not the only one. Measures are needed in order to increase opportunities for high-growth business start-ups in university and HIE contexts.

Meeting Demanding Needs

Implementing rapid organizational growth is difficult and often painful. Rapid growth implies rapidly increasing organizational complexity, the management of which requires significant managerial skill and time. Growing organizations face increasing compliance demands, and to address these they need to develop new control and governance structures. Because demands for managerial skills also increase as a function of growth, frequent changes in the firm's management team are often necessary in growing firms. One specific set of demands is imposed by early and proactive internationalization, which is often a necessity especially for technology-based new ventures. Because of the multitude of demands, growth brings about increasing resource needs (both human resources and financial capital), and profitable growth is rare. Finally, greater growth also means greater organizational volatility, and the firm's hazard rate is a positive function of its growth rate, at least during the early stages of the organizational growth. Because of their highly dynamic character, high-growth new ventures tend to be much more vola-

tile than low-growth ventures, and spectacular successes are therefore likely to be accompanied by equally spectacular failures. Policy-makers, therefore, should be ready to accept casualties. High rates of survival may imply insufficient dynamism.

The volatile character, significant resource needs, and escalating organizational complexity of fast-growth firms means that they need highly sophisticated support. Quite often, the provision of the right kind of support requires intimate understanding and widely established contacts in the relevant business sector, which is something public sector support organizations can rarely offer. The contacts and business acumen required have to come from private-sector operators, such as venture capitalists, experienced managers, and more experienced peers. Private-sector participation is particularly important during the more advanced stages of the venture growth process, but it is also important during the very earliest stages of the innovation process, for validation purposes. An important role for the policy-maker is to facilitate the development of a business service infrastructure that is sophisticated enough to cater to the needs of fast-growth ventures. Overall, balancing public- and private-sector service provision is not easy, because overlaps and insufficient synchronization may give rise to crowding and market distortion.

Selectiveness and Proactiveness

Because only small minority of all new firms possess significant potential and motivation for rapid organizational growth, policy measures should be selectively targeted. Even though programs should not propose to 'pick winners', feasible criteria for selection do exist. First, for admittance, programs should require explicit orientation toward growth. Even though growth orientation cannot guarantee growth, growth in the absence of aspiration for it is extremely rare. Therefore, support programs should require visible and credible commitment to growth as a key selection criterion. Second, the longer the venture has progressed in its development path, the more tangible proof of its growth potential should be required. In the early phases of new ventures, growth orientation and flexibility should be emphasized. In more advanced stages, tangible proof of market acceptance may provide a feasible selection criterion.

This implies that supporting rapidly growing firms is more demanding than supporting SMEs in general. In addition to depicting more demanding needs, high-growth firms also have distinctive support needs which are seldom experienced by slowly growing SMEs.

As regards the sophistication of policy measures, research suggests that high-expectation entrepreneurial activity has distinctive, and often demanding, support needs. In general, providing value-adding support for high-growth entrepreneurial

tends to be more demanding than in the case of low-growth entrepreneurial ventures. This is because of the high degree of organizational complexity, as well as the general dynamism of high-potential and high-growth ventures. Effecting organizational growth, as well as managing it, is difficult and often also painful.

Addressing and Motivating the Right People

Studies show that high-growth entrepreneurship, in essence, is a career choice, often made by individuals who possess significant human and social capital (Davidsson & Henrekson, 2002). Such a career choice can therefore involve significant economic trade-offs. The aggregate-level flow from paid employment to entrepreneurship is not strong in Finland (Heinonen & al. 2005), particularly among those with academic education, but micro-level survey data reveals that as career move, entrepreneurship has paid off well, and counter-flow will not take place. Policy-makers should be mindful of the existence those trade-offs and address them as needed. The recent GEM study also showed that the great majority of high-growth entrepreneurs already have job (Autio, 2005b), which underscores the potential importance of industry spin-offs as a source of high-growth firms. Engaging established industrial companies is therefore important. Policy initiatives designed to facilitate spin-off formation, particularly from knowledge-intensive companies and research institutions, might prove useful in facilitating high-expectation entrepreneurial activity in high-income countries.

Support for Internationalization

Particularly in high-income countries that have small domestic markets, internationalization becomes a necessity, rather than choice. Echoing the notion of 'Born Globals', some studies suggest that early and rapid internationalization may not only be a necessity for high-growth firms, but it also may become a potent source of competitive and competence-based advantage in its own right (Autio et al., 2000; Sapienza et al., 2005). Traditionally, measures geared to supporting internationalization have tended to emphasize exports and advocate a cautious, incremental, and risk-minimizing approach to internationalization. If early and proactive internationalization is to become a source of competitive advantage in its own right, more proactive, sustained, and hands-on support initiatives are required. Ultimately, such policy initiatives may even involve cross-border collaboration in high-growth entrepreneurship support.

Remove Dis-Incentives

Finally, an important facet of high-growth entrepreneurship policy should address dis-incentives for entrepreneurial growth. For example, compliance requirements

tend to increase progressively as firms grow. Therefore, lowering compliance requirements for small entrepreneurial firms may, if inappropriately applied, become a barrier to growth, if compliance requirements are not smoothed for firms that intend to grow rapidly. A phased introduction of compliance requirements, for example, involving sufficient honeymoon periods that enable the growing firm to consolidate before addressing compliance, might help smooth the path to growth. This aspect of high-growth entrepreneurship policy may be particularly relevant for EU countries, where empirical studies suggest the existence of many compliance-related obstacles for firm growth.

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Nopean kasvun pk-yrityksiä tukevat toimenpiteet yhdeksässä maassa: analyysi, luokittelu ja suositukset		
Tiivistelmä		
<p>Useissa tutkimuksissa talouskasvun, innovaatioiden ja yrityspolitiikan välille on löydetty positiivinen yhteys. Silti tiedämme vielä varsin vähän nopean kasvun yritysten edellyttämistä tukitoimenpiteistä ja niistä erityisistä innovaatio- ja talouspolitiikan keinoista, joilla yritysten nopeaa kasvua voidaan systemaattisesti tukea. Oletuksena usein on, että yritysten kasvu on suureksi osaksi endogeeninen, yritysten elinkaareen liittyvä prosessi, johon ei laajan mittakaavan politiikkainstrumenteilla tai tukitoimenpiteillä voida suoraan tehokkaasti vaikuttaa.</p> <p>Tutkimuksessa on pyritty identifioimaan ja kuvaamaan yritysten nopean kasvun syitä ja mekanismeja sekä politiikkatoimenpiteitä, joilla nopeaa kasvua voidaan tukea ja edistää. Lisäksi kuvataan politiikkatoimenpiteiden erityispiirteitä sekä eri maiden välillä vallitsevia eroja toimenpiteissä. Tutkimuksen fokus on kasvupolitiikoissa ja kasvua tukevilla konkreettisissa toimenpiteissä, ei yleisessä yrityspolitiikassa. Selvitys on toteutettu yhdeksässä maassa, jotka osallistuvat Global Entrepreneurship Monitor (GEM) -tutkimukseen: Alankomaat, Australia, Brasilia, Hong Kong, Espanja, Italia, Iso-Britannia, Unkari ja Suomi.</p> <p>Haastatteluista ja arkistomateriaalista koostuva aineisto kerättiin 2005 ja 2006. Kussakin tutkitussa maassa keskityttiin eri politiikkatoimenpiteiden osalta useilla kriteereillä kerättyyn aineistoon, jota tarkasteltiin tapaustutkimuksen keinoin. Valintaperusteina toimivat mm. rahoitusmuoto, tuen tyyppi, toimiala, menestyksen osalta useita kriteerejä, yrityksen elinkaari ja rahoitustuen muoto. Nopean kasvun edistämiskeinojen sisällöllinen ja temaattinen luokittelu toi esille useita kiinnostavia tuloksia.</p> <p>Yhteistä tehokkaille politiikkatoimenpiteille on se, että ne ylittävät hallinnollisia ja politiikkaohjelmien rajoja ja edellyttävät useiden toimijoiden välistä yhteistyötä. Korkean kasvun politiikkaohjelmat ovat maasta riippumatta varsin uusia ilmiöitä, myös niissä maissa, kuten Englannissa ja Suomessa, joissa yrittäjyyspolitiikka on kehittynyt vakiintuneeksi osaksi talouspolitiikkaa. Tyypillistä myös on että, julkisen ja yksityisen sektorin yhteistyö on varsin vähäistä, vaikka useassa menestyksellisessä ohjelmassa yksityisen sektorin rooli on ollut tärkeä. Teknologiapainotteisuus ja keskittyminen teknologisiin innovaatioihin yhdistävät useiden maiden politiikkatoimenpiteitä, vaikka nopean kasvun yritykset eivät välttämättä ole teknologisia innovaatioyrityksiä.</p> <p>Tutkimuksessa tunnistetaan lukuisia eri maiden hyödyntämiä, onnistuneita ohjelmia ja niitä yhdistäviä elementtejä, joiden perusteella esitetään politiikkasuunnittelu-, -arviointi ja -implementointisuosituksia. Keskeisimpiä niistä ovat keskittyminen laatuun, ei määrään, horisontaalisten politiikkaohjelmien yhteistyö, yliopistoyhteistyö, kansainvälistymisen tuki, valikointi ja proaktiivisuus toimenpiteiden kohdistamisessa sekä yksilöiden motivointi.</p> <p>KTM:n yhdyshenkilö: Elinkeino-osasto/Kimmo Hyrsky, puh. (09) 1606 2641</p>		
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<p>Referat</p> <p>Man har i många utredningar funnit en positiv länk mellan ekonomisk tillväxt, innovationer och företagspolitik, men det oaktat vet man rätt litet om de bästa sätten att stöda snabbtväxande företag och om de särskilda innovations- och näringspolitiska metoder, med vilka man systematiskt kan stöda en snabb tillväxt i företagen. Det är vanligt att anta, att företagets tillväxt är en i hög grad endogen process, som ansluter sig till företagets livscykel, och som inte direkt kan påverkas effektivt med storskaliga politikinstrument eller stödåtgärder.</p> <p>Man har i utredningen försökt identifiera och beskriva orsakerna till och mekanismerna bakom företagets snabba tillväxt samt de specifika företagspolitikåtgärder, med vilka man kan stöda och främja en snabb tillväxt i företag, specialdrag i politikåtgärderna samt rådande skillnader mellan åtgärderna i de olika länderna. Utredningen fokuserar på tillväxtpolitiker och konkreta åtgärder som stöder tillväxtsträvanden, har utförts i flera länder, vilka alla deltar i forskningsprojektet Global Entrepreneurship Monitor (GEM). I utredningen deltar följande länder: Nederländerna, Australien, Brasilien, Hong Kong, Spanien, Italien, Storbritannien, Ungern, Finland. Utredningsmaterialet, som består av intervjuer och arkivmaterial, insamlades 2005–2006.</p> <p>Vad politikåtgärderna beträffar koncentrerade man sig i varje deltagande land i fråga om olika faktorer på det material som insamlades med flera olika kriterier. Materialet granskades som en case-studie. Valkriterier var bl.a. finansieringsform, stödtyp, bransch, flera framgångskriterier, företagets livscykel, finansieringsstödet form. Den innehållsmässiga och tematiska klassificeringen av stödformer med hög tillväxt gav flera intressanta resultat.</p> <p>Gemensamt för effektiva politikåtgärder är, att de överskrider administrativa gränser och gränser mellan politikprogram och förutsätter ofta att flere aktörer samarbetar. Politikprogram om snabb tillväxt är ett nytt fenomen oberoende av land, också i länder som England och Finland, där företagarpolitiken har utvecklats till en etablerad del av den ekonomiska politiken. Typiskt är också, att samarbetet mellan den offentliga och privata sektorn är blygsamt, trots att den privata sektorn har haft en viktig roll i flera framgångsrika program. Gemensamt för politikåtgärderna i många länder var, att tyngdpunkten låg på teknologi och teknologiska innovationer, trots att företag med hög tillväxt inte nödvändigtvis är teknologiska innovationsföretag.</p> <p>I utredningen identifieras flera element, som förenar olika länders lyckade program. Utgående från detta presenteras rekommendationer för politikplanering, -värdering och -implementering. Till de viktigaste av dem hör att inrikta sig på kvalitet, inte kvantitet, samarbete mellan horisontala politikprogram, universitetssamarbete, internationaliseringsstöd, selektivitet och proaktivitet vid riktandet av åtgärder samt motivering av individer.</p> <p>Kontaktperson på HIM: Kimmo Hyrsky/Näringsavdelningen, tfn (09) 1606 2641</p>		
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