

Competencies and Institutions Fostering High-growth Firms^{*}

Magnus Henrekson[#] and Dan Johansson[‡]

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Abstract: High-growth firms (HGFs) are critical for net job creation and economic growth. We analyze HGFs using the theory of competence blocs, linking firm growth to property rights and the interaction of complementary expertise. Specifically, we discuss how the institutional framework affects the prevalence and performance of HGFs. Firm growth is viewed as resulting from the perpetual discovery and use of productive knowledge. A key element in this process is the competence bloc, a nexus of economic actors with complementary competencies that are vital in order to generate and commercialize novel ideas. The institutional framework determines the incentives for these individuals to acquire and utilize knowledge. We identify a number of institutions that foster the emergence of competence blocs and the creation of HGFs. In particular, our analysis points to the pivotal roles played by tax structures, labor market regulation, and the contestability of currently closed service markets. Finally, we characterize institutions beneficial for sclerotic or dynamic capitalism, respectively, depending on whether they provide a favorable environment for the emergence of competence blocs and the creation of HGFs.

Keywords: Competence bloc; Dynamic capitalism; Entrepreneurship; Flyers; Gazelles; High-growth firms; Industrial policy; Innovation; Institutions; Labor security; Product market regulations; Property rights; Sclerotic capitalism; Self-employment; Tax policy.

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[#]Research Institute of Industrial Economics (IFN)
P.O. Box 55665
SE-102 15 Stockholm
Phone: +46-8-665 45 02
Fax: +46-8-665 45 99
e-mail: magnus.henrekson@ifn.se

[‡]The Ratio Institute
P.O. Box 3203
SE-103 64 Stockholm
Phone: +46-8-441 59 03
Fax: +46-8-441 59 29
e-mail: dan.johansson@ratio.se

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Executive Summary

Empirical evidence indicates that a small number of high-growth firms (HGFs), also known as “Gazelles”, are crucial for net job creation and economic growth. Arguably, it is likely that HGFs are more responsive to economic policy than firms with low or no growth ambitions. We analyze how the institutional framework affects such firms, taking the theory of competence blocs as our point of departure. According to this theory, firm growth is driven by the perpetual creation and application of knowledge. The central element in this process is the competence bloc, which associates key economic actors with the complementary competencies required to generate and commercialize novel ideas: inventors, entrepreneurs, industrialists, venture capitalists, actors in secondary markets, skilled workers and competent customers. Growth depends on the acquisition and utilization of knowledge by these different actors. The opportunities for doing this, and the incentives to seize such opportunities, are determined by the “rules of the game” – the institutions of a society. Our analysis is confined to advanced economies where fundamental institutions like a well-functioning legal system are already in place.

We identify three institutional categories as key areas for the promotion of HGFs: the tax system, the organization of labor markets and product market regulations. We characterize specific institutions as either (1) fostering dynamic capitalism, by providing a favorable environment for the emergence of competence blocs and the generation of HGFs; or (2) leading to sclerotic capitalism, by failing to produce such an environment.

Within these three institutional categories, government monopolization of production poses the greatest obstacle. Non-contestable public sector monopolies close entire markets to private entrepreneurs and venture capitalists. Consequently, the competencies that these actors represent will be absent and there will be no competence blocs or HGFs under such a regulatory regime.

High taxes and labor market regulations also impinge on the creation and functioning of competence blocs. However, there is often some scope for costly evasion of taxes and regulations. It is still true that the industry distribution, as well as the size and age distributions of firms, will adjust endogenously, favoring the industry and firm structure least penalized by a certain regulatory setup. In practice, this is also likely to penalize HGFs. It is noteworthy that these institutions typically introduce distortions that are disadvantageous to young, small and service-sector firms – exactly the kind of firms that are overrepresented among HGFs.

Analyzing HGFs through the lens of the theory of competence blocs offers a more holistic view of economic growth. In our view, rapid firm growth is a complex process requiring a number of complementary competencies, implying that studies with a narrow focus on a single aspect are likely to be misleading.

Our analysis suggests that the commercialization of innovations and generation of HGFs would be greatly facilitated if more product markets are contestable and tax structures and labor market institutions are adjusted in order to stimulate the emergence of more effective competence blocs.

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At the microeconomic level, restructuring is characterized by countless decisions to create and destroy production arrangements. These decisions are often complex, *involving multiple parties* as well as strategic and technological considerations. The efficiency of these decisions depends not only on managerial talent but also on the existence of *sound institutions* that provide a proper transactional framework.
Ricardo Caballero (2007, p. 3, *italics added*)

1. Introduction

Most productive activities take place in profit-driven enterprises. These organizations also carry out a major share of all research and development and function as the main vehicles for economic renewal – in short, they are the engine of long-run economic growth. The success of an individual enterprise hinges on its ability to combine diverse factors of production and to satisfy consumers in an efficient way. At the aggregate level, economic growth in contemporary market economies presupposes continuous and massive microeconomic restructuring and factor reallocation.

Enterprises exhibit large heterogeneity in age, size, industry affiliation, growth ambitions and realized growth performance. It is well documented that young and small firms contribute disproportionately to net employment and productivity growth.¹ Meanwhile, most firms grow very slowly, or not at all. Zook and Allen (1999) report that only one in seven companies achieves sustained growth while remaining profitable. Accordingly, some observers point to a small number of rapidly growing firms – which may be neither small nor young – that contribute a disproportionately large share of net job creation and economic growth (see, e.g., Birch and Medoff 1994, Storey 1994, Schreyer 2000, and Acs et al. 2008). To the extent that this is true, it is of crucial importance to understand under what institutional conditions talented entrepreneurs are motivated to establish firms with the ambition and ability to expand rapidly, as well as what conditions are conducive to the expansion of existing firms with growth potential.

Our main aim in this paper is to characterize the institutional setup that is likely to be most conducive to the fostering of high-growth firms (HGFs).² By institutions we mean “the rules of the game in society” (North 1990, p. 3).

¹ For a survey of the empirical evidence, see van Praag and Versloot (2008).

² Gerschenkron (1962) introduces the felicitous concept “appropriate institutions”, which nicely captures what we set out to identify in this essay. Gerschenkron’s term has recently received renewed attention, see, e.g., Acemoglu et al. (2003). They focus on differences in what constitutes good policy depending on a country’s “distance to the technological frontier”. More generally, the role of institutions has moved to the fore of mainstream explanations for economic performance, especially over the longer term. See, for example, North and Weingast (1989), Rodrik et al. (2004) and Acemoglu et al. (2005).

It should be noted that there is a large literature studying the effect of so-called micro-level factors on firm growth. In a wide-ranging survey of the literature on firm growth, Storey (1994) identified 35 such factors, which he classified into three categories (p. 122): i) The starting resources of the entrepreneur(s), e.g., motivation and education; ii) the firm, e.g., age and size; and iii) strategy, e.g., management training and market positioning.³ A related strand of literature addresses the effects of micro-level factors on HGFs; see, e.g., Delmar and Davidsson (1998), and Barringer et al. (2005) for surveys. Barringer et al. (2005) identify founder characteristics, firm attributes, business practices and human resource management as the four most influential categories of variables explaining rapid firm growth.

Turning to macro-level factors, there is a literature studying the effects of public policy, like tax policy and financial assistance, aimed at stimulating the growth of small and medium-sized firms (see, e.g., Storey 1994, 2006).⁴ The literature on the effects of institutions on firm growth in a broader sense – the business climate – is still limited (examples include Demirgüç-Kunt and Maksimovic 1998, Henrekson 2005, Klapper et al. 2006, and Powell 2008). The literature specifically addressing the effects of institutions on HGFs is scarce, focusing almost exclusively on the provision of capital to high-growth firms; see e.g., Buss (2001).⁵ Two exceptions are Davidsson and Henrekson (2002), who analyze the effects of institutions on the incentives for entrepreneurs to establish and rapidly expand enterprises, and Stam et al. (2007) who discuss the policy implications of the fact that entrepreneurs with high growth ambitions contribute relatively more to economic growth than the average entrepreneur.

Over the past decades endogenous growth theory has also developed models that come closer to making explicit what drives long-term economic development. Explicit incentives for innovation have been included so as to explain why individuals would engage in creating new technologies and better ways of producing goods and services (Barro and Sala-i-Martin 1995, and Aghion and Howitt 1998). However, the actual agents of change, the entrepreneurs, are still defined rather narrowly and theory does not capture the wide-ranging and complex functions suggested outside mainstream economics (see, e.g., Baumol 1968, Glancey and McQuaid 2000, Swedberg 2000, Johansson 2004, Bianchi and Henrekson 2005, and Phelps 2007). To a great extent enterprises are still modeled as “representative firms” which are

³ See, e.g., Delmar (1997), Davidsson (2006) and Reynolds (2007) for recent surveys and discussions.

⁴ There is a larger literature on the institutional effects on firm entry and firm exit; see, e.g., Djankov et al. (2002), Fan and White (2003) and Brandt (2004).

⁵ We do not count studies with general conclusions such as “since HGFs are important, growth obstacles need to be removed.” The analysis needs to be more precise to be considered.

treated as “black boxes” (Rosenberg 1982, 1994) even though researchers have started to open it up; see, e.g., Aghion and Tirole (1994) and Acemoglu et al. (2007).

We argue that these approaches need to be supplemented by a micro-oriented analysis of how institutions affect the behavior of the individual actors involved in the process. In order to make such an analysis manageable, the actors are divided into a limited number of functionally defined categories. The theory of competence blocs (Eliasson and Eliasson 1996) offers such a categorization. A competence bloc contains a set of actors with the different and complementary competencies required to generate and exploit new knowledge. This process, in turn, eventually results in large-scale economic development and economic growth. This requires “breadth” (all categories of actors of the competence bloc have to be in place) as well as “depth” (a critical mass of actors are needed to fulfill each function efficiently). Hence, this analysis may be seen as an extension of Davidsson and Henrekson (2002) where we expand the analysis to include other actors than entrepreneurs.⁶ Our broader approach aims to deepen our understanding of the effects of institutions on HGFs, since institutions may affect different actors differently. Due to the complementarity of competencies, institutions may have a larger effect on firm growth than suggested by an analysis that focuses on a single actor.

An underlying assumption is that rapid economic growth and employment creation are obtained if individual actors form competitive competence blocs and establish new firms with high growth potential and aspirations. This requires appropriate institutions that harmonize the incentives of the different types of actors with complementary competencies (Pelikan 1993; Henrekson and Johansson 1999).

The study is organized as follows. In section 2 we define the competence bloc and its key actors and competencies. In section 3 we briefly review the literature on HGFs. In section 4 we discuss more generally the HGFs–institutions nexus, as a preamble to the in-depth institutional analyses that follow. Section 5 deals with the effects of taxation, and section 6 discusses the organization of the labor market. Section 7 deals with product market regulations that disturb the link between the entrepreneur and the customer, by restricting market entry by private entrepreneurs and by restricting private customers’ ability to choose a (private) provider. We classify institutions into either of two categories, depending on whether they support what we call “sclerotic” or “dynamic” capitalism, respectively. Section 8 concludes.

⁶ The surveys by, for instance, Storey (1994) and Barringer et al. (2005) show that studies investigating micro-level factors mainly focus on the entrepreneur/founder (including discussions of his/her management team and his/her social and professional networks) and strategies for human resource management of employees, notably workforce training and incentive programs. The financial resources and provision of capital to growing firms are also discussed.

2. Competence Blocs and Growth

Economic growth is a complex process of generation and use of knowledge (see, e.g., Hayek 1945, 1978, Romer 1986, Barro and Sala-i-Martin 1995, Aghion and Howitt 1998, and Phelps 2007). We draw on the theory of competence blocs (Eliasson and Eliasson 1996) to identify key actors with different but complementary competencies⁷ that interact to generate, identify, select, expand and exploit new ideas about how to satisfy consumer preferences more efficiently.⁸ This theory identifies at least seven types of actors crucial to the generation of long-run economic growth:

- i) *Entrepreneurs* identify new ideas and introduce those with expected profitability into the market. They may be characterized as agents of change and fulfill a fundamental coordinating and judgmental function.
- ii) *Inventors* solve specific technical, organizational or economic problems. Inventors have detailed knowledge about production processes, product specifications etc. that entrepreneurs may lack. Their work provides a basis for subsequent activity by entrepreneurs who have a common understanding of the business idea and commercialization process.
- iii) *Industrialists* organize the further commercialization of the original ideas into a large-scale business after the introductory entrepreneurial phase.⁹ The introduction of new ideas into the economy and the subsequent development of the original innovations into large-scale businesses generally require two separate competencies (Flamholtz 1986; Baumol 2004). Sometimes the original entrepreneur evolves into an industrialist and continues to head his/her firm as it becomes large, but more often than not, the entrepreneur will cede the top executive position to somebody with the requisite experience and competence to manage a large firm. The industrialist may also be a competitor to the entrepreneur who introduced the original innovation.

⁷ Competence is defined as the ability to use knowledge to accomplish a particular purpose (Johansson 2001, p. 16).

⁸ See Johansson (2008) for an introduction. The idea of the importance of complementary competencies to generate growth is recognized by a number of researchers. See, for instance, Phelps (2007, p. 553) for a discussion in conformity with our analysis.

⁹ In relation to Schumpeter (1934) the industrialist conducts a similar function as the imitator. This does not simply mean copying the original innovation but includes incremental improvements and adjustments of the original innovation to new markets that in the long run may have a larger impact than the original innovation. See, e.g., Nelson and Winter (1982), and Baumol (2002).

- iv) *Skilled labor*. Economic development and economic growth requires labor with relevant professional skills. Rapidly expanding industries are often hampered by lack of individuals with specific skills.
- v) *Venture capitalists* supply equity capital to enterprises in early phases of business ventures.¹⁰ This includes identifying entrepreneurs and projects, assessing the value of potential investments, supervising management and evaluating investments. In case of sustained mismanagement of a company, or if a company can be more skillfully managed by somebody else, venture capitalists can enforce change and appoint new management better equipped to lead the company. Venture capitalists can be said to provide “competent capital”, since they, in addition to providing capital, supply management skills, industry-specific knowledge and access to business networks. The function is often performed by individuals with long experience of the industry in which they invest. Many are former entrepreneurs who have sold their businesses to invest the profits in new firms without assuming day-to-day operational responsibility.¹¹
- vi) *Actors in secondary (exit) markets* have similar competencies and carry out similar functions as venture capitalists, but at a later stage when entrepreneurs and venture capitalists want to exit from their investments. There are several types of actors in secondary markets, most notably portfolio investors in publicly listed companies, private equity (PE) firms, and management buy-ins.¹²
- vii) *Competent customers* provide the entrepreneur with information about consumers’ preferences. The ability to discern the preferences of the consumers, so that highly-valued goods and services are produced, is a key ingredient in successful entrepreneurship. A competent customer should be representative of large groups of customers. A competent customer can be an individual or a firm. Cooperation with one or several large firms dominating an industry provides knowledge about a considerable share of the market. Large enterprises rich in capital can also function as competent venture capitalists and finance the development of particular products.¹³

¹⁰ So-called business angels carry out a similar function as venture capitalists, generally in earlier phases. Business angels are not explicitly mentioned in the original definition of the competence bloc.

¹¹ Gompers and Lerner (2001) provide a comprehensive analysis of the importance of venture capital for innovation and firm growth.

¹² See Wright (2007) for an overview of the different categories and Prowse (1998) for an analysis of the function of the private equity market.

¹³ Perhaps the best example is the biotechnology industry where scientific breakthroughs, increased regulations, innovative “sclerosis” among large firms, high costs for development and commercialization of new products, and financial constraints in new and small firms have induced a massive formation of strategic alliances among firms. An important case in point is large firms financing small firms developing new products which are then commercialized by large firms. See, e.g., Lerner and Merges (1998), and Audretsch and Feldman (2003). Also

The different categories of actors are heterogeneous in a number of respects. For example, the competence of an industrialist may be restricted to a particular industry or to firms of a certain size.¹⁴ One individual can carry out more than one function such as acting both as an entrepreneur and as an industrialist.

We distinguish between an invention, defined as a new idea, and an innovation, defined as the introduction of the invention into the economy. Technical innovations are often emphasized as particularly important for economic growth. As a consequence, policy often aims at stimulating technical innovations. This is likely to be insufficient from the perspective of economic growth. Technological development is a result of human creativity and thus a result of the ways in which individuals organize in enterprises and communities. Organizational innovations may dominate technological innovations and in those cases they become a prerequisite for the latter.

Naturally, there is a form of interplay here – technological innovations and scientific breakthroughs with commercial potential make it necessary for the institutions of society to be flexible so they can adapt or be adapted to new circumstances. A forceful illustration of this point is that although China was considerably more technically advanced than Europe 1,000 years ago, the West not only caught up, it also took the lead. The crucial institutional factor behind this reversal of technological and economic leadership was the (gradual and by no means complete) introduction of private property rights in Western Europe (North and Thomas 1973, Rosenberg and Birdzell 1986, Mokyr 1990, and Jones 2001). The introduction of private property rights was thus an organizational innovation of extraordinary material significance.

For several reasons it is impossible to know the value of an innovation *ex ante*. First, the number of potential innovations is infinite. Second, every actor, or group of actors, in the competence bloc is boundedly rational (Simon 1955, and Conlisk 1996, 2001). Third, information is highly decentralized, in particular in early stages of development of a new technol-

see von Hippel (2007) for a study of how innovation users form networks to develop and diffuse innovations themselves.

¹⁴ The original definition included the category “innovators”, whose function was an extension to that of inventors. They bridged the gap between inventors and entrepreneurs. In practice, this implies a more administrative role, managing the integration of inventions and technologies into well-functioning worthwhile products. The definition differs from Schumpeter (1934) who uses “innovator” and “entrepreneur” synonymously. We have noticed that this confuses many readers and have therefore decided to leave out “innovators” from the analysis. Their function will be partially subsumed under the categories skilled labor and entrepreneurs.

ogy or industry (Acemoglu et al. 2007).¹⁵ Rather, every innovation should be regarded as a business experiment that may be tested in the market.

The *ex post* performance of innovations that are tested in the market – by actors in competence blocs who establish firms to exploit innovations – show large variations in economic performance. There are good reasons to expect this state of affairs: The economic potential differs across innovations, firms and innovations are in different phases of development, and competence blocs themselves are in different phases of development. Consequently, an experimentally organized economy necessitates large flows of workers and other factors of production across firms due to experimentation in the face of uncertain market prospects, cost structures, managerial abilities and technologies (Jovanovic 1982).¹⁶

3. The Role of High-growth Firms

David Birch launched the term “Gazelles” about a quarter of a century ago referring to a small group of HGFs that, in his view, generated the bulk of new net jobs in the economy (Landström 2005, p. 170).¹⁷ These HGFs were contrasted with the vast majority of firms that start out small and grew very little, therefore contributing marginally to employment growth, and to large companies that with a large employment share but slow, or even negative, employment growth. These two types of firms were aptly denoted “Mice” and “Elephants”, respectively.

There is surprisingly little empirical evidence backing Birch’s claim. In Henrekson and Johansson (2008), we identify a grand total of 19 studies published after 1990.¹⁸ The studies are disparate in scope and method; they use different metrics for growth, investigate firms in different industries, of different ages, in different time periods and cover different countries

¹⁵ For instance, Conlisk (1996, p. 691) writes: “Many technological innovations result from insights that would have been made years earlier if people really could draw all possible inferences from existing information. In this sense, the rate of technical change is determined largely by bounds on rationality and by the resulting delays in exploiting economic opportunities.”

¹⁶ 80 percent or more of the reallocation of workers takes place within narrowly defined sectors of the economy in developed countries. See Caballero (2007, p. 19 ff) for an overview of the evidence.

¹⁷ Fast growing firms have also been named “flyers”, e.g., by Storey (1994), who also discerns “trundlers” (slow growth firms) and “failures” (exiting firms).

¹⁸ Gallagher and Miller (1991); Birch and Medoff (1994); Kirchoff (1994); Storey (1994); Birch et al. (1995); Picot and Dupuy (1998); Autio et al. (2000); Schreyer (2000); Davidsson and Delmar (2003, 2006); Delmar et al. (2003); Littunen and Tohmo (2003); Fritsch and Weyh (2006); Halabisky et al. (2006); Acs and Mueller (2008); Acs et al. (2008). Storey (1994) reports findings from 14 early studies investigating the employment contribution of rapidly growing firms. Henrekson and Johansson (2008) count them as one study. Schreyer (2000) presents seven studies on high-growth firms and employment, which we treat separately. As Schreyer, Davidsson and Delmar (2003, 2006), and Delmar et al. (2003) are based on the same Swedish data set and since they draw similar conclusions, we treat them as one study. In total our survey therefore encompasses 19 studies.

and regions. Two alternative definitions of HGFs are used.¹⁹ The lack of suitable data, the cost of carrying out such studies, and the relatively recent interest in these questions may explain the dearth of research on this topic.

Job contribution can be measured in terms of gross or net jobs (see, e.g., Davis and Haltiwanger 1999 for a discussion). All the aforementioned studies report net job creation. The job contribution of HGFs is compared to the job contribution of non-HGFs in the investigated population or related to total employment growth, total unemployment or other aggregates. Moreover, firms can grow organically (i.e., through new appointments) or through acquired growth (i.e., growth through acquisitions and/or mergers), where organic growth is supposed to have a larger effect on net employment. However, with few exceptions lack of appropriate data make it difficult or impossible to separate the two. Some studies, therefore, focus exclusively on single establishment firms, since there is reason to believe that they mostly grow organically.

All of the studies are concerned with what Fritsch and Mueller (2004) denote “direct effects”, when analyzing the employment effect from new entry. They argue that employment initially increases due to the direct effect on employment from entering firms, but after some time begins to decline as firms with inferior productivity exit. In the long run, employment is increased due to positive supply-side effects. See Fritsch (2008) for a summary of the empirical evidence and a discussion.

Despite the heterogeneity across the studies in several dimensions, some general findings emerge:

- i) All studies report HGFs to be crucial for net job growth compared to non-HGFs. They generate a large share of all, or more than all (in the case where employment shrinks in non-HGFs), new net jobs. This is particularly pronounced in recessions when HGFs continue to grow, while non-HGFs decline or exit.
- ii) Several studies, particularly the ones concerning the U.S., find that HGFs provide a large share of new net jobs relative to total job growth in the economy and total unemployment.
- iii) Small firms are overrepresented among HGFs, but HGFs are of all sizes. In particular, larger firms are important job contributors in absolute terms. A small subgroup of large HGFs – so-called Superstars or super Gazelles – are major job creators.

¹⁹ First, firms whose growth exceeds a particular (annual) rate in a certain time period. Alternatively, a certain fraction of the firms in a population of firms, e.g., the 10 percent fastest growing firms. Recently, OECD (Ahmad 2006) proposed high-growth firms to be defined as “enterprises with an average employment growth rate exceeding 20 percent p.a. over a three-year period and with 10 or more employees at the beginning of the period.” The term “Gazelles” was proposed to refer to HGFs less than five years old. In this essay we do not apply the proposed definition but use the terms “Gazelles” and “HGFs” synonymously.

- iv) Age is undisputedly of great importance. All studies reporting firm age conclude HGFs to be younger on average. Super Gazelles are also relatively young. HGFs are overrepresented in young and growing industries with a large inflow of new firms.
- v) Young and small HGFs grow organically to a larger extent than large and old HGFs, and therefore make a larger contribution to net employment growth.
- vi) HGFs are present in all industries. There is no evidence that they are overrepresented in high-tech industries. If anything, HGFs appear to be overrepresented in service industries.

On the basis of this meta-analysis, we conclude that HGFs are instrumental to economic growth, in particular those HGFs that start growing rapidly when young and small.²⁰ Recent evidence supports this conclusion. High growth potential Total Entrepreneurial Activity (TEA), measured according to the Global Entrepreneurship Monitor (GEM) study, is the sole form of entrepreneurship that has any explanatory effect on differing rates of economic growth across nations (Wong et al. 2005).²¹ The other three forms of entrepreneurship – overall TEA, necessity TEA and opportunity TEA – are found to have insignificant effects.²² Based on this and similar studies, Sternberg and Wennekers (2005, p. 200) conclude: “These findings may have important implications for entrepreneurship policy in highly developed economies. At least from an economic growth perspective, policy should focus primarily on potentially fast growing new firms and not on new enterprises in general.”

A similar conclusion is made by Bartelsman et al. (2005, pp. 387–388) when finding post-entry growth of successful entrants to be much higher in the USA than in Europe. They suggest that this may indicate barriers to growth in Europe rather than barriers to entry: “The main difference between the USA and most European countries lays in post-entry employment growth amongst surviving firms. ... U.S. firms experience a major increase in employment during the initial years, while employment growth amongst surviving firms in Europe is much more modest. These observed differences in post-entry growth ... seem to indicate a greater degree of experimentation amongst entering firms in the USA.” Interestingly, the U.S.

²⁰ One indicator of the propensity for new and small firms to grow into large firms is the rate at which the stock of large firms in the economy turns over. Here it is clear that the annual turnover rate on the Fortune 500 in the U.S. has accelerated in recent decades. While it used to take 15–20 years for a third of the Fortune 500 firms to be replaced, it has only taken about a third of that time in recent years (Baumol et al. 2007). Moreover, Yim (2006) reports that among the 358 firms that entered the Fortune 500 Index during the ten-year period beginning in 1993, 44 were founded after 1975.

²¹ See Stam et al. (2007) for a similar result.

²² Overall TEA measures the overall involvement in entrepreneurial activity defined as the sum of nascent entrepreneurs (people in the process of starting a new business) and entrepreneurs that have recently started a business. Necessity TEA refers to individuals pushed into entrepreneurial activities due to lack of other employment opportunities, and opportunity TEA refers to individuals pulled into entrepreneurship because of perceived business opportunities (Bosma et al. 2008).

reports the largest share of entrepreneurs with high growth ambitions among rich countries according to the GEM study, while countries like Greece and Italy report the lowest (Bosma et al. 2008).

The empirical findings that HGFs on average are both younger than other firms and over-represented in new and rapidly growing industries is interesting when combined with the research which finds that young firms seem to be more prone to explore new fields of knowledge with radically new innovations with a great economic potential, while large and mature firms dominate established areas (see, e.g., Almeida 1999). There is also evidence that old and large firms dominate process innovations, while young and small firms play a greater role in product innovations – an important distinction, as product innovations appear to be more important for long-run growth (see, e.g., Acs et al. 1999, and Acs and Audretsch 2005). Audretsch (2006) summarizes the literature on innovations in small (often young) versus large (mostly old) firms and find small firms to be more innovative in some industries, particularly in new and dynamic industries. A number of explanations to this pattern have been suggested. For instance, Hannan and Friedman (1984) conclude that young and small firms are more flexible, since organizational inertia increases with age and size.²³

The size distribution of firms (i.e., the relation between the number of small-sized and the number of large-sized firms), as well as the density of firms (i.e., the number of firms) in different size classes have consequences for the functioning of competence blocs and the prevalence of HGFs. First, the possibility of reaching a critical mass in the competence bloc increases with the number of actors. With many firms there are more individuals with the requisite competence to organise productive activities and to run firms, which in turn implies a broader and more varied competence base from which business ideas can be generated and exploited. This is important for the efficient matching of new technologies with competent actors who recognize and exploit the potential profits of new ideas. The density of firms in different size classes is probably important because firms of different sizes might require different managerial competence. For instance, managers from large traditional manufacturing firms may have difficulties managing new, small biotech firms due to differences in corporate culture. Second, there is arguably a positive relationship between the number of actors and the number of experiments carried out, since each actor or group of actors can perform a limited number of experiments.

²³ Holmström (1989) provides an excellent review and explication of the incentive and governance mechanisms that give small firms a comparative advantage in innovative activities.

While studies show that organic growth has a larger effect on net employment than acquired growth, it would be wrong to infer from this fact that organic growth should be promoted and acquired growth avoided. The latter is important for reallocating employment and other resources to more productive uses. Hence, HGFs growing externally may be of crucial importance for productivity growth, and may in turn spur new entrepreneurial opportunities (Holcombe 2003). Klepper and Simons (2005), for instance, show that growing industries typically experience shakeouts in which the number of firms after some time falls sharply due to exits, mergers and acquisitions. This gives rise to a pattern in the course of the evolution of an industry: Initially, the number of firms is very large, but as the industry grows and matures the selection process rapidly reduces the number of firms. It therefore seems normal that HGFs in mature industries grow through acquisitions of less efficient competitors.²⁴

Figure 1 schematically summarizes the competence bloc and the role of the various actors in the process of fostering HGFs. The figure provides a stylized representation of the categories of actors in the competence bloc and of the growth phases of HGFs (the development of a business idea, introduction, early growth, rapid growth into a large-scale firm). Some categories may be important in several phases and a certain individual can fulfill several functions either simultaneously or at different points in the individual's or firm's life cycle. In a stylized form, the development of rapidly growing firms may be depicted as an S-curve. Most HGFs do not display sustained growth, but follow a more complex pattern; see, e.g., Parker et al. (2005). The figure shows at which stage of a firm's growth different categories play a key role. The order in which the categories appear beneath the boxes indicates which actor that has the main coordinating responsibility. This is not a definite ranking and in practice it differs across enterprises, but a stylized depiction of what we believe is the typical situation. In the first phase, entrepreneurs together with competent customers identify potential business opportunities. Inventors are engaged to solve specific problems. The first phase of commercialization (introduction and early growth of firms) involves entrepreneurs, while skilled workers are involved to a small extent only. Industrialists are active in the phase of industrialization and rapid growth, which also requires a great deal of skilled labor. Venture capitalists are important financiers in the earlier phases. In later phases when the firm is larger, this role is taken over by actors in secondary markets. Competent customers are typically involved

²⁴ Klepper (2002) provides many interesting examples in this regard. The U.S. automobile industry consisted of 271 firms in 1909. This number was down 60 percent by 1923, and in the 1950s only four car manufacturers remained in business. The television industry shows a similar pattern.

in all phases and ultimately (together with other customers) determine the demand for the good.

Figure 1 about here

The analysis suggests that it is useful to discern two kinds of incentives. The first kind directly affects the individuals carrying out a specific function in the competence bloc. Examples include taxes on wages and taxes on capital income. The second kind indirectly affects the actors via firm attributes like firm age, firm size and industry affiliation. Examples include institutional effects on the provision of capital in early or late phases of commercialization (firm age), labor security mandates (which tend to fall more heavily on small firms), and industry-specific regulations.

There are also spatial dimensions to the theory of competence blocs, such as the well-recognized effects that some industries cluster around certain sources of raw materials (forest, mining etc). The stages of the product life cycle mapped in figure 1 may also be geographically separated because different areas may be more conducive to different kinds of knowledge discovery and knowledge exploitation. For example, cities favorable for diversified knowledge are more suited in the early phases of the product cycle when generation of ideas is crucial, while cities advantageous for specialized knowledge are more suited for later (production) stages (Duranton and Puga 2001). This implies that local institutional conditions may affect the workings of competence blocs and their ability to generate HGFs. For practical reasons, we confine our analysis to the national level.²⁵

4. Institutions and High-growth Firms

The theory of competence blocs does not explicitly address whether certain types of firms are of particular importance. However, based on the evidence presented in section 3 we deem that HGFs should hold center stage. We are not implying that other types of firms are unimportant or that they can be ignored, but merely emphasizing the importance of letting firms with particularly large growth potential realize their full potential. This requires a level institutional playing field and involves a large number of actors and key competencies.

Empirical evidence suggests that a high turnover (entry plus exit) of firms in itself boosts the number of HGFs (cf., Bartelsman et al. 2004, 2005, Brown et al. 2006, Birch 2006, Fogel

²⁵ See, for instance, Stam (2005, 2007) for an elaboration on the spatial dimension of HGFs.

et al. 2006, and Caballero 2007). A plausible explanation is that a high turnover of firms is a natural effect of an accelerated discovery procedure of new business opportunities and a rapid reallocation of resources from unsuccessful to successful firms (see, e.g., Johansson 2005). A prerequisite for this process to generate HGFs is that entry and expansion as well as contraction and exit are facilitated, so that new and expanding firms can attract resources from inefficient firms. Without this dynamic reallocation the growth of firms will be hampered, irrespective of their inherent growth potential.

In section 3 we noted that HGFs seem to do better in some countries than others. Such cross-country differences may not only derive from differences in industry structure and factor endowments. The alignment of the incentives of all actors in the competence bloc requires appropriate institutions that shape “the social structure of payoffs” (Baumol 1990).

For simplicity, we restrict our analysis to formal rules. Informal rules such as norms, values or codes of conduct are harder both to enact and to analyze, but also constitute important determinants of the business climate. We believe that both informal institutions and cultural attitudes are affected by formal institutions and policies. To the extent that norms and attitudes are culturally codified products of the reward structures in society, institutional changes are likely to affect norms and attitudes as well (Bowles 1998; Baumol et al. 2007, pp. 203ff; Smith 2003).

Modern societies are rich webs of formal and informal institutions that differ greatly in terms of their significance for the fostering of HGFs. To provide an exhaustive characterization of the pertinent institutional setup conducive to rapid firm growth is beyond the scope of this study. Our aim is to describe mechanisms with a documented importance for firm growth, and show what kinds of institutions are required for these mechanisms to work efficiently. Many of our examples will involve Sweden, since that is the country we are most familiar with.

Private property rights – including the existence of legal titles to hold property, and the protection thereof – is arguably the most fundamental economic institution (e.g., Libecap 1993, Baumol 2002, and Rodrik et al. 2004). Secure property rights ensure that physical objects can be turned into capital, a transformation that requires judgment, imagination and innovation (de Soto 2000).²⁶

²⁶ A system of secure private property rights presupposes that the rule of law prevails. The rule of law ensures the protection of individual freedom and social peace, but is also a very broad concept. See, e.g., Kasper and Streit (1998, pp. 165–168) for a definition and discussion of the rule of law.

When the protection of property rights is eroded, a first effect is to reduce the profits pertaining to productive entrepreneurship.²⁷ For instance, business owners will retain a smaller share of profits in their firms (Johnson et al. 2002). A further effect is that entrepreneurship takes new forms, since opportunities to earn profits from unproductive entrepreneurship arise. This involves protective activities such as security firms and the like, which substitute for weak institutions. Moreover, profits can be earned by legally transferring land titles or other resources among groups of the population. If the protection of property rights continues to weaken, purely predatory forms of entrepreneurship, such as extortion and corruption, will gain currency.

Well-functioning financial markets are also of crucial importance for economic development, and by implication for firms with a high growth potential (Levine 2005). Following a series of reforms in the 1970s and 1980s financial markets (for debt, equity and foreign exchange) became considerably less regulated in most advanced economies. This process was completed by the early 1990s in virtually all of the wealthiest OECD countries.

Our analysis pertains to high-income countries, where the rule of law applies, private property rights are reasonably secure, and financial markets are deregulated. Therefore, we will not deal further with these factors. The subsequent analysis will make clear that, for instance, although financial markets are fully deregulated, other institutions, such as the tax system or rules governing pension savings schemes, may influence how well financial markets can cater to the needs of HGFs. A general conclusion is that multiple institutions tend to interact in complex ways, either reinforcing or reducing the total effect.

In what follows we will in turn deal with the effect on potential HGFs of the tax system, institutions governing the labor market (including the regulation of labor markets, wage-setting institutions and the social insurance system), and regulations barring product markets from private entrepreneurs and prohibiting private customers from buying preferred products and qualities from preferred suppliers.

5. The Tax Code

By referring to the theory of competence blocs we have identified seven distinct categories of actors crucial for HGFs. However, the tax code does not acknowledge these categories; there is no specific tax on income from entrepreneurial effort, inventive activity or the return on

²⁷ Productive entrepreneurship means that the return on entrepreneurship comes from wealth generation. This stands in contrast to unproductive and destructive entrepreneurship where the return emanates from wealth redistribution (Baumol 1990).

acquired skills. Instead, based on provisions in the tax code, individual income will be classified as labor income, capital income and/or corporate income, and within each of these categories there may be further provisions influencing the effective tax rate. Since tax income as a share of GDP varies between roughly 32 and almost 60 percent of GDP among OECD countries,²⁸ the incentive effects of the tax system are potentially large. These effects are also highly complex and difficult to assess with precision.

In *Table 1* we outline the different kinds of taxation and list the most important aspects of each category.²⁹ In what follows we will discuss each type of tax in turn to examine how the incentives for the different categories of actors in the competence bloc are affected.

5.1 Labor Taxation

The level and progressivity of labor taxation (including mandatory social security contributions) always affect employees directly, by determining the incentives for work effort, labor supply (on the extensive and intensive margin), occupational choice, career aspirations, and the propensity to upgrade and learn new skills. Most obviously, high and progressive labor taxes lower the rate of return on productive skills, and therefore they are likely to impair the supply of skilled workers.³⁰ They also slow down restructuring and the reallocation of people across firms, since it becomes more costly to obtain the net wage differential necessary to induce a person to quit their current employment position.

To the extent that inventors are taxed as wage-earners their incentives are also affected by the tax code for labor income. The same is true for industrialists, unless they have a large ownership share in the firm they manage, which is usually not the case for large firms.

To the extent that income from entrepreneurship is taxed as wage income, the incentives of entrepreneurs are also affected. But one should not equate entrepreneurship and self-employment. High taxes on labor income are likely to encourage self-employment both because the self-employed can more easily avoid reporting some of their income, convert part of their private consumption expenditures into tax-deductible business costs, and shift more highly taxed labor income to corporate or capital income taxed at a lower rate (Feldstein and

²⁸ According to recent OECD statistics total government income as a share of GDP varies between 32 percent in Japan/Korea and 59 percent in Sweden (in 2005). The average for the euro area is 45 percent (OECD 2006).

²⁹ It should be apparent from this table that a tax system easily becomes arcane, offering opportunities to tax lawyers and businessmen to profit from novel ways to structure business activities in order to lower the effective rate of taxation: a textbook example of unproductive entrepreneurship.

³⁰ The incentives to acquire human capital through formal schooling may be strong thanks to low or zero tuition fees, subsidized student loans and housing financed by taxes, while high marginal taxes abate the incentives to use and further develop that kind of capital.

Slemrod 1980). These mechanisms are likely to both affect the selection of individuals who become self-employed and to discourage growth beyond a certain threshold level where it becomes more difficult to exploit these tax-avoidance strategies.³¹

Table 1 Different Types of Taxes with an Impact on the Actors in the Competence Bloc.

<p><i>Labor taxation</i></p> <ul style="list-style-type: none"> – level and degree of progressivity – EITC/exemptions – social security contributions <ul style="list-style-type: none"> – level and degree of actuarialness – capped/non-capped <p><i>Sales/VAT</i></p> <ul style="list-style-type: none"> – level – degree of uniformity – exemptions 	<p><i>Taxation of savings</i></p> <ul style="list-style-type: none"> – level and degree of progressivity – differences across instruments – preferential treatment of pension savings <ul style="list-style-type: none"> – differences across actors <p><i>Corporate taxation</i></p> <ul style="list-style-type: none"> – level and degree of progressivity – statutory rate/effective rate – S-corporations or other measures to eliminate two-tier taxation – accounting measures to lower effective taxation – treatment of holding companies <ul style="list-style-type: none"> – domestic/foreign – single- or multi-level taxation
<p><i>Taxation of stock options</i></p> <ul style="list-style-type: none"> – capital or labor income – tax on realized or imputed gain – differences based on holding period – effect of employment clause <p><i>Taxation of current capital income</i></p> <ul style="list-style-type: none"> – level and degree of progressivity – dividends – interest income – exemptions <p><i>Taxation of capital gains</i></p> <ul style="list-style-type: none"> – level and degree of progressivity – differences across assets – differences based on holding period – exemptions <p><i>Taxation on asset holdings</i></p> <ul style="list-style-type: none"> – level and degree of progressivity – wealth tax – property tax – inheritance tax – exemptions 	<p><i>Taxation at owner's level</i></p> <ul style="list-style-type: none"> – level and degree of progressivity – differential across types of owner – exemption levels/threshold effects <p><i>Degree of symmetry in the tax treatment of business profits and losses</i></p> <ul style="list-style-type: none"> – against other types of income – against future profits – effect of progressivity <p><i>Taxation of venture capital and private equity activity</i></p> <ul style="list-style-type: none"> – tax treatment of managers' and partners' income – taxation at one or several layers

Note: For all types of taxes it matters whether nominal or real incomes are taxed.

³¹ See Asoni and Sanandaji (2007) for a formal analysis of these effects.

In other words, high labor taxation may induce people to become self-employed, but it is likely to weaken their incentives to develop HGFs. But this conclusion is still too simplistic. From a tax perspective entrepreneurial income can show up in many other forms: dividends, capital gains on equity and/or stock options, and as interest income on lending by the entrepreneur to her/his own business. Given the complexity of the tax code in a typical OECD country, the incentive effects of the tax system on entrepreneurs are highly multifaceted. Still, it is clear that some of the returns to entrepreneurial effort are taxed as wage income. The tax code may restrict the extent to which income accruing from closely held companies may be taxed as capital income.³² In addition, some of the entrepreneurial function is carried out by employees without an ownership stake in the firm, and for them the labor tax schedule is always applicable.

The level and progressivity of labor income taxation also indirectly affect the industry structure from the demand side. A large percentage of all work, most notably household work, is performed outside the market. Cross-country comparisons of industry-level employment also point to considerable scope for substitution of certain economic activities between the market and non-market sectors (Rogerson 2006; Freeman and Schettkat 2005).

In a well-functioning, decentralized market economy, firms can be expected to detect and act upon the potential for starting new operations or expand existing ones, thereby creating job opportunities. But for many goods (e.g., high-tech products like computers), the higher price that results from taxation may cause the consumer to forego a purchase, or to buy a lower quality version of the good. This need not be the case with services – high labor taxes often induce the consumer to produce the service himself.³³ High rates of personal taxation tend to make it more profitable to shift a large share of the service production to the informal economy, in particular into the “do-it-yourself” sector.

As a result, the emergence of a large, efficient service sector competing successfully with unpaid work is less likely in countries with high rates of personal taxation. Consequently, important opportunities for commercial exploitation and entrepreneurial business development become less accessible. When services are provided by professionals, incentives emerge to invest in new knowledge, to develop more effective tools, to develop superior contractual

³² This is true for Sweden, where the so-called 3:12 rules restrict how much of profits from closely held firms that can be taxed as dividends and not as wage income by the owners. See Agell et al. (1998), and Davis and Henrekson (2007).

³³ This basic insight constitutes an important point of departure in recent work in the theory of optimal taxation. The theoretical results of Kleven Jacobsen et al. (2000) and Piggott and Whalley (2001) strongly suggest that the optimal tax structure involves a relatively low tax rate on those market-produced services that could alternatively be produced in the household sector. See also Jansson (2006).

arrangements, to create more flexible organizational structures and so forth. Put simply, higher rates of personal taxation discourage the market provision of goods and services that substitute closely for home-produced services.³⁴

Thus, the tax burden on personal income steers consumer demand towards sophisticated material goods and low-priced goods that are complements to one's own time. In countries where the taxation of personal income is high the competent customers are therefore more likely to be either firms or public entities buying intermediate goods or individuals demanding goods that are difficult to produce in the household or in the underground economy.

5.2 Sales tax/VAT

The incidence of commodity taxation generally falls on final domestic consumers, while intermediate goods and exports are exempted. Hence, the effects of these taxes on the actors of the competence blocs are similar to the effects of labor taxation. In some countries certain commodities such as personal services and merit goods are exempted or taxed at lower rates, while some goods (alcohol, energy etc.) are taxed more heavily. Generally, there is considerable differentiation in sales/VAT taxation across countries and commodity groups.

5.3 Taxation of Stock Options

One mechanism to encourage and reward individuals supplying key competencies to a firm is the use of stock options. In ideal circumstances this can provide incentives that closely mimic direct ownership. This is likely to be most important for employed inventors, entrepreneurs and industrialists in certain industries where options are an effective response to agency problems.

The efficiency of stock options is highly dependent on the tax code. If gains on stock options are taxed as wage income when the stock options are tied to employment in the firm some of the incentive effect is lost. This is particularly true if the gains are subject to (uncapped) social security contributions and if the marginal tax rate is high.

The situation is very different if an employee who accepts stock options can defer the tax liability to the time when the stocks received upon exercise of the options are eventually sold. The effectiveness is further reinforced if there are no tax consequences to the employee upon the granting or the exercise of the option and if the employee is taxed at a low capital gains rate when the stock acquired through the exercise of the option is sold. In the latter case the

³⁴ See Dew-Becker and Gordon (2008), Rogerson (2006) and Davis and Henrekson (2005) for assessments of these effects across OECD-countries.

tax risk of the options is pushed back to the government. This accomplishes two things: it increases the potential profit from the stock options and it allows budget-constrained individuals to sell stocks whenever they choose to do so. It is noteworthy that the U.S. changed the tax code in the early 1980s along the latter lines, which paved the way for a wave of entrepreneurial ventures in Silicon Valley and elsewhere (Misher 1984; Gompers and Lerner 2001).

5.4 Taxation of Current Capital Income

Current capital income consists of interest income and dividends on equity holdings. Tax systems may differ in important respects here: (i) labor income and capital income can either be summed and taxed according to the same tax schedule, and if the income tax is progressive this may result in very high taxes on capital income, in particular if the tax rate applies to nominal as opposed to real returns; (ii) capital income can be taxed separately from labor income, either at a flat or progressive rate with or without inflation adjustment; (iii) dividends may be taxed at a lower rate reflecting the fact that dividends as opposed to interest payments is a tax-deductible business cost for the firm; (iv) the tax code may put restrictions on the payment of dividends to the owners of closely held firms in order to prevent active owners from converting labor income into capital income taxed at a lower rate.³⁵ Moreover, tax systems may differ as to whether deduction of interest payments is allowed (in real or nominal terms).

Hence, the tax code pertaining to current capital income has large incentive effects, especially for entrepreneurs and the functioning of secondary markets. In particular, if taxation is nominal and tax rates are high, the real rate of taxation can easily exceed 100 percent even at moderate inflation rates. On the other hand, this may be largely offset by tax deductibility of interest payments, and if certain investments are tax favored opportunities for tax arbitrage arise.³⁶

5.5 Taxation of Capital Gains

Most of the economic return from the successful building of an HGF comes in the form of a steeply increased market value of its stock rather than as dividends or large interest payments

³⁵ In this respect it is noteworthy that in the U.S. dividends in the so-called S-corporations are only taxed at the level of the owner's personal income tax (Cullen and Gordon 2006).

³⁶ Fukao and Hanazaki (1987) provide systematic evidence of such effects for OECD countries in the 1970s and 1980s.

to the owners. As a result, the taxation of capital gains on stock holdings has large effects on the incentives to create wealth through the fostering of HGFs.

There are large differences across countries and over time. In some countries the tax rate is zero or very low on capital gains on long-term holdings of equity, thereby providing strong incentives for entrepreneurs to create value by investing money and effort in their own business, and to give other key actors (industrialists and business angels) ownership stakes in the firm if their competencies are required. In other countries the reverse may be true, that is, the tax system penalizes owners of stock in closely held firms relative to owners of stock in listed firms in order to prevent owners of profitable small businesses from saving on taxes relative to the case where they are regular employees.³⁷

Moreover, the capital gains tax may differ across different types of owners, where some types of owners, such as institutional investors and offshore trust funds, are taxed at lower rates than individuals. This is likely to spur an endogenous response in the ownership structure of the business sector towards the tax-favored owner categories. Generally, if individual stock holdings are disfavored relative to institutional holdings this affects the functioning of secondary markets, giving more effective control rights to fund managers and less to final owners.

5.6 Taxation of Asset Holdings

There are several types of taxes levied on asset holdings where the tax is decoupled from the return. This is true for taxes on wealth, property and inheritance. In cases where these taxes are non-zero, the rules for how taxable wealth is assessed in the business sector are particularly important in our context. Successful entrepreneurs, venture capitalists and actors in secondary markets have been shown to be highly sensitive to these kinds of taxes.³⁸ In some systems corporate wealth may be exempted, which would spur investment in entrepreneurial ventures by key actors. Alternatively, corporate wealth may be taxed heavily, while other assets such as pension savings or art objects are exempted. Hence, taxes on asset holdings influence both the absolute and relative return on asset accumulation. In most cases where such taxes

³⁷ This is the case in Sweden, where the legislator is concerned that owners of closely held firms do not convert labor income to capital income by paying themselves dividends taxed at 30 percent rather than wages taxed at the marginal tax rate for labor income. The scope for dividend payments is therefore restricted to a relatively small percentage of the equity capital paid in by owners. Similar provisions raise the capital gains tax on small businesses (Agell et al. 1998). In recent years it has normally been 43 percent for small closely held firms instead of the regular 30 percent, since half of the capital gain is taxed as wage income.

³⁸ See Rosen (2005) for an overview. In Sweden the emigration of successful entrepreneurs was extensive due to very high effective taxes on wealth and inheritance, particularly during the 1970s and the 1980s (Lindqvist 1990).

are levied the calculations are complicated; certain assets may be exempted and the imputed value used as the basis for assessments may be far below the market value.

5.7 Taxation of Savings

Given the level of wealth or national savings, the composition of national savings is not neutral in its impact on entrepreneurship and small business development. The manner in which savings are channeled to various investment activities influences the type of business organization that can obtain credit. Pension funds, for example, are less likely to channel funds to entrepreneurs than business angels or venture capital firms. Hence, if the government forces individuals to carry out large part of their savings through a national pension fund system, small business credit availability will suffer relative to an alternative policy and institutional arrangements that allow for greater choice by individuals regarding their savings and investments. But apart from such forced measures the tax system may provide forceful incentives regarding the level and channeling of savings.

Often savings in the form of life insurance are tax favored relative to other forms of savings. Insurance premiums may be tax deductible against current wage income, and the yield may not be subject to taxation until it is paid out. If financial assets are subject to wealth tax, this rarely applies to pension savings. Normally, pension savings can neither be bought back by the policy holder nor can it become available until a higher age. Returns on savings in mutual funds may be taxed differently than savings in individual securities, in particular with regard to capital gains taxation where a change in the asset composition made by the investment fund has no tax consequences, while the same changes in the case of direct asset holdings could result in the payment of capital gains tax. These and other similar provisions in a country's tax code provide incentives to channel financial savings into institutions where it gets locked in for extended periods of time. Even if the institutions that handle the savings are not subject to any restrictions regarding their portfolio choice, these institutions cannot substitute for individual equity capital in early phases of firm development.

A tax system that encourages reliance on savings schemes that escape capital taxation typically restricts the owner's control of the assets. In this way, the tax treatment of financial assets and property encourages the accumulation of illiquid assets controlled by large financial institutions rather than assets under the direct control of the owner. Personal financial assets with these characteristics cannot be used by the asset holder as working capital in an existing owner-operated business or to start a new owner-operated business. In particular, this

would affect entrepreneurs and venture capitalists and, hence, the generation and early growth of HGFs.

If entrepreneurial talent and venture capital competence are unevenly distributed, policies that decrease the likelihood that the entrepreneurially talented and those with talent for being venture capitalists are equity constrained are likely to be beneficial. The only really efficient means of increasing this likelihood is to pursue economic policies that promote private wealth accumulation across the board, and in forms that do not preclude or severely circumscribe that the wealth may be used as equity in entrepreneurial ventures.³⁹

5.8 Corporate Taxation

Corporate tax rates have come down from very high levels, following extensive tax reforms throughout the OECD countries in the 1980s. Cross-country variations in the statutory corporate tax rates, however, remain large, exceeding 50 percent in Germany while no higher than 24 percent in Ireland and 18 percent in Hungary. Still, there was no correlation ($r = -0.07$) between the statutory rate and corporate tax payments as a share of GDP, and Germany combined the highest tax rate and the lowest aggregate tax payments (OECD 2004b). In *figure 2* the relationship between the statutory corporate tax rate and government revenue from corporate taxation in 28 OECD countries in 1980–2006 is displayed. In fact, a 1 percentage point higher statutory rate is associated with 0.027 percent lower revenue from corporate taxes as a share of GDP (significant at the 1% level). The discrepancy between statutory and effective corporate income tax rates results from mechanisms such as tax-reducing depreciation rules, inventory valuation rules, and other more *ad hoc* tax reductions that may be country or industry specific.⁴⁰ Seen from the perspective of the individual firm, opportunities for lowering the effective tax rate induce behavioral responses by firms, and to the extent that these opportunities differ depending on firm and industry characteristics, effects on HGFs can be expected.

Figure 2 Corporate Tax Rates and Corporate Tax Payments as a Share of GDP in 28 OECD Countries, 1981–2006 (percent).

Enclosed

Source: Statutory tax rates are from *OECD Tax Database, PART II. Taxation of Corporate and Capital Income* (www.oecd.org/dataoecd/26/56/33717459.xls) and tax revenue from *SourceOECD: Revenue Statistics of OECD Member Countries Database*.

³⁹ Pelikan (1988) provides forceful arguments supporting this view.

⁴⁰ See, e.g., King and Fullerton (1984) and the studies contained therein.

Taxes on business profits are not limited to the corporate level. Account needs to be taken of all taxes including the owner's level and differences arising because of different sources of finance. In particular, for our purposes it is important to highlight whether there are any differences between small individually owned firms (incorporated or unincorporated) and institutionally owned firms, which are either listed or unlisted.

5.9 Taxation at the Owner's Level

Estimating, in real terms, the size of the marginal tax burden faced by private firms for investment in real capital is a painstaking task requiring that we consider the overall effects of several different taxes, such as corporate taxation with its specific rules for depreciation and valuation, as well as the taxation of interest income, dividends, capital gains, and wealth. In addition, we need to take into consideration how these tax schedules differ across different types of investors. A correct estimate of the tax burden must take into consideration what type of real capital the firms invest in, how these investments are financed, who the firm's owners and creditors are, and in what industries the investments are made. Estimates have been made for a number of countries using the methodology developed by King and Fullerton (1984).

We will use the Swedish tax system to illustrate how tax schedules affect HGFs. *Table 2* presents effective marginal tax rates for different combinations of owners and sources of finance for Sweden in 1980 and 1994. Three categories of owners and sources of finance are identified, and the effective marginal tax rate is calculated assuming a real pre-tax rate of return of 10 percent. A negative number means that the real rate of return is greater after tax than before tax.

The table highlights several aspects of the tax system that are potentially important determinants of HGF activity. First, in 1980 debt financing received the most favorable tax treatment and new share issues the least favorable treatment. Second, the taxation of households as owners was much higher than for other categories. In fact, more than 100 percent of the real rate of return was taxed away for a household buying a newly issued share. Third, tax-exempt institutions benefited from a large tax advantage relative to the other two categories of owners. Tax-exempt institutions had a substantial relative tax advantage throughout when investing in newly issued shares.⁴¹ Fourth, insurance companies were in an intermediate position in terms of effective taxation. As shown by Davis and Henrekson (1997) the tax system favored

⁴¹ Tax-exempt institutions by definition pay no tax on interest receipts, dividends or capital gains. This category includes charities, scientific and cultural foundations, foundations for employee recreation set up by companies, pension funds for supplementary occupational pension schemes, and the National Pension Fund.

large and old manufacturing firms. By implication a tax system of this type penalized many of the key attributes characterizing HGFs. Distortions of such magnitudes most certainly had a negative effect on the functioning of competence blocs and the capability of fostering rapidly growing firms, in particular entrepreneurs, venture capitalists, actors in secondary markets and HGFs in their infancy are likely to be negatively affected.

Table 2 Effective Marginal Tax rates for Different Combinations of Owners and Sources of Finance in Sweden, 1980 and 1994 (real pre-tax rate of return = 10%).

	Debt	New share issues	Retained earnings
1980			
Households	58.2	136.6	51.9
Tax exempt institutions	-83.4	-11.6	11.2
Insurance companies	-54.9	38.4	28.7
1994			
Households	32.0/27.0†	28.3/18.3†	36.5/26.5†
Tax exempt institutions	-14.9	21.8	21.8
Insurance companies	0.7	32.3	33.8

Note: All calculations are based on the actual asset composition in manufacturing. The following inflation rates were used: 1980: 9.4%, 1994: 3%. The calculations conform to the general framework developed by King and Fullerton (1984). The average holding period is assumed to be 10 years. A negative tax rate implies that the rate of return after tax is greater than before tax. For instance, a tax rate of -83 percent for a debt-financed investment owned by a tax-exempt institution in 1980 tells us that a real rate of return of 10 percent before tax becomes 18.3 percent after tax.

Source: Södersten (1984) and calculations provided directly by Jan Södersten.

A series of tax reforms from 1985 until 1994 entailed a substantial "leveling of the playing field" for different types of owners and sources of finance. The tax changes of 1993-94, primarily the abolishment of wealth tax on unlisted stocks and taxation of dividends at the investor level, and the lowering of capital gains taxation to 12.5 percent, brought about a dramatic leveling of taxation for different owners and different means of finance compared to the situation in 1980. Taxation on financing by owner equity, regardless of whether it takes the form of a new issue of shares or of earnings plowed back into the firm, became largely the same for households as for other categories of ownership.⁴² This should have a positive effect on the generation and growth of HGFs, according to our analysis.

⁴² These rules were only in place for one year, and the differential across owner categories and sources of finance increased again in 1995 when taxation of dividends at the investor level was reintroduced and the capital gains tax was raised to 30 percent.

5.10 Symmetry in the Tax Treatment of Business Profits and Losses

It has been argued that governments can provide insurance for business owners by taking part of profits in good times and offsetting losses in bad times (Domar and Musgrave 1944; Sinn 1996). If individuals are risk averse, such insurance encourages the risk-taking central to all entrepreneurial activity, not least HGFs.

A number of arguments have been put forward to counter this proposition. For instance, it is not valid under progressive taxation and, under most tax codes, losses can only be offset against future profits. It could well be that misdirected forms of insurance only serve to encourage new business ventures among those who are not entrepreneurs (de Meza, 2002).

In this respect there are also large differences across countries. For instance, Cullen and Gordon (2006) show that the asymmetry in the tax treatment of business profits and losses is greater in Sweden than in the U.S.⁴³ In the U.S., the asymmetry actually runs the other way in some cases. Cullen and Gordon write: “For individuals in the top bracket, risk taking in start-up firms is heavily subsidized in the U.S., but tax penalized in Sweden.”

The usual tax asymmetry discourages risk-taking activities even for risk-neutral owners. Since startup activities are often risky, this effect is stronger for new firms than for incumbents. This difference is aggravated to the extent that small firms have more volatile profit streams and fewer opportunities to apply losses in some units to reduce taxes on the gains accruing to other units. For closely held firms, the disincentive to pursue risky activities is even stronger insofar as risk-averse owners have much of their wealth tied up in the firm. As regards the previously reported evidence that HGFs tend to be young, it is conceivable that such a policy has negative effects on entrepreneurial activities in general and HGFs in particular.

5.11 Taxation of Venture Capital and Private Equity Activity

As explained in section 2 venture capitalists (VC) often fill a crucial role in the development of a small entrepreneurial high-growth venture by converting high-risk opportunities to a more acceptable risk level through portfolio diversification, and adding key competencies that the firm may be lacking. This is achieved by means of developing arrangements that align the incentives of the three actors – investors, venture capitalists and entrepreneurial start-ups (Zider 1998; Gompers and Lerner 2001). The extent to which this is possible is also largely governed by the tax code for stock options, capital gains, and whether pension funds are al-

⁴³ Asymmetry refers to a situation whereby the effective tax rate on business profits is greater than the fraction of business losses shared by the government through the tax system.

lowed to invest in high-risk securities issued by small or new companies and venture capital funds.

VC firms hardly ever participate in the earliest stages of the development of new high-risk concepts that eventually make it to the stage of successful commercialization. The earliest financial support is likely to come from affluent friends or relatives, or from wealthy individuals who have already become rich from similar earlier ventures. The tight screening and close monitoring of the firm's progress by these financiers sharply reduce the moral hazard problems.⁴⁴ Venture capitalists would have far fewer companies to finance if it were not for these "business angels". The same is true for actors in secondary markets, notably private equity (PE) firms, but here it is about aligning incentives of investors, private equity partners and the industrialists in charge of the acquired firms.⁴⁵

The tax systems of many countries evolved before complicated ownership structures involving VC/PE financing even existed.⁴⁶ Sophisticated mechanisms were needed to provide high-powered incentives for a number of actors in addition to the final equity holders. In fact, the modern VC industry in the U.S. could not evolve until the tax system was changed in key respects: sharp reductions in the capital gains tax, stock option legislation of 1981 that made it possible to defer the tax liability to the time when the stocks were sold rather than when the options were exercised, and new legislation in 1979 allowing pension funds to invest in high-risk securities issued by small or new companies and venture capital funds (Fenn et al. 1995).

In the U.S. investments by venture capital firms are taxed at low rates. The returns that venture capitalists receive when the companies they help build are sold (so-called carried interest) are taxed at the 15 percent capital gains rate. For the founders of the startup the capital gains tax rate may be half of that level (up to a high cap), since half of the gains is tax exempt if the stock has been held for at least five years.

In Sweden, by contrast, domestically domiciled VC and PE firms are at a disadvantage relative to other firms. Until 2003 dividends were taxed threefold: at a rate of 28 percent in both the firm itself and the VC firm and, when applicable, at 30 percent at the owners' level. Since 2003 there is no taxation at the level of the VC or PE firm as long as it owns 10 percent of the firm in question. Also, business angels that take active part in the management of the firms in which they invest are taxed at a higher rate. Active owners of unlisted firms are taxed

⁴⁴ The reader who is interested in exploring these aspects in depth is referred to Landström (2007) and the articles contained therein.

⁴⁵ See Wright (2007) and Prowse (1998).

⁴⁶ VC and PE ownership involves several layers of ownership: Private ownership stake by founders and key personnel, ownership share by VC/PE firm, ownership stake by VC/PE partners (often indirect), investor stake in the VC/PE fund and final beneficiaries of institutions investing in VC/PE funds.

at higher rates than passive owners in that dividends above a fairly moderate threshold is taxed as wage income, and capital gains are also largely taxed as wage income and not as capital income. Likewise, the income of the general partners in VC firms and income from and stock options tied to employment are taxed as wage income. Thus, the high rates of taxation of entrepreneurs, general partners of VC firms and the owners of the VC firms or the business angels result in a substantial reduction in the after-tax return on activities typical of VC firms in the U.S.

On the other hand, the Swedish VC and PE industries have developed offshore ownership structures that are very tax efficient, but where the thresholds are high and transparency is low or negligible. More generally, taxation of the VC and PE industries should be evaluated in the light of the extent to which venture capital and private equity firms can operate from offshore tax havens. A tax code providing generous opportunities for such behavior offers a safety valve to circumvent onerous taxation, but it also puts VC and PE firms at an advantage relative to other actors (stockholders of publicly listed firms, family owners etc.) including individual entrepreneurs.

Strategies for bridging the gap between founders of firms and external financiers, strategies differ considerably across countries (Bottazzi and Da Rin 2005). In the U.S., venture capitalists often buy out the start-up entrepreneur at an early stage in the life-cycle of the firm (Hellmann and Puri 2002). The entrepreneur loses control, but often becomes quite wealthy when the venture capitalist and the entrepreneur exit in an IPO (Gompers and Lerner 2001). Venture capitalists, and sometimes entrepreneurs, use the proceeds of IPOs to invest in new entrepreneurial ventures. In contrast, Swedish entrepreneurs often cling to control throughout their entire careers, showing a strong unwillingness to give up control rights to external financiers (Wiklund et al. 2003, Berggren et al. 2000). Greater emphasis on control rather than growth is consistent with the Swedish tax system, and it may be an important factor explaining the fact that few Swedish firms founded in recent decades have grown to large size.⁴⁷

5.12 Summary of the Effects of Taxation

In order to fully evaluate the effect of the tax system on the incentives for HGFs, it is necessary to take account of the overall effects of all taxes combined.

⁴⁷ In 2004, among the 100 largest firms in Sweden, including firms formed by government and firms established by foreigners, there were 34 firms originally founded by Swedish entrepreneurs. The median year of establishment of these firms was 1908 and no one was founded after 1970 (Axelsson 2006).

Let us first consider the occupational choice decision of economic actors, i.e., whether to acquire and use any of the key competencies crucial for HGFs. It is clear from our analyses of the tax system that these choices depend on the complex interplay of a number of tax rates and tax code provisions, and the incentives for savings in general and in forms that are amenable to equity financing.

The analysis reveals that tax systems typically contain many asymmetries giving rise to distortions concerning, for instance, ownership and firm age, which is expected to have a negative effect on the functioning of competence blocs and the ability to generate HGFs. One illustration is given in *table 3*, which reports some important aspects pertaining to the taxation of shareholding in OECD countries. In some key respects it is clear that there is always a group of countries where taxation is zero, while this is not the case in the tax code of other comparable countries. Despite recent trends towards tax harmonization within the EU and the OECD, it is clear that there exist innumerable combinations of tax rates and tax provisions giving rise to different blends of ownership structure, financing structure, industry structure, size distribution of firms and employment dynamics across countries.

Even seemingly neutral taxation may give rise to distortions if, for instance, some actors and firms are more likely to be financially constrained, notably small firms.⁴⁸ Such examples are corporate taxation, taxation on savings and taxation on private wealth where small and young firms to a larger extent rely on retained earnings and private equity. In our view, this is an important determinant of cross-country differences in the prevalence of HGFs. Likewise, the regulatory (tax) burden is likely to fall more heavily on small and young firms (and hence on potential HGFs), since the concomitant administrative costs have a large fixed component that is unrelated to the size of the firm. This is recognized in a number of countries identifying the regulatory burden itself as an impediment to economic development, in particular for young and small firms (see, e.g., European Commission 2007). Many governments have therefore commissioned authorities to document and reduce the regulatory burden of (small) firms. The establishment of the Office of Advocacy within the U.S. Small Business Administration in 1976 is an early example. In the Lisbon agenda the European Union stated the ambition to reduce the regulatory burden of firms by 25 percent until 2011.

Our analysis of the effect of the tax system on incentives for HGFs leads to three conclusions:

- (i) The tax system is likely to have far-reaching effects.

⁴⁸ See, for instance, Beck et al. (2005), and Angelini and Generale (2008).

- (ii) To identify the incentive effects for the key actors in the competence bloc, the tax code has to be examined at a detailed level. Hence, cross-country studies trying to explain differences in industry structure, the size distribution of firms, the prevalence of HGFs and the like by using raw tax rates or other aggregate tax-system indicators as regressors may be misleading.
- (iii) A number of common features of tax systems lead to large distortions, disfavoring infant HGFs, and hence have an expected negative effect on renewal, employment and economic growth.

A further summary of the effect of the tax system on the different actors in the competence bloc is provided in *table 4*.

Table 3 Some Important Aspects of the Taxation of Shareholders in Selected Industrialized Countries, 2003.

No or reduced taxation of dividends at the owner level	No wealth tax	Low wealth tax/ large exemptions and/or low/no taxation of dividends	No capital gains tax on long-term holdings	Capital gains tax > 0 but ≤ 20% on long-term holdings
Finland	Australia	Finland	Belgium	Ireland
France	Belgium	France	Denmark	Italy
Greece	Denmark	Luxemburg	Greece	Japan
Italy	Greece	Switzerland	Korea	Luxemburg‡
Luxemburg	Ireland	Spain	Luxemburg	Norway
Norway	Italy		Mexico	Spain
New Zealand*	Japan		Netherlands	U.S.A.
Spain	Canada		Poland	Canada
U.K.	Netherlands		Portugal	Iceland
Germany	New Zealand		U.K.#	
	Poland		Germany	
	Portugal		Austria	
	U.K.		Czech Republic	
	Germany		New Zealand	
	U.S.A.		Switzerland	
	Austria			

Notes: #Large exemption. †Effective as of 2001. ‡50% of the income tax rate, i.e., a maximum rate of 23%. The definition of "long-term holdings" varies between 3 months and 5 years. In some instances the situation refers to a representative case.

Sources: The Federation of Swedish Enterprise, Institutet för Utländsk Rätt and *European Tax Handbook* (published by KPMG).

Table 4 Taxation and the Actors in the Competence Bloc.

Type of tax	Actors affected
Labor taxation	Entrepreneurs, inventors, industrialists, skilled labor, competent customers
Sales/VAT	Very similar to the effects of labor taxation
Taxation of stock options	Entrepreneurs, inventors, industrialists
Taxation of current capital income	Entrepreneurs, actors in secondary markets
Taxation of capital gains	Entrepreneurs, venture capitalists, actors in secondary markets
Taxation on asset holdings	Entrepreneurs, venture capitalists, actors on secondary market
Taxation of savings	Entrepreneurs, venture capitalists, actors in secondary markets
Corporate taxation	No direct effect on actors, negative effect on HGFs since more dependent on equity capital
Taxation at owner's level	Entrepreneurs, venture capitalists, actors in secondary markets
Degree of symmetry in the tax treatment of business profits and losses	Entrepreneurs
Taxation of venture capital and private equity activity	Entrepreneurs, venture capitalists, actors in secondary markets

6. The Organization of Labor Markets

Many of the empirical studies of job flows and worker flows are from the 1990s. While there are far fewer recent papers on this topic, there is reason to believe that the two main results summarized by Davis and Haltiwanger (1999) still hold. First, job creation and destruction flows are large and persistent, with 10 to 15 percent of all jobs in the private sector being destroyed each year. Second, the overwhelming share of these job flows take place within narrowly defined sectors of the economy. According to a variety of studies only about 10 percent of reallocation reflects shifts of employment opportunities across 4-digit industries. Based on the existing empirical literature Caballero (2007, p. 24) maintains that more than 50 percent of aggregate productivity growth emanates from reallocation across plants/firms in the same industry, and 20–50 percent can be attributed to the effect of entry and exit in narrowly defined industries. Caballero also shows that the gross flow of workers is higher in firms with high productivity growth. Taken together these observations point to the importance of experimentation and selection.

Moreover, studies using matched employer-employee data reveal very large churning, i.e., hires and separations in excess of total job creation and destruction (Abowd and Kramarz

1999). In other words, worker flows are much larger than job flows, perhaps as much as twice the volume. For instance, Westergård-Nielsen and Bingley (1998) find that among *growing* establishments in Denmark two hires must be made for each net job created.

Hence, labor studies document massive ongoing restructuring of jobs and workers across firms. It is reasonable to hypothesize that HGFs and potential HGFs are more in need of flexibility and freedom of contracting in order to realize their high-growth potential. Institutions hampering the freedom of contracting curtail the possible combinations of factors of production. The large productivity differentials across firms in the same industry indicate that labor productivity controlling for skills/competencies can vary dramatically depending on who is the manager/entrepreneur.

In this section we will examine the impact of labor market institutions on the functioning and efficiency of the competence bloc. We focus on three labor market institutions of particular importance for the economy's ability to generate HGFs: (i) labor market regulations, especially concerning job security mandates; (ii) wage-setting institutions; and (iii) the social insurance system.

6.1 The Regulation of Labor Markets

There are large cross-country differences in the extent of labor market regulations. OECD (1994) compares the extent of government regulations on labor standards by measuring five different aspects: working time, fixed-term contracts, employment protection, minimum wages and employee representation rights. In each of these aspects, a country is ranked on a scale of 0, 1, and 2, where a 2 represents the highest degree of regulation. Adding the five aspects together produces an index ranging in value from 0 to 10. Of the 18 countries included in the survey, Greece and Sweden exhibited the highest index value (8 and 7 points, respectively). The average for all European countries was 4.9. The U.S. scored a zero and Canada 2.⁴⁹

The empirical findings about churning and restructuring give reasons to believe that in particular strict employment security provisions and other regulations that restrict contracting flexibility are more harmful for enterprises that would like to grow rapidly. As an employer learns about a worker's abilities over time, or as those abilities evolve with the accumulation of experience, the optimal assignment of the worker to various tasks is likely to change. The scope for task reassignment within the firm can be expected to rise with firm size. In an unfet-

⁴⁹ OECD (2004a) provides an update of the 1994 study, although less comprehensive, covering employment protection only.

tered labor market, optimal task reassignment often involves mobility between firms, and such mobility is more likely when the initial employment relationship involves a small, often young, business. For instance, Schnabel et al. (2008) report that employment stability (measured as time employed in the same firm) is higher and the risk for becoming unemployed lower in incumbent firms than in newly founded firms. Moreover, both the rate at which workers separate from jobs and the rate at which employers destroy job positions decline with the size, age and capital intensity of the employer (Brown and Medoff 1989; Davis and Haltiwanger 1999). Bartelsman et al. (2004, p. 4) claim that there is much more churning among young and small firms compared to old and large ones. In a meta-analysis of employment creation studies, van Praag and Versloot (2007, p. 360) conclude that “employment dynamics are larger in entrepreneurial firms”.⁵⁰ These patterns in worker separation and job destruction rates suggest that any costs imposed by labor security regulation are likely to fall more heavily on younger, smaller and less capital-intensive (often service) employers. Since HGFs are overrepresented in these categories, this implies that labor security regulations disproportionately burden HGFs.

Strict application of the principle of “last in – first out” in case of redundancies also implies that tenure at the current employer becomes relatively more important for labor security than individual skill and productivity. This fact increases an employee’s opportunity cost of changing employers or of leaving a secure salaried job to become self-employed.

If regular employment is highly regulated there may be strong incentives to devise arrangements that circumvent the regulations. In several European countries new forms of flexibility have emerged, leading to more job opportunities (Blau and Kahn 1999). The most important of these arrangements are increased self-employment, the emergence of an underground economy where the government refrains from enforcing regulations, and increased reliance on temporary employment.⁵¹ It is likely that part of the increase in self-employment in recent years is driven by such considerations. For the self-employed, compensation and working hours are totally unregulated and no labor security is mandated. Also, very small firms may be able to avoid unionization and the signing of collective agreements, and therefore benefit from greater freedom of contracting. This room of maneuver is likely to be lost once the firm size exceeds a certain threshold. Therefore, these evasive measures do little to help HGFs. Instead, they tend to create a system with a large share of economic activity oc-

⁵⁰ They define entrepreneurial firms as smaller and younger firms.

⁵¹ Arai and Heyman (2004) report that temporary job flows in Sweden in the 1990s were as much as ten times higher than job flows for permanent contracts.

curing in small firms without the ability or the aspiration to become HGFs.⁵² The differential effect of labor market regulations may go a long way towards explaining why the rate of self-employment is fairly low in the U.S., while it is very high in Italy. One may hypothesize that in the U.S. the really good entrepreneurial firms are more likely to grow rapidly, while the onerous regulation, possibly in combination with the high tax rates on labor income, makes it difficult and risky to build large firms in Italy. Instead, the firms tend to remain small and resort to a strategy of cooperation with other small firms in clusters (Lazerson and Lorenzoni 1999).

6.2 Wage-setting Institutions

Wage-setting institutions may impact on the functioning of the competence bloc and the conditions for (potential) HGFs through several channels. In particular, the wage compression associated with centralized wage bargaining is likely to disadvantage smaller and younger businesses, particularly in services (i.e., the most likely potential HGFs). Wages are consistently higher at larger employers, even after exhaustive efforts to control for observable worker characteristics and other job attributes (Oi and Idson 1999).

Also, on average old firms pay higher wages than new firms and industries in the low-end of the wage distribution are found in services, not in manufacturing.⁵³ Centralized wage-setting institutions disadvantage potential HGFs by implementing standard rate compensation policies that closely tie wages to easily observed job and worker characteristics such as occupation, education, experience and seniority.⁵⁴ In their study of the size-wage structure in the U.S. manufacturing sector, Davis and Haltiwanger (1996) find that residual wage dispersion declines sharply with establishment size in standard human capital regressions that relate worker earnings to sex, education, experience and job tenure.

Halabisky et al. (2006) explicitly investigate the development of wages in HGFs compared to other firms with the purpose to examine the validity of the argument that the job contribution of smaller firms is less valuable since they pay lower wages than larger firms. They find that larger firms paid higher wages, but – consistent with the other studies reported in

⁵² These opposing effects are also consistent with the findings of Robson (2003) and Torrini (2005), who do not find any relationship between the rate of self-employment and the degree of regulation of labor markets in rich countries.

⁵³ Garen (1985) and Kremer (1993) develop theoretical models that explain the systematic sorting of more productive workers to larger employers as an efficiency-enhancing outcome in economies with heterogeneous, imperfectly substitutable labor.

⁵⁴ Freeman (1988), Blanchflower and Freeman (1992) and Blau and Kahn (1996) provide evidence that unions and other centralized wage-setting institutions compress wages among observationally similar workers by promoting standard rate compensation policies.

section 3 – that these firms are concentrated in slowly growing and declining industries. On the other hand, wages grew most rapidly in HGFs, among which small firms were overrepresented. Halabisky et al. maintain that this is in line with the idea that the development of wages reflects firm performance and conclude (p. 265): “In other words, for small firms, wage levels were highest in those that grow the fastest. This suggests that firms that might have started out small and paid low wages can afford to increase wages faster as the company grows and becomes more successful and more productive.”

Given the large intra-firm differences in productivity and productivity growth, in particular in young and rapidly expanding industries and young firms (Caballero 2007), it is clear that the functioning of the competence bloc for HGFs is impaired if wages are set in negotiations far from the individual workplace, and therefore not taking these facts into proper account.

6.3 Labor Markets and the Social Insurance System

By providing insurance for unfavorable outcomes, an extensive and generous public social insurance system can in principle encourage individuals to pursue entrepreneurial endeavors. This is a valid theoretical point shown formally by Sinn (1996), but it is an open question whether it is important empirically. To our knowledge, this hypothesis has yet to be tested empirically. At first sight it appears more clear-cut that a generous welfare system makes it less costly to bear uncertainty as an entrepreneur or transfer to a risky job in an entrepreneurial firm. In labor markets where job security is closely linked to job tenure, this may no longer hold; what matters is the opportunity cost, i.e., how much an employee has to give up in terms of income security if (s)he transfers to self-employment or a risky job in an entrepreneurial firm. For a tenured employee (with a low-risk employer), the opportunity cost rises considerably in many OECD countries.

We can illustrate this point by comparing the situation in Sweden and Denmark. In Denmark generous welfare systems are combined with weak job security mandates, sometimes called “flexicurity” (Andersen 2005). In Sweden the situation is very different. If employment with the current employer has lasted for a long time, and the employer is unlikely to be forced to shut down, the system in reality provides income security for the individual.⁵⁵ By contrast, somebody who voluntarily gives up a tenured position for self-employment may often end up having no more security than what is provided by (means-tested) social welfare, and this pre-

⁵⁵ This was true until 2006, but beginning in 2007 the Swedish government has implemented numerous measures that reduce the generosity and eligibility of the social insurance system for the unemployed.

supposes that the individual depletes all her own assets. Hence, the construction of the public income insurance systems in combination with the labor security legislation tends to penalize individuals who assume entrepreneurial risk. As a result, the opportunity cost of giving up a tenured position in Denmark is substantially lower than in Sweden. In a study of business start-ups among the whole science and technology labor force in Sweden, Delmar et al. (2005) report that employees and students often prefer unemployment and further education to starting a business of their own when facing unemployment.⁵⁶ In total, only 3.5 percent of the science and technology labor force started a new business during the studied period (1990–2000), and firm growth is reported to have low priority among them. A major explanation is that employees and unemployed are embraced by the social security system, such as income insurance, whereas the *de facto* income insurance of self-employed is weak or non-existent. Thus, many are unwilling to forgo a large part of their social security benefits for uncertain entrepreneurial incomes.

A final point concerns the design of the supplementary pension system and other important benefits that may be tied to employment, notably health insurance. Supplementary pension plans that are not fully actuarial and individualized contain elements of redistribution and risk-sharing across individuals in a group, e.g., the white-collar workers in a certain industry. The pension benefit level may be disproportionately tied to the wage level achieved at the end of the professional career. To the extent that this is true, the mobility of (older) workers across firms is greatly discouraged, as well as the hiring of elderly unemployed.

6.4 Summary of the Effects of Labor Market Regulations

The degree of regulation and design of labor markets, wage-setting and social insurance systems can be expected to influence incentives for potential HGFs and existing HGFs, by restricting the freedom of contracting and thereby curtailing the possible combinations of factors of production. The need for experimentation in order to find more efficient factor combinations is likely to be larger in new firms and industries in general, and in current HGFs or potential HGFs in particular.

The most important channel by which labor market institutions affect HGFs is by hampering the supply of skilled workers to firms undergoing expansion and/or change. Given the large worker flows required in a dynamic economy, it will be harder to recruit workers with the competencies needed: the opportunity cost of leaving a tenured position goes up for the

⁵⁶ The science and technology labor force is defined as persons with at least three years of higher education (university) in science, technology or medicine.

employees, the fixed cost of hiring goes up when a bad recruitment becomes more costly to reverse; there may be threshold effects that make firms hesitant to expand beyond a certain size, and a great deal of entrepreneurial effort may need to be expended on evasive rather than directly productive activities.

A fundamental insight from the theory of the competence bloc is that experimentation and selection not only takes place across firms, but also between workers and other key actors (notably entrepreneurs) whose productivity is only revealed in the course of working. If temporary contracts are used systematically in order to circumvent regulations tied to permanent employment, industries and business ideas that depend on high-skilled labor and on-the-job learning are disadvantaged. Legal and institutional hurdles that prevent firms from laying off workers that underperform, discourage potential HGFs from expanding. Depending on how labor markets are regulated and how these regulations interact with the social insurance system, the opportunity cost of becoming self-employed is affected. When social security benefits are closely tied to tenured positions and the employee has tenure at a low-risk employer the opportunity cost increases heavily in many OECD countries. If employees who establish their own business lose part of their social security entitlements, this can be expected to impact negatively on the recruitment of entrepreneurs.

7. The Regulation of Product Markets

Competence bloc theory identifies the right for private entrepreneurs to enter markets and the right for customers to buy preferred products and qualities from preferred suppliers as crucial for economic development and firm growth. In recent decades, developed countries have experienced a wave of deregulations of product markets aimed at increasing the contestability of markets and providing more opportunities for private entrepreneurship, e.g., in telecommunications, transportation and financial services. This can be expected to lead to larger scope for the emergence of new competence blocs and HGFs.

One central segment of the economy of many advanced economies, however, remains heavily regulated and in some cases even monopolized by the public sector: the provision of private good social services such as health care, care of children and the elderly, and education. The social benefits from well-functioning competence blocs in these areas are likely to be substantial. These industries already constitute a considerable share of GDP: about 30 percent of GDP in the Scandinavian welfare states, and about 20 percent in OECD (Adema 2001, Adema and Ladaique (2005), and Andersen 2008). These industries will meet an increasing

demand from aging and wealthier populations. The income elasticity of services provided by these industries has been estimated to be as high as 1.6 (Fogel 1999). While several of these markets have been partially opened for private competition in recent years, many impediments are still in place, with private firms still producing only a fraction of total output.

We discuss three types of regulations separately: (i) the case where private production is permitted, but financing is monopolized; (ii) the case where production is monopolized by local or central government, but private financing is allowed; and (iii) the case where production and financing are both monopolized by local or central government

7.1 Private Production and Public Financing

Ensuring access to health care and other social goods and services does not require government production of such goods, only public financing. Welfare states are increasingly experimenting with combinations of public financing and private provision of these services, thereby introducing a market-type mechanism.⁵⁷ The most common instruments are outsourcing (“contracting out”) and vouchers. Public-private partnerships have become more common in infrastructure project; see Rosenau Vaillancourt (2000) for an evaluation of the use of public-private partnerships in different policy areas.

The combination of private provision and public financing poses problems for the creation of competence blocs and HGFs. First, the government is a monopsonist in a number of product markets. The consumer is eligible for a certain service or good free of charge, but only from the provider commissioned by the government. The service provider typically has limited options to offer and charge for additional services on top of what is granted through the tax-financed system. These restrictions make it difficult for consumers to express their preferences and their willingness to pay via market transactions, counteracting the use of customers’ private information about their needs and requirements and about the quality of the service providers. These restrictions blunt the incentives and ability to acquire competence for entrepreneurs, industrialists, venture capitalists and actors in secondary markets, resulting in a lack of depth of such competencies in these industries.

In markets where the producers know more than the end user about the product, customers act indirectly via middlemen who reduce the associated problem of asymmetric information (see, e.g., Klein 2001). For example, the final borrower and final lender seldom contract directly in the credit market. Instead, the transactions are made via an intermediary, usually a

⁵⁷ OECD (2005, p. 130) defines a market-type mechanism as “encompassing all arrangements where at least one significant characteristic of markets is present.”

bank. The intermediary has specialized knowledge and can in many cases function as a competent customer. Such intermediaries become scarce under a regime of public financing. In some markets, the government monopolizes intermediary functions as well (for instance, the labor exchange in Sweden was monopolized until 1993). In the case where the government intervenes to become the sole buyer of goods and services prices are usually regulated as well.

Second, a common pattern is that the government does not legally prohibit private provision of services like health care and non-mandatory schooling, but simply crowds out private producers by failing to level the playing field in these markets. In particular, the public sector may offer the service free of charge, financed through taxes in combination while banning customers from being eligible for any subsidies when buying from a private provider. Occasionally it is suggested that private enterprises providing publicly financed services should be prohibited from making profit, and required to reinvest all surplus in the firm.⁵⁸ While such provision constitutes no impediment for private non-profit foundations (such as universities and many U.S. hospitals), it weakens the incentives for entrepreneurs and venture capitalists, whose competencies are crucial to the formation of competence blocs and HGFs.

The mix of public financing and private provision does not preclude competence blocs and HGFs, but it is likely to give rise to incomplete blocs. This is mainly due to the lack of competent customers, since all private customers are prohibited.⁵⁹ In case there is a *de facto* ban on profit, there will be no complete competence blocs and no private HGFs. Nevertheless, in many instances opening previously monopolized markets to private providers has led to impressive performance of HGFs suggesting that there is a large untapped potential for this in sectors such as health care, education and care of children and the elderly. One such example is the voucher system for school choice that was introduced in Sweden in the early 1990s, which paved the way for several HGFs in the area. At about the same time local and regional governments began to outsource health care, and from this a number of HGFs have emerged, and some of them have become multinational.⁶⁰

7.2 Public Production and Private Financing

There are a few markets, mainly infrastructure, where government monopolizes production, but where private financing is allowed, even as the main source of funding. Electricity supply,

⁵⁸ This was explicitly suggested by a government expert investigation in Sweden in 2002 (SOU 2002:31).

⁵⁹ An exception is when the government purchases goods and services to their core activities, e.g., national defense.

⁶⁰ One of the most well-known examples is the health care provider Capio founded in Sweden in 1994. In 2008 Capio had 16,500 employees in eight countries. There are also several large operators in elderly care, which are gradually becoming multinational as well.

garbage collection, telecommunications, postal services, public transportation and water supply are prime examples.

Entrepreneurship channeled through private firms has no role if the provision of a good is monopolized by government. This is likely to reduce efficiency and innovative activity in these markets. Public enterprises are sometimes lucky enough to have intrapreneurs, hospital managers, school principals or college deans that improve performance through innovation and the build-up of structural capital. But in this system establishments that are better managed or otherwise above average in performance have little opportunity and weak incentives to expand and improve quality across the board.

Venture capitalists that increase firm value through active ownership are redundant in such markets. VC profits are typically realized via exit through sale in a secondary market. When production is monopolized competencies of venture capitalists and actors in secondary markets will be absent, since there are no investment opportunities. Similarly, the build-up of industrial competence is negligible when the acquisition and use of such competence is restricted.

State ownership makes management less interested in innovation activities, since it is more difficult for them to reap any benefits from these activities compared to private owners (see, e.g., Shleifer 1998).⁶¹ This implies that it is difficult for inventors to earn returns on their efforts in excess of their salary, which in general is much less than the market value of potentially successful inventions. Thus, while research and development may be subsidized the incentives for inventors themselves are weakened.⁶² Moreover, their labor market is monopsonized, which will make the salary lower than in a market with many competing producers. This reasoning also applies to skilled workers. Hence, wages for skilled workers in monopolized industries may go down, leading to a scarcity of skilled workers.

7.3 Public Production and Public Financing

The effect of government monopolization of production and financing on competence blocs and HGFs are similar to the case of government monopolization of production. Critical entrepreneurial and venture capitalist competencies cannot exist. Actors in secondary markets can-

⁶¹ Hart et al. (1997, p. 1131) argue that the focus on quality changes from innovative activities differ from traditional approaches in the literature on regulation and procurement, e.g., Laffont and Tirole (1993), who study issues like adverse selection and moral hazard stemming from incomplete information in contracting.

⁶² This should be separated from the rate of innovation for inputs purchased by the government from private firms, such as pharmaceuticals and medical equipment. Winston (1998) provides empirical examples of how the transfer of ownership from the government to private actors positively affects the creation and adoption of new technologies.

not contribute through ownership control and contestability, and industrialist competencies are hard to acquire and utilize. The competencies of inventors and skilled workers tend to be badly compensated. In addition, there will be a lack of competent customers and they will have difficulties in affecting production. As a result, the appropriate competence blocs will not emerge, and there will be no HGFs.

Where the market mechanism cannot be relied on to ensure efficiency other devices can sometimes be used as substitutes (Hirschman 1970). In some cases, customers can “vote with their feet”, leaving particularly poorly run local governments in favor of better ones. In other cases, customers may express their wishes directly through complaints or active participation in the provision of the service (such as through the Parent-Teacher Association, PTA).

Government-run organizations can to a varying degree use wages, promotion and other incentive mechanisms to improve efficiency. In some situations, a publicly run activity may even have some advantages over private alternatives, for example, if monitoring costs are high and the private firm has incentives to shirk on quality (Shleifer 1998). These alternative mechanisms can mitigate the problems associated with the removal of market forces, but are unlikely to fully offset the costs, especially since the market can be combined with alternative ways of influencing producers (see, e.g., Le Grand 2007).

Public monopolies concentrate control over the functions of the competence bloc in the hands of politicians. This will have an adverse effect on competence blocs for several additional reasons. First, the recruitment of individuals to the different functions in the competence bloc is restricted to a narrow group of people. In order to achieve the best results the broadest pool of individuals possible should be considered when selecting individuals to the functions in the bloc. The possibility to reach critical mass in the competence bloc increases with the number of actors as does the probability that the most competent individuals carry out the respective functions.

Second, politicians are not selected via the market process, i.e., accordingly to how well they manage the respective functions in the competence bloc. Instead they are selected through a political process, i.e., according to how well they attract voters. The two competencies need not be correlated. Success in the political process generally requires a different set of competencies and experience compared to what is rewarded in economic markets (see, e.g., Pelikan 1993).

Political competence may be a poor substitute for entrepreneurial, industrial, venture capital and secondary market actor competencies, since the essence of these functions is to generate profit through the commercialization of novel and commercially viable ideas in competi-

tive markets. In this context, private firms can be seen as “universities” for educating talented people, when entrepreneurial, industrial and venture capital competence is largely acquired through individual learning-by-doing in profit-driven firms. (cf. Eliasson and Vikersjö 1999).⁶³

Soft budget constraints (Kornai 1986) stand in the way of the politician’s function as a substitute for venture capitalists. In a well-functioning market economy incompetent venture capitalists will soon be outcompeted, and the misallocation of resources will be relatively small.⁶⁴

In many well-developed countries efficient organizations cannot expand geographically, since local governments are responsible for production and are not allowed to expand outside their own region. Often consumers (e.g., patients) in the region are legally restricted to using the local provider. Such a policy *de facto* creates small regional production monopolies controlled by local government and where consumers are geographically locked-in.

The problems associated with product regulations are strengthened by prohibition or limitations imposed on international trade. This makes it impossible to interact with international competence blocs; it is not possible to exploit economies of scale, utilize international specialization and take advantage of the diffusion of knowledge, learning effects and knowledge spillovers that arise from export and import (see, e.g., Keller 2004, and Bernard et al. 2007).

Government controlled organizations are governed by other criteria than economic efficiency. Political considerations may reduce the scope for correcting mistakes, for example by downsizing or exit. Cutbacks become particularly difficult if the production unit is a large employer in a sparsely populated area. Furthermore, decision-making is bureaucratic in organizations controlled by politicians and bureaucrats, and such organizations tend to lack flexibility (cf. Wilson 1989, and Wintrobe 1997). Finally, political control and the power of the political system to define property rights and redistribute private property give rise to a negative incentive structure impinging on productive entrepreneurship and promoting socially harmful rent-seeking behavior (Bhagwati 1982, and Baumol 1990).

⁶³ In line with this way of reasoning, small firms may function as a cost-efficient mechanism to identify, select and develop entrepreneurial, industrial and venture capital competencies. Mistakes are less costly and learning costs lower in small firms because small values are at stake (Lucas 1978).

⁶⁴ See Duggan (2000) for a recent study of the importance of soft budget constraints for the performance of hospitals in California.

7.4 Summary of the Effects of Product Market Regulations

We have discussed three general cases affecting the creation and functioning of competence blocs and the potential for developing HGFs: (i) production is contestable, but only government financing of purchases is allowed; (ii) production is monopolized by government, but private financing is allowed; and (iii) production is monopolized and financed by government. *Table 5* provides a summary of the analysis. The benchmark case is private production *and* private financing, as described in section 2.

Table 5 Product Market Regulations and the Prevalence of Competence Blocs and HGFs.

	Private production	Monopolized production
Private financing	Entrepreneurs – Yes Inventors – Yes Industrialists – Yes Skilled labor – Yes Venture capitalists – Yes Actors in secondary markets – Yes Competent customers – Yes	Entrepreneurs – No Inventors – Limited Industrialists – No Skilled labor – Limited Venture capitalists – No Actors in secondary markets – No Competent customers – Limited
	Complete competence blocs and prevalence of HGFs	No competence blocs and no HGFs, imperfectly replaced by government
Public Financing	Entrepreneurs – Possible Inventors – Possible Industrialists – Possible Skilled labor – Yes Venture capitalists – Possible Actors in secondary markets – Possible Competent customers – Limited	Entrepreneurs – No Inventors – Limited Industrialists – No Skilled labor – Limited Venture capitalists – No Actors in secondary markets – No Competent customers – No
	Potential impediments to competence blocs and to HGFs, depending on institutional climate	Few competence blocs and no HGFs, imperfectly substituted by government

According to our analysis, governmental monopolization of production has a highly detrimental effect on competence blocs and HGFs, which fail to evolve because critical entrepreneurial and venture capitalist competencies cannot be acquired through learning in competitive markets. The same is true in the case when government monopolizes production and the government is also a monopsonist. If private production is allowed but financing is restricted to government only purchases of goods and services, the emergence of complete competence blocs will be hampered and HGFs are less likely to emerge. The analysis reveals that thriving competence blocs and HGFs require free private provision of goods and services and private financing. Only then can the incentives be harmonized for all actors in the competence bloc, thereby providing favorable circumstances for HGFs.

Hence, due to the *de facto* monopolization by the public sector of the production of many income-elastic services vast areas of the economy have remained unexploited as sources of commercial growth. Part of this problem is overcome if the public sector encourages commercial firms to substitute for tax-financed public sector service production, even if the service is provided free (or almost free) of charge to customers. A further step would be to allow service producers to offer additional services beyond what is granted through a tax-financed voucher system. This would provide stronger incentives for the actors in the competence bloc to launch HGFs. In particular, it is easy to imagine how a different organization of the health-care sector could provide a basis for the emergence of new HGFs.

Continued, near-exclusive reliance on taxation for the financing of key services like education, health care, child care and care of the elderly will become increasingly problematic. These highly income-elastic services suffer from Baumol's Disease (Baumol 1993, and Jansson 2006). Further technological breakthroughs are likely to increase the supply of services in the health sector in the future. If private purchasing power is not allowed into these sectors, they become tax-financed "cost problems" rather than potential growth industries attracting talented entrepreneurs and other key actors in the competence bloc.

8. Conclusion

The successful commercialization of an innovation requires competence blocs: an entire chain of actors with complementary competencies that work together. The high degree of complexity in production combined with the specificity of human capital makes successful interaction within the competence bloc difficult but also highly rewarding when successful. Most (potential) HGFs fail, but the few that succeed stand for a substantial part of growth and development.

Bringing together the specialized, non-transferable competencies of different actors into a well-functioning whole is invariably difficult, even with favorable institutions and public policies, and almost impossible in any other setting. Favorable economic institutions are likely to be of particular importance for the emergence of HGFs, both because of the sensitivity of competencies to good institutions and because of the high social return in terms of growth and job creation.

Our meta-analysis suggests that a small group of high-growth firms, not necessarily small but relatively young, are of critical importance as a force for renewal in the economy. Empirical investigations show that these HGFs, also known as "Gazelles", are responsible for the bulk of net job creation. Since formal institutions are important for economic performance in

general, it is fair to hypothesize that they also influence the generation and growth of HGFs. It is also reasonable to believe that institutions have a differential effect on HGFs compared to the majority of firms with no growth ambitions. For instance, the availability of equity capital and the strictness of employment security mandates are critical for enterprises with high growth ambitions, while they are of much less importance for firms without growth potential or growth ambitions.

Analyzing HGFs using the theory of competence blocs offers a more holistic view on economic progress. A key insight is that rapid firm growth is a complex process requiring a number of different but complementary competencies, and it is clear that studies with a narrow focus on a single aspect are likely to be misleading. Our analysis also emphasizes the complementary character of institutions.⁶⁵ There is no “quick-fix” that will boost the frequency of HGFs. Lower taxes on entrepreneurial activities may have less effect than expected if high taxes on skilled labor give rise to bottlenecks in production or if key areas remain closed for entrepreneurial exploitation. If policymakers would like to improve conditions for HGFs, our analysis suggests that they need to adopt a broad approach and implement a wide array of complementary institutional reforms.

We wish to emphasize that it is incorrect to infer that organic growth should be promoted and acquired growth avoided, based on studies showing that organic growth contributes more to net employment growth. Acquired growth is an important mechanism for reallocating employment and other resources from less to more efficient organizations. In fact, it is a natural pattern when an industry matures that the number of firms is rapidly reduced through a selection process.

Creating appropriate conditions for growth based on effective competence blocs places great demands on government policies. In particular, such growth requires appropriate legal structures (including further deregulation of product markets) that encourage the spontaneous emergence of effective solutions from the bottom up. As is pointed out by many researchers, picking winners in this chaotic world is virtually impossible and the only winning strategy is “to let a thousand flowers bloom” (see, e.g., Birch 2006, pp. 198–199). It is the perpetual search by economic actors for profits that exceed the risk-adjusted rate of return available for passive investors that leads to a situation in which entrepreneurship, talent and ownership skills are channeled to the most promising areas and supplied in the best possible quantities.

⁶⁵ Orszag and Snower’s (1998) study of the complementarity of different policies in the area of unemployment provides an interesting parallel. They show how the effectiveness of one policy depends on the implementation of other policies.

This increases the probability that new business opportunities will be developed and exploited to their potential. This process creates the organizational and structural capital that is an indispensable component in all successful enterprises. The potential entrepreneur can always refrain from using his/her skills and remain an employee with a fixed salary; the venture capitalist can choose to remain passive instead of supplementing his/her financial investment by supplying management skills and so on.

Our analysis is confined to highly developed countries with basic institutions, such as secure property rights and the rule of law, in place. By applying the theory of competence blocs we have identified three bundles of institutions which are likely to be particularly important for the generation and growth of HGFs: the tax system, the organization and regulation of labor markets and product market regulations. To summarize the effects of these institutions on HGFs we characterize institutions that provide a favorable environment for “dynamic capitalism”, the experimental process of creative destruction nurturing competence blocs and HGFs, as well as institutions that do the reverse, instead promoting “sclerotic capitalism”; see *table 6*. Note that the introduction of a single measure disfavoring dynamic capitalism may have only minor sclerotic effects, and the introduction of a certain sclerotic institution may be offset by other dynamic institutions. Strong effects pushing the system in either a sclerotic or dynamic direction are likely to result from the reinforcing complementarity of numerous institutions.

Of the three categories of institutions we have discussed, monopolization of production poses the greatest obstacle for the creation and functioning of competence blocs and generation of HGFs. While high taxes and labor markets regulations also impinge on the creation and functioning of competence blocs, there is often some scope for (costly) tax evasion and circumvention of labor market regulations. Moreover, the more complicated and the less stable regulations, the more they benefit large incumbent firms, i.e., firms with a low probability of becoming HGFs. Generally, we find distortions introduced by the three bundles of institutions analyzed to disfavor the kind of firms that have been found to be overrepresented among HGFs, namely young, small and service sector firms.

Table 6 Institutions Favoring Sclerotic Capitalism and Dynamic Capitalism.

Institution	Sclerotic capitalism	Dynamic capitalism
Marginal tax rate	High	Low
Personal tax on capital income	High	Low
Personal tax on capital gains	High	Low
Tax on stock options	High	Low
Degree of tax neutrality across owner categories	Favor institutional owners over individuals	Neutrality
Degree of neutrality across sources of finance	Favor debt over equity	Neutrality
Personal taxation of asset holdings	Yes, in particular on equity	No, or exemption for equity holdings
Corporate tax rate	High statutory rate, low effective rate and exemptions favoring large firms in mature industries	Low statutory rate, low effective rate and neutral
Symmetric tax treatment of profit and losses	No	Yes
Labor security mandates	Tied to years of tenure	Portability of tenure rights
Design of pension plans	Large weight to best years at high age	Fully actuarial
Wage-setting arrangements	Centralized and closely tied to formal criteria	Decentralized and individualized
Production of welfare services/merit goods	Government production	Sizeable private production, contestability
Financing of welfare services/merit goods	Tax financing only	Government ensures basic high quality supply, then private financing
Profit-driven organizations	Partly <i>de facto</i> prohibited in key areas facing income-elastic demand	Fully allowed
Government role in income insurance	Impose obligations on incumbent firms	Provide flexicurity

Government monopolization of production considerably constrains the evolution of contestable markets, where critical entrepreneurial and venture capitalist competencies can be developed and acquired through learning. *De facto* prohibition of profit-driven organizations have the same effect. Consequently, there will be no competence blocs and no HGFs. Large service industries are still *de facto* monopolized in many OECD-countries. Prime examples include higher education, providing a large economic potential for deregulation and contestability.

Even in advanced economies, there is a large untapped economic potential which can be unleashed by institutional changes, such as the opening up of closed markets for entrepreneur-

rial competition. This would be expected to have a positive effect on the emergence of competence blocs and the prevalence of HGFs. The effect would be more pronounced if tax structures and labor market institutions simultaneously were adjusted in order to stimulate the emergence of more effective competence blocs, and institutions were made more neutral with respect to firm attributes, type of ownership and source of finance.

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Figure 1 The Competence Bloc and the Fostering of HGFs.

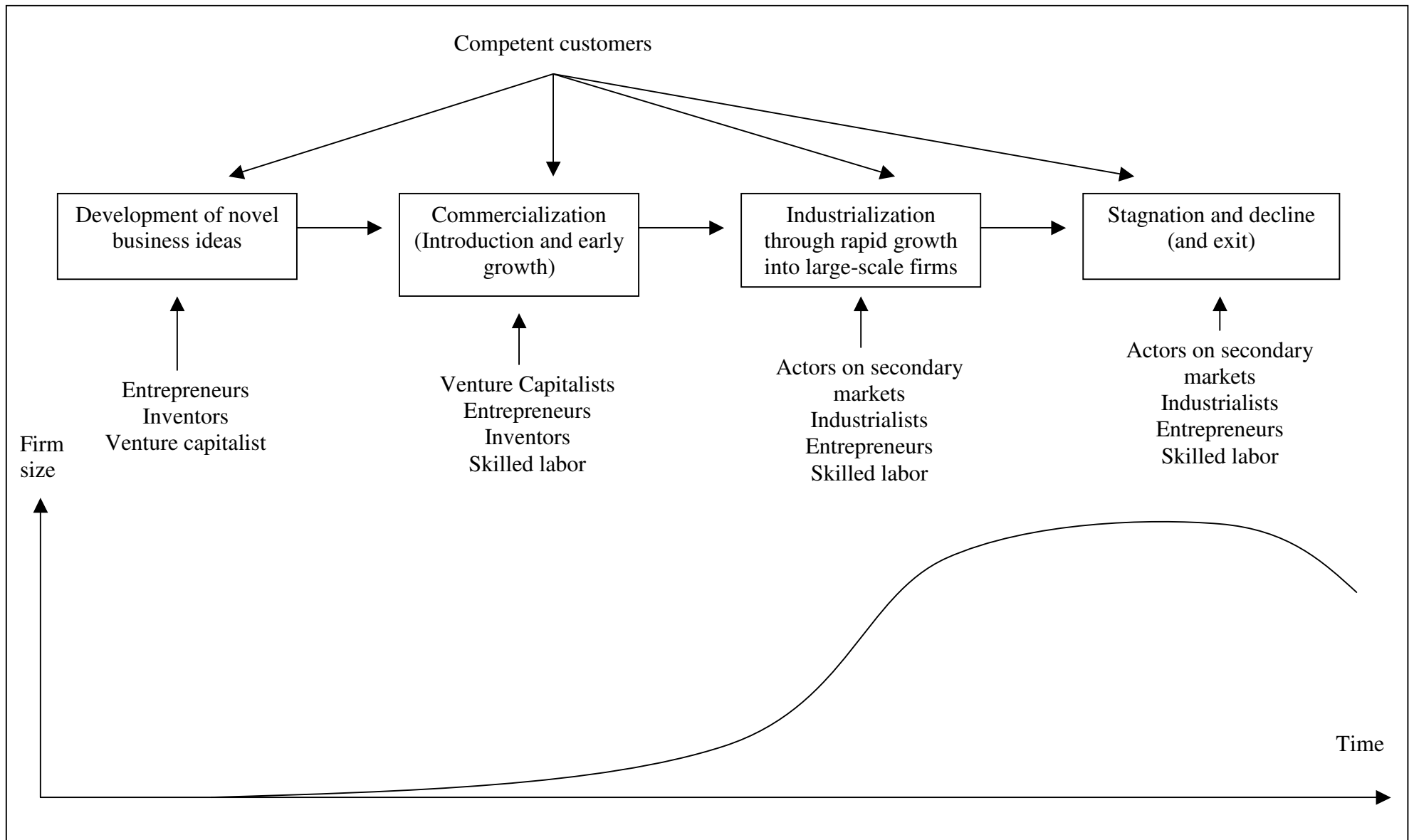


Figure 2 Corporate Tax Rates and Corporate Tax Payments as a Share of GDP in 28 OECD Countries, 1981–2006 (percent).

