Institutional Determinants of the Prevalence of Start-ups and High-Growth Firms: Evidence from Sweden*

by

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Abstract: The purpose of this study is to identify key institutional determinants of firm emergence and growth. We do this using various types of data from Sweden, a country, which until a recent turnaround, experienced a prolonged period of substandard economic performance. A characterization of a number of institutions and policy measures shows that they are likely to have contributed to an environment that discourages entrepreneurial activity and firm growth. Aspects dealt with include: missing arenas for entrepreneurship in the care and sectors and for household-related services, taxation of entrepreneurial income, incentives for wealth accumulation, wage-setting institutions and labor market regulations. Using original data, we provide evidence of a low prevalence of nascent entrepreneurs and a small net employment contribution by high-growth firms. These micro-level findings are consistent with the observed weak performance at the macro level. We admit that indisputable evidence for the effects of institutional arrangements is almost impossible to establish. However, the consistency of our theoretical arguments and empirical data makes a strong case for the notion that the Swedish case illustrates the costs of giving too little weight to economic renewal in policy making.

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There are strong reasons to believe that productive entrepreneurship is an essential explanatory factor of the economic performance of a country, and hence that cross-country differences in the degree of productive entrepreneurial activity are likely candidates for explaining part of observed cross-country differences in economic performance.[1] As a concrete manifestation of a vibrant entrepreneurial culture, one would expect to observe (i) a high rate of firm formation and a high prevalence of nascent entrepreneurs, and (ii) that the most viable commercial ideas are translated into a sizable number of high-growth firms.

A large body of empirical research aims at identifying micro-level factors explaining the emergence and growth of firms. As regards emergence, long lists of psychological and socio-demographic characteristics of business founders have been compiled and examined by Gasse (1996), Miner (1996) and Stanworth *et al.* (1990). Concerning growth, Storey (1994), in an extensive survey of this literature, identified 35 such factors. Delmar (1997) and Wiklund (1998) provide more recent literature reviews. These studies focus on differences in performance across firms while taking the broader institutional framework ("the rules of the game") as well as the aggregate outcome as given.

By contrast, in this study we focus on the links between social institutions and firm start-ups and growth, and between such micro-level dynamics and aggregate economic development. The express purpose of the study is to attempt to identify the most important institutional determinants of firm emergence and growth, using various types of data from Sweden.

There has been little room for the entrepreneurial element in theoretical mainstream economics (Baumol, 1993; Kirchhoff, 1994; Kirzner, 1997). The main reason for this disregard of the entrepreneur in mainstream economic theory is that he or she largely eludes analytical tractability. However, if one subscribes to the view that the main rationale for economic research is to enhance our understanding of the workings of the real world, this is, to put it mildly, a tenuous excuse.

It is easy to point out several institutional studies that broadly deal with the grand issue of why some countries, such as the UK of the late 18th century, had the requisite institutional set-

[1] It is important to emphasize that the societal reward structure may be such that entrepreneurial effort is channeled towards inherently unproductive activities such as rent-seeking and redistribution of property rights

up to allow a long-term growth process to start. Or analogously, why other technologically advanced countries, such as China under the Ming Dynasty, did not embark on a similar growth path. Three of the most influential studies in this tradition are North and Thomas (1973), Rosenberg and Birdzell (1986) and Mokyr (1990). The most important proposition in these studies is that a necessary condition for a long-term take-off is that property rights are well defined *ex ante*. Baumol (1990) specifically deals with the effect of institutions/the social payoff structure on the supply of productive entrepreneurship across highly varying historical contexts. However, to our knowledge, there are few, if any, studies before Davis and Henrekson (1997, 1999) that analyze how various institutional set-ups in a contemporary context impact on firms of different size, industry, age *et cetera*. In this paper their analysis will be extended to the effects on entrepreneurial behavior and firm growth.

It is a formidable task to construct convincing tests of the hypothesis that the institutional set up is an important determinant of firm growth and entrepreneurial activity. Ideally our approach will be able to explain why the quantitative effect of a certain individual or firm specific factor may vary across institutional set-ups. To provide a fully satisfactory answer, the analysis would firstly need the identification of the relevant institutions and their likely effects on behavior. The institutional arrangements we analyze include missing arenas for entrepreneurship in the care sectors and for household-related services, taxation of entrepreneurial income, incentives for wealth accumulation, wage-setting institutions and labor market regulations. Secondly, we need high quality data. The micro-level data sets we utilize have been carefully checked and prepared for our type of purpose. We are thus confident that limitations to data quality will not be a source of distorted results. Lastly, we need a yardstick for comparison and a means to rule out competing explanations.

An analysis of the influence of institutional arrangements is almost by definition restricted to situations with few observations and many potential influences. In this regard the validity of our conclusions will in part have to be judged in terms of the strength of the theoretical arguments in combination with the correspondence between theoretical predictions and empirical results. A test of the hypothesis is greatly improved if there is institutional variation. This can be achieved in two ways: (i) by studying differences in behavior across countries with differing institutions (see Davis and Henrekson, 1999, 2000) and (ii) by studying a

rather than to wealth-creating activities (Baumol, 1990; Murphy, Schleifer and Vishny, 1991). The term entrepreneurship in the remainder of this paper is exclusively used in the meaning productive entrepreneurship.

country over time during periods when institutions change. We will mostly use the latter approach in this paper. As regards comparisons we have comparable (common methodology) international data for start-up activity. For business growth we will have to rely on relevant within-country comparisons.

The paper is organized as follows. In section 1 a brief characterization of Sweden's long-term growth and employment performance is given. In the two following sections we carefully assess whether the performance observed at the macro level is consistent with studies at the individual and firm level. In particular, we investigate the extent of independent business start-ups and the role of high growth firms for job creation. The remainder of the paper is devoted to an analysis of the pertinent institutions and rules of the game that may explain the empirical findings in sections 1–3. In section 4 it is argued that the production of services generically is highly amenable to entrepreneurial activity. However, entrepreneurs have been barred from large areas of service production, since they have been *de facto* monopolized by the public sector, or as in the case of household-related services, commercial exploitation is stymied by the very high rate of labor taxation. In sections 5 to 8 we analyze four key institutional areas likely to be crucial for entrepreneurship and firm growth in general. The areas discussed are taxation of entrepreneurial income, incentives for wealth accumulation and the development of a well-functioning venture capital market, job security mandates, and wage-setting institutions. In section 9 we discuss at some length the recent signs of an upturn in entrepreneurial activity in Sweden, and whether this development is consistent with our thesis. Section 10 concludes.

1. Swedish Aggregate Economic Performance

In *Table I* we present the growth rate of GDP and GDP per capita in Sweden, OECD and OECD Europe in the 1970–98 period. Sweden's slow growth in a long term-term perspective is evident: the growth of GDP and GDP per capita has been roughly 1.0 and 0.5 percentage points, respectively, below the OECD and OECD Europe averages since 1970.

The slow economic growth rate in Sweden since 1970 has had a highly significant impact on the Swedish income level compared to that of other countries. It is well known that comparing income levels is more difficult than comparing growth rates across countries. The most suitable method is to use purchasing-power-parity adjusted measures of GDP per capita. In such a comparison Sweden had the fourth highest GDP per capita in the OECD area in 1970, with per capita GDP 5 percent above the average of the 23 rich OECD countries (excluding Mexico, Turkey and the most recent members Poland, South Korea, Hungary and the Czech Republic). By 1990 Sweden had fallen to a tied 9th position 6 percent below this average. In 1998 Sweden was ranked 15th with a GDP per capita 14 percent below the average of the 23 rich OECD countries.[2] In order to obtain a more complete picture of Swedish growth performance relative to other countries it is useful to extend the period of observation even further. In *Figure 1* we compare PPP-adjusted GDP per capita in Sweden relative to the average of the 23 rich OECD countries since 1950. The figure shows that Swedish income growth was comparable to the OECD average until the mid-1960s. At that point a long-term decline set in, and by 1977 the Swedish income level had fallen below the OECD average.

Table I The Growth Rate of GDP and GDP per Capita in Sweden, OECD and OECD Europe, 1970–98 (%).

	GDP	GDP per capita
Sweden	*1.7*	*1.3*
OECD	2.7	1.9
OECD Europe	2.4	1.8

Source: OECD, *National Accounts Main Aggregates 1960–1997 Vol. 1,* 1999 and OECD, *Main Economic Indicators*, February 2000.

Figure 1 Purchasing Power Parity Adjusted GDP per Capita in Sweden as a Percentage of the OECD Average, 1950–98.

Enclosed

Note: OECD is defined as the 23 rich OECD countries (excluding Mexico, Turkey and the most recent members Poland, South Korea, Hungary and the Czech Republic). For the period 1950–69 the series is constructed from *Penn World Tables* (*PWT*). From 1970 we display both the OECD and the *PWT* series (available until 1992). The *PWT* series was rendered comparable to the OECD series by defining a corresponding population weighted aggregate from the 23 national series and scaling the series so that the 1970 level is identical to the level of the OECD series.
Source: OECD, *National Accounts Main Aggregates 1960–1997 Volume 1,* 1999, OECD, *Main Economic Indicators*, February 2000 and *Penn World Tables* version 5.6.

Even if the rate of economic growth has been slow relative to the OECD average since the mid to late 1960s, the employment rate was for a long time exceptionally high. In 1990 the employment rate (defined as employment as a share of population aged 15–64) was together with Switzerland the highest in the OECD. However, during the early 1990s employment fell

[2] *Source*: OECD, *National Accounts Main Aggregates 1960–1997 Vol. 1,* 1999 and OECD, *Main Economic*

dramatically in Sweden and in 1998 it was down by 11.1 percentage points to 70.2 percent, which was only 9th position among the OECD countries (OECD, *Economic Outlook*, Vol. 65, June 1999).

The employment performance of the US, on the other hand, was totally different. Employment adjusted for population growth rose by approximately 27 percent in the US between 1970 and 1998, while it decreased by 8 percent in Sweden during the same period. The private service sector grew most rapidly.[3] The number of US private service sector jobs rose by 90 percent in 1970–93, compared with 16.7 percent in Sweden (OECD, *Economic Outlook*, December 1998; OECD, *National Accounts 1960–1997*, 1999).

The figures above indicate that employment growth is considerably more rapid in the US than in Sweden. Nevertheless, according to OECD statistics for 1998, the employment rate – calculated as the ratio of people employed to the total working-age population – was only 4 percentage points lower in Sweden than in the US (70.2 percent vs. 74.3 percent).[4] However, the OECD figures do not account for differences in the number of hours worked. Nickell (1997) accounts for hours worked by defining total potential employment as the product of maximum annual hours worked and the total working-age population. We may assume that the maximum annual hours worked is 2,000 (40 hours per week times 50 weeks). Such a comparison is made in *Table II.* In 1998, the average annual hours worked was 1,957 in the US and 1,551 in Sweden, while the employment rates where 74,3 and 70.2 percent, respectively. As a result, the Swedish work-hours adjusted employment rate was 54.5 percent compared to 72.7 percent in the US.[5] From the table it is also clear that the work-hours adjusted employment rate has decreased somewhat between 1973 and 1998 in Sweden while increasing sharply in the US. A low level of employment is also typical of most other European countries.

Indicators, February 2000.

[3] Defined as total private employment minus private employment in agriculture, forestry, hunting and fishing, mining, manufacturing, electricity, gas, steam and water works, and construction.

[4] *OECD Economic Outlook*, Vol. 65, June 1999.

[5] Nickell compares employment in 20 OECD countries using this approach. It turns out that the variations between countries are very large. If we proceed from a maximum of 2,000 hours worked annually, employment varies from 43–44 percent (Spain and Belgium) to 72–73 percent (Japan and the US).

Table II The Level of Employment in Selected OECD Countries, 1973 and 1998.

Country	Year	Average annual hours of work per employed	Employment rate (%)	Work-hours adjusted employment rate (%)
Sweden	1973	1,557	73.6	57.3
	1998	1,551	70.2	54.5
US	1973	1,924	63.4	61.0
	1998	1,957	74.3	72.7
Japan	1973	2,201	71.0	78.1
	1995#	1,889	74.0	69.9
European	1973	1,844	67.6	62.0
average†	1998	1,631	65.0	52.7

Note: Employment rate is defined as total employment divided by total population aged 15–64. Work-hours adjusted employment rate is defined as employment rate x (average annual hours of work per employed person/2 000). #Latest available year. †The unweighted average of all European countries for which the requisite data are available: Sweden, Finland, France, Norway, Spain, the UK and Germany.
Source: *OECD Employment Outlook*, July 1995, July 1996 and July 1999 and OECD, *Economic Outlook*, June 1999.

A key feature of Swedish policy has been expanding public sector employment. *Figure 2* shows that the entire growth in employment after 1950 took place in the public sector. Between 1950 and the early 1990s, 1.1 million jobs were added in the public sector, while private sector employment stagnated. This dramatic employment shift resulted in a very high proportion of total employment in the public sector in Sweden – higher than any other OECD country. From this perspective, private sector employment performance looks very weak.

Figure 2 Cumulative Change of Private Employment, Government Employment and Population in Sweden, 1950–98 (thousands).

Enclosed

Source: Statistics Sweden and Gunnarsson and Lindh (1997).

In this section it has been documented that the rate of growth in Sweden has been slow relative to almost all other OECD countries during the last three decades. As a result, Swedish per capita income dropped sharply relative to a broad average of other rich countries. Regarding employment there has been a great difference between the rapid rate of job creation in the US compared to Sweden (and Europe), where employment has been stagnant since the 1970s. This has resulted in an hours-adjusted employment level in the US on the order of 35 per cent higher than in Sweden and other European countries.

In this section we have documented a weak long-term performance in the Swedish economy both in terms of aggregate growth and private sector employment. Is this unfavorable development at the macro level consistent with analyses at the firm and individual level? That is, is the slow growth of the economy associated with low start-up rates and a relative lack of high-growth firms? This is the subject to which we now turn.

2. The Prevalence of Business Start-ups

In 1985 Statistics Sweden started to record the prevalence of “genuinely new firms”. Apart from a downturn during the deep recession in 1991–93 there has been an upward trend in these statistics and annual start-up rates after 1994 have been well above 50 percent higher than they were in the mid 1980s (Statistics Sweden, 1999). In a seven-country comparison reported by Reynolds, Storey and Westhead, (1994) Sweden came out with the highest start-up rate. Rather than proving high entrepreneurial activity in Sweden, these results reflect that business entry statistics are notoriously difficult to compare – the Swedish data were simply more complete This lack of comparability is admitted in a somewhat more recent compilation of business entry statistics (ENSR, 1996, table 3.2). Therefore, a special effort was made in that report to harmonize data to arrive at comparable estimates. According to this harmonized comparison, Sweden’s entry rate was not clearly different from those of Finland, Italy or Japan, but clearly lower than the start-up rate for each of 15 other European countries (mostly EU) as well as the US. This definitely points towards concluding that business start-up rates in Sweden are low by international comparison. However, despite the apparent precision conveyed by the confidence bands accompanying the cited analysis the corrections made to achieve comparability can still be questioned. Another drawback is that start-up rates are related only to the size of the business population, which is a more ambiguous basis for comparison than is the size of the human (working age) population (Garofoli, 1994).

More directly comparable estimates of business start-up activity across countries can be derived from two major, on-going collaborative research efforts, *viz.* the Entrepreneurial Research Consortium[6] (ERC; see Reynolds, 1997a, 2000) and the Global Entrepreneurship Monitor (GEM; see Reynolds, Hay and Camp, 1999). The ERC is originally an American effort that has spun off similar studies in other countries. Its over-arching goals are (i) to

[6] One of the authors (Davidsson) is a member of the Executive Committee of the American ERC and also involved in the Swedish study, and hence has access to the data sets for these two countries.

arrive at national estimates of the prevalence of "nascent entrepreneurs", *i.e.*, people who are in the process of starting a new business at a given point in time, and (ii) to follow a representative sample of nascent entrepreneurs/start-up efforts over time and study how the process evolves. The GEM is an international collaborative effort whose over-arching goal is to investigate the relationship between entrepreneurial activities (independent start-ups and other) and economic growth.

In both of these international research efforts it is a central issue to establish what proportion of the population are nascent entrepreneurs at a given point in time. Operationally, this is done by asking the following question in phone interviews directed at a random sample of adults: "Are you, alone or with others, now trying to start a new business?" The percentage answering this question in the affirmative is used in the international comparisons in *Table III*.

We use the Swedish main study (1998) as the focal study and consider only differences relative to the results of that study. For that study a stratified random sample of 49,979 individuals was drawn. The age group 25–44 was over-sampled in order to get a higher yield of nascent entrepreneurs. The results have been weighed to adequately represent the age ranges used in Table III. It was possible to obtain a telephone number for 35,971 (71.9%) of the individuals. The remaining 28.1% were not listed (n = 13,338), had severe disabilities (n = 381) or had moved abroad (n = 289). Of those contacted by telephone, 30,427 individuals (84.6 %) agreed to participate. Out of these, 715 answered that they were involved in an independent business start-up.

Essentially the same methodology was used in all the other studies, so the results should be comparable.[7] The main tendency of the results is very clear. In only one comparison (with Japan) does Sweden come out significantly higher. In all other comparisons Sweden is either

[7] Some sources of error need to be mentioned. The sample sizes vary substantially across samples. Statistically significant differences are much more easily obtained when results from studies based on large samples are compared. While all studies aim at obtaining samples representative of the population, differences in the approach (random digit dialling vs. sample of specified individuals), prevalence of listed phone numbers and propensity to participate may influence the results. Minor differences in the wording of the focal question apply to Norway and part of the German sample. In the studies within the GEM research a somewhat more restrictive definition of nascent entrepreneur was used. Apart from affirming the focal question (*cf.* above) the respondent also had to a) expect to own all or part of the business, b) currently be active in the start-up effort, and c) deny that the effort is an "infant business" (*i.e.*, already "up and running", albeit at an early stage). In addition, there was no upper age limit in the GEM samples. The last two differences lead to conservative comparisons relative to the hypothesis that Sweden would have a low rate in 1998. The direction of the effect of the other possible sources of error mentioned above is unknown. It should also be kept in mind that due to differences in successful

significantly lower (10 contrasts) or there is no statistically significant difference (9 contrasts). In particular in comparison with countries outside Europe (excepting Japan) Swedish prevalence rates appear low. Hence, to some extent low rates of business start-ups appear to be a European rather than a specific Swedish problem. However, also in some European comparisons (the Netherlands, Norway and the UK) the Swedish figures are low.

Table III Estimates of the Prevalence of Nascent Entrepreneurs in Different Countries.

Country	Year	Sample size	Nascent entrepreneurs % of pop. aged 18+	Nascent entrepreneurs % of pop. aged 18–64
Sweden [a]	*1998*	*30,427*	*2.0* [c]	*2.2* [d]
Sweden [a]	1997	976	2.4 [c]	
Canada [b]	1999	appr. 1,000	5.3 [e] *	
Denmark [b]	1999	appr. 1,000	1.5 [e]	
Finland [b]	1999	appr. 1,000	1.3 [e]	
France [b]	1999	appr. 1,000	1.7 [e]	
Germany [b]	1999	appr. 1,000	2.1 [e]	
Germany [a]	1999	appr. 2,000		2.9 [d]
Israel [b]	1999	appr. 1,000	3.5 [e] *	
Italy [b]	1999	appr. 1,000	3.0 [e]	
Japan [b]	1999	appr. 1,000	1.1 [e] ¤	
Netherlands [a]	1998	appr. 30,000		3.5 [d] *
Norway [a]	1996	9,469	3.1 [c] *	2.6 [d]
Norway	1997	appr. 10,000		3.8 [d] *
UK [a]	1998	appr. 2,000		3.1 [d] *
UK [b]	1999	appr. 1,000	2.4 [e]	
US [a]	1993	1,016	3.9 [c] *	
US [a]	1996	454	3.8 [c] *	
US [a]	1998	appr. 30,000		8.4 [d] *
US [b]	1999	appr. 1,000	5.6 [e] *	

* = significantly higher ($p < 0.05$) than Sweden in 1998. ¤ = significantly lower ($p < 0.05$) than Sweden in 1998. a = part or forerunner of the international ERC research. b = part of the international GEM research. c = age range restricted to 18–70 years. Previously reported in Delmar and Davidsson (2000) who apart from own data built on Kolvereid and Alsos (1997), Magnussen (1997) and Reynolds (1997a, 1997b).
d = previously reported in EIM (2000). e = previously reported in Reynolds, Hay and Camp (1999).

Data concerning attempted harmonization of actual start-up rates as well as prevalence of nascent entrepreneurs correspond reasonably well. For the ten countries included in both compilations the Spearman rank order correlation is 0.45 (based on the 18+ column in Table III and on ENSR, 1996, figure 3.1). In both sets of data, the US has a much higher rate than Sweden, and Japan is one of the few countries with a point estimate lower than Sweden.

realization of the effort and in the prevalence of team vs. solo start-ups (and team size), differences in prevalence of nascent entrepreneurs do not necessarily translate directly into similar differences in firm start-up rates.

Based on this it feels safe, despite the limitations of the data, to conclude that business start-up rates in Sweden are low rather than high. The data on actual start-ups are based on the 1988–94 period. We know that the rate of start-up of genuinely new firms has increased since (Statistics Sweden, 1999). However, the nascent entrepreneur research suggests they remain unimpressive by international comparison.

A suggestive result, emphasized by Reynolds, Hay and Camp (1999), is that the female to male start-up ratio is much higher in the countries that have the highest prevalence of nascent entrepreneurs. This is based on the GEM data where no direct comparison with Sweden can be made. However, the compilation of ERC data (EIM, 2000) suggest that for all comparisons where Sweden comes out significantly lower in the rightmost column in Table III, Sweden has a worse (lower) female to male ratio than the other country. Hence, relative female under-representation is part of the explanation for Sweden's low over-all rates. As regards age distribution the results reported by Delmar and Davidsson (2000) suggest that in comparison with the US, Swedish prevalence of nascent entrepreneurs is particularly low in the 25–34 age bracket. A comparison with the GEM results aggregated across countries is not conclusive but suggests that the Swedish prevalence rate is particularly low for the youngest (18–24) age group and closest to the average for other countries in the oldest (55+) age group. Unfortunately, data on the sectoral distribution of the start-up efforts are as yet not available.

3. Job Creation by High-Growth Firms

For high-growth firms (HGFs) we have no internationally comparable data. Instead, we will have to rely on a national comparison in trying to assess their contributions, using original data. Specifically, we will discuss the following:

1. Comparison with total job creation in the economy.
2. Comparison with the job contributions from genuinely new firms during their first year in operation.
3. Comparison with total unemployment in the Swedish economy.

Our data were collected from Statistics Sweden. We worked closely with their register experts[8] in combining data from three different registers: the Central Firm and Establishment Register (*Centrala Företags och Arbetsställeregistret* [CFAR]), The Register of Company

[8] In particular, Peter Thorén at CFAR has made a major contribution to making possible the analyses presented in this paper.

Groups (*Koncernregistret*), and the Register of Foreign-owned companies (*Registret över utlandsägda företag*). Ten annual versions of each register were combined in order to create a data set for the specific purpose of HGFs.

Three units of analysis are conceivable for our purpose. The first is the establishment (plant). This unit is preferable from a technical point of view because establishment codes are relatively stable. However, establishments in multi-establishment firms often do not correspond to the theoretical concept of a "firm" (*cf.* Davidsson and Wiklund, 2000). This leaves us with either of the two remaining units: the (legal) company or the entire company group (*i.e.*, a hierarchy of parent and daughter companies under the same ownership control). As companies may change their legal form and structure – and have their identification codes changed – analyses on these levels run the risk of yielding biased results. This problem is all the more serious as HGFs are probably more likely to undergo changes in their legal-structural make-up than are stable firms.

We have handled this problem by not accepting the company code as the relevant criterion for following a unit over time. Instead we have used establishment identity codes, which are more stable. If essentially the same group of establishments appears in the registers under different company codes in different years, they are treated in our data set as one and the same surviving firm.

Moreover, a HGF is likely to eventually grow no longer (only) within the original unit but (also) by adding new units (subsidiaries, a holding company). Thus, the company becomes a company group, and if only the original company's size development is followed a large part of the company's (now: the company group) growth is left out of the analysis. Therefore, we conduct a separate analysis on the company group level. In the firm level analysis both independent and company group affiliated companies are included. Each company in a company group is included as a separate case as long as it fulfills other criteria. In the company group level analysis the entire company groups are the cases, while independent companies without company group structure are excluded from the analysis. An ideal study would follow units first as individual enterprises and then, when applicable, as company groups. Our data set gives some (but not entirely satisfactory) opportunity to conduct such analyses. We will supplement our analysis with some tracking over time of this kind.

The data include all commercially active companies or company groups within the non-government sector in Sweden as long as they had at least 20 employees in November 1996.[9]. There are 11,515 such enterprises (both independent and affiliated with company groups) and 4,377 company groups.[10] Annual data for each enterprise and company group have been compiled for the 1987–96 period. 8,173 enterprises and 1,758 company groups were active during the entire period, while the remainder were started later during the period.

We use the number of employees as our size (and growth) indicator, because we have complete sales data only for about 50 percent of the firms (and a biased 50 percent). We further focus on absolute rather than relative growth. We therefore choose a definition that maximizes the importance of HGFs for job creation. We thus define the HGFs as *the ten percent of the firms in the data set that exhibit the highest average annual increase in absolute employment.* Likewise, high growth company groups are defined as the ten percent of the company groups that exhibit the highest average annual increase in absolute employment.

While we define HGFs on the basis of total employment growth, we also analyze what proportion of total growth is organic and what proportion is attributable to acquisition. This is a crucial distinction. Arguably, organic growth is relatively more likely to reflect entrepreneurial activity, *i.e.,* the emergence and expansion of *new economic activity.* Growth through acquisition represents the moving of existing activity from one organization to another, and therefore the expansion does not constitute job creation on the societal level. Through the above-mentioned link to the establishment level, our data set offers a unique possibility to distinguish between acquired and organic growth. This is because we know for each year whether an establishment is

[9] Empirically based answers to research questions are always in part contingent on the methodological choices the researcher makes. Even if it can be hoped that methodological differences do not lead to diametrically opposing conclusions, it is important to understand the assumptions and conditions that the analysis rests upon. Since we study HGFs, we are required to study firms that have actually grown and to (arbitrarily) define a time period within which this growth should have occurred (since HGFs is not a stable category; its “members” continually change). Our data are to be compared with a cross-section survey of 20+ employee firms conducted in November, 1996. Compared with such a study, ours has the distinctive advantages that (i) it is a census rather than a sample, and (ii) size data for each year were collected at the right time rather than retrospectively. Our study is *not* a panel that follows all firm existing in 1987 through their subsequent development. Hence, it is possible that during the 1987–96 period firms might have existed which had strong growth, but which by 1996 had ceased to exist or shrunk to less than 20 employees. It is likewise probable that some firms now identified as HGFs would not be defined as such had the study covered instead, *e.g.*, the 1989–98 period. Every analysis of the category HGFs is then necessarily time specific. Our conclusions are founded on the assumption that firms which leave the HGF category are substituted by other, similar firms so that the characteristics of the HGF *group* are characterized by some degree of stability, even though its specific members are exchanged.

(i) old to the economy and to the firm, (ii) old to the economy but new to the firm, or (iii) new to the economy and to the firm. The initial stock of jobs in units of type (ii) are treated as growth-through-acquisition while all other size increases are regarded as organic growth.

The leftmost column in *Table IV* displays the employment contribution of the examined firms through growth during the studied period. Employment creation through new entry is not included in the table. Between 1987 and 1996 the HGFs expanded by a total of 185,264 employees. Note that this includes independent companies as well as those affiliated with large, multinational company groups. Davidsson *et al.* (1996), employing a similar definition of new jobs, showed that annual gross job creation in the private sector in Sweden is on the order of 300,000. By comparison, 185,000 jobs over a ten-year period must be regarded as modest. In relation to total job creation (comparison 1) the contribution by HGFs appears to be unimpressive.

Table IV The Employment Contribution through Expansion of High-Growth Firms in Sweden, 1987–96.

Growth by category	Firms; HGFs	Firms; other	Firms; total	Company groups; HGFs	Company groups; other	Company groups; total
Total employment growth, 1987–96	185,264	–251,633	–66,369	157,766	–324,762	–166,996
Organic employment growth, 1987–96	59,626	–325,322	–265,696	–31,216	–662,813	–694,029
Total employment growth, 1996	45,294	11,537	56,831	27,249	–26,094	1,155
Organic employment growth, 1996	20,949	6,342	27,291	–11	–48,617	–48,628
Average annual total employment growth per firm/group						
Mean	26.4	–2.8	0.1	76.4	–9.7	–1.1
Std. dev.	56.0	39.2	42.1	199.0	108.9	123.8
Median	13.2	0.7	1.0	27.0	1.0	1.5
Average annual organic employment growth per firm/group						
Mean	13.2	–3.6	–1.9	–0.1	–19.8	–17.8
Std. dev.	37.7	42.7	45.5	94.0	186.8	179.7
Median	11.0	0.5	0.8	13.0	0.1	0.4

[10] Actually 11,748 enterprises and 4,758 company groups. In the analysis enterprises and company groups which enter for the first time in 1996 are excluded; hence the difference.

According to Statistics Sweden (1998) genuinely new entrants created 49,000 new jobs in 1996, 28,000 of which were full time jobs. This figure fluctuates from year to year but it is roughly of this magnitude, which also makes 185,000 in ten years appear low (comparison 2). Unemployment in Sweden in 1996 (comparison 3) was several hundred thousands regardless of what measure was taken, and consequently the hope that the *gazelles* (Birch & Medoff, 1994) would provide the quick fix to the problem appears unwarranted judging from these data. The table shows that the HGFs could not quite make up for the contraction of other firms. The reader should then keep in mind that additional losses of employment through closures are not included in this analysis.

All possible comparisons thus point in the same direction: the contribution of the HGFs was modest. This can probably be validly translated into saying that the Swedish economy during this period suffered from a relative lack of HGFs. This interpretation is further supported by the fact that it only takes an annual growth of 13.2 employees to reach the median of the high-growth category. In order to barely qualify as a HGF an annual growth of 7.6 people suffices.

Knowing that the period includes the very deep 1991–93 recession it may be argued that the above conclusion is premature. In addition, there may have existed companies during the period, which have subsequently shrunk or closed down. Furthermore, new entrants appear over the years, which distorts the results. Looking solely at the final year – 1996 – is less problematic in these respects. This is a “good” year in terms of the business cycle (which is evident from the fact that also non-HGFs increase employment). *Table IV* shows that the HGFs increased by 45,294 (40 per firm on average) employees during 1996. This is a large number compared to 185,000 for the entire period, but still low if one expects this category alone to provide a quick solution to the unemployment problem. It would take many years like 1996 in a row to achieve that. The 45,000 is also a large number in relation to the total net increase of 56,831 that the firms in the database exhibit. However, the roughly 40,000 new jobs provided by genuinely new firms during their first year in operation and the modest increase in the large number of small and young firms with less than 20 employees are excluded from the analysis (Statistics Sweden, 1998). As already mentioned, gross annual job creation averaged approximately 300,000 during the period; this figure is likely to have been even higher during the favorable business cycle conditions prevailing in 1996.

How does the importance of the HGFs change if we turn to the company group level? Perhaps somewhat surprisingly, it is reduced. This is evident from the right hand side of *Table IV*. The ten percent high-growth company groups do (for obvious reasons) exhibit larger annual growth per entity. As the number of groups is substantially lower than the number of firms in the same size bracket, the aggregate job contribution is in fact lower when the analysis is conducted on the company group level. This is true regardless of whether the entire period or only the final year is analyzed.

Thus far the contribution of the “growth elite” has appeared to be modest. As we turn our attention to what part of total growth is organic this impression is further reinforced. On the company level less than one third of total employment growth is organic over the entire period. During 1996 the share is somewhat higher but still below 50 percent. During a boom year like 1996 the HGFs in Sweden (according to our definition) – large and small, young and old, independent and subsidiary, goods producing, service producing and trading firms – collectively created around 20,000 new jobs in organic terms. This is about half of the net job creation by genuinely new firms during their first year in operation (Statistics Sweden, 1998). Behind this finding is, among other things, the fact that some firms that appear to be HGF in terms of total growth do not grow at all, or even shrink, in organic terms.[11] The latter stands out very clearly when we turn to high-growth company groups. During the ten-year period high-growth company groups exhibit *negative* growth in organic terms! Even in 1996 there is no organic job creation by high-growth company groups.

As indicated above it is likely that HGFs eventually form company groups and continue their growth in that form. It is therefore possible that our analyses hide a group of HGFs that have appeared as new significant actors during this period. In order to search for such a category we conducted a supplementary analysis in order to capture the most spectacular growth cases, allowing also for transfer from firm to company group status.[12] The result of this exercise was the following:

[11] There are ways to define HGFs, that will make them look relatively more important. One natural alternative in our case is ”the ten percent of all firms which in 1996 increased employment the most in organic terms”. In this category employment increased by 43,122 people in 1996. That is, we are still finding figures of the same order of magnitude as the contribution by ”genuinely new firms” (Statistics Sweden, 1998).

[12] First, we chose all independent firms in 1987 (4,047 units) that had not lost their independent status by 1996. This was true for 2,863 companies, 2,340 of which were still single companies whereas the remaining 523 were now the top parent in a company group. Second, we analyzed companies that were top parents of a company group in 1987 and where the entire group had less than 250 employees (1,134 units) and thus in its entirety could be regarded as an SME (Small and Medium-sized Enterprises). We retained those that still had independent

- A total of 23 cases of extreme growth were detected, *i.e.,* cases adding 250 new employees or more.
- Nine of the 23, including the only three cases of 1000+ employment growth can be discarded as data errors – or at least not organic growth – which despite all precautions have slipped into our data. More specifically, six cases appear because of major reconstructions in the bank and insurance industries. Another three cases are producer co-operatives that probably have undergone some legal reconstruction; we know they are not spectacular growth businesses.
- Among the remaining 14, we find one TV channel, one personnel leasing company and two parcel delivery services. This means that at least four of the 14 most spectacular growth cases are directly related to deregulation acts passed by the government.
- Among cases that existed in 1987 either as independent companies or as SME company groups, and which still existed as independent entities in 1996, the most spectacular growth case added 596 new jobs. Only fourteen cases added more than 250 jobs each; collectively these fourteen cases added 5,217 new jobs over the ten-year period. This is close to a complete void of spectacular high growth firms.

In summary: regardless of how we conduct the analysis (unit, period, type of growth) we are unable to find a small group of “elite” firms that collectively account for a substantial share of total job creation. This appears to be in sharp contrast with results reported from the US and the UK. Birch and Medoff (1994) and Birch, Haggerty and Parsons (1995) maintain that all new jobs net in the US are created in a fairly small number of rapidly growing firms. Kirchhoff (1994) finds for the US that the 10 percent fastest growing firms in the 1978 cohort of new firms contributed 74 percent of all new jobs created by this cohort during the eight subsequent years. Storey (1994, p. 113) reports that out of 100 small firms in the UK at a certain point in time, the four fastest-growing firms will generate half of the total number of jobs created by these 100 firms. It should be realized that studies that arrive at very impressive shares of job creation being attributable to a high growth elite do so in part because they relate that elite’s job contribution only to other members of the same cohort. Such studies thus disregard job contributions by firms that where already in existence when the cohort was created as well as jobs that are added by new entry in subsequent years. However, at least the US studies tend to

status in 1996. This turned out to be true for 695 units, 444 of which were still top parents whereas 251 had divested to become single companies. Among the 3,558 (2,863 + 695) “surviving independent” units identified in this way, we singled out those that had experienced extreme growth during the period. The amount of growth was obtained by subtracting 1987 size from 1996 size. For both years the company size measure was used if the unit in that year represented a single company, and the size of the entire group was used if the unit represented a company group. In this way the analysis also captures cases that start out as independent firms and eventually continue their growth by forming a group and adding new units to it. We defined entities that had grown by 250 employees or more as extreme growth entities. On the company group level we cannot separate growth through acquisitions from organic growth, and the analysis thus concerns total employment growth over the entire ten-year period.

show that the high growth elite creates impressive numbers of jobs also in absolute terms. As noted above, we fail to find such a category in Sweden during the studied period.

Thus, we may conclude from the analyses in sections 2 and 3 that studies at the firm and individual level are consistent with the observed weak performance at the macro level. But can these findings be related to pertinent institutions and economic policies that can be expected to lead to this result? The remainder of our paper will deal with these issues.

4. Missing Arenas for Entrepreneurship

One important prerequisite for the emergence of a great deal of entrepreneurship and the existence of a sizable number of high growth firms is that key industries and sectors of the economy are available for entrepreneurial exploitation. In this section we will discuss, under two headings, why large part of service production is either closed to or severely restrained from entrepreneurial business development in Sweden. This implies that important arenas are closed or only partially open to productive entrepreneurship.

4.1 The Household-Related Service Sector

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 nonmarket sectors. For Sweden, studies indicate that more time is spent on production in the household than in the market. According to the 1997 Service Sector Taxation Report (SOU 1997:17), 7 billion hours were devoted to household work in 1993, while production of goods and public and private services accounted for only 5.9 billion hours. Furthermore, paid work not reported to the tax authorities was estimated to represent approximately 10 percent of the hours worked in the marketplace.

In a well-functioning, decentralized market economy, there will always be entrepreneurs who see the potential for starting new operations or expand existing ones, thereby creating job opportunities. Reliable data as to which types of businesses offer such potential may be obtained by examining economies that successfully create new jobs. We will compare Swedish trends with those of the US, where employment has been growing steadily over the past few decades.

Table V displays major service industries where relative employment is substantially greater in the US than in Sweden. The table clearly demonstrates that relative employment in the US is considerably greater in household-related services, such as repair of durable goods, hotel and restaurant, retail sales, laundry and household work.

As indicated in the 1997 Service Sector Taxation Report, the private service sector is exceptionally small in Sweden, even compared to other OECD countries than the US. This is particularly the case for wholesale and retail trade, hotels and restaurants and miscellaneous services. In the case of miscellaneous services, total employment is approximately half the average for the OECD countries (7 percent as opposed to 15 percent).

Table V A Comparison of Service Industries with Large Relative Employment in the US Compared to Sweden in 1994.

Industry	Share of employment (%)	
	US	Sweden
Private household workers	0.8	0.02
Repair services	1.1	0.2
Restaurants & hotels	7.2	2.3
Retail trade	11.3	7.5
Laundries and cleaning	0.6	0.2
Telecommunications	1.0	0.6
Financial institutions	2.9	1.6
Insurance	1.9	1.1

Source: Henrekson (1998).

As US trends in recent decades indicate, new jobs net arise primarily through the rapid growth of an increasingly differentiated service sector. The service sector, particularly activities highly substitutable for ordinary household work (cooking, laundry, cleaning, gardening, repair and maintenance, *et cetera*), often lends itself to a one-person business, a small business, a new enterprise or a family-owned business.

High rates of taxation of labor 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. In the case where the cost of the service consists of labor cost only one can show that – see *Appendix* – it is profitable to produce the service in the market when:

$$\frac{\text{Buyer's hourly wage before tax}}{\text{Seller's hourly wage before tax}} \cdot \frac{\text{Seller's productivity}}{\text{"do - it - yourself" productivity}} >$$
$$> \frac{(1 + \text{the VAT rate})(1 + \text{social security rate})}{1 - \text{buyer's marginal tax rate}}$$

Let us call the right-hand side of this expression the tax factor.[13] The expression describes a fundamental economic relation, which, given wage and productivity differentials, is a crucial determinant of the demarcation line between taxed and untaxed work. Low rates of taxation on labor require smaller wage differentials before tax and/or productivity differences in order to avoid that unpaid work crowds out professional work in cases where unpaid (or black market) work is feasible.

The tax factor in Sweden is in the interval 2.7–4.1 (1997 tax code). In the US the tax factor is generally in the 1.4–1.9 interval (see Henrekson, 1998). Comparisons between Sweden and the US (California) show that in order for a professional service producer to be competitive vis-à-vis unpaid household production, the professional must have a productivity edge of 170–310 percent in Sweden, whereas 40–90 percent is sufficient in the US (in the case of equal market wage). Alternatively, in the case of equal productivity (*e.g.*, child care) the hourly wage of the buyer must exceed that of the seller by a factor 2.7–4.1 in Sweden, whereas a factor 1.4–1.9 is sufficient in the US.

As a result, the emergence of a large, efficient service sector competing successfully with unpaid work is less likely in Sweden than in the US and other countries with lower rates of labor taxation. As a corollary, an important arena for nascent entrepreneurs and HGFs becomes less accessible.

4.2 Public Production of Goods and Services

As already noted, the entire net increase in employment in Sweden since 1950 has taken place in the public sector. Up to 1992, over one million new jobs were created in this sector. As a first approximation public production of private services such as health care and child care takes place in the local (including regional) government sector, whereas the central government is mostly involved in the production of public goods such as defense, infrastructure and overall national administration. In fact, all employment growth net between 1960 and 1998 took place in the local government sector (Statistics Sweden, *National Accounts).*

These publicly produced private services are in many cases highly suitable for production in private and often also small firms. The political decision to produce these services primarily through a public sector monopoly has largely barred this area from both start-up activity and

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[13] The marginal tax rate includes the employee's mandatory contributions to social security.

the emergence of high-growth firms. *Table VI* summarizes the share of private production for the major services that are fully or primarily tax-financed. It is clear that the private production share is very low in activities like child care, care of the elderly and after-school care, despite the fact that these activities are highly amenable to private, small firm production. The potential market is huge. The operating costs incurred by local governments for schooling, child care and care of the elderly exceeded 10 percent of GDP per year in the mid 1990s, and the health care sector is almost as large.

Table VI Private Sector Production Share for Major Services That Are Primarily Publicly Funded, 1996 (percent).

Service	*Share*
Institutional child care (pre-school)	12.5
Child care in the home (of the professional)	2.2
After-school care	4.5
Compulsory schooling	2.4
High school	1.9
Care of the elderly at nursing homes	8.3
Care of the elderly in special apartments	5.1
Care of the elderly in their own home	2.6
Hospital care	4.3
Medical consultations	28
Share of doctors privately employed	10
Psychiatric wards	24
Children's dental care	5

Source: Werenfels Röttorp (1998).

Another area with great potential for new firm formation and entrepreneurship concerns public sector purchases of goods and services beside education, health and welfare services from the corporate sector. These purchases exceed 10 percent of GDP, and they could in principle be opened to fair and equal access for private firms. However, these markets are dominated by 1,500 municipally owned corporations with an aggregate turnover of roughly 115 billion kronor per year (OECD, 1996). In particular, municipal corporations have a dominant position in the housing market: 56 per cent of all apartments in the rental market are owned by municipal companies and municipal corporations also have a dominant position in the electricity, gas, heating and water supply and the communications sector (Hallgren, 1997). According to Bergdahl (1995) only 11 percent of the total activities of local and regional governments could be tied to purchases from the private sector in the early 1990s, but even more importantly, only slightly more than one third of these purchases were made through competitive bidding.

Hence, due to the *de facto* monopolization by the public sector or the unequal access for private businesses in the markets emanating from government purchases, vast areas of the Swedish economy have remained unexploited as sources of commercial growth. In particular in the health sector, it is easy to imagine how a different organizational mode could have provided a basis for the emergence of new high-growth firms.[14] Local governments as producers are unlikely to grow beyond the local market, however efficient they are. In fact, in many cases this is not even allowed. Private firms, on the other hand, which start out as suppliers to one local government, can grow by penetrating other local markets and also export markets.

Finally, it is worth emphasizing that both the impediments to the household-related service sector and for private entrepreneurs to penetrate the education and care sectors, are likely to be of particular concern for female entrepreneurs. As already noted (section 2) relative entrepreneurship among females is low in Sweden and female firms are less likely to grow than male firms (Du Rietz and Henrekson, 2000).

5. Taxation of Entrepreneurial Income

Several features of the pre-1990 Swedish tax system disfavored younger, smaller and less capital-intensive firms and discouraged entrepreneurship and family ownership in favor of institutional forms of ownership. During an extended period of time, for three decades beginning in the early 1960s, there were extreme differences in taxation for different sources of finance and owner categories: (i) debt was the most favored and new share issues the most disfavored; (ii) households/individuals were taxed substantially more heavily than other owner categories. For example, an investment yielding a pre-tax real rate of return of 10 per cent financed by a debt instrument meant that the tax-exempt institution received a real rate of return of 18.3 per cent after tax. In contrast, a household investing in a newly issued share with the same real rate of return the situation was very different: 10 per cent before tax became –3.7 per cent after tax. See *Table A* in the Appendix and the calculations in Södersten (1984, 1993) and Davis and Henrekson (1997). Naturally, tax rules benefiting debt financing relative to equity financing and institutional relative to individual ownership systematically favored large, real capital intensive, publicly traded and well-established firms.

[14] See Henrekson and Rosenberg (2000) for an in depth analysis of these and related issues.

Studies such as King and Fullerton (1984) and Fukao and Hanazaki (1987) also show that Swedish tax policy was extreme in these respects. Furthermore, the Swedish tax system generally subsidized housing investment and has historically had very high marginal tax rates (above 90 per cent in the highest income bracket in the late 1970s) on individual income.

The 1991 tax reform entailed a substantial "leveling of the playing field" for different types of owners and sources of finance, although the leveling was not complete. In 1994 the tax code was further reformed and the playing field became for all practical purposes leveled. However, a 1995 act reinstated a higher tax burden on equity financing. Although the tax reform act of 1991 reduced the distortion between debt and equity financing, there remains a substantial differential today. Furthermore, the tax code still implies a much higher tax burden for investments financed with equity owned by households rather than by institutions.

In order to analyze how the tax system impacts on entrepreneurial behavior it is not sufficient to focus on the taxation of individual owners of firms. To a large extent the return on entrepreneurial effort is taxed as wage income. First, large part of income accruing from closely held companies has to be paid out as wage income. Second, a great deal of the entrepreneurial function is carried out by employees without an ownership stake in the firm.

We display the total marginal tax wedge for three categories of workers since the early 1950s in *Figure 3.* For industrial workers the marginal tax wedge doubled from 38 to 76 percent from 1952 to the late 1970s. For executives it rose from roughly 50 percent to more than 90 percent during the same period. The marginal tax wedge for the average white-collar worker peaked at 85 percent. Minor tax reforms in the first half of the 1980s reduced tax wedges slightly. The 1990/91 tax reform resulted in a great fall in the marginal tax wedges for all groups. For all three categories the wedges decreased by roughly 10 percentage points. Since then marginal tax rates have increased again, and in 2000 they were typically five percentage points higher than in 1991.

Figure 3 Total Marginal Tax Wedge for Industrial Workers, White-collar Workers and Executives in Sweden, 1952–97 (percent).

Enclosed

Source: Du Rietz (1994) and new calculations supplied by Du Rietz.
Note: The marginal tax wedges are evaluated at mean earnings each year. ”Executive” is defined as an individual in the management group (below the CEO) in a private firm. The tax rate includes mandatory social security contributions paid by the employer or the employee, the marginal income tax and indirect taxes on private consumption (all income is assumed to be spent for private consumption purposes). Property taxes are excluded. The tax wedges for executives and average white-collar workers coincide after 1990.

Finally, it should be noted that the use of stock options to encourage entrepreneurial behavior among employees is highly penalized by the tax system, since gains on options are taxed as wage income when the stock options are tied to employment in the firm. Thus they are subjected both to mandatory social security (33 percent) and the marginal tax rate. Since the marginal tax rate is close to 57 per cent this entails a total tax rate of roughly 68 per cent. The firm that issues the stock options does not pay the social security tax until the stock options are exercised, and hence the firm cannot calculate the cost of its stock option plan. The only way to convert part of the gains on stock options to income of capital taxed at 30 percent is to tax the assessed value of the stock options at the time of receipt as wage income. The subsequent gains will be taxed as capital. However, this scheme has two negative side effects: (i) it cannot be used by wealth constrained employees, and (ii) the employees face a greater risk since taxes are paid even if the gains may not exceed the tax payments.[15]

6. Incentives for Wealth Accumulation

The availability of equity financing is a critical factor for both start-ups and the expansion of existing firms (Holtz-Eakin, Joulfaian and Rosen, 1994; Blanchflower and Oswald, 1998; Lindh and Ohlsson, 1996). In general, the riskier the business, the greater the reliance on equity relative to debt financing. The existence of collateral notwithstanding, a sizable infusion of equity is often a prerequisite for obtaining comprehensive credits. The reasons for this fact are straightforward: outside creditors have difficulties assessing the owner’s competence and the future viability of the firm (the problem of asymmetric information; Akerlof, 1970). The smaller and newer the firm, the more difficult for outside financiers to assess the viability and profitability of the proposed investment project. Moreover, Hutchinson (1995) argues that small firms have a lower efficient debt/equity ratio than large

[15] Henrekson and Rosenberg (2000) provide a detailed comparion of the US and Swedish tax rules for stock options.

firms. Portfolio investors generally only have to be concerned with systematic risk, since specific risks can be diversified away. This does not apply to owners of small businesses, since they have a large part of their financial wealth as well as their human capital tied up in their own firm. These considerations call for a long-run survival objective resulting in a lower debt/equity ratio than in firms with a highly diversified ownership, where it is rational to choose a debt/equity ratio that maximizes the firm's market value.

There is substantial scientific evidence supporting the idea that the individual wealth position has important effects for the probability of becoming an entrepreneur and for the propensity to expand. For example, Lindh and Ohlsson (1996) find that the likelihood of starting a business in Sweden increases significantly among those who receive an inheritance or a lottery gain.[16] Taken in isolation this could be explained by increased risk propensity as a result of a windfall gain rather than as a result of wealth (Kahneman and Tversky, 1979), but Lindh and Ohlsson (1998) find that a more unequal wealth distribution covaries positively with the share of self-employed. Hence, the combination of low private savings and an extremely even distribution of these low savings implies that few people either themselves or from their associates, friends or relatives are able to raise the requisite equity to realize their business projects.

Thus, *ceteris paribus*, small and newly established firms are more dependent on equity financing than are large, well-established firms. A large infusion of equity from the owner(s) signals that the project has a high expected rate of return, which makes it easier for a bank to grant the required credit.

The real rate of taxation on financial savings was extremely high in Sweden for individuals before the 1990/91 tax reform. On interest income it typically exceeded 100 percent during the 1970s and 80s. At the same time, institutionalized saving in the form of life insurance policies, where the funds are by definition withdrawn from the non-institutional venture capital market, was highly favored. Even today the rate of taxation on saving and wealth accumulation is high in Sweden. First, the high tax rate on wage income makes it difficult to save a substantial portion of income that can subsequently be used for equity financing. Second, total taxation on accumulated wealth is high: 30 percent on the nominal current return, 30 percent nominal capital gains tax and 1.5 percent wealth tax on real estate, interest-bearing instruments and prime stock listed on the Stockholm Stock Exchange (the so-called

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16 Blanchflower and Oswald (1998) arrive at the same conclusion in an empirical analysis based on British data. Fölster (2001) develops and tests a model where high taxes and low savings create a "vicious circle for entrepreneurship".

A-list).[17] The wealth is levied on all assessed wealth exceeding SEK 900,000 for the household.[18]

The weak incentives for private individual savings also resulted in low levels of saving for households compared to other industrialized countries – see *Table VII*.

Table VII Household Net Savings as a Share of Disposable Income in Sweden, OECD and OECD Europe, 1960–95 (%).

	1960–69	1970–79	1980–89	1990–95
Sweden	*6.1*	*4.0*	*1.1*	*5.6*
OECD	9.7	12.1	11.2	9.8
OECD Europe	12.0	13.6	11.6	10.9

Source: OECD, *Historical Statistics 1960–1980* and *1960–1995;* OECD, *Economic Outlook*, Vol. 64, 1998.

As a result of the consistently low household savings rates in Sweden for several decades, individual financial wealth became very low by international comparisons. Such comparisons can only be made for a limited number of countries. Pålsson (1998) reports (based on OECD, *Financial Statistics*) that financial wealth per capita in Germany, Canada, France and Italy was generally 3–4 times larger than in Sweden in the early 1990s. In the US and Japan it was approximately six times larger than in Sweden.

7. Job Security Mandates

The Swedish Employment Security Act (*Lagen om anställningskydd* or LAS) from 1974 includes four types of regulations that have a significant impact on the functioning of the labor market. These are rules about the period of notice of dismissal, the requirement of objective grounds for dismissal, time limits on probationary employment, and rules about the order of dismissals. Of special interest for the issues in our context are the rules governing the order in which different employees are to be dismissed.

But are strict employment security provisions more harmful for smaller, more entrepreneurial and faster-growing employers? The likely answer is yes, but with one exception: the prevalence of start-ups without the intention of employing anybody in addition to the owner is likely to increase, *ceteris paribus*. It is easier for large firms to exploit the gains from

[17] On 80 percent of the market value.
[18] On a stock market investment yielding a real rate on return of 10 percent before tax, the real rate of return after tax is 5.3 percent for households at an inflation rate of 3 percent, a dividend ratio of 3 percent of the market value of the stock, a holding period of 5 years and full wealth tax.

efficiently matching heterogeneous workers to a variety of tasks and positions. 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 is likely to rise with firm size. In an unfettered labor market, optimal task reassignment often involves mobility between firms, and such mobility is more likely when the initial employment relationship involves a small business. Thus, any inefficiencies induced by LAS in the assignment of workers to tasks are likely to be more severe and more costly for smaller firms. Furthermore, and for obvious reasons, one bad recruitment is proportionately more costly to bear for a small firm.

Other evidence is also consistent with the view that employment security provisions fall more heavily on smaller firms and some other classes of firms. In the United States, 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 *et al.*, 1996). These patterns in worker separation and job destruction rates suggest that any costs imposed by a regulation similar to the LAS are likely to fall more heavily on younger, smaller and less capital-intensive.

What the new research, sometimes called "the new view of the labor market",[19] suggests is that, in order to understand in what ways labor market regulations impede growth and employment, one has to analyze the effects on the individual firm. Several results from this research are essential in this respect:

- A large number of jobs are continuously created through start-ups and expansions, likewise a large number of jobs are destroyed through closures and contraction of existing firms and establishments; in order to create one new job net on the order of 7–10 jobs have to be created gross.
- The lion's share of the gross flows emanate from changes in specific establishments and firms, and they have fairly little to do with employment shifts between industries or to the aggregate net employment change.
- Gross flows tend to be larger in newer, smaller, highly specialized and low wage firms, and in firms with high productivity growth.

This new research suggests that for many firms – and in particular for firms with a good growth potential in terms of productivity and employment – there is a great need for flexibility both to increase the number of employees in response to rising demand and likewise to be able to rapidly contract when demand falls short of expectations. The road from small to large for a gazelle is far from straight, since the activities of new firms in particular are subject to genuine uncertainty. If, under such circumstances, rules are imposed that reduce

[19] See Davis, Haltiwanger and Schuh (1996), Reynolds, (1999) and Davidsson, Lindmark and Olofsson (1996) for Sweden.

the firms' leeway to rapid adjustment one should expect both a lower willingness to expand in general and that fewer firms, despite a good product or a viable idea, grow from small to large in a short period of time.

In addition, a strictly applied "last in – first out" principle in case of redundancies implies that tenure at the present employer becomes relatively more important for labor security than individual skill and productivity. This fact increases the individual's opportunity cost of changing employers or of leaving a secure salaried job to become an entrepreneur. This is likely to reduce the spillover of knowledge between industries and firms. Such spillovers contribute to a high social rate of return on R&D and training.

The analysis in this subsection has mainly emphasized that small firms are disproportionately hit by labor market regulations. However, it is likely that the analysis largely carries over to entrepreneurial firms in general. First, it should be noted that most firms start out small, and it is mainly the entrepreneurial firms that grow into medium-sized and large firms. Second, labor market inflexibility is an element that is inherently inconsistent with the flexibility, nonhierarchical structures, networking and labor mobility across firms distinguishing typical entrepreneurial business cultures, notably the one found in Silicon Valley (Saxenian, 1994).

But how does the Swedish labor security legislation compare to other countries? OECD (1994) has attempted to compare the extent of government regulations on labor standards in the early 1990s. Of the 18 countries included in the survey, only Greece exhibited a higher degree of regulation than Sweden. However, the study does not take into account that the *de facto* level of regulation can be much higher as a result of collective agreements. We definitely judge that this is the case in Sweden where collective agreements often stipulate high minimum wages and extend employment protection well beyond what is legislated (Storrie, 1994).

More specifically, Sweden is the only country where the order of dismissal is laid down in law (Kazamaki Ottersten, 1994), and according to a survey by Industriförbundet (1995, p. 87) Sweden had the shortest maximum period of probationary employment in all of Europe in the early 1990s. In many cases, the union agreement may even further limit the length of the trial period, and in many sectors, trade unions have the right to veto probationary employment and temporary employment (Storey, 1994). Furthermore, it seems that in most countries other than Sweden unfair dismissal regulations are not extended to small firms (Commission of the European Communities, 1993). For instance, in Germany the employer in firms with ten employees or less has the right to dismiss a worker at his won discretion. Funck (1998, p. 5), in a comparison of the job security legislation in the Nordic countries even conclude that ”When several employees are dismissed because of redundancy, the employers in Denmark, Finland and Norway can in practice freely choose which employees that are going to be laid off.”

8. Wage-Setting Institutions

There are *a priori* reasons to believe that the fashion in which the price of labor is determined is not identically well suited for all industries and firms of different types. Swedish labor organizations successfully pursued egalitarian wage policies from the mid 1960s until the breakdown of centralized wage bargaining in 1983 (Hibbs, 1990; Edin and Holmlund, 1995). The strength of Swedish labor organizations and the centralized nature of the wage-setting institutions appear to have facilitated a remarkable compression of the wage structure during this period, judging by cross-country comparisons of wage inequality trends (Davis, 1992). To the extent that Swedish wage-setting developments drove up wages in the lower tiers of the distribution relative to outcomes under other institutional arrangements, they reinforced the concentration of economic activity in larger, older and more capital-intensive firms and sectors. This inference follows from the ample evidence that wages rise with the age, capital intensity and – especially – the size of employers (*e.g.*, Brown and Medoff, 1989; Davis and Haltiwanger, 1991, 1996). In sharp contrast to the evidence for the United States, Albæk *et al.* (1995) find that the employer size-wage effect is negligible in Sweden, which gives credence to the view that egalitarian wage policies have raised the relative labor costs of smaller businesses.

Institutions that truncate or compress the lower tail of the wage distribution disadvantage smaller businesses – and hence discourage the transition from salaried employment to self-employment – for at least two important reasons. First, many smaller employers operate with less-skilled workers. It follows that mandating wage uniformity across workers imposes higher effective costs per unit of labor services on such employers. In this regard, the careful study by Brown and Medoff (1989) concludes that half or more of the large size-wage premiums observed in US data reflect a systematic sorting of more skilled workers to larger employers. Second, larger employers tend to operate with more capital-intensive technologies. It follows that a given wage premium generates a smaller percentage increase in average costs for large than for small employers.

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. Thus, centralized wage-setting institutions may disadvantage smaller businesses and businesses aiming at promoting an entrepreneurial culture within the firm by implementing standard rate compensation policies that closely tie wages to easily observed job and worker characteristics such as occupation, education, experience and seniority. This follows from evidence that larger employers evince a greater preference for standard rate compensation policies.

Davis and Henrekson (2000) present comprehensive evidence that industries with high or low average wages and industries with a high wage dispersion and a larger idiosyncratic element in the wage-setting (the part of the wage that cannot be explained by easily observable characteristics) grew slowly in Sweden relative to the US during the period when wage-setting was highly centralized and wage dispersion was drastically reduced (1965–85). This pattern was reversed when centralization was reduced from the mid 1980s.

9. The Current Upturn in Light of the Analysis

At the time of finalizing this manuscript (April 2000) there is a highly visible upturn in entrepreneurial activity in Sweden both in absolute terms and relative to other countries. The GDP growth rate was 3.0 and 3.8 percent p.a. in 1998 and 1999, respectively, and aggregate employment grew at an average annual rate of 1.8 percent during 1998–99.[20] The growth rate is expected to increase even further in 2000 and to remain in excess of 3 percent in 2001. Open unemployment is also expected to fall rapidly and reach a level of 4.0 percent by the end of 2001. According to a narrow definition there were 58 IPOs in Sweden during 1999, and the majority of them were IT related.[21] According to a wider criterion applied by Nyhetsbyrån Ticker (www.ticker.se), the number of IPOs was as high as 98 in 1998 and 105 in 1999 compared to 29 in 1996. The stock market value of most of those firms soared exorbitantly, in several cases by more than 1000 percent in 1999. New entrepreneurial firms, in particular in the IT sector, are still formed at a rapid rate, and there are also a number of examples of successful spin-offs from Ericsson.

Should this favorable development be seen as a rejection of the thesis in this paper? We do not think so. First, the development is still of recent vintage, and hence it is too early to tell to what extent we are dealing with a cyclical phenomenon. Second, and much more importantly,

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[20] Statistics Sweden, *National Accounts* and *Labour Force Surveys*.
[21] This includes all new listings in 1999 on the OM Stockholm Stock Exchange, Nya Marknaden, Aktietorget, Innovationsmarknaden and the SBI lists.

a number of measures were taken during the 1990s that can be expected to encourage the emergence of a stronger entrepreneurial culture:

- In the mid 1980s a gradual deregulation of the capital market began and the deregulation is now complete. In combination with a new stringent central government process and an independent central bank there has been a dramatic increase in financial stability and a precipitous drop in interest rates.
- The corporate tax rate was cut in half and is now 28 percent, which strongly favors equity relative to debt financing. The introduction of a uniform 30 percent flat capital income tax rate and the abolition of wealth taxation on unlisted share has greatly favored *individual* equity investments relative to the 1980s.
- The highest marginal tax rate has been lowered from close to 90 percent around 1980 to roughly 56 percent, which has after all increased the after-tax rate of return on human capital investment and increased the scope for entrepreneurial development in the household-related service sector.
- The wage bargaining system is now less centralized than before, and in particular wages in the upper decile have increased rapidly in the latter half of the 1990s (Davis and Henrekson, 2000).
- Certain deregulatory measures on the labor market have already been taken,[22] which in practice gives more room for flexibility than before, and more measures can be expected in the near future.
- The deregulation of several previously regulated markets, in particular the deregulation of the market for telecommunications (1993), opened new arenas for entrepreneurial expansion.
- Since 1991 a number of measures have been taken that facilitate the transfer of publicly financed services to private production. There has been a marked in the share of public consumption that is privately produced (Ministry of Finance, 1999).

Other factors are more fortuitous, but still in line with our thesis. The Stockholm stock exchange had the strongest development of all stock exchanges in the industrialized world during the 1980s and 90s (*Economist*, 1999) and given that 60 percent of the population own listed shares, this strong wealth creation has made a large number of people wealthy. According to the analysis in section 7.3, this should spur entrepreneurial activity. For the first time since the interwar period, the deregulation of the credit market in the 1980s also paved the way for the formation of new family fortunes, and in many cases that wealth appears to have been instrumental as angel capital in today's new IT firms. Finally, fortunate timing is involved. The spectacular development in the Swedish IT sector would not have been possible

[22] In 1997 a new type of employment contract was allowed, so-called prearranged temporary employment (*överenskommen visstidsanställning*), which gives every firm an *unconditional* right to employ up to five persons for a maximum of one year. Another 1997 change was procedural. *Local* collective agreements that replace the regulations in the law can now be reached. This makes it possible, through local agreements, to annul tenure-based order of priority in case of dismissal and to annul the right to reemployment for dismissed workers, and to extend the duration of temporary employment beyond 12 months.

without the existence of Ericsson and its success in wireless communications, which turned out to be perhaps the number one growth industry in the world in the latter half of the 1990s.

Thus, the current boom suggests that changes in the conditions facilitating the emergence of a strong entrepreneurial culture will, usually with some lag, lead to the expected result, although there are particular ancillary circumstances that has reinforced this pattern in Sweden today. On the other hand, compared to the US the rules of the game are still unfavorable: the taxation of entrepreneurial income (including stock options and the high overall taxation of VC firms) continues to be high, the steep rate of labor taxation reduces the rate of return on human capital investment and the scope for entrepreneurial expansion of household-related services, and the labor market remains highly regulated.

In 1999 the Swedish GDP growth rate exceeded the OECD average by 1.1 percentage points.[23] However, it should be kept in mind that the recent upturn needs to be sustained for a long time in order for Sweden to substantially regain lost ground in terms of per capita income relative to the OECD average. But if our analysis is correct, it is also likely that further measures encouraging entrepreneurial activity would make it possible for Sweden to shift to a long-run growth path that could bring the country back to its previous top position in terms of GDP per capita and aggregate employment.

10. Concluding Remarks

The purpose of this study has been to test the hypothesis that institutional arrangements impact on aggregate economic development through their influence on entrepreneurial activity as manifested in the prevalence of firm start-ups and high growth firms. Our method is exploratory and we largely draw on empirical evidence from Sweden including an analysis of the pertinent institutions and policies.

Establishing *indisputable* evidence for the relationships we investigate is a difficult and perhaps impossible task. However, we still maintain that the consistency of our findings make a strong case for the interpretation that the institutional arrangements we have discussed are important determinants of entrepreneurial activity. Our analysis shows that the low prevalence of nascent entrepreneurs and the limited employment contribution by high growth firms is

[23] National Institute of Economic Research, *Konjunkturläget*, March 2000.

consistent with our characterization of the institutional environment. The recent entrepreneurial upturn in Sweden is likewise consistent with a number of policy measures that can be expected to improve the entrepreneurial climate.

If the analysis in this paper is correct a number of policy conclusions follow. First and foremost, it is important both to extend the economic arenas where competent entrepreneurs can thrive, and to improve the institutions and rules of the game determining the incentive structure for entrepreneurs. This pertains both to the decision to become an entrepreneur and the subsequent behavior of entrepreneurs, so that strong business ideas give rise to high-growth firms.

From this it follows that the government has a crucial role to play. But this does not imply that the government should give support to individual entrepreneurs, since they do not have the competence to pick winners (Saxenian, 1994). Apart from opening up the service sector on a broad basis for entrepreneurial development a number of institutional reforms in Sweden are, according to our analysis, likely to contribute to a strengthened entrepreneurial culture. First, if taxation of entrepreneurial income is identical to taxation of interest income and business income of portfolio investors, there will be a stronger incentive to become an entrepreneur or to expand operations when this is socially profitable. Likewise, a high rate of labor taxation is, in many instances, likely to act as an impediment to entrepreneurial activity, especially in the household-related service sector. Second, better incentives for private wealth accumulation in general will increase the supply of venture capital. It is also important that private wealth is not locked into institutions, since an important complementary input by venture capitalists is their knowledge.

Third, the labor security legislation makes tenure with the present employer an important asset for an employee. A major explanation for the success of places like Silicon Valley is that employees migrate from firms so frequently, thus spreading knowledge across firms at a rapid rate.

Fourth, a true entrepreneurial culture also entails that entrepreneurship is fostered within the firm, sometimes called intrapreneurship. This is likely to demand a great deal of flexibility in the choice of remunerative schemes, including ”high-powered incentives” (Stevenson, 1985; Williamson, 1985) such as stock-option plans and nonfixed wage elements. The Swedish wage-setting system, with many centralized elements remaining, is characterized by a great deal of relative wage rigidity within firms, across firms and across industries.

Policy-making involves the creation of institutions that succeeds in balancing many interests. The Swedish case can illustrate the effects on aggregate economic development when incentives for economic renewal are given too little weight in that process. If our analysis is correct further institutional change encouraging entrepreneurship and firm growth would make it possible for Sweden to shift to a long-run growth path that could bring the country back to its previous top position in terms of GDP per capita.

Appendix

In order to analyze the choice between market and household production of a service, let us introduce the following notation:

w = the buyer's hourly wage before tax in her own profession
w^* = the service producer's hourly wage before tax
c_1 = the production cost in the do-it-yourself case
c_2 = the cost of buying the service in the market
H = required labor time for the professional service producer
t = marginal tax rate of the buyer including employee contributions to social security
s = mandatory social security contributions (for the employer)
m = VAT rate

In order to simplify the exposition, we assume that the required time for service production in the do-it-yourself case is one hour, thus $1/H$ can be interpreted as a measure of the relative productivity of the professional producer. Furthermore, we assume that all cost is labor cost and that the service in question will always be produced either by the consumer herself or by a professional. The production cost in the do-it-yourself case equals the after tax wage:

$$c_1 = w(1-t)$$

The cost of buying the service in the market is given by:

$$c_2 = w^*(1+s)((1+m)H$$

The service will be bought in the market as long as $c_1 > c_2$, *i.e.*, if $\frac{w}{w^*}\frac{1}{H} > \frac{(1+s)(1+m)}{(1-t)}$.

This expression is used in section 4.1 above.

Table A Effective Marginal Tax Rates for Different Combinations of Owners and Sources of Finance, 1960, 1980, 1991, 1994 and 1995 (real pre-tax rate of return 10% at actual inflation rates).

	Debt	New share issues	Retained earnings
1960			
Households	27.2	92.7	48.2
Tax exempt institutions	–32.2	31.4	31.2
Insurance companies	–21.7	41.6	34.0
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
1991			
Households	31.7	61.8	54.2
Tax exempt institutions	–9.4	4.0	18.7
Insurance companies	14.4	33.3	31.6
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
1995			
Households	32.0/27.0†	67.7/57.7†	48.0/38.0†
Tax exempt institutions	–3.5	25.7	25.7
Insurance companies	21.0	53.3	50.4

†Excluding wealth tax. The wealth tax on unlisted shares was abolished in 1992.

Note: All calculations are based on the actual asset composition in manufacturing. The following inflation rates were used: 1960: 3%, 1970: 7%, 1980: 9.4%, 1985: 5%, 1991: 5%, 1994: 3%, 1995: 3%. The calculations conform to the general framework developed King and Fullerton (1984). The average holding period is assumed to be 10 years.

Source: Calculations provided by Jan Södersten, see Södersten (1984, 1993).

References

Akerlof, G. (1970), ”The Market for Lemons: Quality Uncertainty and the Market Mechanism.” *Quarterly Journal of Economics* **89**(3) 488–500.

Albæk, K., Arai, M., Asplund, R., Barth, E. and E. Strøyer Madsen (1995), “Employer Size-Wage Effects in the Nordic Countries.“ Helsingfors: ETLA Discussion Papers nr 532.

Baumol, W.J. (1990), “Entrepreneurship: Productive, Unproductive, and Destructive.” *Journal of Political Economy* **98**(5), 893–921.

Baumol, W.J. (1993), *Entrepreneurship, Management and the Structure of Payoffs*. Cambridge, MA: MIT Press.

Bergdahl, P. (1995), “Kommunal upphandling i konkurrens.“ Stockholm: Konkurrensverket.

Bertola, G. (1990), “Job Security, Wages and Employment.“ *European Economic Review* **34**(4), 851–879.

Birch, D.L. and J. Medoff (1994), ”Gazelles.” In Solmon, L.C. and A.R. Levenson (eds.), *Labor Markets, Employment Policy and Job Creation.* Boulder and London: Westview Press.

Birch, D.L., Haggerty, A. and W. Parsons (1995), “Who’s Creating Jobs?“ Boston: Cognetics Inc.

Blanchflower, D. G. and R.B. Freeman (1992), "Unionism in the United States and Other Advanced OECD Countries." *Industrial Relations* **31**(1), 56–79.

Blanchflower, D.G. and A.J. Oswald (1998), "What Makes an Entrepreneur?" *Journal of Labor Economics* **16**(1), 26–60.

Blau, F.D. and L.M. Kahn (1996), "International Differences in Male Wage Inequality: Institutions versus Market Forces." *Journal of Political Economy* **104**(4).

Brown, C. and J. Medoff (1989), "The Employer Size Wage Effect." *Journal of Political Economy* **97**(5), 1027–1059.

Commission of the European Communities (1993), *Employment in Europe*. Luxembourg: Official Publications of the European Community.

Davidsson, P., Lindmark, L. and C. Olofsson (1996), *Näringslivsdynamik under 90-talet*. Stockholm: NUTEK.

Davidsson, P., and J. Wiklund, (2000), "Conceptual and Empirical Challenges in the Study of Firm Growth." In Sexton, D. and H. Landström (eds.), *The Blackwell Handbook of Entrepreneurship*. Oxford, MA: Blackwell.

Davis, S.J. (1992), "Cross-Country Patterns of Change in Relative Wages". *NBER Macroeconomics Annual Vol. 7*, 239–292.

Davis, S.J. and J. Haltiwanger (1991), "Wage Dispersion between and within US Manufacturing Plants." *Brookings Papers on Economic Activity: Microeconomics*, 115–180.

Davis, S.J., Haltiwanger, J. and S. Schuh (1996), *Job Creation and Destruction*. Cambridge, MA: MIT Press.

Davis, S.J. and J. Haltiwanger (1996), "Employer Size and the Wage Structure in US Manufacturing." *Annales d'Économie et de Statistique*, No. 41–42, January/June, 323–367.

Davis, S.J. and M. Henrekson (1997), "Industrial Policy, Employer Size and Economic Performance in Sweden." In Freeman, R.B., Topel, R. and B. Swedenborg (eds.), *The Welfare State in Transition*. Chicago: University of Chicago Press.

Davis, S.J. and M. Henrekson (1999), "Explaining National Differences in the Size and Industry Distribution of Employment." *Small Business Economics* **12**(1), 59–83.

Davis, S.J. and M. Henrekson (2000), "Wage-Setting Institutions as Industrial Policy". NBER Working Paper No. 7502.

Delmar, F. (1997), "Measuring Growth: Methodological Considerations and Empirical Results". In Donckels R. and A. Miettinen (eds.), *Entrepreneurship and SME Research: On Its Way to the Next Millenium.* Aldershot, UK: Ashgate.

Delmar, F. and P. Davidsson (2000), "Where Do They Come from: Prevalence and Characteristics of Nascent Entrepreneurs." *Entrepreneurship & Regional Development* **12**(1), 1–23.

Du Rietz, G. (1994), *Välfärdsstatens finansiering*. Stockholm: City University Press.

Du Rietz, A. and M. Henrekson (2000), "Testing the Female Underperformance Hypothesis." *Small Business Economics* **13**(1), 1–10.

Economist (1999), "The Foresight Saga." Vol. 353, No. 8150 (December 18th), 65–67.

Edin, P.-A. and B. Holmlund (1995), "The Swedish Wage Structure: The Rise and Fall of Solidarity Policy?" In Freeman, R.B. and L. Katz (eds.), *Differences and Changes in Wage Structures*. Chicago: Chicago University Press.

EIM (2000), *Entrepreneurship in the Netherlands. Opportunities and Threats to Nascent Entrepreneurship*. Zoetermeer, NL: EIM Small Business Research and Consultancy/Ministry of Economic Affairs.

ENSR (1996), *The European Observatory for SMEs. Fourth Annual Report*. Zoetermeer, NL: European Network for SME Research/ EIM Small Business Research and Consultancy.

Fukao, M. and M. Hanazaki (1987), "Internationalization of Financial Markets and the Allocation of Capital." *OECD Economic Studies*, No. 8, 35–92.

Funck, C. (1998), "Jämförande studie av anställningsskyddet i Sverige och Danmark." Report 98/1. Stockholm: Invest in Sweden Agency.

Fölster, S. (2001), "Do Lower Taxes Stimulate Self-Employment?" *Small Business Economics*, forthcoming.

Garofoli, G. (1994), "New Firm Formation and Regional Development: The Italian Case." *Regional Studies* **28**(3), 381–394.

Gasse, Y. (1996). "Entrepreneurial Characteristics Inventory: Validation Process of an Instrument of Entrepreneurial Profiles (summary)." In *Frontiers in Entrepreneurship Research 1996*. Wellesley, MA: Babson College.

Gunnarsson, G. and T. Lindh (1997), Swedish Employment in the 1950s – Filling the Lacuna. Working Paper

1997:13. Department of Economics, Uppsala University.

Hallgren, T. (1997), *Fakta och argument om kommunala företag*. Stockholm: Svenska Kommunförbundet.

Henrekson, M. (1998), "En ond cirkel för tjänstesektorn". *Arbetsmarknad & Arbetsliv* **4**(2), 137–152.

Henrekson, M. and Rosenberg, N. (2000), "Incentives for Academic Entrepreneurship: Sweden and the United States." SSE/EFI Working Paper No. 362. Forthcoming in Törnqvist, G. and S. Sörlin, S. (eds.), *The Wealth of Knowledge. Universities in the New Economy*. Cambridge, MA: MIT Press.

Hibbs, D.A., Jr (1990), "Wage Compression under Solidarity Bargaining in Sweden." In Persson-Tanimura, I. (ed.), *Generating Equality in the Welfare State: The Swedish Experience*. Oslo: Norwegian University Press.

Holtz-Eakin, D., Joulfaian, D. and H.S. Rosen (1994), "Sticking It out: Entrepreneurial Survival and Liquidity Constraints." *Journal of Political Economy* **102**(1), 53–75.

Hutchinson, R.W. (1995), "The Capital Structure and Investment Decisions of the Small Owner-Managed Firm: Some Exploratory Issues." *Small Business Economics* **7**(3), 231–239.

Industriförbundet (1995), *Det ekonomiska läget – Att återvinna välståndet*. Stockholm.

Kahneman, B. and A. Tversky (1979), "Prospect Theory: An Analysis of Decisions under Risk", *Econometrica* **47**(2), 263–279.

Kazamaki Ottersten, E. (1994), "Yrkeskompetens och rekryteringskrav." In Eliasson, G. and E. Kazamaki Ottersten, *Om förlängd skolgång*. Stockholm: Almqvist & Wiksell International.

King, M.A. and D. Fullerton (eds.), (1984), *The Taxation of Income from Capital. A Comparative Study of the United States, the United Kingdom, Sweden and West Germany*. Chicago: University of Chicago Press.

Kirchhoff, B.A. (1994), *Entrepreneurship and Dynamic Capitalism*. London: Praeger.

Kirzner, I. (1997), "Entrepreneurial Discovery and the Competitive Market Process: An Austrian Approach". *Journal of Economic Literature* **35**(1), 60–85.

Kolvereid, L. and G. Alsos (1997), Bedriftsetableringer i Norge: en undersokelse om etaleringsfrekvens og gründerklima (Business Start-ups in Norway: An Investigation of Start-up Rates and Entrepreneurial Climate). Bodö, Norway: Nordland Research Institute.

Lindh, T. and H. Ohlsson (1996), "Self-Employment and Windfall Gains: Evidence from the Swedish Lottery." *Economic Journal* **106**(439), 1515–1526.

Lindh, T. and H. Ohlsson (1998), "Self-Employment and Wealth Inequality." *Review of Income and Wealth* **44**(1), 25–42.

Magnussen, R.Å. (1997), *Etableringssuksess: En funksjon av etablereren eler etableringsprosessen?* (Start-up Success: A Function of the Founder or of the Process?). Bodö, Norway: Bodö Graduate School of Business.

Miner, J.B. (1996), "Evidence for the Existence of a Set of Personality Types, Defined by Psychological Tests, that Predict Entrepreneurial Success." *Frontiers in Entrepreneurship Research 1996*. Wellesley, MA: Babson College.

Ministry of Finance (1999), *Nationell rapport om ekonomiska reformer: Produkt- och kapitalmarknader – Sverige.* Stockholm.

Mokyr, J. (1990), *The Lever of Riches*. Oxford: Oxford University Press.

Murphy, K.M., Shleifer, A. and R.W. Vishny (1991), "The Allocation of Talent: Implications for Growth." *Quarterly Journal of Economics* **106**(2), 503–530.

Nickell. S.J. (1997). "Unemployment and Labor Market Rigidities: Europe versus North America." *Journal of Economic Perspectives* **11**(4). 55–74.

North, C.D. and P.R. Thomas (1973), *The Rise of the Western World*. Cambridge Cambridge University Press.

OECD (1994c), "Labor Standards and Economic Integration." *OECD Employment Outlook*, July, 137–166.

OECD (1996), *OECD Economic Surveys 1996–1997: Sweden*. Paris: OECD.

Pålsson, A.-M. (1998), "De svenska hushållens sparande och förmögenheter 1986–1996." Mimeo. Department of Economics, Lund University.

Reynolds, P.D. (1997a), *Participation in the Entrepreneurial Process: Estimates for US Households* (Briefing Report). Wellesley, MA: Babson College, Entrepreneurial Research Consortium.

Reynolds, P.D. (1997b), Who Starts New Firms? Preliminary Explorations of Firms-in-Gestation. *Small Business Economics* **9**(3), 449–462

Reynolds, P.D. (1999), "Creative Destruction: Source or Symptom of Economic Growth?". In Acs, Z.J., Carlsson, B. and C. Karlsson (eds.), *Entrepreneurship, Small & Medium-Sized Firms and the Macroeconomy* Cambridge: Cambridge University Press.

Reynolds, P.D. (2000), “National Panel Study of US Business Start-ups. Background and Methodology.” In Katz, J.A. (ed.), *Advances in Entrepreneurship, Firm Emergence and Growth* (Vol. 4). Greenwich, CT: JAI Press.

Reynolds, P.D., Hay, M. and M. Camp (1999*), Global Entrepreneurship Monitor. 1999 Executive Report*. Wellesley, MA/London/Kansas City: Babson College, London Business School and Kauffman Center for Entrepreneurial Leadership.

Reynolds, P.D., Storey, D.J. and P. Westhead (1994), “Cross-National Comparisons of the Variations in Firm Formation Rates.” *Regional Studies* **28**(3)*,* 443–456.

Rickne, A. and Jacobsson, S. (1999), “New Technology-based Firms in Sweden – A Study of their Direct Impact on Industrial Renewal.” *Economics of Innovation and New Technology* **8**(2), 197–223.

Rosenberg, N. and L.E. Birdzell (1986), *How the West Grew Rich*. New York: Basic Books.

Saxenian, A. (1996), *Regional Advantage. Culture and Competition in Silicon Valley and Route 128*. Cambridge, MA: Harvard University Press.

SOU 1997:17, *Skatter, tjänster och sysselsättning.* Slutbetänkande från Tjänstebeskattningsutredningen. Stockholm: Ministry of Finance.

Stanworth, J., Stanworth, S. Granger, S. and M. Blyth (1990) ”Who Becomes an Entrepreneur?” *International Small Business Journal* **8**(1)**,** 11–22.

Statistics Sweden (1998), *Nyföretagandet i Sverige 1996 och 1997* (Newly Started Enterprises in Sweden in 1996 and 1997). *Statistiska Meddelanden, Nv 12 SM 9801.* Örebro, Sweden: NUTEK and Statistics Sweden.

Statistics Sweden (1999), *Nyföretagandet i Sverige 1997 och 1998* (Newly Started Enterprises in Sweden in 1997 and 1998). *Statistiska Meddelanden, Nv 12 SM 9901.* Örebro, Sweden: NUTEK and Statistics Sweden.

Stevenson, H.H. (1985). “A Perspective on Entrepreneurship.” In Stevenson, H.H. Roberts, M.J. and H. Grousebeck (eds.), *New Business Venture and the Entrepreneur.* Boston, MA. : Harvard Business School.

Storey, D.J. (1994), *Understanding the Small Business Sector*. London: Routledge.

Storrie, D.W. (1994), ”Regleringar av visstidsanställningar i kollektivavtal. Konsekvenser av 1994 års lagstiftning.” Report No. 30 from EFA, Department of Labor, Stockholm.

Södersten, J. (1984), “Sweden.” In King, M..A. and D. Fullerton (eds.), *The Taxation of Income from Capital. A Comparative Study of the United States, the United Kingdom, Sweden and West Germany*. Chicago: University of Chicago Press.

Södersten, J. (1993), “Sweden.” In Jorgenson, D.W. and R. Landau (eds.), *Tax Reform and the Cost of Capital. An International Comparison*. Washington D.C.: Brookings.

Werenfels Röttorp, M. (1998), “Den offentliga sektorns förnyelse – vad har hänt under de senaste 15 åren?” In Lundgren, H., *et al.*, *På svag is*. Stockholm Timbro.

Wiklund, J. (1998), *Small Firm Growth and Performance: Entrepreneurship and Beyond*. Dissertation. Jönköping International Business School.

Williamson, O.E. (1985), *The Economic Institutions of Capitalism.* New York: Free Press.