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Large Scope Business Sector Reforms: Has the Swedish Business Sector Become More Entrepreneurial than the U.S. Business Sector?

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Abstract: Recent studies document a 30-year decline in various measures of entrepreneurship in the United States. In contrast, using detailed Swedish employer-employee data over the period 1990–2013, we find no decline in Swedish entrepreneurial activity. Aggregate net job creation is greatest among the youngest firms in the Swedish business sector. Moreover, most of the net job creation by young firms takes place in the expanding service sector. We argue that a key explanation for the high entrepreneurial activity in the Swedish business sector during the last two decades stems from economic reforms in the 1990s that mitigated several hurdles to entrepreneurship.

JEL: J23, K23, L26, L51

Keywords: entrepreneurship, job dynamics, matched employer-employee data, industrial structure and structural change

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1. Introduction

Recent studies document a 30-year decline in various measures of entrepreneurship in the United States (e.g., Decker et al., 2014, Hathaway and Litan, 2014). In this paper, we argue that the opposite has taken place in Sweden, where the business sector has become more entrepreneurial in recent decades. As shown by Decker et al. (2014), over the 30-year period from 1980 to 2010, job creation and destruction rates fell from approximately 17 percent to approximately 14 percent in the United States. Figure 1 compares the development in the U.S. economy to that of the Swedish economy. As shown in the figure, over the period 1991–2011, Sweden instead observed an increase in job creation and a small decline in job destruction.

-- Figure 1 about here --

Decker et al. (2014) argue that a likely reason for the decline in job dynamism in the U.S. has been the decline in the share of young firms, as young firms are known to have higher rates of job creation and job destruction. We find that young firms have been more prominent in the Swedish business sector than in the U.S. business sector over recent decades. In recent decades, young Swedish firms (less than 5-years) accounted for more than half of all firms, averaging approximately 55 percent per annum. In the same time period, the share of young firms in the United States fell from approximately 45 percent to less than 40 percent. We also find higher employment and job creation shares for young Swedish firms than for young U.S. firms. These shares are stable over time in Sweden, unlike in the United States, where they have continuously fallen since the 1980s. Looking across sectors, most of the net job creation by young firms in Sweden takes place in the expanding service sector, which contrasts with the evidence for the U.S where job creation by young firms have decreased in the service sector.

What could explain why the Swedish business sector has become more entrepreneurial over recent decades in comparison with the U.S. business sector? One potential explanation is that the technological shift over recent decades has stimulated entrepreneurship in Sweden but not in the U.S. In particular, one could argue that technological development typically first takes place in the U.S. and then in Sweden, which would imply that the Swedish business sector, as a result, will be less entrepreneurial in the future. Another explanation is that immigrants are more likely to start new businesses and that immigration flows have decreased

in the U.S. while it has been increasing in Sweden during the period under study. Yet another explanation is that the older societies become, the less entrepreneurial they are, and the age structure in the U.S. may have changed in such a way that the U.S. is now less prone to entrepreneurship compared to Sweden. Lazear, Liang and Wang (2014) analyze the relationship between demographics and entrepreneurship using a human capital framework. Based on cross-country data from the Global Entrepreneurship Monitor, they find that a one-standard-deviation decrease in the median age of a country increases the rate of entrepreneurship by 2.5 percentage points, which is approximately 40 percent of the mean rate.

While all of these explanations have merits, we argue for another likely explanation: The implementation of an extensive business reform package conducive to entrepreneurial activity after a severe economic crisis in Sweden during the 1980s and early 1990s. These reforms created a more entrepreneurial business climate in Sweden from the 1990s onward. Heyman, Norbäck and Persson (2015) document a large number of Swedish business reforms undertaken in the aftermath of the most severe economic crisis in Sweden's modern history during the early 1990s. These reforms removed barriers to entry and growth for new firms in several product and services markets, and made the corporate ownership and labor markets more flexible. This development of the business climate in Sweden indeed seems to contrast with the development of the business climate in the U.S. as described by, among others, Zingales (2012). He maintains that the U.S. has evolved into an economy that favors incumbents over entrants, becoming pro-business instead of pro-market.

The remainder of the paper is structured as follows. Section 2 reviews the related literature. Section 3 presents our study's theoretical and institutional background. Section 4 describes the data and methods used for the empirical analysis. Section 5 presents the main results, and Section 6 concludes with a discussion of the implications for academics and policy makers, the limitations of this study, and suggestions for possible directions for future research.

2. Related Literature

This paper is related to the literature on entrepreneurship and public policy. Entrepreneurship activity and its productivity crucially depend on a country's laws and policies, as argued, for instance, by Henrekson and Johansson (2009), Minnitti (2008)

and Parker (2007). Shane (2009) notes that most start-ups fail and argues that policy-makers should focus on reducing the incentives to create these low-probability companies. Mason and Brown (2013) discuss how to create appropriate policies for high-growth firms (HGFs) by drawing on research from Scotland. Roman, Congregado, and Millán (2013) note that several micro-institutional factors such as social capital will interact with macro-institutional factors such as labor market regulations to determine the outcome of entrepreneurship policies. We add to this literature by arguing that large scope business reforms conducive to entrepreneurial activity can have substantial, long-lasting effects on the entrepreneurial activity in a country's business sector.¹

Our paper also relates to the literature on regulation and entry. Djankov (2009) surveys the literature on the relationship between entry regulations on the one hand and entrepreneurship and productivity on the other hand. The presented evidence indicates economically large effects, particularly with regard to entry rates and productivity growth. Based on a comprehensive database of European firms, Klapper et al. (2006) find that costly regulations hamper the creation of new firms, especially in industries that should naturally have high barriers to entry. Branstetter et al. (2014) evaluate the consequences of a regulatory reform in Portugal, which reduced the cost of firm entry. They report increased firm formation and employment, but mostly among 'marginal firms'. Van Stel et al. (2007) present cross-country evidence on the relationship between regulation and entrepreneurship. They find that a minimum capital requirement to start a business lowers entrepreneurship rates, as do labor market regulations. Ciccone and Papaioannou (2007) find that countries where it takes less time to register new businesses have higher entry in industries that have experienced expansionary global demand and technology shifts. Finally, Prantl (2012) exploits a natural experiment in firm entry regulations. After the German reunification, East and West Germany faced different economic conditions but were subject to the same law that imposes a substantial mandatory standard on entrepreneurs. Their main finding is that entry regulations suppressed long-lived entrants in addition to short-lived entrants.

We add to the literature by providing evidence that the Swedish business sector has become more entrepreneurial after the implementation of large scope business reforms conducive to entrepreneurial activity. We also show that Sweden has become

¹ Henrekson and Johansson (1999) examine the evolution of the size distribution of firms over time in Sweden for a period spanning from the late 1960s to the early 1990s. They find poor development for intermediate-sized (10–199 employees) firms, which suggests that institutional barriers to firm growth in the Swedish business sector were high during that period.

relatively more entrepreneurial in comparison with the U.S. business sector over the last two decades.

3. Theoretical and Institutional Background

Why do firm start-up dynamics and entrepreneurial activity differ over time and between countries? The starting point for this paper is that cross-country variation in start-up dynamics and entrepreneurial activity reflects changes in the rules and regulations for entry and firm dynamics in different countries over time. Why then may countries regulate entry and firm dynamics? The industrial economics literature takes as its starting point that unregulated markets may experience strong market failures such as monopoly power and externalities. For instance, governments may regulate entrants to make sure that consumers buy high-quality products from “desirable” sellers; see Viscusi et al. (2005) for an overview and Arrunada (2007) and Färnstrand et al. (2016) for specific contributions. In this stream of literature, differences and changes in regulation originate from changes in technology and structural factors.²

The public choice theory takes as its starting point that incumbents are able to obtain regulations that create rents for themselves because they typically face lower information and organizational costs than dispersed consumers (Stigler, 1971). Acemoglu (2008) presents a model where political power is in the hands of major producers who erect significant entry barriers against new entrepreneurs. Perotti and Volpin (2005) present a model where incumbent businesses seek a low level of effective investor protection to prevent potential entrants from raising capital. They succeed because they can promise larger contributions to ruling politicians than the entrants due to the higher rents earned with less competition. Regulation may also be pursued for the benefit of politicians and bureaucrats. Politicians use regulation both to create rents and to extract them through campaign contributions, votes, and bribes (Djankov et al., 2002). In this strand of the literature, differences and changes in political power and outside forces that can change political power could then explain why entry regulation changes over time and between countries.

Below, we will argue that during the 1990s, Sweden undertook a large set of reforms of the business sector that was partly driven by a less substantial need for regulations due to

² See, for instance, Acs and Audretsch (2005) and Santarelli and Vivarelli (2007) for overviews of firm dynamics and market structure.

technological development and also by an increased understanding of the economic cost of extensive regulation of the business sector. We will argue that these reforms were highly influential in promoting and re-igniting entrepreneurial activity in the Swedish business sector.

The Swedish Reforms

Heyman, Norbäck and Persson (2015) document a large set of business reforms undertaken in the 1990s in Sweden after the most severe economic crises in Sweden's modern history. Their institutional examination shows that these reforms removed barriers to entry and growth for new firms and made the corporate ownership market and the labor market more flexible. To proceed, we will rely on detailed descriptions of the Swedish business sector and the policy reforms that affected firms in Sweden as described in Heyman, Norbäck and Persson (2015).³

During the 1970s and 1980s, Sweden was lagging behind in productivity growth while experiencing high inflation and large budget deficits, and in the early 1990s, it was hit with a severe economic crisis. The 1991–1994 period was characterized by a substantial decline in GDP and increasing unemployment. Previously, during the 1980s, discussions about how to reform the Swedish welfare state had become increasingly intensive. The center-right government that came into power in 1991 was seemingly quick to implement an economic policy based on extensive deregulation in response to the 1990 crisis. Many of these reforms (such as the deregulation of the air traffic control system, the electricity market, and the postal service), however, had already been thoroughly investigated and policies had already been outlined in a proposition by the Social Democratic government in the late 1980s and early 1990s. Moreover, in 1993, the so-called Lindbeck commission launched a large number of proposals to improve the efficiency of the Swedish economy (SOU 1993:16). Some of these proposals concerned the business sector.⁴

The Labor Market Reforms

Until the 1990s, wages were negotiated at the central level between unions and employers' organizations. As documented in many studies—see, e.g., Edin and Topel (1997) and Davis and Henrekson (2000)—the outcome of this wage negotiation system was a compressed wage distribution. In 1994, state-owned firms joined the employers'

³ See also Bergh and Erlingsson (2006), Calmfors (2012), Edquist and Henrekson (2013), Henrekson and Jakobsson (2005) and Lindbeck (1997) and the references therein.

⁴ See Lindbeck et al. (1994).

organizations, thus weakening political influence on wage setting (Nycander, 2008). The agreement included a system that continued industry-level bargaining but with strong *informal coordination* based on pattern bargaining with the manufacturing sector to conclude initial wage agreements in a bargaining round. This system established a norm for wage increases for others to follow. The reformed wage bargaining system turned out to be consistent with lower nominal wage increases than in the past. Moreover, it allowed for greater individual wage flexibility (Calmfors, 2012). Sweden thus progressed from a more coordinated wage negotiation system than other EU countries in the 1980s to a moderately coordinated wage negotiation system in the 1990s.

In 1992, a major employment protection reform was implemented that permitted staffing agencies (Skedinger, 2010), and the regulations concerning temporary work were relaxed. This development created what is referred to as the dual Swedish labor market, with strong employment protections for regular workers and weak employment protections for temporary workers.

These changes in the labor market and in the wage setting by institutions increased the opportunities for firms to better invest and reward human capital and for new, growing, productive firms to hire skilled labor.

Product Market Reforms

Throughout most of the twentieth century, many of Sweden's product markets were public monopolies. Thus, new firms had either no or very few opportunities to enter these markets, and consumer influence was also limited (SOU 2005:4). In the early 1990s, many public monopolies were deregulated, including taxis, electricity, telecommunications, railways, and domestic air travel services. The overall purpose of these reforms was to increase the degree of competition, notably by opening up markets to more entrants (Lundgren et al., 2007; Nicoletti and Scarpetta, 2003). A fundamental change was also that outsourcing of public services to private firms where opened up for elderly care, primary and secondary education, and preschools (see Elinder and Jordahl (2013). Moreover, a new Competition Act was implemented in 1993 based on three cornerstones: the prohibition of restrictive agreements, the prohibition of the abuse of dominance, and the prohibition of the control of concentrations (mergers).

A crucial feature of these product market reforms was that they not only made it easier for new firms to enter the industries but also made it more difficult for inefficient firms to remain in the product market.

Reforms of the Markets for Corporate Ownership

Foreign exchange controls were introduced shortly after the onset of World War II. In practice, this legislation ruled out any substantial foreign ownership of Swedish industry. As expected, legal barriers ensured that foreign ownership remained low, with foreign ownership of listed stock never exceeding 8 percent throughout the 1980s and less than 5 percent of private-sector employees working in foreign-owned companies (Henrekson and Jakobsson, 2005).

Between 1989 and 1993, the government undertook measures that suddenly opened the market, leading to a rapidly increasing share of foreign ownership. At a mere 7 percent in 1989, this share skyrocketed to 40 percent only ten years later (Henrekson and Jakobsson, 2005). This increase also led to substantial growth in the share of employees working in foreign-owned firms, which increased from approximately 5 percent at the end of the 1980s to 23 percent in 2011 (Tillväxtanalys, 2012).

Corporate taxation substantially increased in Sweden during the 1970s and 1980s. However, taxes were reduced from 52 percent to 30 percent when deductions were introduced in the 1990–1991 tax reform; in addition, in 1994, taxes were further reduced to 28 percent.

The marginal tax rate on long-term capital gains was zero until 1965. The tax changes implemented in 1976 sharply increased the top marginal tax rate to more than 30 percent, and it reached a peak in 1979 at almost 35 percent. Thereafter, it decreased to approximately 25 percent prior to the 1990–1991 tax reform (Stenkula et al., 2014). In 1992–1993, the separate capital income tax rate was temporarily reduced to 25 percent. Until 1991, the Swedish tax system disfavored new, small, and less capital-intensive firms while favoring large firms and institutional ownership (pension funds, insurance companies, etc.).

The reforms of the corporate ownership market and tax system created a system that was far more favorable to individuals and foreign firms that wanted to start, develop, and act as the controlling owners of firms in Sweden compared to the situation in the 1970s and 1980s.

To provide support for the hypothesis that the large-scale business reforms in Sweden during the early 1990s benefited young firms over established large firms, we will carefully document the firm dynamics and job creation and job destruction processes in Sweden in detail during the period 1990–2013 with a special focus on firm age.

4. Data Description

The empirical part of this paper is based on a comprehensive database from Statistics Sweden covering the years 1990–2013. The database includes firm, establishment, and individual data that are linked via unique identifiers. Detailed information on firms, establishments, and employees enables us to thoroughly analyze questions regarding firm dynamics. One important issue when studying firm and job dynamics is how to credibly follow firms over time. Using organization numbers can be problematic because such numbers can change for various reasons. For instance, internal firm reorganizations sometimes result in changes in legal registration numbers, even though the employment composition remains the same. This issue complicates the identification of entrants, expanding firms, contracting firms, and shutdowns.

To more reliably follow firms over time, we use additional data from Statistics Sweden (FAD by the Swedish acronym). In each year, a firm is identified by both its legal registration number as well as a survival code. Based on the employment composition in $t+1$ compared to that in t , firms are categorized as either remaining, new, or shutdown. The criteria for each survival type are described in detail by Andersson and Arvidson (2001). Typically, if the majority of workers remain, the firm is categorized as remaining. Each firm is assigned a unique FAD identifier. If a firm is assigned a new legal registration number but is considered remaining according to the FAD methodology, its FAD identifier does not change. Thus, in this paper, we follow firms based on their FAD identifier, not their legal registration number. These data make it possible to identify new firm entry and firm exits, which means that we can analyze employment changes in (i) completely new units, (ii) continuing units and (iii) exiting units.⁵

The FAD database also contains information on the registration year. Each firm is divided into a firm age category corresponding to its FAD age, not its legal age. Firms registered in 1986 or before all have 1986 as their registration year, meaning that we are

⁵ See Andersson and Arvidsson (2011) for details on the FAD data.

compelled to restrict our sample by the number of firm age categories included. For instance, it is not until the year 2000 and onward that we can safely say that a firm is actually 14 years old or older. To make the results as reliable as possible, we also limit our analysis to firms with at least three employees in a given year.⁶

5. A Comparison with the United States

Business dynamism and the rate of business startups have been declining in recent decades in the United States, as shown by Decker et al. (2014) and illustrated in Figure 1 above. In this section, we highlight the differences and similarities between Sweden and the United States with respect to business dynamism. We then undertake a more in-depth analysis of how business dynamism has evolved in Sweden over the past two decades.

Share of Activity by Young Firms

Decker et al. (2014) provide evidence for a declining share of activity by young firms (defined as five years old or less) in the United States. Figure 2, which is constructed from their data, shows that the share of young firms and their respective employment and job creation statistics have declined over the last two decades for which we have comparable Swedish micro-data. Decker et al. (2014) also show that this decline is secular going back to the early 1980s.

Historically, the startup rate has been declining in Sweden as well. Figure 3, taken from Braunerhjelm and Carlsson (1993), shows that the number of new manufacturing firms, as a share of total firms, was halved from approximately 1950 to 1990. Going back to as far as the 1920s, the decline is even more apparent. Our micro-data do not go further back than 1990 and are not entirely comparable with the data in Braunerhjelm and Carlsson (1993). However, our data, which again cover the last two decades, do not show any signs of a declining share of entrants. This evolution thus seems to have been halted after the business reforms in the early 1990s. After 1991, the first year in our data, the startup rates are fairly constant when measured in terms of the share of young firms.

-- Figures 2 and 3 about here --

⁶ All results are robust to using all firms instead of only firms with at least three employees.

Figure 4 shows the development in Sweden over the period 1990 to 2013 for the same measures for different definitions of a young firm, as in Figure 2 (the share of young firms and their respective employment and job creation), ranging from young firms being defined as operating for 5 years or less as in Decker et al. (2014) to defining young firms as operating for one year or less.

Generally, young firms appear to be more prominent in the Swedish business sector than in the business sector in the United States. We can see that in recent decades, young Swedish firms aged five years or less accounted for more than half of all firms, steadily averaging approximately 55 percent per annum. In the same time period, the share of young firms in the United States fell from approximately 45 percent to less than 40 percent. There is a similar pattern with respect to the employment share and the job creation share, i.e., higher levels for young Swedish firms, consistent over time, unlike in the United States, where they have both continuously fallen since the 1980s. Looking in more detail at the contribution of different age groups in Figure 4, we find that irrespective of how we define young firms (younger than 5, 4, 3, 2 or 1 years), a similar picture emerges. The pattern of a non-declining share of activity by young firms is even stronger when studying the very youngest firms.

-- Figure 4 about here --

In what sectors do young firms create new jobs, and what types of jobs are created in terms of workers' educational background? To this end, we can extend the analysis of Swedish firms in Figure 4 by separating the effects by first sector (manufacturing, service, or other) and then by also examining workers' educational background in order to understand what type of jobs young firms have been creating. Due to space limitations, we now focus on firms aged 5 years or less and firms aged 1 year or less.

Decker et al. (2014) report falling activity for young firms in the service sector. The pattern is the opposite in Sweden—at least with respect to employment and job creation. As shown in Figure 5, the activity of young firms is largest in the service sector. The share of employment, firms, and job creation of young firms is notably much higher in services than in manufacturing or other industries. The trends are similar for both age groups, but of course we observe less activity when we restrict the definition of young firms from firms aged 5 years or less to firms aged 1 year or less. Young firms, however, exhibit a declining presence in the

manufacturing sector in Sweden. In terms of employment, this decline appears to be even stronger than in the U.S.⁷

-- Figure 5 about here --

To investigate what types of jobs that are created by young firms, we group employees into three different categories: (1) workers with at most 9 years of elementary education, (2) workers with 1–2 years of upper secondary education and (3) workers with at least 3 years of post-secondary education. Figure 6 shows that there are no strong trends in how much job creation and employment that originate from young firms for different types of jobs, here classified by education.⁸ While there appears to be a slight decline in the share of workers with secondary and tertiary education that work in firms that are five years of age or younger, no such trend is observed in start-ups.

-- Figure 6 about here --

Post-Entry Job Dynamism

Start-ups and young firms play an important role in U.S. job creation. Evidence from the United States suggests that there is a distinct negative relationship between firm age and employment growth within each age group. Looking at survivors, mature firms are associated with lower rates of job creation than younger firms. While we do find similar trends in Sweden, the relationship does not seem as strong as in the United States. Job creation among Swedish firms seems to be rather stable for firms aged one to seven years old, unlike in the United States, where the rate drops at a higher pace. As Figure 7 illustrates, it is not until Swedish firms grow older than eight years of age that we observe significantly lower rates of job creation. Apart from the less pronounced trend, we also observe much lower *levels* of job turnover in Sweden among the very youngest firms. In the United States, net job creation by start-ups averages approximately 14 percent, while their Swedish counterparts' job growth is stable at approximately two percent.

⁷ We illustrate the differences in the Appendix. See Figures A1–A3.

⁸ This separation of gross job flows across educational attainment is uncommon in the job dynamics literature, where essentially all of the evidence concerns the total number of jobs and, thus, does not distinguish between the types of jobs that are created and destroyed. One exception is Gartell et al. (2010).

-- Figure 7 about here --

As for exit dynamics, the trends are similar, but the levels are again lower in Sweden. Both in the United States and in Sweden, younger firms have a substantially higher exit rate than mature firms, and job destruction by exiting firms is higher in the United States than in Sweden. Thus, we find evidence that young Swedish firms exhibit a relatively strong “up or out” dynamic, although not as strong as for the U.S. firms studied by Decker et al. (2014).

Unlike Decker et al. (2014), we are able to separate the “up or out” dynamics across workers’ educational background. The results are presented in Figure 8. Again, we observe that job destruction by exiting firms is falling with firm age—regardless of the types of jobs in terms of educational groups. Not only are the trends similar, but the levels also seem to be very similar across educational groups. However, when studying net job creation by continuing firms, we do observe major differences. It is clear that developments for workers with higher education were more positive throughout our sample period from 2002–2013 than for workers with primary education only. Nevertheless, net employment growth is almost uniform over age groups for workers with tertiary education.

-- Figure 8 about here --

We continue the analysis by examining the arithmetic means of employment growth at the firm level and for each age category. This exercise reveals enormous heterogeneity among firms. In Figure 9, we illustrate the 90th, 50th, and 10th percentiles of job growth for surviving firms by firm age and educational level. Irrespective of educational level, we observe that the median growth is declining with firm age, just as in the United States. Comparing the outliers, i.e., employment growth in the 90th and 10th percentiles, we see that the Swedish outliers are not as extreme and do not vary quite as much. In unreported results, we compare the median to the mean. As in the United States, they are both decreasing with firm age. However, we observe that the median growth is higher than the mean in Sweden—unlike in the United States, where the mean is consistently larger than the median.

-- Figure 9 about here --

6. Is it Age and not Size that Matters for Dynamism?

In our comparison of business dynamism in the U.S. and Sweden, we have focused on firm age. However, the strong correlation between how long a firm has been in business and firm size makes it difficult to distinguish between a firm size and a firm age effect regarding employment growth. Very large firms have, on average, been in business for quite a long time. Hence, observing a positive firm age and job creation relationship might in fact be a positive firm size–job creation relationship or vice versa. So, is it age or size that matters for Swedish dynamism?⁹ In this section, we thus investigate how firm age (measured by the number of years since startup) and firm size (measured by the number of employees) are related to each other in terms of their role in business dynamism and employment growth at the firm level. We then introduce workers' educational background to the analysis to take into account job heterogeneity.

As an illustration, Figure 10 depicts net job creation as a function of firm age and size in terms of the number of employees between the years 2000 and 2013. As expected, there is positive net job creation in almost all age-size groups. Nevertheless, most of the new employment is created in small, young firms. While small start-ups create most of the employment, small firms that are 4 to 9 years of age experience the largest decline in employment, which is a sign of learning and experimenting in the “up or out” process. Looking across the diagonal, we observe significant employment creation in middle-aged, middle-sized firms. Looking across sectors (not shown), most of this net employment creation occurs in the service sector.

Finally, old-large firms experience a decline in employment, which is consistent with rapid technological development and globalization, with automation and international and domestic outsourcing shifting employment away from these firms. In sum, the overriding message of Figure 10 is the fact that small start-ups create most of the new jobs in Sweden. Next, we will document this result in more detail using regression analysis.

-- Figure 10 about here --

⁹ Haltiwanger et al. (2013) examine job dynamics in the U.S. business sector and find that once they control for firm age, there is no systematic relationship between firm size and growth.

Effects of Firm Size and Firm Age

To further investigate how firm size and firm age correlate with employment growth at the firm level, we estimate the following regression equation:

$$y_{ijt} = \alpha + \sum_{i=1,2} \beta_i \times Ageclass_i + \sum_{j=1,2,3} \gamma_j \times Sizeclass_j + \tau_t + \varepsilon_{ijt} \quad (1)$$

where i indexes age classes, j size classes, and t years. The dependent variable y represents different measures of gross job flows measured in rates (net job creation; gross job creation; gross job destruction). For simplicity, we include three size categories. Firms are defined as either small (less than 50 employees), medium (50 to 249 employees), or large (250 employees or more). For age, we use two groups. Firms aged five years or less are called young (in accordance with the classification in Decker et al., 2014), while firms older than five years are called old. We exclude young-large firms, as they might be affected by measurement error. Our estimates cover the years 2000–2013 and are based on approximately 1.4 million observations.¹⁰

Columns 1–3 in Table 1 report estimates for when the age characteristics are ignored. We observe a clear inverse relationship between firm size and job creation. Small firms are associated with a 21.3 percentage point higher gross job creation rate than large firms. The effect for medium firms is weaker, although it is still approximately 3.4 percentage points higher than large firms. As for net job creation, we observe a similar pattern—small firms are associated with 2.5 percentage points of higher growth than large firms, and the estimate for medium firms is again lower, by 1.5 percentage points.

Controlling for age characteristics, however, the estimates change dramatically, as shown in columns 4–6. The estimates for small- and medium-sized firms are now negative, which suggests that they are associated with a few percentage points lower (4.2 and 1.7, respectively) net job creation rates than large firms. The “young” dummy is, however, positive. Compared to the reference group, i.e., old firms, young firms are associated with 13.1 percentage points higher job growth.

The results from equation (1) include separate controls for the age and size characteristics of firms. We continue the analysis by running similar regressions, however, we now use interaction terms between the different age-size groups. This approach allows us to

¹⁰ See also OECD (2014) for a cross-country analysis on job dynamics.

assess the role of firm age within size classes as well as the role of firm size within age groups. The specification is as follows:

$$y_{ijt} = \alpha + \sum_{ij} \delta_{ij} \text{Ageclass}_i \times \text{Sizeclass}_j + \tau_t + v_{ijt} \quad (2)$$

Table 2 reports the estimates for equation (2) where old-large firms is the omitted category. All groups have higher gross job creation rates than old-large firms, as shown in column 1. Young-small and young-medium firms exhibit the largest differential. Column 2, however, shows that old-large firms destroy relatively fewer jobs than all of the other groups of firms. The most interesting results, i.e., those concerning net job creation, are reported in column 3. We note that the group consisting of young-small firms accounts for the largest growth rate, making this group the most dynamic. Young-small firms are associated with approximately 9.1 percentage points higher net growth rates than old-large firms. Young-medium firms and old-medium firms also have higher net growth rates than old-large firms, but on the contrary, old-small firms exhibit significantly lower net growth rates.

Note again that we follow the methodology of Davis et al. (1997), meaning that job creation originates with either startups or expanding firms. Job destruction, on the other hand, originates with either shutdowns or contracting firms. A possible explanation for the greater dynamism among young firms, as demonstrated above, is the positive contribution of entry. Hence, we repeat equations (1) and (2) but exclude entrants from the sample. As shown in Tables 3 and 4, the estimates drop drastically for young firms, suggesting that the estimates in Tables 1 and 2 indeed are driven by entrants. In fact, young firms now appear to have approximately 30 percentage points lower net growth than old firms. We also observe a change in sign for the young-small and young-medium firms. With entrants excluded, old-large firms do in fact exhibit a greater growth rate than firms in the young-small and young-medium groups.

From the regression exercise above, we conclude that the main determinant in business dynamism is firm age, not firm size. Entrants and young firms seem to play a major role in job creation. Similar results can also be obtained when we divide the firms into five age categories (aged 0–1 years, 2–3 years, 4–9 years, 10–13 years, or 14 years and older) and when analyzing differences across all firm age categories (results available upon request).

7. Summary and Conclusion

The Swedish business sector lacked dynamism and performed poorly in the 1970s and 1980s. In the early 1990s, however, it became much more entrepreneurial, with a stronger contribution of young firms in the job creation process. Moreover, in contrast, to the U.S., the entrepreneurial level has been stable over the last twenty years. What can explain this pattern? We have argued that the reason for the increased dynamism in the Swedish business sector was that fundamental market and political failures were mitigated through a set of policy reforms that were initiated in the late 1980s but mostly implemented in the 1990s. Thus, Sweden went from having one of the most regulated, static business sectors in the developed world in the late 1980s to having one of the more pro-entrepreneurial business regulation systems in the developed world.

Our analysis suggests that large scope business reforms that remove barriers to entry and growth for new and productive firms and that increase the return on capital and human capital investments, similar to those implemented in Sweden during the 1990s, are likely to spur economic growth through increased entrepreneurship. We also believe that our study is relevant to the ongoing academic and policy debate about the current crisis in Europe, which tends to be dominated by macroeconomic and public sector considerations. The Swedish post-crisis experience suggests that microeconomic dimensions are crucial for turning a stagnant business sector into an entrepreneurial business sector. Therefore, to ensure recovery in these countries, the focus on implementing long-run microeconomic reforms should increase.

What other factors could explain the increased dynamism of the Swedish business sector? Sweden abandoned its fixed exchange rate and adopted a floating Krona in the 1990s. Thus, some would argue that a flexible exchange rate is the answer. However, a floating Krona does not explain why the increased dynamism in Sweden has been sustained for such a long period. In this paper, we have argued that the reforms in taxation, in the labor markets and on the regulation of foreign direct investment were all crucial to increasing the dynamism in the Swedish business sector after the Swedish crises in 1992.

Yet another explanation might be the fact that Swedish youth obtained access to computers relatively early and also had a relatively large amount of freedom in life, which enabled them to create competitive advantages in the ICT sector. Indeed, the possibility of selling successful ventures to large, foreign incumbent firms such as Microsoft may have been a driver of the vibrant Swedish start-up market in new service sectors, in computers, and in the Internet and computer games. Prominent examples of such Swedish tech start-ups that

have been sold for astronomical sums include Skype and World of Warcraft. Network effects in these businesses then create synergies when large foreign incumbents obtain new products from smaller firms. Bidding competition for the target firms creates huge gains for these sellers—and those gains are then invested into new projects.

We have focused on the total effect of the extensive and wide-ranging business sector reforms. An interesting avenue for future research would be to examine in more detail the effects of the different reforms on entrepreneurial activity in the business sector. Moreover, it would be interesting to see whether such reforms in isolation might be sufficient to improve entrepreneurial activity or if it is a package that is needed to create a strong, lasting effect.

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Figures

Figure 1: Comparing Employment Dynamics in Sweden and the U.S., 1991–2011. Firms with at least one employee.

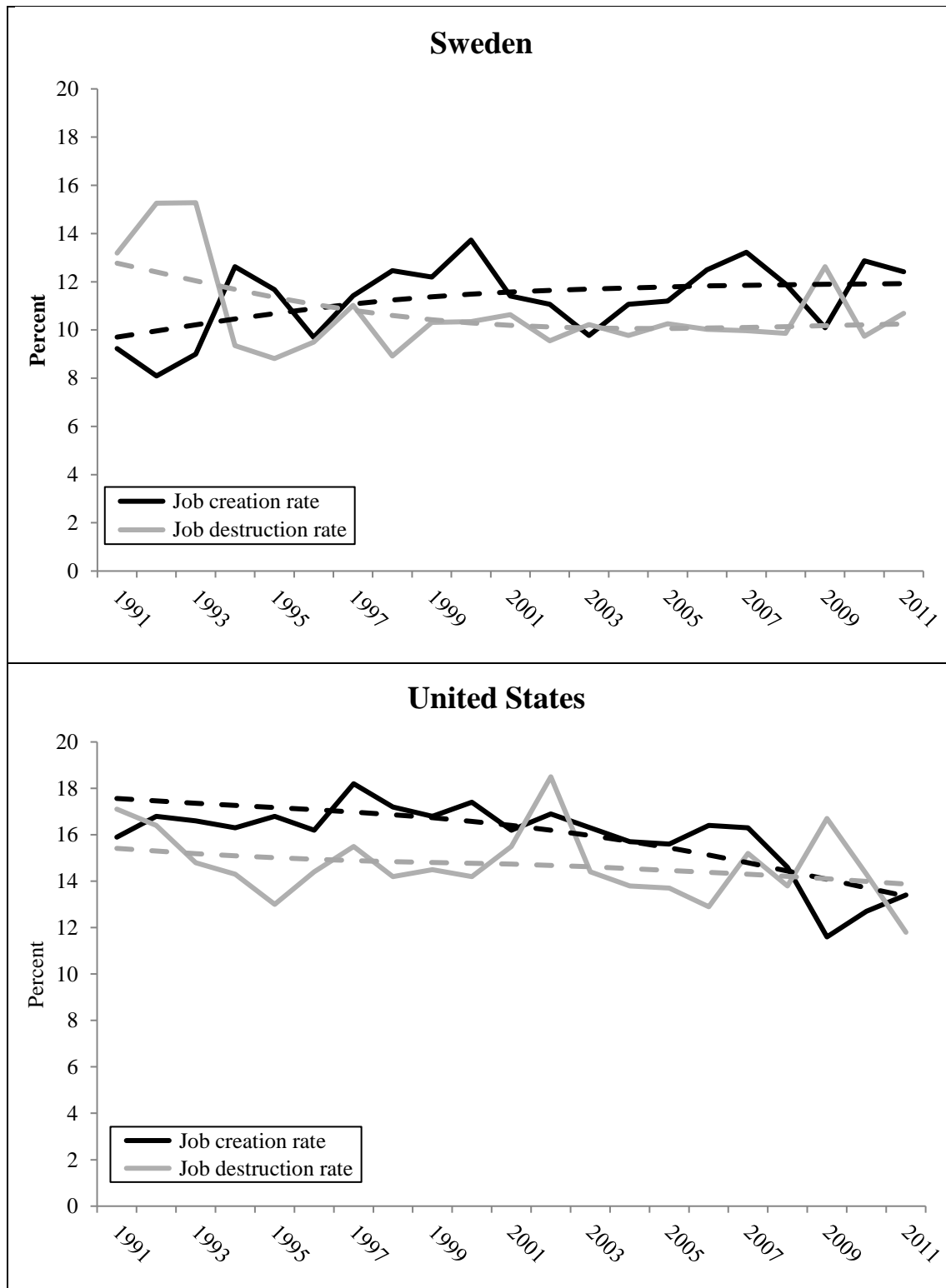
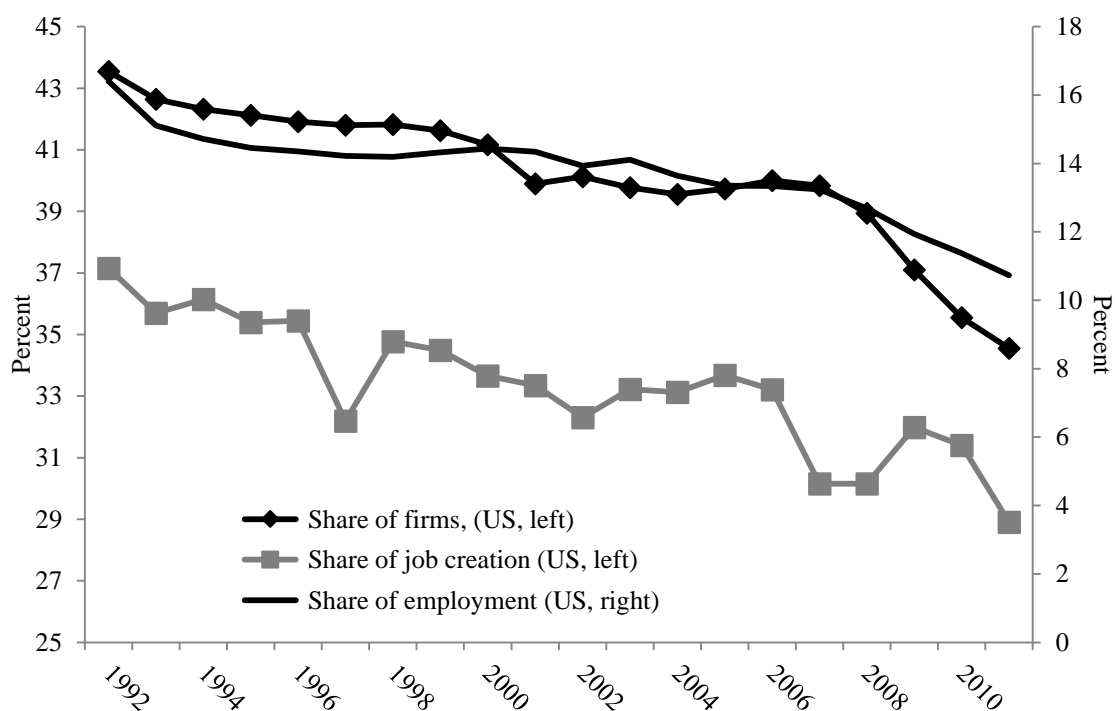
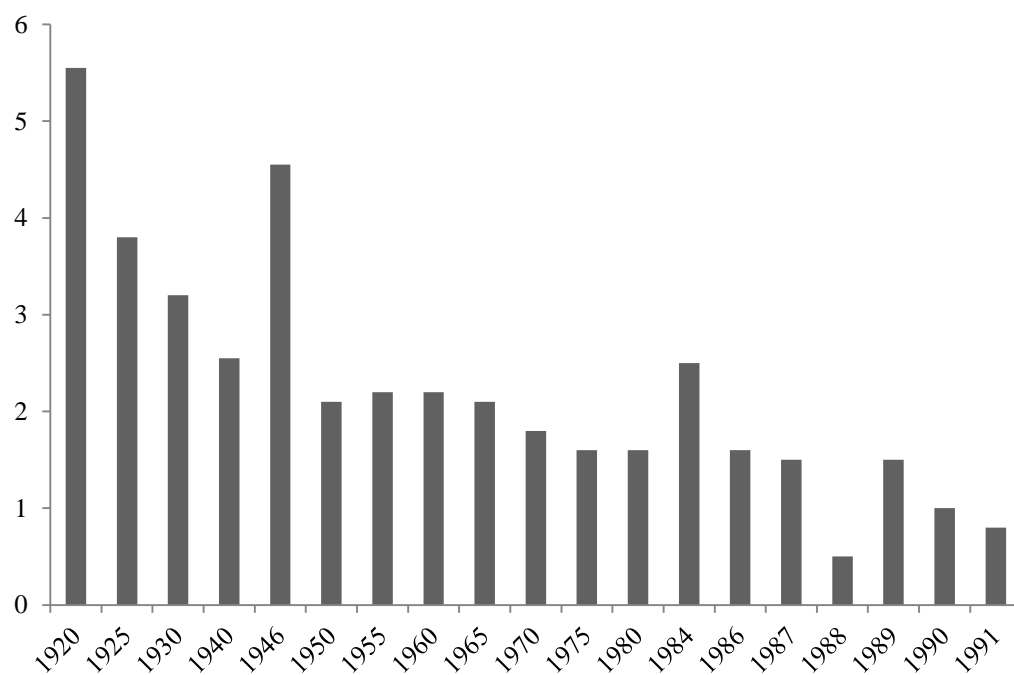


Figure 2: Declining Share of Activity from Young Firms in the US (firms aged 5 years or less). Firms with at least one employee.



Source: Decker et al. (2014).

Figure 3: New Firms in the Swedish Manufacturing Sector (% of stock).



Source: Braunerhjelm and Carlsson (1993)

Figure 4: Share of Activity from Young Firms in Sweden.



Figure 5: Share of Activity from Young Firms in Sweden by Sector, 1996–2013.

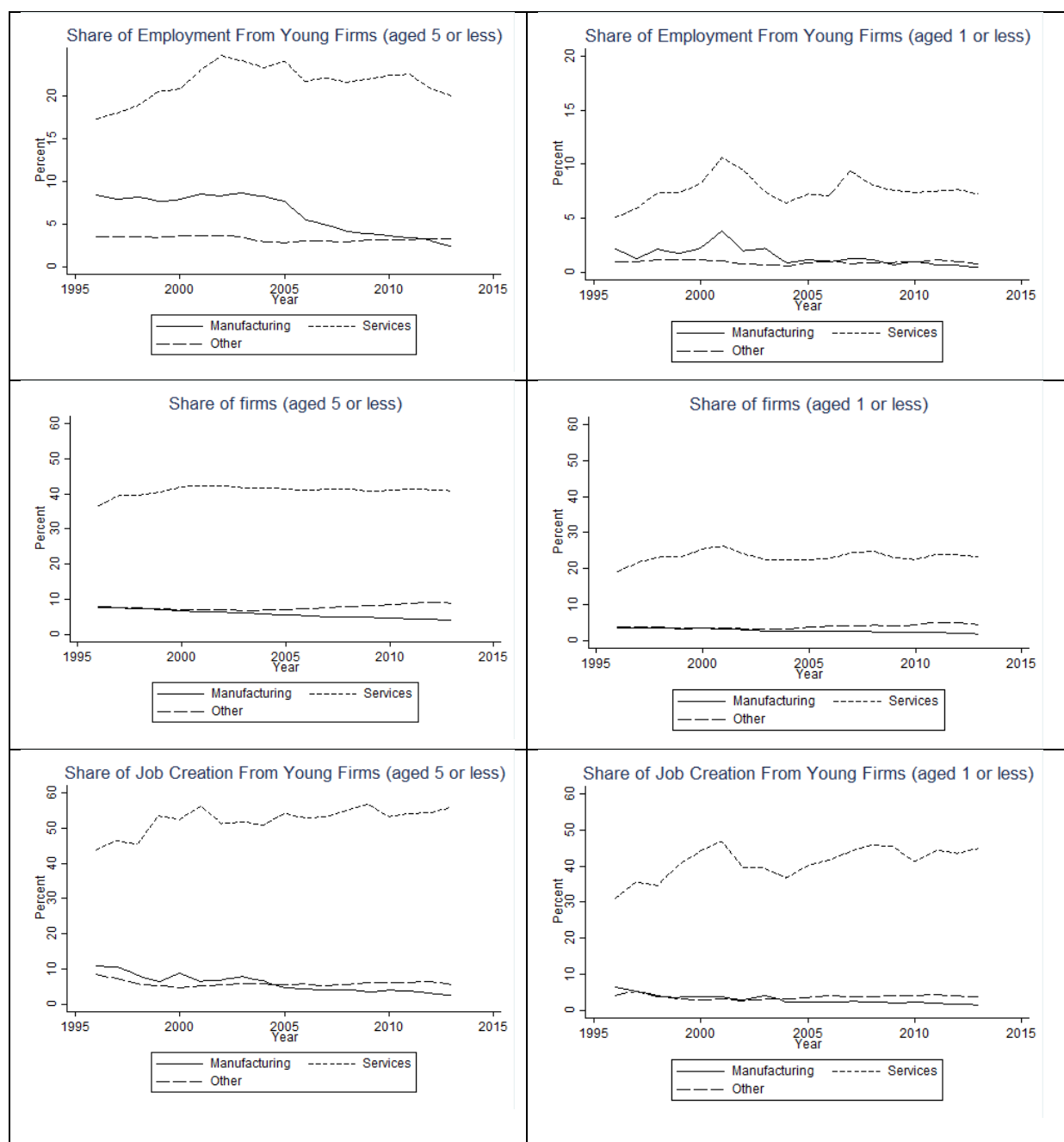


Figure 6: Activity from Young Firms in Sweden by Education (share of employment and job creation).

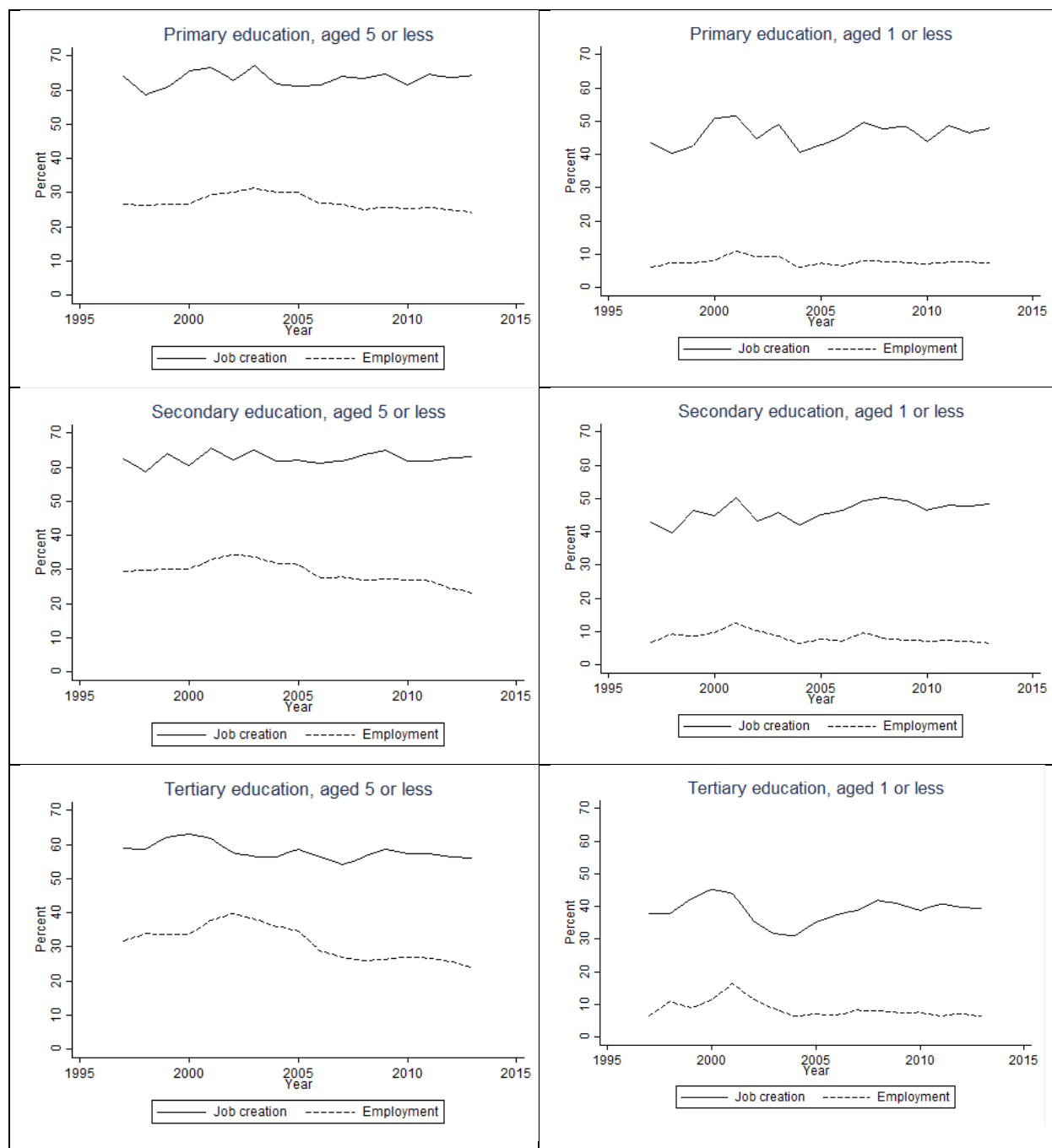
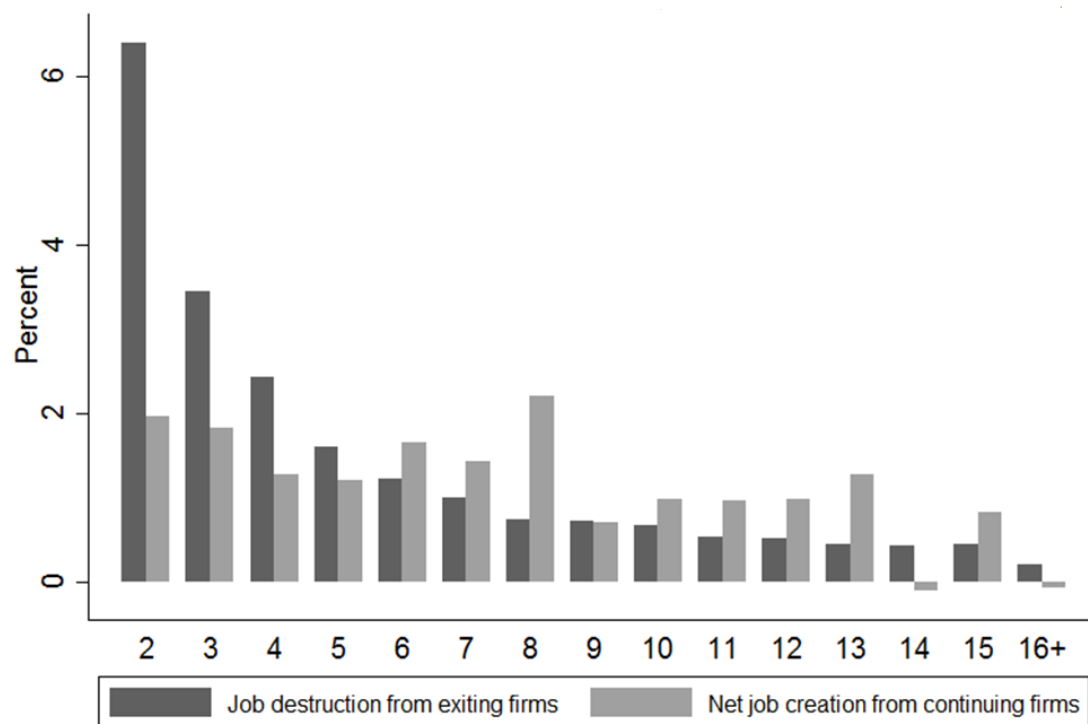
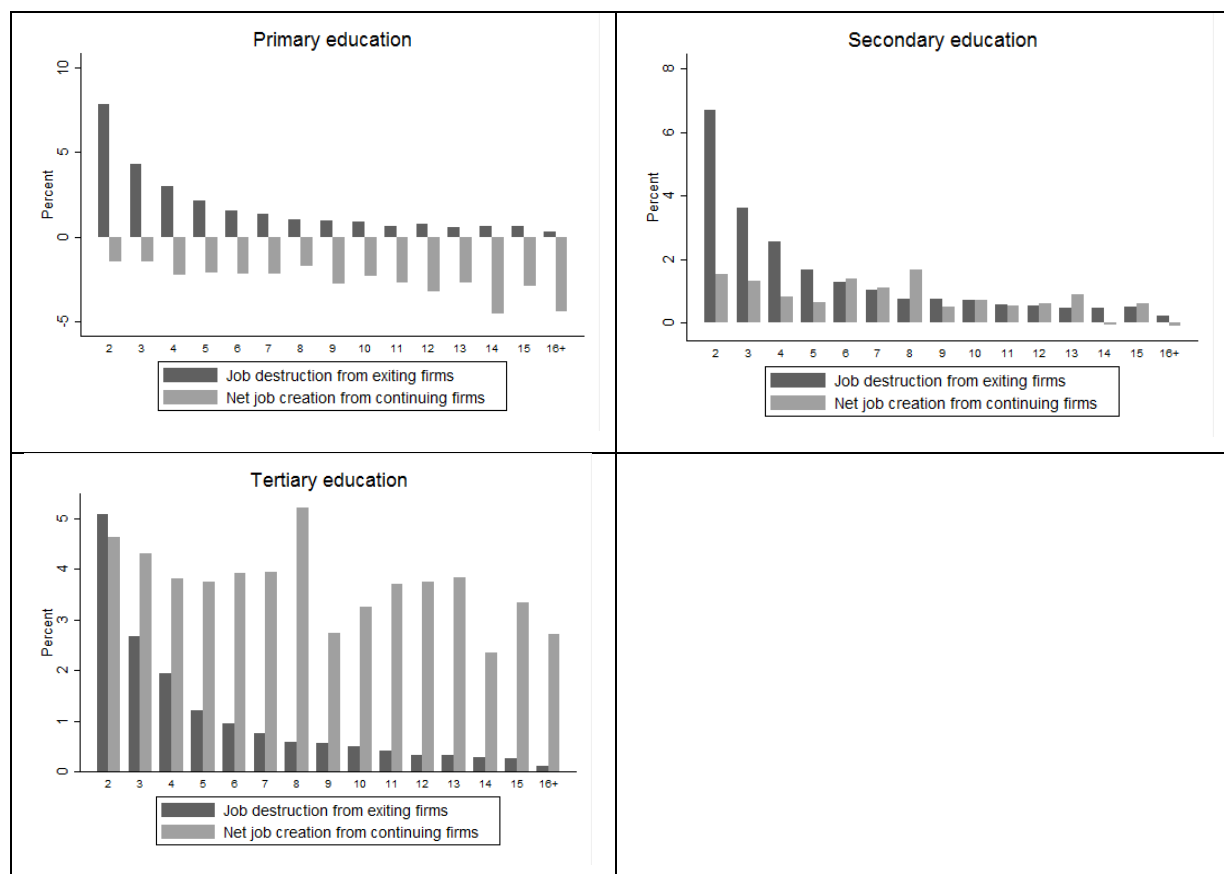


Figure 7: Up or Out Dynamic for Young Firms in Sweden, 2002–2013.



Note: We exclude firms aged 1 year or less for aesthetic reasons—the rates are much higher than for the remaining groups.

Figure 8: Up or Out Dynamic for Young Firms in Sweden by Education, 2002–2013.



Note: See Figure 7.

Figure 9: Net Employment Growth and Growth Rates for Surviving Firms by Education.

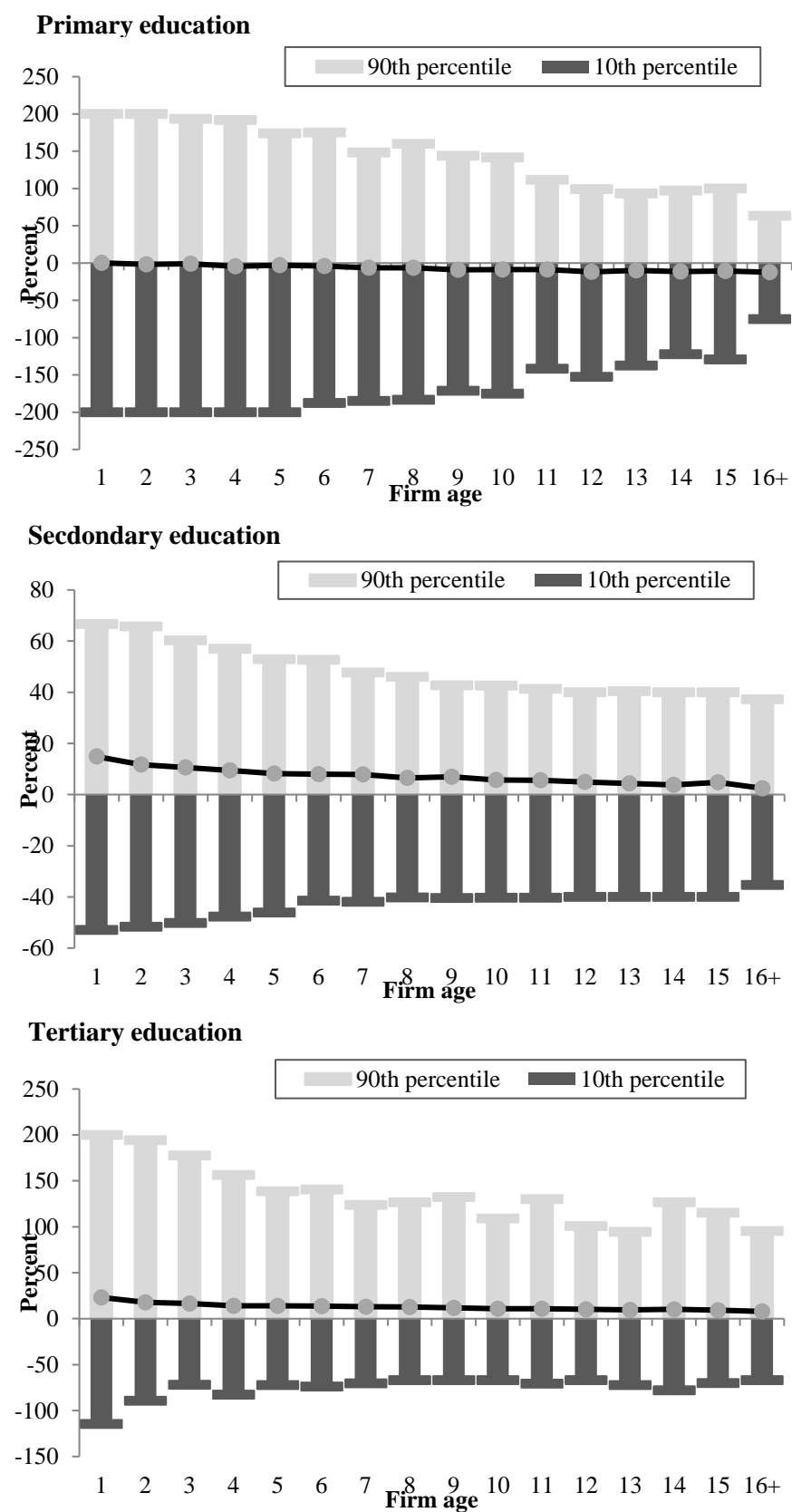
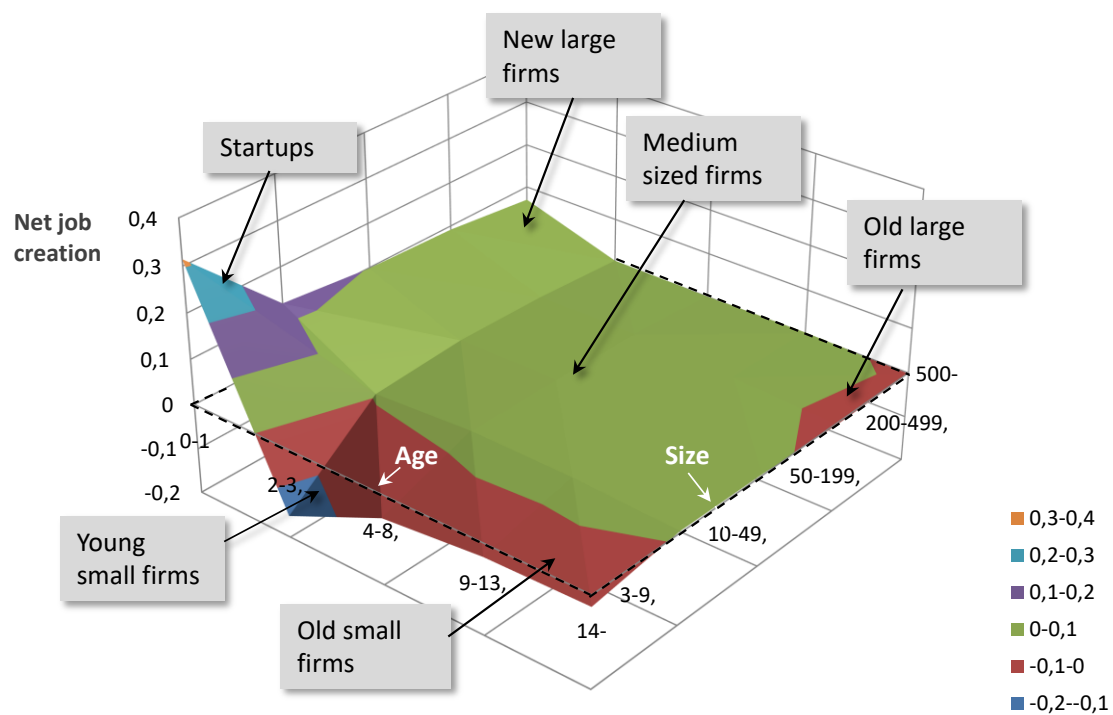


Figure 10: Net Job Creation by Age and Size, 2000–2013.



Tables

Table 1: Gross Job Creation and Destruction and Net Growth Rate of Firms by Size and Age Groups, 2000–2013.

	(1) Gross Job Creation Ratio	(2) Gross Job Destruction Ratio	(3) Net Growth Rate	(4) Gross Job Creation Ratio	(5) Gross Job Destruction Ratio	(6) Net Growth Rate
Young				0.367*** (0.000888)	0.236*** (0.000895)	0.131*** (0.00141)
Small	0.213*** (0.000933)	0.188*** (0.000944)	0.0249*** (0.00145)	0.0266*** (0.000808)	0.0682*** (0.000899)	−0.0417*** (0.00132)
Medium	0.0387*** (0.00115)	0.0239*** (0.00113)	0.0148*** (0.00173)	−0.0512*** (0.00121)	−0.0340*** (0.00116)	−0.0172*** (0.00175)
Observations	1,484,760	1,484,760	1,484,760	1,484,760	1,484,760	1,484,760
R-squared	0.006	0.005	0.001	0.108	0.050	0.006
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The reference categories are Old (age>5) and Large (size 250+). Young-large firms are dropped, as this group is likely to be affected by measurement error. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 2: Gross Job Creation and Destruction and Net Growth Rate of Firms by Size-Age Groups, 2000–2013.

	(1) Gross Job Creation Ratio	(2) Gross Job Destruction Ratio	(3) Net Growth Rate
Young × Small	0.398*** (0.00120)	0.308*** (0.00117)	0.0909*** (0.00187)
Young × Medium	0.120*** (0.00319)	0.0782*** (0.00295)	0.0421*** (0.00462)
Old × Small	0.0218*** (0.000806)	0.0652*** (0.000900)	−0.0434*** (0.00132)
Old × Medium	0.0122*** (0.000892)	0.00627*** (0.000926)	0.00596*** (0.00141)
Observations	1,484,760	1,484,760	1,484,760
R-squared	0.110	0.050	0.006
Year FE	Yes	Yes	Yes

Notes: The reference category is Old-Large (age>5; size 250+). Young-large firms are dropped, as this group is likely to be affected by measurement error. Robust standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1.

Table 3: Gross Job Creation and Destruction and Net Growth Rate of Firms by Size and Age Groups Excluding Entrants, 2000–2013.

	(1) Gross Job Creation Ratio	(2) Gross Job Destruction Ratio	(3) Net Growth Rate	(4) Gross Job Creation Ratio	(5) Gross Job Destruction Ratio	(6) Net Growth Rate
Young				0.0140*** (0.000216)	0.314*** (0.00104)	−0.300*** (0.00112)
Small	0.0277*** (0.000789)	0.213*** (0.000970)	−0.185*** (0.00137)	0.0213*** (0.000793)	0.0695*** (0.000904)	−0.0482*** (0.00132)
Medium	0.0188*** (0.000876)	0.0246*** (0.00113)	−0.0057*** (0.00156)	0.0155*** (0.000875)	−0.0497*** (0.00120)	0.0652*** (0.00162)
Observations	1,349,168	1,349,168	1,349,168	1,349,168	1,349,168	1,349,168
R-squared	0.002	0.006	0.005	0.005	0.078	0.063
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: See Table 1.

Table 4: Gross Job Creation and Destruction and Net Growth Rate of Firms by Size-Age Groups Excluding Entrants, 2000–2013.

	(1) Gross Job Creation Ratio	(2) Gross Job Destruction Ratio	(3) Net Growth Rate
Young × Small	0.0350*** (0.000801)	0.388*** (0.00129)	−0.353*** (0.00164)
Young × Medium	0.0405*** (0.00130)	0.0835*** (0.00306)	−0.0431*** (0.00354)
Old × Small	0.0216*** (0.000793)	0.0652*** (0.000905)	−0.0436*** (0.00132)
Old × Medium	0.0121*** (0.000878)	0.00631*** (0.000931)	0.00582*** (0.00142)
Observations	1,349,168	1,349,168	1,349,168
R-squared	0.006	0.080	0.064
Year FE	Yes	Yes	Yes

Notes: See Table 2.

Appendix

Table A1: Job Flows at the Firm Level, Percentages, 1990–2013.

Year	NEW	EXP	NEW+EXP=JC	EXIT	DECL	EXIT+DECL=JD	NET=JC-JD	JR=JC+JD
1991	2.53	4.17	6.70	2.43	6.73	9.16	-2.46	15.86
1992	2.62	3.21	5.84	3.29	9.42	12.71	-6.87	18.54
1993	2.60	3.32	5.92	3.11	9.55	12.66	-6.74	18.58
1994	2.86	6.53	9.39	2.47	4.28	6.75	2.64	16.14
1995	2.77	6.29	9.07	2.41	3.72	6.13	2.94	15.20
1996	2.28	4.84	7.12	2.26	4.64	6.90	0.22	14.01
1997	3.40	5.25	8.65	3.24	5.58	8.82	-0.17	17.47
1998	3.36	6.84	10.20	2.89	3.78	6.67	3.53	16.87
1999	4.17	5.96	10.13	3.47	4.54	8.01	2.12	18.14
2000	5.36	6.48	11.84	4.32	4.01	8.33	3.50	20.17
2001	4.17	5.38	9.55	3.84	4.73	8.57	0.97	18.12
2002	3.33	5.86	9.19	3.32	4.15	7.47	1.72	16.66
2003	2.97	4.76	7.73	2.97	5.13	8.10	-0.37	15.83
2004	3.11	5.50	8.60	2.92	4.49	7.41	1.19	16.02
2005	3.54	5.17	8.71	3.19	4.65	7.85	0.87	16.56
2006	4.22	5.78	10.00	3.65	3.99	7.65	2.35	17.65
2007	4.78	6.06	10.84	4.03	3.56	7.59	3.25	18.43
2008	4.39	5.16	9.55	3.51	4.03	7.53	2.02	17.08
2009	3.35	4.15	7.50	3.37	7.22	10.59	-3.09	18.08
2010	4.30	5.89	10.18	3.50	3.77	7.27	2.91	17.45
2011	4.49	5.42	9.91	4.29	4.04	8.34	1.58	18.25
2012	4.06	5.27	9.33	3.65	3.99	7.63	1.69	16.96
2013	4.05	5.01	9.06	3.69	4.32	8.00	1.06	17.06
Average	3.60	5.32	8.91	3.30	4.97	8.27	0.65	17.18

Figure A1: Employment Share, Young Firms, Manufacturing. Firms with at least one employee.



Figure A2: Employment Share, Young Firms, Retail. Firms with at least one employee.

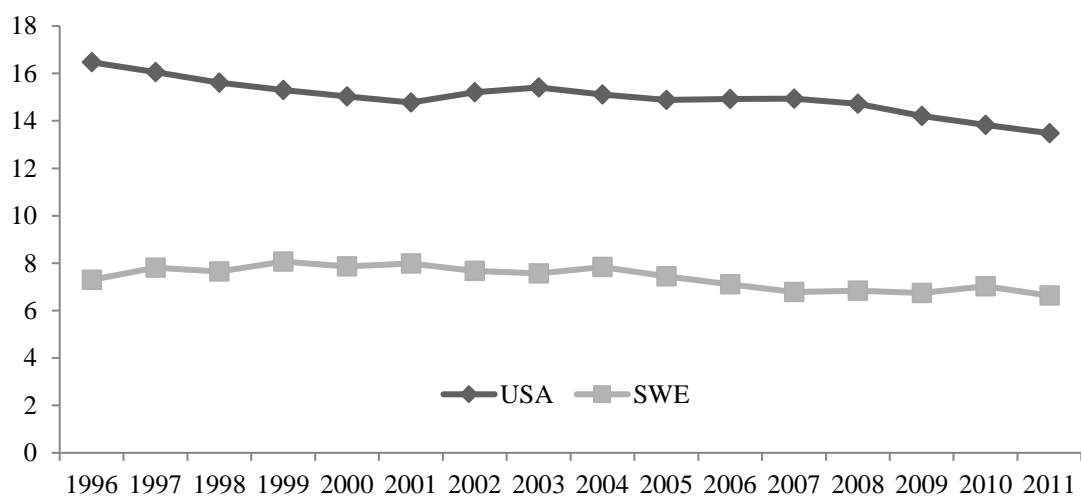


Figure A3: Employment Share, Young Firms, Service (Excl. Retail). Firms with at least one employee.

