Jobs Incorporated:

Incorporation Status and Job Creation*

Thomas Åstebro

HEC Paris†

Joacim Tåg

Research Institute of Industrial Economics (IFN)‡

September 2015

ABSTRACT

We report in this paper the gross (including the founders) and net (excluding the founders) job creation by entrepreneurs two and six years after start-up. We then posit that incorporation status at founding will distinguish between entrepreneurs who will hire others from self-employed who will not hire others. Using a dataset with over 24 million observations and more than 230,000 entries into entrepreneurship, we show that newly incorporated entrepreneurs create 50% more jobs than sole proprietors. The result derives partly from the fact that high-ability individuals are more likely to form incorporated ventures. While there is selection from both tails of the ability distribution into starting incorporated ventures—that is, both those from the bottom and the top of the ability distribution start corporations—it is primarily individuals with low ability who start sole proprietorships. This does not, however, mean that the aggregate number of jobs created by those forming corporations is higher. Since more entrepreneurs in total become sole proprietors, the sole proprietors initially contribute more to aggregate job creation than the incorporated.

Keywords: Entrepreneurship, job creation, incorporation, occupational choice, self-employment, stars and misfits.
JEL Codes: L26, J24.

*Thomas acknowledges financial support from the Leadership Center, HEC and the HEC Foundation. Joacim gratefully acknowledges financial support from Vinnova and the Marianne and Marcus Wallenberg Foundation. We thank seminar participants at various institutions and conferences for excellent comments and suggestions.

†Corresponding author. HEC Paris, 1 rue de la Liberation, 78351 Jouy-en-Josas Cedex, France. Email: astebro@hec.fr.

‡Research Institute of Industrial Economics (IFN), Box 55665, SE-102 15 Stockholm, Sweden. E-mail: joacim.tag@ifn.se

1 Introduction

Over the past decade, policy makers have embraced entrepreneurship as an opportunity to create new jobs and wealth under ailing economic conditions. Indeed, recent studies of aggregate employment growth show that most new employment is created by young companies that start small, often in new industries (Anyadike-Danes et al., 2013; Haltiwanger et al., 2013; Heyman, et al., 2013).[1] A large portion of the recent shift in employment has thus been due to entrepreneurs. Nevertheless, the studies reported above typically do not show how many employees are actually hired by entrepreneurs. As far as we can tell, there have only been back-of-the-envelope calculations of hiring rates by entrepreneurs (e.g. Hurst and Pugsley, 2011; Shane, 2008). As a first order of business we will report in this paper the gross (including the founders) and net (excluding the founders) job creation by entrepreneurs two and six years after start-up. No matter how we define or analyze the numbers, these data will show some startling lack of job creation by entrepreneurs.

Despite extensive efforts in recent years, it has been difficult to generate employment growth through policy initiatives directed at stimulating entrepreneurship. Several initiatives to stimulate job creation through entrepreneurship have been considered and implemented, such as allowing those coming from unemployment to collect unemployment insurance also as entrepreneurs for a transition period (e.g. Caliendo and Künn, 2011; Hombert et al., 2013). Nevertheless, entrepreneurship stemming from unemployment is characterized by economically underperforming businesses (Andersson and Wadensjö 2007; Åstebro et al., 2011; Caliendo et al., 2015), and so stimulating these, while potentially reducing transfer payments in the long run and improving the labor market prospects of the prior unemployed (Caliendo and Künn, 2011), may not generate much, if any, additional employment. For example, Caliendo et al. (2015) find that 19 months after start-up, only 36.1% of previously subsidized business owners stemming from prior unemployment employ on average three full-time equivalent workers, while 56.5% of regular business founders employ on average six full-time equivalent workers. And since most entrepreneurship, and in particular those which perform economically better, stem from people coming from prior employment (Andersson and Wadensjö 2007; Åstebro et al., 2011; Garcńõa-Pńerez et al., 2013), it would seem important to examine in

[1] Haltiwanger et al., (2013, p. 348) writes: "Importantly, because new firms tend to be small, the finding of a systematic inverse relationship between firm size and net growth rates in prior analyses is entirely attributable to most new firms being classified in small size classes."

more detail how many jobs actually are created by the average entrepreneur and in particular what characterizes those entrepreneurs which creates the most job growth.

Unfortunately, despite extensive research, little robust information exists on the characteristics of entrepreneurs who create jobs (Parker, 2009).[2] For several reasons, some associated with a lack of data, it has been difficult to robustly identify any specific characteristics of entrepreneurs that distinguish between those who create jobs and those who do not.[3] Nevertheless, entrepreneurs clearly are not a homogeneous group. Business ability among entrepreneurs shows large variation (e.g. Hall and Woodward, 2010), which is likely to affect variations in job growth across new ventures. Furthermore, only a few entrepreneurs prefer to innovate and expand their firms, while a preponderance of new business owners do not intend to expand their firms, preferring, instead, to remain small (Hurst and Pugsley, 2011). Indeed, research shows an apparent bimodal selection into entrepreneurship predominantly by those from the tails of the ability distribution (Andersson and Wadensjö 2013; Åstebro et al., 2011; Blanchflower, 2000, Elfenbein et al., 2010; Levine and Rubinstein, 2013; Ohyama, 2014; Poschke, 2013). In three recent studies, Andersson and Wadensjö (2013), Levine and Rubinstein (2013), and Tåg et al. (2014) distinguish between these two tails according to the legal form of the business when it was started–those who form sole proprietorships and those who form incorporated firms–and show that these two groups have different patterns of entry and earnings for the individual owners of the firms.[4] The three studies find that individuals with higher prior wages are substantially less likely to become sole proprietors and more likely to start an incorporated firm (Andersson and Wadensjö, 2013; Levine and Rubinstein, 2013; Tåg et al. 2014). Furthermore, Levine and Rubinstein (2013), find strong sorting into entrepreneurship based on a range of cognitive, noncognitive, and family traits, and discover that those who start incorporated firms earn significantly more than comparable wage earners, who, in turn, earn significantly

[2]Some argue that robust predictors regarding the characteristics of entrepreneurs are lacking mostly because of the effect on firm growth of chance and because little predictive information exists on post-entry firm growth from observable pre-entry entrepreneurial characteristics (e.g. Coad et al., 2013).

[3]Two recent exceptions are Herstad et al. (2013) and Huynh and Petrunia (2010).

[4]The sole proprietorship is a business owned and run by one person, in which there is no legal distinction between the owner and the business, and the owner pays personal income tax on profits from the business. The owner receives all profits (subject to taxation specific to the business) and has unlimited responsibility for all losses and debts. With little government regulation, they are the simplest business to set up or close down. For the purposes of this paper, incorporation involves limited liability and a separate legal identity with stricter reporting and auditing rules, and an upfront cash contribution of SEK 100,000 deposited into an escrow account. In addition, the corporations are "closely held", with at most four owners controlling at least 50% of the shares, and shares are not traded on an open exchange.

more than those starting sole proprietorships.

If job creation is important, then knowing which entrepreneurs have the largest observable ability to expand their firm is critical. Because of the large proportion of jobs created by new firms, finding out whether certain types of entrepreneurs are more (or less) likely to create jobs than others is equally critical for both policy makers, as discussed above, and those considering becoming entrepreneurs.

Given the recent findings that entrepreneurs can be divided primarily into two groups – those from the top of the ability distribution (sometimes called "stars") and those from the bottom of the ability distribution (sometimes called "misfits") – and that they might be easily identified by the legal form of the business, we focus in this paper on the relation between the legal form of the start-up and the number of jobs created by the owners of these firms. We use data on all entrepreneurs in Sweden (subject to some constraints) between the ages of 20 and 60 who started new businesses during the period 2005 through 2009 to examine the extent of job creation two years, and for one cohort six years, after founding the firm. Our outcome data on job creation thus extends to 2011. As we identify all Swedish entrepreneurs, encompassing 38,836 new entries per year, we avoid the difficulties of identification based on small samples encountered in most previous studies.

Our first contribution is to show that the average entrepreneur does not create any jobs for any other than him/her-self, and that the average entrepreneur, in addition, typically arrives from prior job market activity so that even for him/her-self there is no new job created, but simply a reshuffling of jobs from older to new firms. Our second contribution is to show that those who start incorporated ventures are substantially more likely to create jobs than those who start sole proprietorships. This might not be too surprising. However, what might be more surprising is that the variable "incorporation status" completely dominates other observable individual characteristics in our dataset in its association with job creation. For example, the second most important variable in the dataset, education, represents 2% of the explained variance, in comparison with incorporation status that represents 74% of the explained variance in firm growth. That is, if one searches for the most powerful predictor of job creation one should look no further than at the legal status of the firm.

In a standard multivariate log growth regression, we find that the number of gross and net employees in the second year of operations is approximately 50% higher (or between 62% to 64%

higher using the inverse hyperbolic sine function) for an incorporated entrepreneur than for a sole proprietor. The gross employment created by the average sole proprietor, including him- or herself, is only 0.66 individuals two years after founding, while gross employment in incorporated firms is 2.48 employees. Excluding the entrepreneur, the average sole proprietor creates a minuscule 0.10 jobs for others, while the individual starting an incorporated firm hires 1.73 others over the same two-year period. Although these averages are surprisingly small, some entrepreneurs do manage to expand their firms to a decent size rather quickly but they are extremely few.[5] For example, at the 99th (95th) percentile, and after two years, the incorporated create 20 (8) jobs. Among the sole proprietors, however there is almost no job growth, even at the top of the job creation distribution. Sole proprietors only create 3 (2) jobs after two years at the 99th (95th) percentile.

These differences persist in the medium term. Six years after starting the firm, the average sole proprietor still has created only 0.09 positions, while gross employment in incorporated firms has fallen to 0.46 employees. These data show that the job losses from the exit of unsuccessful new firms exceed the growth in the remaining successful firms, as found in general (Decker et al., 2014). Employment by incorporated firms at the bottom of the employer distribution thus falls over time while employment growth at the top of that distribution increases over time, leading to a bifurcation in job creation, while the distribution of employment growth for sole proprietors remains stagnant. In conclusion, the data on job growth present strong evidence that early considerations motivating the legal form chosen by entrepreneurs create persistent differences in job growth.

We then show that the results are driven partly by the selection of high ability entrepreneurs into incorporated ventures. While there is selection from both tails of the ability distribution into starting incorporated ventures—that is, both high ability and low ability individuals start incorporated firms—it is primarily individuals with low ability who start sole proprietorships. This does not, however, mean that the aggregate number of jobs created by the incorporated is higher. Since more entrepreneurs start sole proprietorships, the sole proprietorships initially contribute more to aggregate job creation than the incorporated firms, despite the absence of stars among sole proprietorships.

Our results on the distribution of job creation by entrepreneurs are consistent with those on

[5]The averages are smaller than reported in other studies because our study is able, for the first time, to include in the count those who do not employ anyone other than themselves.

the distribution of earnings by entrepreneurs (e.g. Levine and Rubinstein, 2013) which show substantial differences in earnings between those who becomes sole proprietors and those who start incorporations. At some level, this is not surprising. First, the two outcome variables job creation and individual earnings are likely to be positively correlated. A firm which generates large earnings for its owners is likely to also provide employment growth because of an underlying common cause driving both outcomes, such as the quality of the business idea. Second, as noted by Levine and Rubinstein (2013), the incorporated business form has two features that are particularly important for entrepreneurs who intend to expand: limited liability and legal separation of the individual entrepreneur from the company. Hiring others and entering into long-term employment contracts creates a risky commitment, since the future direction of the company is often uncertain. Both features of the incorporated business form are thus desirable to mitigate the risks of personal liability for the entrepreneur when hiring others, and incorporation status at founding also for this reason is likely to be positively correlated with future hirings.

While we have found that incorporation status by far is the strongest predictor of future job creation, its utility for public policy is confounded by the fact that it is a choice variable by the entrepreneur. In fact, we end with a rather cautionary view on the utility of using incorporation status for policy measures. The issue is that the legal form is a choice by the entrepreneur, not a cause of job creation in itself. Thus, for example, trying to encourage entrepreneurs to create incorporated firms using monetary incentives is likely to have perverse effects in terms of attracting the lower-performing entrepreneurs to form incorporated firms. Such adverse selection is particularly likely in this case since as we show in this paper, it is predominantly the low ability individuals which without an economic incentive would select to become sole proprietors. It is therefore not as simple as arguing that governments should stimulate the formation of incorporated firms to create more jobs (per entrepreneur). Such stimulation might be more costly than its benefits, and might not lead to any discernible increases in job creation for the simple case that it might just lead to a relabeling of firms' legal statuses up to the net value of whatever funds are distributed as incentives. Nevertheless, our results are still highly useful for researchers interested in obtaining a better proxy for successful entrepreneurship in the sense of indicating a priori which entrepreneur will be creating more gross and net jobs.

The roadmap reads as follows. The next section lays out our empirical approach. Section 3

describes the job creation data and other summary statistics. Section 4 provides regression results on job creation by incorporation status. Section 5 examines selection into incorporation status by ability, and Section 6 studies economywide total job creation by incorporation status. We summarize the paper and provide a discussion of the implications of our results in section 7.

2 Empirical Approach

We follow the definition used by Statistics Sweden in defining entrepreneurs. Statistics Sweden defines an individual as being employed in her own firm in a given year if her total income from her own company (labor and capital income) is more than 62.5 percent of income from all labor. Using this definition, one excludes as entrepreneurs those with a secondary source of income who remain employed by someone else and the majority of whose earnings come from that employment. This definition significantly reduces the number of recorded entrepreneurs compared to, for example, counting those who report earning any income from a business they own or counting those who are simply registered as owning a business.[6] We further define an individual as entering entrepreneurship in any given year if the following criteria are simultaneously fulfilled:

1. *Occupied in own business.* An individual is classified by Statistics Sweden as working in her own company in the current year.

2. *New place of work.* The individual's current firm and establishment identifiers are different from those of the previous year, and

3. *New firm.* No individual in our sample worked for the firm in the previous year.

Criterion 1 states that Statistics Sweden identified an individual as being an entrepreneur, criterion 2 ensures that the individual moved into entrepreneurship, and criterion 3 attempts to ensures that the firm is entirely new. Criterion 3 is also imposed to remove hires at existing firms that obtain an ownership stake in connection with being hired. Using this definition, we find 233,014 entrepreneurs between 2005 and 2009. As already discussed, using this definition of entry into entrepreneurship excludes part-time ("hybrid") entrepreneurs, such as those who have a regular job while operating

[6]See Bjurgren, Johansson and Stenkula (2012) for a detailed discussion of the entrepreneurship definition used by Statistics Sweden (and this paper).

a consulting business on the side. We consider such part-time entrepreneurs unimportant in terms of job creation. Our definition of entry into entrepreneurship also excludes individuals who start a business in which they do not work for themselves and thus do not satisfy the criterion of earning at least 62.5 percent of all labor income from their own firm. This measure therefore excludes jobs created at firms where all owners are silent owners. We are rather confident that a multi-owner firm with silent owners is likely to have at least one owner-partner employed in the business, and job creation will then be counted through that person's record of entrepreneurship, although we cannot be sure that we capture all those firms. It is also useful for our purposes that Statistics Sweden distinguishes between incorporated firms and sole proprietorships.

To measure gross employment, we use the number of employees, including owners, two years after the firm's founding and divide by the number of entrepreneur-owners at the firm at founding. Specifically, at time $t+s$ gross employment equals:

$$G_{t+s} = \frac{E_{t+s}}{F_t} \tag{1}$$

where G_{t+s} is gross jobs at $t+s$, E_{t+s} is employment at the firm at $t+s$, F_t is the number of founding entrepreneurs, and s measures the number of years since founding. Thus, $s=0$ is the first year of operation of the business, and we use $s=2$ in our main specifications.

We further want to analyze the impact of entrepreneurial characteristics on job creation for others. If an individual simply leaves an employer and starts his own firm, then there is no new job creation. We therefore analyze net job creation in the following way. Net jobs measures employment growth in the firm two years after founding while subtracting the number of entrepreneurs at the firm in that year (and dividing by the number of entrepreneurs at founding). Specifically, at time $t+s$ net employment equals:

$$N_{t+s} = \frac{E_{t+s} - F_{t+s}}{F_t} \tag{2}$$

where N_{t+s} is net jobs at $t+s$, E_{t+s} is total employment at the firm at $t+s$, and F_t is the number of entrepreneurs at the firm at t, and s measures the number of years since founding.

If the firm closes prior to $t+s$, we set both measures at zero.[7] It is entirely possible that a firm may experience gross/net job losses of less than 1 prior to $t+s$. For example, let us assume that a firm is started by two entrepreneurs, and they hire one employee. However, only one entrepreneur and no other employee remain employed at the firm at $t+2$. Gross jobs are thus $= G_{t+2} = 1/2 = 0.5$, and net jobs $N_{t+2} = (1-1)/2 = 0$. Finally, note that we measure gross and net employment on a per-founder basis. That is, we divide each measure by the number of founders at each firm at creation. This allows us to compute job creation by each original founder.

The number of created jobs is left censored at zero and subject to a high degree of skew. As a consequence, ordinary least squares (OLS) regression at sample mean values may provide biased estimates. A standard approach, which we employ as our main specification, is to take the logarithm of $(1+G_{it+2})$ to reduce the skew and proceed with OLS. That is, our regressions on gross jobs (and for net jobs) take the form:

$$log(1+G_{it+2}) = \alpha + \beta INC_{it} + \gamma x_{it-1} + \theta_t + \epsilon_{it} \tag{3}$$

where INC_{it} is a dummy for incorporation status and x_{it-1} contains demographic characteristics, educational attainment characteristics, labor market outcome characteristics, and employer characteristics for individual i at time $t-1$ (including industry and region dummies). Year dummies are represented by θ_t. For our main regressions, we also perform quantile regressions to examine the distribution of the parameter INC_{it} across the job creation distribution, and we report in the appendix robustness checks using the inverse hyperbolic sine transformation instead of $\log(1+G_{it+2})$.[8]

3 Gross and Net Job Creation by Entrepreneurs

Table 2 provides summary statistics for the full sample (column 1), those not entering entrepreneurship (column 2), and those entering entrepreneurship (column 3). The table also shows characteristics for those entering entrepreneurship as sole proprietors (column 4) and as incorporated (column

[7] More precisely, after a firm is duly registered as founded according to our prior stated definition, if no individual in Sweden either was recorded as owning the firm or obtained his or her primary source of income from the firm at $t+s$, we set both gross and net jobs in year $t+s$ at zero.

[8] While less known, regressions with the inverse hyperbolic sine function, $\log(y+(y^2+1)^{(1/2)})$, has the advantage that the estimated coefficients better approximate percentage effect around zero (MacKinnon and Magee, 1990).

5).[9] Our sample represents all individuals living in Sweden between the ages of 20 and 60 and contains over 24 million individual-year observations. In terms of entrepreneurship, the rate of entry is approximately 1 percent per year for all individuals. The entry rate is somewhat smaller than in other studies because our definition of entrepreneurship is rather stringent making the number of people passing the definition smaller than for example if one includes all those starting a new business, and because we examine entry as a fraction of all individuals in Sweden between the ages of 20 and 60, not just as a fraction of the working population. Of those entering entrepreneurship, 16.1% choose to incorporate.

There are rather large differences in observable characteristics between those who choose to start a sole proprietorship and those who choose to incorporate. Those who do not incorporate tend to be less educated; earn less as employees; are more likely to be female, unemployed, or out of the labor force; and are less likely to be an entrepreneur (of any kind) in the year prior to entering entrepreneurship.

Aside from the large differences between those who start incorporated firms and those who start sole proprietorships, there are also large differences in their firms' outcomes. Table 3 shows the distributions of gross and net jobs two and six years after founding a sole proprietorship or incorporated business. Panels A and B display the distributions overall, while Panels C and D show distributions conditional on survival at $t+2$ and $t+6$ respectively. Panel C and D also display total earnings that accrue to the entrepreneur conditional on business survival.

This table reports strikingly large differences in gross and net job creation between the sole proprietors and the incorporated entrepreneurs. Panel A shows that the gross employment created by the average sole proprietor, including him- or herself, is only 0.66 individuals two years after founding, while gross employment in incorporated firms is 2.48 employees. Excluding the entrepreneur, the average sole proprietor creates a minuscule 0.10 jobs while the individual starting an incorporated firm hires 1.73 others over the same two-year period. Although these averages are surprisingly small, some entrepreneurs do manage to expand their firms to a decent size rather quickly, but they are extremely few. After two years, at the 99th (95th) percentile the incorporated entrepreneurs create 20 (8) jobs. Among the sole proprietors, however, there is almost no job growth. Even at the 99th (95th) percentile, sole proprietors only create 3 (2) jobs.

[9] Variable descriptions are available in Table 1.

These differences persist in the medium term. Panel B shows that six years after the firm has opened, the average sole proprietor has created only 0.09 jobs, while gross employment in incorporated firms has fallen to 0.46 employees. These data show that the job losses from the exit of unsuccessful firms exceed the growth in the remaining successful firms. The patterns are consistent with those found in the United States (see, e.g., Decker et al., 2014). For the surviving firms, job creation is, of course, larger. Panel C shows that sole proprietorships that survive at $t+2$ tend to have 1.2 employees while incorporated firms have 3.1 employees. Two years out, and at the 99th percentile, firm size for the sole proprietorships is 4 and for the incorporated firms is 23. Six years out, Panel D shows that the sole proprietorships employ 1.2 individuals and the incorporated firms 4.1 individuals at the mean, and 5 and 34 individuals respectively at the 99th percentile. Thus, employment by incorporated firms at the bottom of the employer distribution falls over time, and employment growth at the top of that distribution increases over time, leading to a split in job growth. The distribution of employment growth at sole proprietorships remains stagnant.

Our supporting data on private earnings show an even stronger split between sole proprietors and incorporated entrepreneurs in Sweden than in the United States. Panel C shows that the personal earnings for those starting incorporated firms and surviving for two years are eight times higher, on average approximately \$48,000, versus \$6,000 for sole proprietors (2005 values, \$1 = SEK 7.5).[10] Furthermore, 50% of all sole proprietors earn zero or less, while even at the bottom 25% of the earnings distribution, owners of incorporated firms earn \$25,000. The differences in pre-entry earnings for the two entry groups displayed in Panel D of Table 3 are somewhat smaller, but still highly indicative. Those who start sole proprietorships earn on average \$14,800 before entry, while those who become owners of incorporated firms earn on average \$33,900, or more than twice as much, before entry.

4 Regressing Gross and Net Job Creation on Incorporation Status

We now move on to analyze the effect of incorporation status on gross and net job creation. The next set of regressions thus analyzes the log of the number of jobs created, in which firms that closed

[10] In the United States, the median of total income for all owners of incorporated firms is only twice as high as that for all sole proprietors (Levine and Rubenstein, 2013). In Sweden, the median sole proprietor (independent of year of operations) earns zero total income (a mean of SEK 42,800) and the median incorporated entrepreneur SEK 293,560 (a mean of SEK 397,670).

during that period are counted as having contributed zero jobs. The coefficient can thus be directly interpreted as the percentage change in the number of jobs created by an entrepreneur in two years' time at the mean of the distribution.

Table 4 displays the results from the model presented in equation 3.[11] Columns 1-2 show the effects on gross and net jobs from a regression including only year fixed effects and the incorporation status dummy. Columns 3-4 add industry and location fixed effects, and columns 5-6 individual-level controls from Table 2. The final column displays regressions on gross and net jobs at $t + 6$ instead of $t + 2$ and thus restricts the sample to $t = 2005$. Incorporation status is a strong correlate of the average gross and net job creator. The number of gross and net employees in the second year of operations is approximately 50% higher for an incorporated firm than a sole proprietorship. Note that most often no major difference exists between the coefficients for gross and net job creation, indicating that job growth occurs primarily among non-owner employees. Moreover, adding controls has almost no effect on the size of the coefficient for incorporation status, and the explanatory power of the model, the R^2, changes very little when we include controls that typically tend to predict entrepreneurship entry.[12]

Incorporation status has a delta-R^2 of between 0.108 and 0.156 and the proportion of all variance explained for this variable is between 72.6% and 74% for results reported in columns 5 and 6. All other coefficients not displayed are significantly smaller in effect size than the coefficient for incorporation status and contributes a much smaller proportion of all variance explained. Choosing for example the second most predictive set of variables for gross jobs, the education level, the delta-R^2 for the full set of education dummies is 2%, which is considerably lower than the 74% delta-R^2 for incorporation status.

Columns 7 and 8 show that the coefficients for incorporated firms surprisingly maintain the same level after six years as they do after two years of operations, 47% to 48%. Even though one would expect to find considerably more random variation in the data when predicting what will happen

[11] Because of the large number of variables included we do not report details on all coefficient estimates in Table 4. Details are available from the corresponding author on request. However, it is fair to mention that almost all coefficients are significant, which is due to the large size of the sample.

[12] In unreported regressions, we have also included year times industry fixed effects, which results in unchanged coefficients on the incorporated firm dummy. We also ran the regressions restricting the sample to only males and additionally ran them separately for each industry. The results remain similar in these subsamples, with the number of gross and net employees in the second year of operations being between 49%-60% higher for an incorporated firm than a sole proprietorship in the male only subsample and the subsamples separated by industry. The effects were lowest in the wholesale and retail industry and highest in the real estate, renting, and business activities industry.

six years into the future instead of two, it turns out that the legal form of the firm as well as other coefficients together explain about as much variation in six years as in two years. The R^2 for the regressions two years out is between 0.15 and 0.22, while six years out it is between 0.12 and 0.20.

We also ran quantile regressions on gross job creation (unreported) to investigate whether the more rapidly growing start-ups are more likely to be found among incorporated firms. We run quantile regressions for the median, the 75th- , 95th-, and 99th-percentile job creators. The median effect for incorporation status is 0.35, while the 75th percentile is estimated at 0.59, the 95th at 1.21, and the 99th at 1.62. This suggests that most of the gross and net job creation at the tails takes place in incorporated firms. Table A1 in the appendix replicates Table 4, but uses the inverse hyperbolic sine transformation of gross and net jobs to account for zeros in the LHS variable instead of using log of the value plus one. Arguably this specification is more appropriate for highly skew distributions (MacKinnon and Magee, 1990), but is less well known than the log transformation. Our results from this analysis reports an even larger size for the incorporation dummy, between 62% and 64%, probably because the hyperbolic sine function is more sensitive to changes close to zero than the log transformation. Since the median effect (estimated with quantile regression which is based on absolute rather than squared deviances) was estimated to 35% it would seem pertinent to report in the body of the paper the middle estimate between the median quantile and inverse hyperbolic sine transformation, and that is what has been done.

Finally, we ask if incorporation is a complement or a substitute to starting a sole proprietorship? It could be that some individuals start out as sole proprietors, but switch to incorporating their firm once they decide to grow and hire others – the two legal forms would then be complements. However, if that would be so, then the legal form would in principle not be predictive of future job growth – prior legal form would instead be randomly related to future job growth.[13] On the other hand, if the two legal forms are primarily substitutes, those who choose one form do so because of its specific benefits for the choice for that person, for example choosing a sole proprietorship for the simplicity of formation and reporting requirements, and choosing to incorporate because they plan to grow the firm and hire people. The legal form could then be a potent indicator of sorting and

[13]Empirically, it is difficult to know from the register data whether an entrepreneur which has one legal form in $t-1$ and another in t reform the old firm or start a completely new firm. In fact, for lack of better information, in our analysis we assume that a new business registration number recorded in year t is a completely new firm. We might therefore overstate the role of the legal form on future job growth because we report those originally being sole proprietors and switching to incorporated as starting fresh with an incorporation.

future hirings.

We start by noting that only 0.5% of all sole proprietors in operation at $t-1$ switch to forming a corporation at t. Thus, an overwhelming number of those that choose sole proprietorship remain with that legal form. This suggests that, overwhelmingly, the two legal forms are substitutes rather than complements. It is interesting to note, however, that those few that are a sole proprietor at $t-1$ and who switch to owning a new firm in $t=0$ (whether a sole proprietorship or corporation) experience 7% higher gross jobs at $t+2$ and $t+6$ and 10% to 11% higher net jobs relative to those being employed at $t-1$ and switching to entrepreneurship in $t=0$. This result could reflect a number of differences of course, such as learning from prior entrepreneurship. However, those who switched from owning one incorporation at $t-1$ to owning another in $t=0$ had lower relative job grow in their new corporation than those coming from employment in $t-1$.[14] These two sets of regression results are therefore consistent with that the small fraction of individuals choosing first sole proprietorship and then a corporation do so as they expect to hire some employees in the future. Furthermore, a regression corresponding to the one in Table 4 but run only on those that incorporate and omitting the incorporation status dummy shows that once incorporated, being a sole proprietor at $t-1$ is associated with an increase in net jobs of 25% percent at $t+2$ and 31% at $t+6$ relative to being employed at $t-1$. In contrast, there is no difference in net job creation between those who owned an incorporated firm at $t-1$ relative to those being employed at $t-1$.

In summary, while we cannot state conclusively that those with a prior sole proprietorship who switch to incorporating their firm do so because they want to hire others, the results are consistent with the notion that a small group of individuals (less or equal to 0.5% of all sole proprietorships) indeed use a sole proprietorship as a stepping stone to being incorporated and hiring others. But because these are so few, the two legal forms are in general substitutes rather than complements, suggesting that the legal form at business start contains information about future hirings.

5 Selection and Incorporation Status

Table 2 clearly highlights that entrepreneurs who incorporate tend to be fundamentally different from those who do not, across several pre-entry characteristics. Moreover, Table 4 shows that

[14] These results are based on the coefficients reflecting prior labor market status in the regressions underlying Table 4. These coefficients are statistically significant.

those who incorporate also tend to create many more gross and net jobs. We next document that those who incorporate tend to be drawn from both the top and the bottom parts of the ability distribution, whereas those who start sole proprietorships tend to be drawn from the bottom part of the ability distribution only. In effect, both stars and misfits incorporate but only the misfits start sole proprietorships.[15]

To examine the conditional probability of forming a corporation versus a sole proprietorship as a function of the location in the ability distribution, we use a multinomial logit model with three outcomes: being in salaried employment at $t = 0$, entering as sole proprietor at $t = 0$, and entering as incorporated at $t = 0$.[16] Table 5 displays the output. We include a battery of controls in the regressions, reflecting in particular schooling and labor market experience, and focus on earned labor income as our ability measure. The term "ability" should be understood as a time invariant level of skills that exists prior to the start of the human capital accumulation process and that affects labor market wages, even after controlling for acquired human capital. Note that since we include all typical human capital variables as covariates, this specification is very similar to using a two-stage model, where the first stage is a traditional Mincer-type wage equation which generates an error term, which is used in the second stage as a measure of ability, cleaned from the effects of human capital and other regressors. (Analysis using this less straight-forward two-stage method produced similar results and are not reported.) Using the unexplained component of wage as an indicator of "ability" is standard fare, and a recent example applied to the entrepreneurship domain is Levine and Rubenstein (2013).

We start by restating the large gross difference in pre-entry wages between those selecting sole proprietorship and incorporation. Panel D of Table 3 report that those who start sole proprietorships earn on average $14,800 before entry, while those who become owners of incorporated firms earn on average $33,900, or more than twice as much, before entry. On average, therefore, there is a large difference in the entrepreneur's combined pre-entry ability and human capital between the

[15]It is worth noting that this pattern is not exactly the same as that documented by Andersson and Wadensjö (2013) for male Swedes entering entrepreneurship in 2001 from salaried employment. Andersson and Wadensjö, in contrast to the present authors, find that entry from both tails of the labor income distribution happens mostly among sole proprietors. Possible explanations for this divergence in results is that our data cover a longer time period, includes females, those outside the labor force, and the unemployed, and pools the incorporated, who start businesses that employ others (positive net jobs), with the incorporated, who do not do so (zero net jobs).

[16]We drop observations with other outcomes at $t = 0$. In unreported regressions, we obtained similar results if we also included moves to unemployment and moves to "other" (such as going abroad and leaving the labor force) as potential outcomes and if we run the regressions only on the sample of salaried workers at $t = -1$.

two choices of legal form. Cleaning out the effect of human capital and other characteristics, Table 5 continues to show differential entry patterns into forming sole proprietorships versus forming corporations, depending on the pre-entry location of an entrepreneur in the labor income distribution. Individuals at the tails of the labor income distribution are more likely to start incorporated firms than the individuals in the middle of the labor income distribution. For example, the probability of starting an incorporated firms is 80% higher for those at the 90th percentile, and 124% higher at the 10th percentile, than for those at the 50th percentile. However, the higher up an individual is in the labor income distribution, the lower is the probability of forming a sole proprietorship. For example, those at the 90th percentile are 64% less likely to become a sole proprietor than those at the 50th percentile. This pattern suggests that the large coefficients on the incorporation dummy in the job creation regressions could be driven by the fact that high-ability individuals are more likely to form corporations. While there is selection from both tails of the ability distribution into starting incorporated ventures—that is, both stars and misfits start corporations—primarily individuals with low ability, the misfits, start sole proprietorships.

To investigate this selection issue further, we revisit the job creation regression, but this time we run regressions that omit the incorporation status dummy. Columns 1 and 2 in Table 6 display the coefficients for the labor income deciles from this regression. As expected, both more gross and net jobs are created by individuals higher up in the labor income distribution. Columns 3 and 4 then reintroduce the incorporation status dummy. Two observations emerge. First, all coefficients for labor income are considerably reduced in size. For example, the coefficients on deciles between the 60th and 90th percentile are no longer statistically significant. Second, the R^2 of the regressions increases by around 300%. These findings indicate that ability affects both gross and net job creation through incorporation choice, but that incorporation status also includes other omitted controls, such as, potentially, a preference for staying small and perhaps an idiosyncratic business opportunity, that are associated with job creation.

6 Total Gross and Total Net Job Creation

We now continue with an analysis focussed on the 2005 cohort and ask: in the aggregate, which create more jobs: sole proprietors or incorporated entrepreneurs? The answer is not straightfor-

ward. Although we have shown that incorporated firms create more jobs per entrepreneur, more entrepreneurs in the aggregate enter as sole proprietors. The total number of jobs created in the economy may therefore be higher for sole proprietors than for those starting incorporated firms.

Figure 1 is informative in answering this question. This figure displays gross and net job creation for new ventures created in 2005 divided by incorporation status. The top two figures shows mean gross and net jobs in the firms *conditional on survival* for $t = 0$ to $t = 6$. The bottom two figures show the economywide sums of gross jobs and of net jobs created by new businesses started at $t = 2005$ for $t + 0$ to $t + 6$. The two top figures displaying mean job creation conditional on survival shows what we have found earlier: jobs are more plentiful and their number grows more rapidly in incorporated firms than in sole proprietorships, in both gross terms (top left) and net terms (top right). The mean size of a surviving incorporated firm at $t + 6$ is 4, whereas it is only slightly above 1 for sole proprietorships.

As shown by the bottom two figures, however, the aggregate gross number of jobs created by sole proprietors is consistently higher than the aggregate gross number of jobs created by incorporated firms. But there is a downward trend among sole proprietorships that is not present for incorporated firms. Six years out, the aggregate gross number of jobs created by both sole proprietors and entrepreneurs forming corporations in the 2005 cohort is around 20,000. The bottom right figure, in combination with the top two figures, clearly shows that this is driven by the fact that sole proprietors stay small and tend not to hire anyone beyond the founders, whereas the incorporated firms tend to hire other employees.

7 Concluding Remarks

This paper looks at job creation by entrepreneurs and by their incorporation status. Our first contribution is to show that there is very little job creation by entrepreneurs beyond those created for themselves. For example, the gross employment created by the average sole proprietor (representing 84% of all new firms in these data), including him- or herself, is only 0.66 individuals two years after the firm is founded, while gross employment in incorporated firms (representing 16% of all new firms) at that time is 2.48 employees. At the 99th percentile, sole proprietorships create 3 jobs, while the incorporated firms create 20 jobs in two years' time. Furthermore, most entrepreneurs (90%)

come from prior job-market activity, meaning that there are no new jobs (for themselves) created by these moves, but just a reshuffling of jobs from old to new firms through entrepreneurship.

These figures are lower than typical job creation numbers reported in the past, because most prior studies have been forced to examine only job creation among registered employers (see, e.g., Haltiwanger et al., 2013), which by definition excludes non-employers, thereby inflating true job creation numbers. However, our gross employment data seem to stack up well compared to calculations on employment at all kinds of U.S. start-ups by Scott Shane (Shane, 2008, p. 65). He reports studies showing that the average new firm in the United States with at least one employee had 3.8 employees. Because the number of new businesses without any employees in the United States is about 76 percent, Shane extrapolates and states that "the average start-up in the United States begins with 1 employee, including the founder." The average employment size at t+2 in our dataset is the same: 1. Another attempt to avoid the inflationary problem in official U.S. employer-only data was made by Hurst and Pugsley (2011). They use the Kauffman Firm Survey (KFS) to show that, among surviving start-ups of all kinds (employers and non-employers), after four years, 41.9% had hired more than one employee, and 3.6% had hired more than ten employees. Using our data, we find that only 21.2% had hired more than one employee, and only 1.4% had hired more than ten employees. That is, while there is job creation among entrepreneurs, the numbers are not impressive, and a dominant majority of entrepreneurs create jobs only for themselves and not for others.

Including all types of entrepreneurs in calculating job creation rates thus significantly changes our understanding of how many jobs are actually created by the typical entrepreneur. Our paper is among the first to show an unbiased assessment of the number of employees and job growth in all start-ups in an economy. It may appear from our analysis that job creation by entrepreneurs in Sweden is either of comparable magnitude to those in U.S. data or that they generated less employment than those in the United States.[17] Nevertheless, as stated above, among the very top percentiles of those forming incorporated firms, there are some high-level job creators.

The raw data on job creation by entrepreneurs reported in this paper strongly suggests that

[17]Unfortunately, the KFS does not properly represent all U.S. firms, so a representative analysis of the United States using the KFS is not possible. An official description of the KFS states: "The study created the panel by using a random sample from the Dun & Bradstreet (D&B) database list of new businesses started in 2004. In response to the Foundation's interest in understanding the dynamics of high-technology businesses, the KFS oversampled these businesses based on the intensity of research and development employment in the businesses' primary industries."

any policy maker intent on stimulating job creation by manipulating incentives for individuals to become entrepreneurs will be sorely disappointed. There is simply not going to be large amount of jumps in new hirings even if a significant number of people enter entrepreneurship. And most people which become entrepreneurs will arrive from prior job-market activity (only 10% will come from prior unemployment), so there will be no net new jobs created for the majority of entrepreneurs, but simply a redistribution of jobs. That is not to say that redistribution of jobs from old to new firms may not be a good thing.

Our second contribution is showing that incorporation status is highly correlated with the creation of both gross and net jobs, in both the short and the long run. This is useful for researchers interested in obtaining a better proxy for finding, a priori, successful entrepreneurs with intentions to grow and expand their firms. Our results do not agree with those authors arguing that there are no robust predictors of new firm growth (e.g. Coad et al., 2013). [18] However, policy makers intent on using these results to stimulate job creation by encouraging entrepreneurs to create incorporated firms may find such policies backfiring if they are not wisely designed. Such stimulation is bound to have perverse effects in terms of attracting the worse-performing entrepreneurs to form incorporated firms for no reason other than to obtain the incentives.

Nevertheless, there are likely to be labor market failures that prohibit the best allocation of talent to the most suitable jobs. Åstebro et al. (2011) indicate that labor market frictions are a strong determinant of entrepreneurship and that these frictions are driving the bimodal pattern of entry, with stars entering from the upper tail of the ability distribution and misfits entering from the bottom of the ability distribution. In this paper we have added a piece of evidence showing the stars are more likely to form incorporated firms and the misfits are more likely to form sole proprietorships. If labor market frictions were the only cause of entrepreneurship, it would be possible to use the level of entry from the tails of the ability distribution as a measure of the lack of job matching in the labor market. Using this lens, higher levels of entry at the tails would indicate greater market failure, signaling the need for more government intervention to reduce job-matching frictions. An important policy implication thus seems to be for policy makers to take a more profound interest

[18] In fact, our regressions are filled with significant coefficients, although most of them have small effect sizes, and significance is largely driven by the sample size. Our conclusion is that the lack of significant results in prior studies mostly has to do with running analysis on too small samples. We of course want to caution that obtaining statistical significance is not an important goal in and of itself.

in reducing job-matching frictions, rather than in trying to stimulate entrepreneurship. Reducing job-market frictions would then reduce inefficient allocation of talent to entrepreneurship.

References

Andersson, J. P., Wadensjö, E. 2007. Do the Unemployed Become Successful Entrepreneurs? International Journal of Manpower, 28(7), 604Ð626.

Andersson, J. P., Wadensjö, E. 2013. The best and the brightest or the least successful? Self-employment entry among male wage-earners in Sweden. Small Business Economics 40(1): 155-172.

Anyadike-Danes, M., Hart, M. Du, J. 2013. Firm Dynamics and Job Creation in the U.K. ERC White Paper No. 6, Enterprise Research Centre, Birmingham.

Åstebro T., Thompson, P. 2011. Entrepreneurs: Jacks of all trades or hobos?, Research Policy, 40: 637-649.

Åstebro, T. Chen, J., Thompson, P. 2011. Stars and Misfits: Self-Employment and Labor Market Frictions, Management Science, 57(11), 1999-2017.

Bjuggren, C. M., Johansson, D., and Stenkula, M. 2012. Using Self-employment as Proxy for Entrepreneurship: Some Empirical Caveats, International Journal of Entrepreneurship and Small Business, 17(3), 290-303.

Blanchflower, D. G. 2000. Self-employment in OECD countries. Labour Economics 7 (5):471-505.

Caliendo, M., Künn, S. 2011. Start-Up Subsidies for the Unemployed: Long-Term Evidence and Effect Heterogeneity, Journal of Public Economics, 95(3-4), 311-331.

Caliendo, M., Hogenacker, J., Künn, S., Wieğner, F. 2015. Subsidized Start-Ups out of Unemployment: A Comparison to Regular Business Start-Ups Small Business Economics, 45(1), 2015, 165-190.

Coad, A., Frankish, J. Roberts, R. G. Storey, D. J. 2013. Growth paths and survival chances: An application of Gambler's Ruin theory. Journal of Business Venturing 28(5): 615-632.

Decker, R., Haltiwanger, J., Jarmin, R. S. Miranda, J. 2014. The Role of Entrepreneurship in US Job Creation and Economic Dynamism. Journal of Economic Perspectives 28(3): 3-24.

Elfenbein, D. W., Hamilton, B.H., Zenger, T. R. 2010. The small firm effect and the entrepreneurial spawning of scientists and engineers. Management Science 56 659-681

Garcńõa-Pńerez, M., Goetz, C., Haltiwanger, J. C. 2013. DonÕt Quit your Day Job: Using Wage and Salary Earnings to Support a Bew Business, Center for Economic Studies, Washington D.C. Working paper CES 13-4.

Hall, R. E., Woodward, S.E. 2010. The Burden of the Nondiversifiable Risk of Entrepreneurship. American Economic Review 100(3): 1163-94.

Haltiwanger, J. C., Jarmin, R. S. Miranda, J. 2013. Who Creates Jobs? Small Versus Large Versus Young, Review of Economics and Statistics, 95(2): 347-361.

Henrekson, M., Johansson, D. 2010. Gazelles as job creators: a survey and interpretation of the evidence. Small Business Economics 35(2): 227-244.

Herstad, S. J., Sandven, T., Solberg, E. 2013. Location, education and enterprise growth. Applied Economics Letters 20(10): 1019-1022.

Heyman, F., Norbäck, P-J., Persson, L. 2013. Jobbdynamiken i svenskt näringsliv 1990 till 2009. IFN Policy Paper nr 60, 2013. Research Institute of Industrial Economics.

Holly, S., Petrella, I., Santoro, E. 2013. Aggregate fluctuations and the cross-sectional dynamics of firm growth. Journal of the Royal Statistical Society Series A-Statistics in Society 176(2): 459-479.

Hombert, J., Schoar, A., Sraer, D. Thesmar. D. 2013. Should the Government Make It Safe to Start a Business? Evidence from a French Reform. Working paper, HEC Paris.

Hurst, E. Pugsley, B. 2011. What Do Small Businesses Do? Brookings Papers on Economic Activity 43(2): 73-142.

Huynh, K. P., Petrunia, R. J. 2010. Age effects, leverage and firm growth. Journal of Economic Dynamics & Control 34(5): 1003-1013.

Levine, R., Rubinstein, L. 2013. Smart and Illicit: Who Becomes an Entrepreneur and Does it Pay?, NBER Working Paper No. 19276.

Lopez-Garcia, P., Puente, S. 2012. What makes a high-growth firm? A dynamic probit analysis using Spanish firm-level data. Small Business Economics 39(4): 1029-1041.

MacKinnon, James G and Lonnie Magee. 1990. Transforming the Dependent Variable in Regression Models. International Economic Review 31(2): 315-39.

Ohyama, A. forthcoming. Entrepreneurship and Job Relatedness of Human Capital, Economica.

Parker, S. 2009. The economics of entrepreneurship. Cambridge, Cambridge University Press.

Poschke, M. 2013. Who becomes an entrepreneur? Labor market prospects and occupational choice, Journal of Economic Dynamics and Control 37(3): 693-710.

Shane, S. A. 2008. The Illusions of Entrepreneurship The Costly Myths That Entrepreneurs, Investors, and Policy Makers Live By. New Haven, Yale University Press.

Tåg, J., Åstebro, T., Thompson, P. 2014. Hierarchies and Entrepreneurship, SSRN working paper ttp://ssrn.com/abstract=2216809.

Table 1: Variable Definitions

This table displays descriptions of the variables that we use from the Statistics Sweden's LISA database. Our final dataset uses data from Statistics Sweden for $t = 2005$ to $t = 2009$ for everyone in Sweden between 20 and 60 years old unless otherwise noted. The Swedish Secrecy Act protects access to the data from Statistics Sweden, but researchers affiliated with a Swedish research institution can apply for access. A full detailed description of the variables in LISA is available from the Statistics Sweden homepage (scb.se). An individual's main source of income in November in each year is the base for the majority of the employer-employee links in LISA. Information on all variables below is close to complete for the population of individuals living in Sweden unless otherwise noted.

Panel A: Demographic Characteristics	
Individual Identifier	Original source is social security numbers from the population registry.
Gender	Original source is the population registry.
Educational Attainment	Information on highest completed education level comes from the Education Register at Statistics Sweden (Utbildningsregistret). The education level variable takes the values: (6) postgraduate education, (5) post-secondary education (two years or longer), (4) post-secondary education (less than two years), (3) upper secondary education, (2) primary and lower secondary education (9 or 10 years), and (1) primary and lower secondary education (less than 9 years).
Panel B: Labor Market Outcomes	
Labor Market Status	We classify workers in one of five categories based on employment and unemployment information from Statistics Sweden: (1) employed, (2) unemployed, (3) sole proprietor, (4) incorporated entrepreneur, and (5) other. The other category includes those outside the labor force (for example, students).
Labor Market Experience	Calculated as the number of years since an individual last obtained a degree from a school based on data from the Education Register at Statistics Sweden. For those without a degree, we calculate it as $age - 19$ if attended upper secondary school ("High School") and $age - 16$ if attended primary or lower secondary education or below.
Labor Income	Original source is Swedish Tax Office records. Labor income refers to total gross annual labor income in thousands of 2005 SEK from all sources.
Tenure	We calculate the tenure of a worker based on observing worker-firm links from 1990 onward. We include a truncation dummy to account for not observing information before 1990.
Sector	Employer sector of operation classification. We use the SNI2002 classification and map the SNI1992 and SNI2007 to SNI2002 for years the SNI2002 classification is not available. We then aggregate industries to seven sectors: (1) manufacturing, (2) wholesale and retail, (3) real estate, renting, and business activities, (4) education, (5) health and social work (6) other, and (7) worker not employed.
Geographic Location	Employer geographic location. We use the NUTS2 region coding provided by Statistics Sweden. The regions are: (1) Stockholm, (2) Östra Mellansverige, (3) Småland med Öarna, (4) Sydsverige, (5) Västsverige, (6) Norra Mellansverige, (7) Mellersta Norrland, (8) Övre Norrland, and (9) worker not employed.

Continued on next page.

Continued from previous page.

Panel C: New Business Characteristics	
Entrepreneurship Entry	Entrepreneurship entry takes the value one for individuals switching to entrepreneurship and zero otherwise. We rely on the entrepreneurship classification provided by Statistics Sweden to construct this dummy. See section 2 for additional details.
Incorporation Status	A dummy based on entrepreneurship type provided by Statistics Sweden. Takes the value one for entrepreneurs running incorporated firms and the value zero for sole proprietorships.
Gross Jobs at $t+s$	For entrepreneurs entering entrepreneurship at time t, gross employment equals $G_{t+s} = \frac{E_{t+s}}{F_t}$ where G_{t+s} is gross jobs at $t+s$, E_{t+s} is employment in the firm at $t+s$, F_t is the number of founding entrepreneurs, and s measure years since founding. For businesses not in operation, gross jobs at $t+s$ equals zero. See section 2 for additional details.
Net Jobs at $t+s$	For entrepreneurs entering entrepreneurship at time t, net employment equals $N_{t+s} = \frac{E_{t+s}-F_{t+s}}{F_t}$ where N_{t+s} is net jobs at $t+s$, E_{t+s} is employment in the firm at $t+s$, F_{t+s} is the number of entrepreneurs in the firm at $t+s$, F_t is the number of founding entrepreneurs, and s measure years since founding. For businesses not in operation, net jobs at $t+s$ equals zero. See section 2 for additional details.
Total Earnings at $t+s$	For entrepreneurs entering entrepreneurship at time t, total earnings at time $t+s$ equals the sum of annual labor and capital income at $t+s$ if the business is in operation in the sense that is has at least one employee (including the founders). For businesses not in operation, total earnings at $t+s$ equals zero.

Table 2: Summary Statistics on Pre-entry Characteristics

This table displays summary statistics for $t-1$ on the full sample (column 1), those not entering entrepreneurship at t (column 2), those entering entrepreneurship at t (column 3), those entering as sole proprietors (column 4), and those entering as incorporated (column 5). Variable descriptions are available in Table 1.

	Full Sample (1)	No Entry (2)	Entry (3)	Sole Proprietors (4)	Incorporated (5)
Observations	24,476,848	24,243,834	233,014	195,511	37,503
Entering Entrepreneurship	0.95%	0%	100%	83.9%	16.1%
Panel A: Demographic Characteristics					
Female	0.492	0.493	0.359	0.385	0.219
Educational Attainment					
- <9y	0.038	0.038	0.034	0.038	0.015
- 9-10y	0.108	0.108	0.110	0.113	0.092
- Upper secondary	0.488	0.488	0.489	0.493	0.472
- Post-secondary (2y<)	0.071	0.071	0.083	0.080	0.098
- Post-secondary (>=2y)	0.270	0.270	0.261	0.252	0.307
- Post-graduate	0.009	0.009	0.008	0.007	0.012
- Not available	0.016	0.016	0.015	0.017	0.005
Panel B: Prior Labor Market Characteristics					
Prior Labor Market Status					
- Employed	0.765	0.767	0.620	0.621	0.617
- Unemployed	0.057	0.056	0.094	0.106	0.035
- Entrepreneur (Sole Proporietor)	0.042	0.042	0.079	0.067	0.142
- Entrepreneur (Incorporated)	0.026	0.026	0.045	0.027	0.143
- Other	0.109	0.109	0.161	0.180	0.064
Prior Labor Income	199.644	200.272	134.273	111.253	254.282
Prior Tenure	4.059	4.082	1.722	1.541	2.665
Prior Industry					
- Manufacturing	0.125	0.126	0.070	0.068	0.080
- Wholesale and Retail	0.095	0.096	0.083	0.074	0.132
- Real Estate, Renting, and Bus. Act.	0.105	0.105	0.124	0.101	0.240
- Education	0.065	0.065	0.039	0.042	0.022
- Health and Social Work	0.174	0.175	0.073	0.077	0.047
- Other	0.210	0.210	0.231	0.227	0.250
- Not Employed	0.225	0.223	0.381	0.410	0.229
Prior Location					
- Stockholm	0.235	0.235	0.219	0.206	0.286
- Östra Mellansverige	0.111	0.111	0.079	0.074	0.105
- Småland med Öarna	0.064	0.064	0.046	0.043	0.059
- Sydsverige	0.096	0.096	0.079	0.077	0.088
- Västsverige	0.149	0.150	0.115	0.110	0.141
- Norra Mellansverige	0.061	0.061	0.043	0.041	0.053
- Mellersta Norrland	0.028	0.028	0.023	0.022	0.025
- Övre Norrland	0.037	0.037	0.025	0.024	0.033
- Not Employed	0.219	0.218	0.371	0.402	0.210

Table 3: Summary Statistics on Outcomes

This table displays summary statistics on gross jobs, net jobs, and total earnings accruing to the founder two years after founding ($t+2$) a business. Variable descriptions are available in Table 1. Panel A displays outcomes unconditional on survival, i.e. the outcomes takes value zero of the business has no employees (including the founder) at $t+2$. Panel B displays outcomes conditional on survival, i.e. outcomes for the firms that have employees (including the founder) at $t+2$.

	Mean	SD	P25	Median	P75	P95	P99
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Outcomes at $t+2$							
Unincorporated (N=195511)							
- Gross jobs	0.656	0.857	0.000	1.000	1.000	2.000	3.000
- Net jobs	0.105	0.633	0.000	0.000	0.000	1.000	2.500
Incorporated (N=37503)							
- Gross jobs	2.477	5.681	1.000	1.000	2.500	8.000	20.500
- Net jobs	1.725	5.403	0.000	0.000	1.500	7.000	19.333
Panel B: Outcomes at $t+6$ for the 2005 Cohort							
Unincorporated (N=195511)							
- Gross jobs	0.091	0.397	0.000	0.000	0.000	1.000	1.000
- Net jobs	0.017	0.245	0.000	0.000	0.000	0.000	0.000
Incorporated (N=37503)							
- Gross jobs	0.459	3.554	0.000	0.000	0.000	2.000	9.000
- Net jobs	0.362	3.463	0.000	0.000	0.000	1.000	8.000
Panel C: Outcomes Conditional on Survival at $t+2$							
Unincorporated (N=108909)							
- Gross jobs	1.178	0.839	1.000	1.000	1.000	2.000	4.000
- Net jobs	0.189	0.839	0.000	0.000	0.000	1.000	3.500
- Total earnings	43.569	2196.175	-14.321	-0.094	16.297	183.234	599.720
Incorporated (N=29861)							
- Gross jobs	3.111	6.210	1.000	1.500	3.000	9.000	23.000
- Net jobs	2.166	5.976	0.000	1.000	2.000	8.000	22.000
- Total earnings	361.100	598.477	187.028	289.034	412.030	809.055	1714.548
Panel D: Outcomes Conditional on Survival at $t+6$ for the 2005 Cohort							
Unincorporated (N=14642)							
- Gross jobs	1.213	0.864	1.000	1.000	1.000	2.000	5.000
- Net jobs	0.224	0.869	0.000	0.000	0.000	1.000	4.000
- Total earnings	32.954	299.129	-17.738	-0.450	17.198	202.863	657.212
Incorporated (N=4167)							
- Gross jobs	4.130	9.926	1.000	2.000	4.000	13.000	34.000
- Net jobs	3.257	9.927	0.000	1.000	3.000	12.000	34.000
- Total earnings	396.715	584.248	194.940	308.482	455.069	889.789	2319.557

Table 4: Job Creation and Incorporation Status

This table displays the output from OLS regressions on the log of gross jobs at $t+2$ and the log of net jobs at $t+2$ corresponding to the model in equation 3. Columns 7-8 refers to regressions on the log of gross jobs at $t+6$ and the log of net jobs at $t+6$. Variable descriptions are available in Table 1. Individual controls include gender, education, labor market status, labor market experience (plus its square), dummies for each year of tenure for the employed, and decile dummies for labor income. Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

	All years $(t+2)$		All years $(t+2)$		All years $(t+2)$		All years $(t+6)$	
	Gross Jobs	Net Jobs	Gross Jobs	Net Jobs	Gross Jobs	Net Jobs	Gross Jobs	Net Jobs
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Incorporation Status	0.490***	0.510***	0.485***	0.504***	0.493***	0.502***	0.470***	0.493***
	(0.00377)	(0.00397)	(0.00380)	(0.00397)	(0.00392)	(0.00400)	(0.0103)	(0.00981)
Characteristics at $t-1$								
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Location FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Individual Controls	No	No	No	No	Yes	Yes	Yes	Yes
Observations	233,014	233,014	233,012	233,012	233,012	233,012	44,890	44,890
R^2	0.131	0.200	0.136	0.205	0.147	0.219	0.122	0.198

Table 5: Multinomial Logit for Entry

This table displays the output from a multinomial logit model with three outcomes: in salaried employment at $t = 0$ (omitted), entering as a sole proprietor at $t = 0$ (column 1) and entering as incorporated at $t = 0$ (column 2). Observations with other outcomes at $t = 0$ are dropped. Variable descriptions are available in Table 1. Individual controls include gender, education, labor market status, labor market experience (plus its square), and dummies for each year of tenure for the employed. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	Unincorporated (1)	Incorporated (2)
Labor Income Decile at $t-1$		
Below 10th	2.816***	1.310***
	(0.0152)	(0.0350)
10th-20th	2.450***	1.090***
	(0.0117)	(0.0382)
20th to 30th	1.408***	1.100***
	(0.00944)	(0.0226)
30th to 40th	0.733***	0.316***
	(0.00912)	(0.0243)
40th to 50th	(Omitted)	(Omitted)
60th to 70th	-0.538***	-0.137***
	(0.0126)	(0.0266)
70th to 80th	-0.669***	0.0395
	(0.0129)	(0.0243)
80th to 90th	-0.833***	0.200***
	(0.0133)	(0.0227)
Above 90th	-0.974***	0.553***
	(0.0132)	(0.0211)
Other Characteristics at $t-1$		
Year FE	Yes	Yes
Industry FE	Yes	Yes
Location FE	Yes	Yes
Individual Controls	Yes	Yes
Observations	17,814,490	17,814,490

Table 6: Job Creation and Ability

This table displays the output from OLS regressions on the log of gross jobs at $t+2$ and the log of net jobs at $t+2$ corresponding to the model in equation 3. Variable descriptions are available in Table 1. Individual controls include gender, education, labor market status, labor market experience (plus its square) and dummies for each year of tenure for the employed. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	All years $(t+2)$		All years $(t+2)$	
	Gross Jobs	Net Jobs	Gross Jobs	Net Jobs
	(1)	(2)	(3)	(4)
Incorporation Status			0.493***	0.502***
			(0.00392)	(0.00400)
Labor Income Decile				
Below 10th	-0.135***	-0.133***	-0.0502***	-0.0464***
	(0.00693)	(0.00607)	(0.00646)	(0.00551)
10th-20th	-0.0402***	-0.0520***	-0.00845**	-0.0196***
	(0.00452)	(0.00347)	(0.00431)	(0.00314)
20 to 30th	-0.0339***	-0.0331***	-0.0261***	-0.0251***
	(0.00392)	(0.00318)	(0.00371)	(0.00289)
30th to 40th	-0.0260***	-0.0266***	-0.00990***	-0.0102***
	(0.00404)	(0.00332)	(0.00382)	(0.00301)
40th to 60th	(Omitted)	(Omitted)	(Omitted)	(Omitted)
60th to 70th	0.0306***	0.0241***	0.00520	-0.00177
	(0.00577)	(0.00511)	(0.00533)	(0.00458)
70th to 80th	0.0613***	0.0540***	0.00907*	0.000757
	(0.00595)	(0.00543)	(0.00540)	(0.00480)
80th to 90th	0.0928***	0.0995***	0.00592	0.0110**
	(0.00629)	(0.00591)	(0.00567)	(0.00522)
Above 90th	0.118***	0.143***	-0.0340***	-0.0121**
	(0.00598)	(0.00560)	(0.00546)	(0.00505)
Characteristics at $t-1$				
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Location FE	Yes	Yes	Yes	Yes
Individual Controls	Yes	Yes	Yes	Yes
Observations	233,012	233,012	233,012	233,012
R-squared	0.038	0.059	0.146	0.215

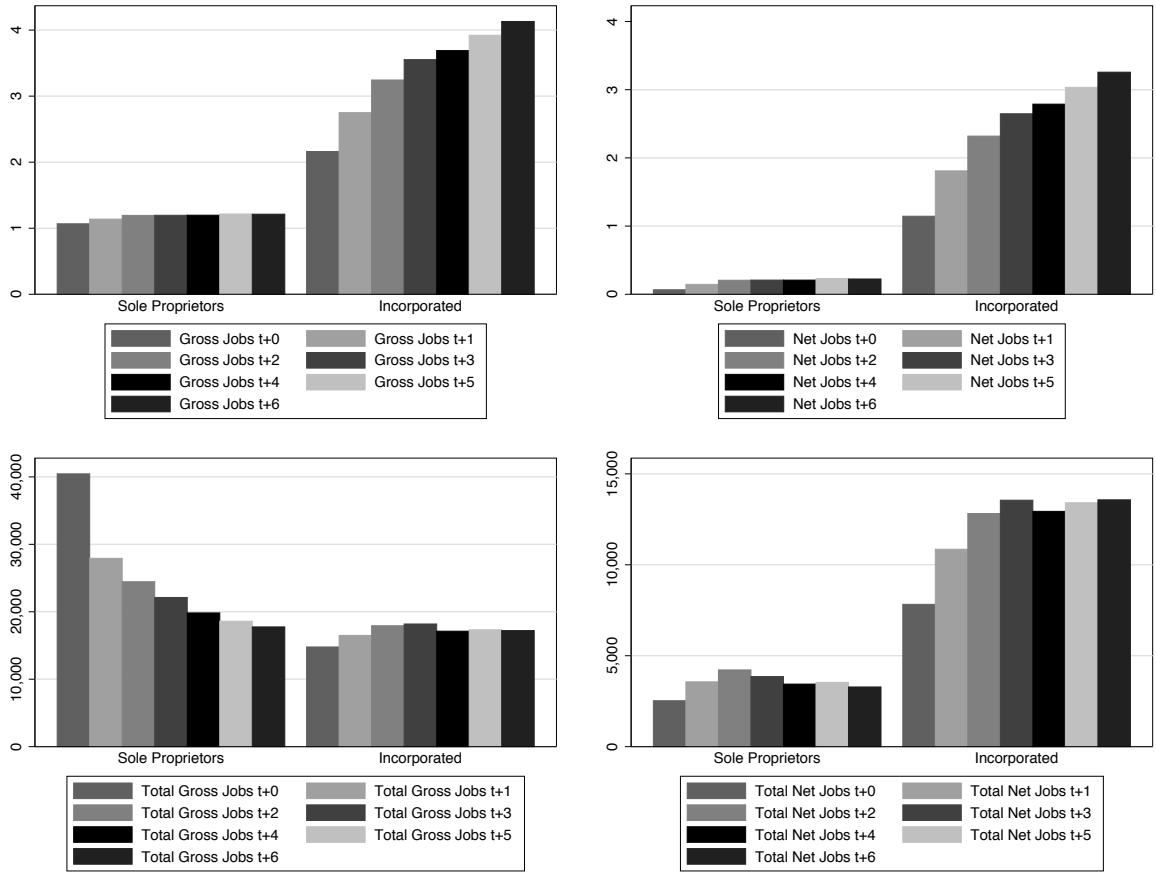

Figure 1: Total Gross and Net Job Creation by Incorporation Status

These figures displays gross and net job creation for new ventures created in 2005 by incorporation status. The top two figures shows mean gross and net jobs in the firms *conditional on survival* for $t = 0$ to $t = 6$. The bottom two figures show the economywide sum of gross jobs and sum of net jobs created by new businesses started at $t = 2005$ for $t + 0$ to $t + 6$.

Appendix

Table A1: Job Creation and Incorporation Status (Inverse Hyperbolic Sine Transformation)

This table displays the output from OLS regressions on the inverse hyperbolic sine transformation of gross jobs at $t+2$ and the inverse hyperbolic sine transformation of net jobs at $t+2$ corresponding to the model in equation 3. Columns 7-8 refers to regressions on the log of gross jobs at $t+6$ and the log of net jobs at $t+6$. Variable descriptions are available in Table 1. Individual controls include gender, education, labor market status, labor market experience (plus its square), dummies for each year of tenure for the employed, and decile dummies for labor income. Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

	All years $(t+2)$		All years $(t+2)$		All years $(t+2)$		All years $(t+6)$	
	Gross Jobs	Net Jobs	Gross Jobs	Net Jobs	Gross Jobs	Net Jobs	Gross Jobs	Net Jobs
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Incorporation Status	0.629***	0.649***	0.623***	0.642***	0.633***	0.640***	0.599***	0.607***
	(0.00475)	(0.00500)	(0.00478)	(0.00500)	(0.00495)	(0.00505)	(0.0129)	(0.0123)
Characteristics at $t-1$								
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Location FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Individual Controls	No	No	No	No	Yes	Yes	Yes	Yes
Observations	233,014	233,014	233,012	233,012	233,012	233,012	44,890	44,890
R^2	0.133	0.201	0.138	0.206	0.149	0.220	0.124	0.200