Journal of Business Venturing Insights 8 (2017) 64–70

Contents lists available at ScienceDirect

Journal of Business Venturing Insights

journal homepage: www.elsevier.com/locate/jbvi

Gross, net, and new job creation by entrepreneurs☆

Thomas Åstebro[a], Joacim Tåg[b,*]

[a] HEC Paris, 1 rue de la Liberation, 78351 Jouy-en-Josas Cedex, France
[b] Research Institute of Industrial Economics (IFN), Box 55665, SE-102 15 Stockholm, Sweden

ARTICLE INFO

JEL codes:
L26
J24

Keywords:
Entrepreneurship
Job creation
Incorporation
Occupational choice
Self-employment
Sole proprietorship

ABSTRACT

Using a dataset with over 24 million year-employment observations and the universe of more than 230,000 entries into entrepreneurship in one economy we analyze the gross (including the founders), net (excluding the founders), and new (jobs to the former unemployed or those outside the labor force) job creation by entrepreneurs two and six years after start-up. These novel measures of job creation show that the average entrepreneur does not create any jobs for any other than him/her-self, and typically arrives from having another job. Thus, short term job creation by entrepreneurs involves a reshuffling of jobs from older to new firms rather than creating new jobs.

1. Introduction

Over the past decade, policy makers have embraced entrepreneurship as an opportunity to create new jobs. 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., 2015; Haltiwanger et al., 2013; Heyman et al., 2013; Fairlie and Miranda, 2016). A large portion of the recent shift in employment has thus been due to entrepreneurs.

Nevertheless, data limitations typically prevent computing how many employees entrepreneurs hire and from where the entrepreneurs and their hires come from since prior work history is often not observable. These data limitations can lead to serious errors in statistical inferences made and associated policy recommendations. For example, if most entrepreneurs arrive from prior employment and they tend not to hire anyone else, then there is no job creation, but simply a reshuffling of jobs from old to new firms. Yet, if their origin is not accounted for, the jobs by entrepreneurs in new firms may seem to policy makers like new to the economy.

In addition, there are various programs trying to create employment for the unemployed through entrepreneurship. These programs have sometimes met with success (Caliendo and Künn, 2011; Hombert et al., 2016). While these programs might (at least temporarily) move some unemployed into employment, it is not clear from prior studies how large a fraction of entrepreneurs that originates from unemployment. If this fraction is large, then such programs may make a big dent in unemployment. By recording the origin of entrepreneurs and their employees and by creating a precise measure of job creation for these contra other types of hires, we in this paper are able to show the importance of entrepreneurship for creating jobs for the prior unemployed.

Another major difficulty has been that owners of sole proprietorships are often not recorded as employees. Job creation analysis

☆ 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 (2015.0048). We thank seminar participants at various institutions and conferences for excellent comments and suggestions.

* Corresponding author.
E-mail addresses: astebro@hec.fr (T. Åstebro), joacim.tag@ifn.se (J. Tåg).

http://dx.doi.org/10.1016/j.jbvi.2017.06.001
Received 25 April 2017; Received in revised form 16 June 2017; Accepted 23 June 2017

has therefore been limited to employment growth in firms reporting at least one non-owner employee. This overstates employment growth if used to infer growth among all new businesses. Past studies can therefore only provide suggestive evidence of gross employment by all entrepreneurs (Davis et al., 2007; Shane, 2008; Parker, 2009; Hurst and Pugsley, 2011; Fairlie and Miranda, 2016).

This paper fills a void by suggesting three separate measures of job creation: the gross (including the founders), net (excluding the founders) and new (jobs to the former unemployed or from outside of the labor force) job creation per each entrepreneur. We use measures of job creation per founder because we want to avoid double-counting jobs created precisely when there are more than one founder in the firm. The idea is that in multiple-founder firms (say with 2 founders), an additional hire is allocated in equal fractions (here half) to each of the (two) founders. If we did not do so, the additional hire would be counted twice, once for each of the founders, and job growth would be overstated. We provide summary statistics using 24 million year-employment observations and the universe of more than 230,000 entries into entrepreneurship in Sweden and differentiate between sole proprietors and those starting incorporations.

We show that the average entrepreneur does not create any jobs for any other than him/her-self. Job creation for others is almost non-existent among sole proprietors, and a trivial number of sole proprietors reform into corporations. Further, the average entrepreneur typically arrives from having a job so that even for herself there is no new job created, but simply a reshuffling of jobs from older to new firms. Finally, the aggregate gross number of jobs created by sole proprietors is consistently higher than those created by incorporated firms simply because there are more than five times as many new sole proprietors as there are owners of incorporated firms. These data show some startling lack of new job creation by entrepreneurs in the short run.

2. Measures of job creation

Consistent with Swedish tax authorities we define an individual as entrepreneur if she derives the majority of her taxable income from a business she owns in full or in part. 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 both different from those of the previous year, and
3. *New firm.* No individual in our sample worked for the firm in the previous year.

Statistics Sweden further distinguishes between incorporated firms and sole proprietorships. A sole proprietorship is a business owned and run by a 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. 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.

To measure gross employment created by each entrepreneur we use the total 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 specification. For the earliest available cohort in the sample we use $s = 6$ and study job creation over a six year period.

We define net job creation for others 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.

To measure new job creation we use the number of employees including owners which originated from non-employment prior to entering the firm. We define non-employment as not having a firm-affiliation and it thus includes, for example, unemployed, students, those arriving from abroad, and stay-at-home parents. Specifically, at time $t + s$ new employment equals:

$$J_{t+s} = \frac{U_{t+s}}{F_t} \tag{3}$$

where J_{t+s} is new jobs at $t + s$, U_{t+s} is employment at the firm at $t + s$ originating from non-employment in $t - 1$, and F_t is the number of entrepreneurs at the firm at t, and s measures the number of years since founding .

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 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.
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.

If the firm closes prior to $t+s$, we set all three measures to zero. Note also that all measures are on a per-founder basis which allows us to compute job creation by each original founder.[1]

3. Gross, net and new 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 5).[2] 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% per year for all individuals. The entry rate is somewhat smaller than in other studies because our definition of entrepreneurship is rather stringent. We only examine people deriving their primary source of income from entrepreneurship making the number of people passing the definition smaller than for example if one includes all those simply registering a new business, or including also those

[1] Results are not particularly sensitive to using other algorithms. Since sole proprietorships mostly have one founder, results don't differ much if one double-counts the few employees in multiple-owner sole proprietorship firms. For the incorporated, job growth predictably ends up larger if double counting employees in multiple-owner firms, as more of these firms tend to have multiple founders. A version of Table 3 that does not calculate these measure on a per-founder basis is available on request from the corresponding author.

[2] Variable descriptions are available in Table 1. Åstebro and Tåg (2015); Tåg et al. (2016) describe the data in detail.

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 Proprietor)	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 (SEK)	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

reporting some consulting income in parallel with maintaining a wage job. We also 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.

Table 3 shows the distributions of gross and net jobs two and six years after founding a sole proprietorship or incorporated business. Sole proprietors represent 83.9% of all entrepreneurial entries, while those forming incorporated firms represent 16.1% of all entries. This table reports striking differences in 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 net 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 quickly, but they are extremely few. After two years, at the 95th (99th) percentile the incorporated entrepreneurs create 7 (19.3) net jobs. Among the sole proprietors, however, there is almost no net job growth. Even at the 95th (99th) percentile, sole proprietors only create 1 (2.5) net jobs.

Looking at new jobs, there are 0.28 such created by sole proprietors and 0.67 such created in incorporated firms. The difference in

Table 3
Summary Statistics on Outcomes. This table displays summary statistics on gross jobs, net jobs, new jobs and total earnings accruing to the founder two years after founding ($t + 2$) a business. 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 at $t + 6$ for the 2005 cohort. Panel C displays outcomes conditional on survival, i.e. outcomes for the firms that have employees (including the founder) at $t + 2$. Panel D display the same at $t + 6$ for the 2005 cohort. Data comes from the Statistics Sweden's LISA database. We use data for $t = 2005$ to $t = 2009$ for everyone in Sweden between 20 and 60 years old. 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).

	Mean (1)	SD (2)	P25 (3)	Median (4)	P75 (5)	P95 (6)	P99 (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
- New jobs	0.277	0.560	0.000	0.000	0.500	1.000	2.000
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
- New jobs	0.666	1.971	0.000	0.000	1.000	3.000	7.000
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
- New jobs	0.040	0.243	0.000	0.000	0.000	0.000	1.000
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
- New jobs	0.141	1.244	0.000	0.000	0.000	1.000	3.000
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
- New jobs	0.497	0.673	0.000	0.000	1.000	1.000	3.000
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
- New jobs	0.836	2.177	0.000	0.000	1.000	3.000	8.000
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
- New jobs	0.539	0.720	0.000	0.000	1.000	1.333	3.000
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
- New jobs	1.266	3.536	0.000	0.500	1.000	4.500	12.000

new jobs between sole proprietors and incorporated firms is therefore the smallest among our measures of job creation. This is a reflection of that there is a substantially larger fraction of sole proprietors who entered from prior unemployment or other non-employment (28.6%) than there are owners of incorporated firms entering from prior unemployment or other non-employment (9.9%). A lot of new job creation among sole proprietors is apparently for entrepreneurs themselves. Nevertheless, there are still twice as many new jobs for the prior non-employed created in incorporated firms.

mong the few jobs created in new firms, a surprisingly large fraction originates from unemployment. For example, at the 75th percentile, one out of every two (two and a half) jobs created in new sole proprietorships (new incorporated firms) are for individuals which previously were unemployed. These percentages seem relatively persistent even in the medium term, as illustrated in Panels B and D. The latter finding indicates that the unemployed when hired in new firms do not lose their jobs quicker than other hired individuals.

The differences in job creation between sole proprietors and incorporated firms 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 gross jobs, while gross employment in incorporated firms has fallen to 0.46 employees. Panel C shows that sole proprietorships that survive at $t + 2$ tend to have 1.2 gross jobs while incorporated firms have 3.1 gross jobs. Two years out, and at the 99th percentile, gross jobs for the sole proprietorships is 4 and for the incorporated firms is 23. Six years out, Panel D shows that the sole proprietorships attain 1.2 gross jobs and the incorporated firms

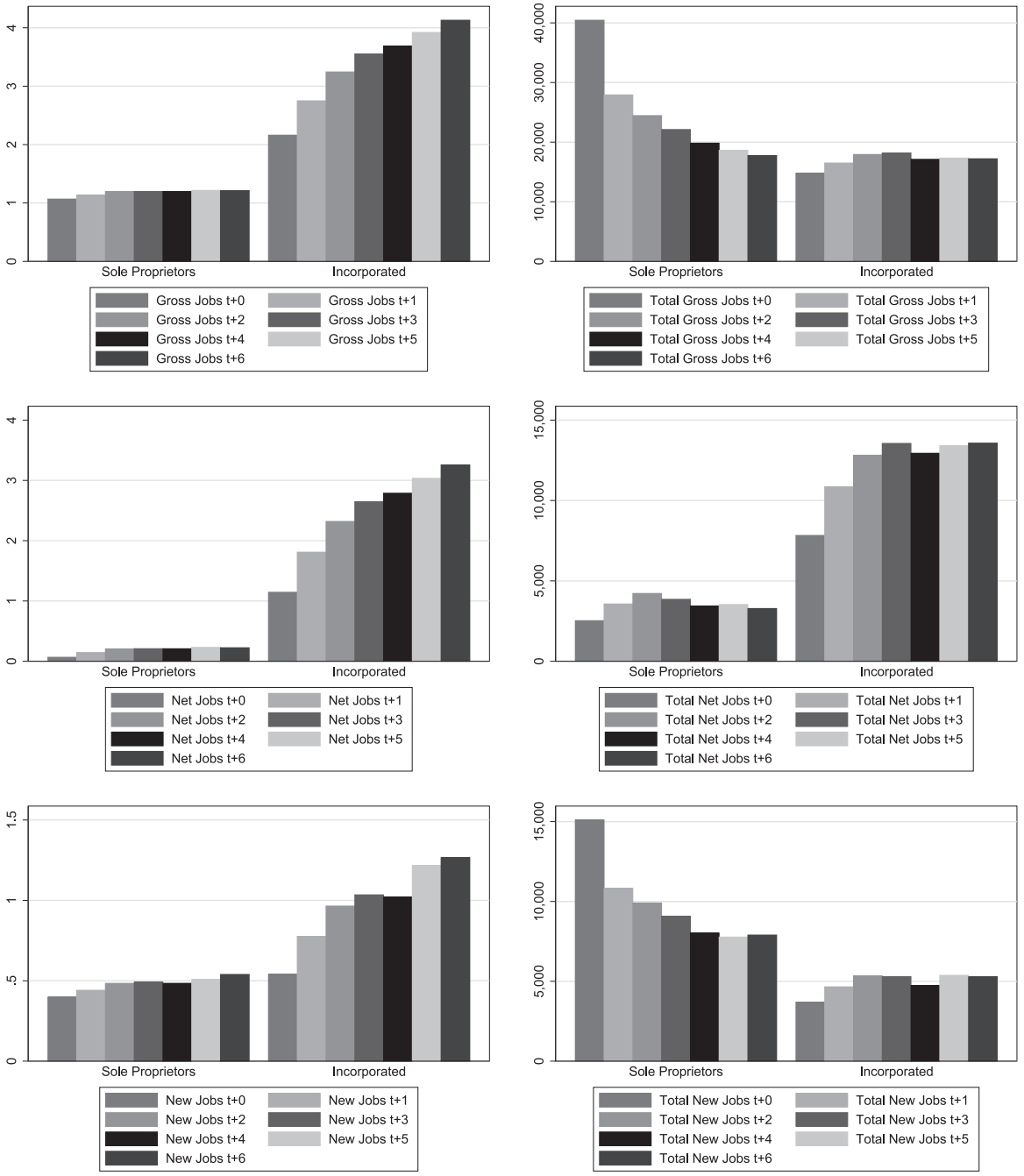

Fig. 1. Gross, Net, and New Job Creation by Incorporation Status. These figures displays gross, net and new job creation for new ventures created in 2005 by incorporation status. The left hand side shows mean gross, mean net jobs and mean new jobs in the firms *conditional on survival* for $t = 0$ to $t = 6$. The right hand side figures show the economywide sum of gross jobs, sum of net jobs, and sum of new jobs created by new businesses started at $t = 2005$ for $t + 0$ to $t + 6$.

4.1 gross jobs at the mean, and 5 and 34 gross jobs respectively at the 99th percentile.

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. However 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.

It has been suggested that non-employers which migrate into employer status account for a sizable share of young employers (Davis et al., 2007). Consistently, we find that those young firms which change legal form from sole proprietorship to incorporation grow faster than those which start fresh as incorporated. Our estimates suggest a 10–11% higher growth rate (for details see Åstebro

and Tåg, 2015). However, only 0.5% of all sole proprietors in operation at $t-1$ switch to forming a corporation at t. If we restrict analysis to firms less than 2 years old the fraction is 0.7%. Thus, an overwhelming number of those that choose sole proprietorship remain with that legal form.

4. Total gross, net and new job creation

In the aggregate, who creates more jobs: sole proprietors or incorporated entrepreneurs? The answer is not straightforward. Although we have shown that incorporated firms create more jobs per entrepreneur, much 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.

Fig. 1 is informative in answering this question. This figure displays gross, net and new job creation for new ventures created in 2005 by incorporation status. The left hand side figures show mean gross, net and new jobs in the firms *conditional on survival* for $t = 0$ to $t = 6$. The right hand side figures show the economy-wide sums of gross, net and new jobs created by new businesses started at $t = 2005$ from $t + 0$ to $t + 6$. The left hand side 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), net terms (middle), and new terms (bottom). 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 right hand 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 are very similar at around 20,000. The middle right figure, in combination with the top and middle left 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.

The bottom left figure displaying new jobs is similar to the top left figure indicating gross jobs, although at lower levels. This illustrates that new hirings of the non-employed into sole proprietorships is flat beyond the initial founders, while incorporated firms continue to hire previously non-employed beyond those hired at founding. The bottom right figure indicates that the total number of non-employed hired into sole proprietors is about 50% more in sole proprietors than in incorporated firms at the end of six years, reflecting that there is initially a larger probability that the founder will be coming from non-employment in a sole proprietorship than in an incorporated firm.

5. Concluding remarks

This paper suggests three separate measures of job creation: the gross (including the founders), net (excluding the founders) and new (jobs to the former unemployed or from outside of the labor force) job creation by entrepreneurs. While policy makers have embraced entrepreneurship as an opportunity to create jobs, we show using registry data that there is very little job creation by entrepreneurs in the short and medium term beyond that created for themselves, and that most jobs created by entrepreneurs involves a reshuffling of jobs from older to new firms. Nevertheless, among the few jobs created, a surprisingly large fraction possibly between 25 and 60% depending on firm type and length of time since firm creation, is for individuals originating from unemployment. Thus, while gross job creation by entrepreneurs is small, entrepreneurship may be an important vehicle for moving individuals out of unemployment.

References

Anyadike-Danes, M., Hart, M., Du, J., 2015. Firm dynamics and job creation in the United Kingdom: 1998–2013. Int. Small Bus. J. 33 (1), 12–27.
Åstebro, T., Tåg, J., 2015. Jobs Incorporated: Incorporation Status and Job Creation. IFN Working Paper No. 1059.
Caliendo, M., Künn, S., 2011. Start-up subsidies for the unemployed: long-term evidence and effect heterogeneity. J. Public Econ. 95 (3), 311–331.
Davis, S.J., Haltiwanger, J., Jarmin, R.S, Krizan, C.J., Miranda, J., Nucci, A., Sandusky, K., 2007. Measuring the Dynamics of Young and Small Businesses: Integrating the Employer and Nonemployer Universes. NBER Working Paper No. 13226.
Decker, R., Haltiwanger, J., Jarmin, R.S., Miranda, J., 2014. The Role of Entrepreneurship in US Job Creation and Economic Dynamism. J. Econ. Perspect. 28 (3), 3–24.
Fairlie, R.W., Miranda, J., 2016. Taking the Leap: The Determinants of Entrepreneurs Hiring their First Employee. NBER Working Paper No. 22428.
Haltiwanger, J.C., Jarmin, R.S., Miranda, J., 2013. Who creates jobs? Small versus large versus young. Rev. Econ. Stat. 95 (2), 347–361.
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.
Hombert, J., Schoar, A., Sraer, D. and Thesmar, D. 2016. Can Unemployment Insurance Spur Entrepreneurial Activity? Evidence From France. Working paper, HEC Paris.
Hurst, E., Pugsley, B., 2011. What do small businesses do? Brook. Pap. Econ. Act. 43 (2), 73–142.
Parker, S., 2009. The Economics of Entrepreneurship. Cambridge University Press, Cambridge.
Shane, S.A., 2008. The Illusions of Entrepreneurship: The Costly Myths That Entrepreneurs, Investors, and Policy Makers Live By. Yale University Press, New Haven.
Tåg, J., Åstebro, T., Thompson, P., 2016. Hierarchies and Entrepreneurship. Eur. Econ. Rev. 89, 129–147.