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employ?**

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# Labor mobility and entrepreneurship: Who do new firms employ?

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## Abstract

Entrepreneurship is often claimed to be important for generating employment. However, the empirical evidence on the relationship between entrepreneurship is not always convincing. Most of the studies that analyse the relationship between new firm formation and employment growth perform their analysis on cross-country or regional data. At the micro-level, we still know little about the labour dynamics and re-allocation effects induced by new firm formation. Which role do new firms play regarding labour reallocation? This paper intends to explore the individual and firm characteristics for employees in new Swedish firms. Do new firm start-ups absorb outsiders in the labour market or do they recruit employees from already incumbent firms? The paper use unique matched firm-employees dataset that makes it possible to link new firm formation and information about the individuals employed in these new firms. The empirical results indicate that the individual and firm characteristics associated with employees differ between new and incumbent firms. In particular, the share of immigrants, recently graduated employees and people entering the labor market is slightly higher in new firms. Hence, new firms might play a more important role for outsiders in the labor market.

**Keywords:** Entrepreneurship; labour mobility; employment

**JEL:** L26; L21; L62

# 1. Introduction

During recent decades, the importance of new firm formation has received increased attention from both researchers and policy makers. The main reason for this interest is the strong belief that new firms are of particular importance for future economic growth and employment. Several studies can, at least from a long-term perspective, establish a positive relationship between new firm formation, productivity and economic growth (see e.g. summaries by Praag & Versloot (2007) and Karlsson & Nyström 2008). How do these improvements in productivity and growth through the creation of new firm occur explicitly? One frequent explanation is that many new firms are established based on innovations. Hence, new firms are claimed to be a crucial link to commercialization of innovations (Acs, et al. 2004). In addition, it is argued that the establishments of new firms are an important part of the structural change process since it represents re-allocation of resources, which may result in a more efficient utilization of resources (Schumpeter 1934 and 1942). Furthermore, labor mobility is an important source of knowledge spillovers. According to the theories of endogenous growth, developed by Romer (1986 and 1990) and Lucas (1988), the interactions between individuals, which result in knowledge spillovers, are crucial to increased productivity and enhanced economic growth.

When a new firm is established additional employees need to be recruited if the firm is to expand its business beyond the founder of the company. This causes labor dynamics since these employees need to be recruited, either from already existing firms, from firms closing down their business or from people who enter the labor force. Entry into the labor force occurs, for example, when young individuals get their first job or when a previously unemployed person receives a new job. In labor economics, one usually distinguishes between insiders and outsiders (see e.g. Lindbeck and Snower, 1989). The theory suggests that insider (incumbent employees) have market power and a stronger position on the labor market. Hence, they can be expected to be less willing to risk their strong position and enter a newly established firm.

In this paper, the main characteristics of employees in new firms will be compared to incumbent firms. Do new firms employ certain types of labor? Due to the novelty of the research area, we know very little about what can be expected. Is it the case that new firms are of particular importance to outsiders such as young people and immigrants who are less likely to have a strong

position in the labor market? Furthermore, we would like to study if there are any particular patterns with regard to sex and educational background among the employees in new firms. Furthermore, we will start to explore the role of previous work history of employees in new firms. To what extent are employees in new firms recruited from incumbent firms? To what extent are they new entrants in the labor market.<sup>1</sup> The econometric set-up that will be used in order to answer these questions is to estimate a probit-model where the probability to be employed in a new firm is contrasted to individual and firm characteristics. What is the probability of being employed in a new firm for individuals with different characteristics such as age, sex, and educational background?

This research empirical paper is novel due to its intention to merge two theoretical and empirical fields in economics – entrepreneurship and labor market economics. The paper will use an international perspective unique dataset of matched firm-employees dataset. If the research project find that labor mobility related to employment in new firms have special characteristics and patterns compared to incumbent firms, this would be an extremely important contribution to the empirical knowledge in the field. Such a finding would be crucial for researchers trying to further unravel the micro economic foundations regarding the link between new firm formation and economic growth.

The paper is organized as follows: Section 2 provide an survey of related literature in this field. Section three describes the data and method. In section, four descriptive statistics for the characteristics in new and incumbent firms are presented and analyzed. Section five present the results of the probit-estimation regarding the probability to be employed in a new firm. Finally, conclusions and suggestions for future research are provided.

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<sup>1</sup> The information in the database does not make it possible to distinguish between different types of entry into the labor market. Hence, we can not explicitly determine, for example, if the person enters the labor market due to a previous unemployment period or other reasons.

## 2. Previous related research

Every year there is a substantial turbulence in an economy in terms of entry and exit of firms. During the period, 1997-2001 about 10 percent of the firms in the manufacturing industry entered and closed down each year. In service sectors, the entry and exit rates are even higher (Nyström 2007). In the labor market, the turbulence is also substantial. Several studies are available regarding the extent and patterns of labor mobility in the Swedish labor market (see e. g. Israelsson, Strannefors and Tydén 2003, Andersson & Tegsjö 2006 and Andersson & Thulin, 2008). For example, Andersson & Thulin, (2008) find that during the period 1987-2005 on average 12.5 per cent of the employees in the private sector change employment every year. However, there are no previous studies, in Sweden or internationally, that explicitly distinguish between labor mobility patterns in new firms compared to incumbent firms.

Labor mobility occurs between both incumbent, new and firms closing down their business. There are some indications that labor mobility related to new firms might be of special interest. Lundmark & Powell (2007) study labor dynamics in the ICT-cluster in Stockholm. They find that the labor mobility was substantially higher in this cluster, compared to the rest of the regional economy. Another related research field concerns the knowledge spillovers associated with individuals starting a new firm (see e.g. Fornnahl, Zellner and Audretsch, 2005 and Sundin & Thörnquist (2006) for a Swedish study in the area. Audretsch & Keilbach (2003) show that labor mobility of in particular labor intensive employees starting a new firm has a positive effect on productivity. Thulin, (2010) shows that labor mobility has a positive effect on regional growth.

### 3.Data and method

We use an in an international perspective unique dataset of matched firm-employees dataset provided by Statistics Sweden. In this database, we can track labor mobility into new firms. The firm level data includes information from the profit and loss account and balance sheet as well as some basic information about industrial classification and employment. For each individual in the dataset information about, for example, age, sex, country of birth, education and year of graduation are available. The database consists of extremely detailed information for all employees in Sweden.

The intention of the paper is to provide a first look at the individual and firm characteristics associated with new firms. In this paper, we use data for 2005 in the empirical analysis. The idea is to extend this analysis to a panel setting cover the period 1997-2007. The database enables an analysis of both at the firms and establishment level. However, we choose to perform the analysis on establishment level since this implies an accurate definition of being new.<sup>2</sup> The database distinguishes between individuals having employment or ownership status. This classification enables us to focus on the individual who have employment status in a new firm i.e. not the entrepreneur.<sup>3</sup> Both labor mobility and new firm formation varies substantially across industrial sectors and regions (see Andersson & Thulin 2008 and Nyström, 2007). Hence, the empirical model includes industry and regional dummies. Table 1 provides the definitions of the variables used in this paper.

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<sup>2</sup> The definition of a new firm is, for example, more sensitive to changes in ownership.

<sup>3</sup> For a more detailed description of the database see , for example, Thulin, (2010)

**Table 1. Definition of variables**

<b>Variable</b>	<b>Variable definition</b>
EMPNEW	1 if employed in new firm, 0 otherwise
<i>Individual characteristics</i>	
AGE	Age of the employee
SEX	1 if female, 0 otherwise
IMMIGRANT	1 if born abroad, 0 otherwise
EDUSEC	1 if the highest attained education is two or three years of upper secondary education 0 otherwise
EDUHIGH	1 if the highest attained education is two or three years of post secondary education or PhD education 0 otherwise
GRAD	Year of graduation
EMPLENTRY	1 if the employee did not have an employment the previous year i.e. emplymententrant, 0 otherwise.
<i>Firm characteristics</i>	
FIRMSIZE	Number of employees in the firm
OWNPRIVATE	1 if private ownership <sup>4</sup> , 0 otherwise
OWNOTHER	1 if other ownership <sup>5</sup> , 0 otherwise
OWNGOV	1 if government ownership, 0 otherwise
OWNMUN	1 if municipality ownership, 0 otherwise
<i>Industry and regional controls</i>	
Industry	Dummy variables for each 2-digit level SIC
Region	Dummy variables for 71 functional regions.

Since the dependent variable has a binary outcome (employed in a new firm or not) a model suitable for estimating a model with discrete dependent variable is needed. The econometric model used in this paper is a probit-model. See, for example Greene (2003), for details about the probit model. A correlation table is reported in Appendix A. The correlation table does not indicate that we should expect any problems with multicollinearity.

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<sup>4</sup> Public limited companies

<sup>5</sup> Other ownership form but still public companies

## 4. Empirical findings

### 4.1. Descriptive statistics for new firms, recent entrants and incumbent firms

This section presents descriptive statistics regarding the individual and firm characteristics in new firms. Table 2 compares these characteristics to already incumbent firms. The table reports the characteristics of firms that were established in 2005. With regard to individual characteristics, we can conclude that employees in new firms are, on average, slightly younger. Incumbent firms have a higher share of male employees compared to new firms. Furthermore, 10 percent of the employees in the incumbent firm are born outside of Sweden, while 14 percent in the new firms are immigrants. There are also some small differences in their educational background. The share of employees with a higher education (post secondary education) is lower in new firms but on the other hand the share of employees with upper secondary education is higher. Furthermore, the employees in the new firms are more recently graduated. With regard to labor mobility, it is interesting to note that seven per cent of the employees in incumbent firms are employment entrants while this figure is substantially higher for new firms (20 per cent) For firm characteristics the average firms size, as have been shown in several previous empirical studies, is substantially smaller in new firms.<sup>6</sup> With regard to ownership status, we note a higher share of publicly owned companies (OWNPRIVATE and OWNOTHER) in new firms.

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<sup>6</sup>Note that we are not able to distinguish between different modes of entrants such as spin-offs or de novo entrants, which may explain the quite large average firm size.



**Table 2 Descriptive statistics new and incumbent firms**

<b>Variable</b>	<b>N. obs.</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
<i>Individual characteristics</i>					
<b>AGE(incumbent)</b>	3481640	42.143	12.546	16	84
<b>AGE (new)</b>	112534	39.432	13.079	16	84
<b>SEX/FEMALE(incumbent)</b>	3481640	0.496	0.500	0	1
<b>SEX/ FEMALE(new)</b>	112534	0.456	0.498	0	1
<b>IMMIGRANT(incumbent)</b>	3481640	0.109	0.312	0	1
<b>IMMIGRANT(new)</b>	112534	0.140	0.347	0	1
<b>EDUSEC(incumbent)</b>	3468016	0.498	0.500	0	1
<b>EDUSEC(new)</b>	111684	0.524	0.500	0	1
<b>EDUHIGH(incumbent)</b>	3468016	0.365	0.482	0	1
<b>EDUHIGH(new)</b>	111684	0.334	0.472	0	1
<b>GRADYEAR(incumbent)</b>	2546912	1990.115	10.645	1947	2005
<b>GRADYEAR(new)</b>	82351	1992.204	10.501	1949	2005
<b>EMPLENTRY(incumbent)</b>	3481640	0.071	0.256	0	1
<b>EMPLENTRY (New)</b>	112534	0.204	0.403	0	1
<i>Firm characteristics</i>					
<b>FIRMSIZE(incumbent)</b>	3481640	430.186	1185.262	1	8453
<b>FIRMSIZE(new)</b>	112534	64.564	171.051	1	1361
<b>OWNPRIVATE(incumbent)</b>	3481640	0.540	0.498	0	1
<b>OWNPRIVATE(new)</b>	112534	0.550	0.498	0	1
<b>OWNOTHER(incumbent)</b>	3481640	0.029	0.167	0	1
<b>OWNOTHER(new)</b>	112534	0.097	0.297	0	1
<b>OWNGOV(incumbent)</b>	3481640	0.035	0.184	0	1
<b>OWNGOV(new)</b>	112534	0.030	0.170	0	1
<b>OWNMUNI(incumbent)</b>	3481640	0.020	0.141	0	1
<b>OWNMUNI(new)</b>	112534	0.006	0.075	0	1

We know from previous research (see e.g. Geroski, 1995) that new firms experience substantial turbulence during their first years. During the first five years there is a high probability of exit, but some of the firms that survive grow rapidly. Hence, it is also interesting to study the individual and firm characteristics for recent entrants, which in our case are defined as firms that are three and five years old respectively. Table 3 and 4 report the individual and firm characteristics for these recent entrants. The tables show that the differences with regard to individual and firm characteristics persist but are, in some cases, less pronounced. Note that the number of individuals employed in new firms is lower for the recent entrants (three years). Two reasons may explain this figure. Firstly, as mentioned above many new firms do not survive their first year. Secondly, there might be a cohort effect since the size of the cohort of new firms varies

over time.

**Table 3: Descriptive statistics recent entrants (3 years since start-up) and incumbent firms**

Variable	N. obs	Mean	Std. Dev.	Min	Max
<i>Individual characteristics</i>					
<b>AGE (incumbent)</b>	3494505	42.123	12.561	16	84
<b>AGE (recent entrant)</b>	99669	39.7746	12.732	16	84
<b>SEX/FEMALE (incumbent)</b>	3494505	0.495	0.500	0	1
<b>SEX/FEMALE (recent entrant)</b>	99669	0.479	0.5000	0	1
<b>IMMIGRANT(incumbent)</b>	3494505	0.110	0.312	0	1
<b>IMMIGRANT(recent entrant)</b>	99669	0.127	0.333	0	1
<b>EDUSEC(incumbent)</b>	3480541	0.498	0.500	0	1
<b>EDUSEC (recent entrant)</b>	99159	0.518	0.450	0	1
<b>EDUHIGH (incumbent)</b>	3480541	0.365	0.481	0	1
<b>EDUHIGH (recent entrant)</b>	99159	0.354	0.478	0	1
<b>GRADYEAR(incumbent)</b>	2554200	1990.137	10.650	1947	2005
<b>GRADYEAR (recent entrant)</b>	75063	1991.676	10.424	1951	2005
<b>EMPLENTRY(incumbent)</b>	3494505	0.074	0.262	0	1
<b>EMPLENTRY (recent entrant)</b>	99669	0.104	0.305	0	1
<i>Firm characteristics</i>					
<b>FIRMSIZE(incumbent)</b>	3494505	427.811	1183.459	1	8453
<b>FIRMSIZE (recent entrant)</b>	99669	100.648	208.737	1	1361
<b>OWNPRIVATE(incumbent)</b>	3494505	0.538	0.499	0	1
<b>OWNPRIVATE(recent entrant)</b>	99669	0.624	0.484	0	1
<b>OWNOTHER(incumbent)</b>	3494505	0.030	0.172	0	1
<b>OWNOTHER (recent entrant)</b>	99669	0.053	0.224	0	1
<b>OWNGOV(incumbent)</b>	3494505	0.034	0.182	0	1
<b>OWNGOV(recent entrant)</b>	99669	0.046	0.210	0	1
<b>OWNMUNI (incumbent)</b>	3494505	0.020	0.140	0	1
<b>OWNMUNI (recent entrant)</b>	99669	0.012	0.110	0	1

**Table 4: Descriptive statistics recent entrants (5 years since start-up) and incumbent establishments**

Variable	N. obs	Mean	Std. Dev.	Min	Max
<i>Individual characteristics</i>					
AGE(incumbent)	3487485	42.128	12.567	16	84
AGE (recent entrant)	106689	39.794	12.534	16	84
SEX/FEMALE (incumbent)	3487485	0.496	0.500	0	1
SEX/FEMALE (recent entrant)	106689	0.455	0.498	0	1
IMMIGRANT(incumbent)	3487485	0.110	0.313	0	1
IMMIGRANT(recent entrant)	106689	0.124	0.330	0	1
EDUSEC (incumbent)	3473525	0.499	0.500	0	1
EDUSEC (recent entrant)	106175	0.506	0.500	0	1
EDUHIGH (incumbent)	3473525	0.364	0.481	0	1
EDUHIGH (recent entrant)	106175	0.368	0.482	0	1
GRADYEAR( incumbent)	2548069	1990.133	10.655	1947	2005
GRADYEAR (recent entrant)	106175	1991.663	10.270	1949	2005
EMPLENTRY (incumbent)	3487485	0.074	0.262	0	1
EMPLENTRY (recent entrant)	106689	0.098	0.297	0	1
<i>Firm characteristics</i>					
FIRMSIZE (incumbent)	3487485	426.494	1182.392	1	8453
FIRMSIZE (recent entrant)	106689	165.233	496.374	1	1361
OWNPRIVATE (incumbent)	3487485	0.536	0.499	0	1
OWNPRIVATE(recent entrant)	106689	0.661	0.473	0	1
OWNOTHER(incumbent)	3487485	0.031	0.172	0	1
OWNOTHER(recent entrant)	106689	0.048	0.214	0	1
OWNGOV(incumbent)	3487485	0.035	0.184	0	1
OWNGOV(recent entrant)	106689	0.023	0.151	0	1
OWNMUNI (incumbent)	3487485	0.020	0.139	0	1
OWNMUNI (recent entrant)	106689	0.017	0.130	0	1

#### 4.2. Results from the probit-estimation

Table 5 reports the results from the probit-estimation. The columns report results estimated for entrants and recent entrants respectively. The estimation largely confirms the results from the analysis of the descriptive statistics. The probability of being employed in new firms is lower for females and employees with post secondary education. On the other hand, the probability to get an employment in a new firm is higher for immigrants, employees with upper secondary education, and recently graduated employees. Nevertheless, it is interesting to note that when we control for other individual characteristics, such as education and graduation, there is no longer any statistically significant differences with regard to the age of the employees in new and

incumbent firms. However, there is a positive statistically significant effect for employees that enter the labor market. When we compare the results for the new firms and recent entrants, we again conclude that the differences between new and incumbent firms with regard to individual and firm characteristics are less pronounced for recent entrants. With regard to labor market entrants, there is no statistically significant effect for firms that are five years old.

**Table 5: Results from the probit-estimation**

VARIABLES	New firm	Recent entrant (3-year old firm)	Recent entrant (5-year old firm)
<i>Individual characteristics</i>			
AGE	-1.14*10 <sup>-4</sup> (2.76*10 <sup>-4</sup> )	-1.98*10 <sup>-4</sup> *** (2.84*10 <sup>-4</sup> )	-4.05*10 <sup>-4</sup> (2.70*10 <sup>-4</sup> )
SEX/FEMALE	-0.067*** (0.004)	-0.013*** (0.004)	-0.031*** (0.004)
IMMIGRANT	0.088*** (0.006)	0.043*** (0.006)	0.025*** (0.006)
EDUCATION (SECONDARY)	0.068*** (0.008)	-0.017** (0.008)	-0.006 (0.008)
EDUCATION (POST SECONDARY)	-0.001 (0.009)	-0.025*** (0.009)	0.006 (0.009)
GRADUATION YEAR	0.004*** (3.04*10 <sup>-4</sup> )	0.002*** (3.11*10 <sup>-4</sup> )	0.003*** (2.95*10 <sup>-4</sup> )
EMPLOYMENT ENTRY	0.383*** (0.005)	0.0284*** (0.006)	0.006 (0.006)
<i>Firm characteristics</i>			
FIRMSIZE	-0.001*** (1.80*10 <sup>-5</sup> )	-4.10*10 <sup>-4</sup> *** (5.84*10 <sup>-6</sup> )	-0.000130*** (2.67*10 <sup>-6</sup> )
OWNERSHIP PRIVATE	0.141*** (0.007)	0.435*** (0.007)	0.354*** (0.007)
OWNERSHIP OTHER	0.522*** (0.009)	0.506*** (0.010)	0.388*** (0.011)
OWNERSHIP GOVERNMENT	-0.055*** (0.012)	0.434*** (0.011)	0.003 (0.012)
OWNERSHIP MUNICIPALITY	-0.596*** (0.020)	0.0138 (0.016)	0.137*** (0.014)
Pseudo R2	0.093	0.054	0.049

Note that industry and regional dummies are included in the model but not reported in the table.

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.10

## 5. Concluding remarks

In this paper, it is argued that new firms might have an important role for the functioning of the labor market. Firstly we, study the individual and firm characteristics employed such as age, sex, and educational background and firm size and ownership associated with being employed in a new firm.. Furthermore, we explore the role previous employment in terms of being a labor market entrant for being employed in a new firm. The empirical results indicate that the individual and firm characteristics associated with employees in new firms differ compared to incumbent firms. In particular, the share of immigrants, recently graduated employees and people entering the labor market is higher in new firms. Hence, new firms might play a more important role for outsiders in the labor market. Furthermore, it can be argued that labor market regulations<sup>7</sup> increase the switch-cost for insiders. If an insider accepts a position in a newly established firm, he or she needs to be compensated in one way or the other for the higher risk of firm failure. Furthermore, he or she needs to be compensated for the fact that he/she will be the last person employed. This may be an extremely important issue if the firm need to decrease the number of employees in the future. Finally, it should be stressed that the empirical results presented in this paper is based on data for one year and that further empirical investigation is motivated.

These results in this paper indicate that the employment history of employees in new firms is interesting to explore further. Definitely, this research area needs further attention. Firstly, it would be valuable to be able to distinguish between different types of entrants. As previously mentioned we do not distinguish between spin-offs and de novo entrants in our empirical analysis. It is reasonable to expect that de novo entrants to a larger extent need to hire outsiders while spin-offs may bring employees from their previous employer to their new venture. Additional research questions that are interesting to explore for the future are, for example, to what extent employees hired by new firms' persons who have previously been employed by firms that decided to close down? Furthermore, it would be interesting to study if employees in new firms have work- experience in the same or totally different industries as their previous employer.

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<sup>7</sup> In Sweden, the principle "last in first out" should be used case of redundancies. If one choose to switch employer the individual lose the security he/ she has as a "senior employee".

Is their new employment associated with moving to a different region? Are there any differences, in terms of employment background of employees in new firms compared to incumbent firms?

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**APPENDIX A: Correlation table**

Variable	EMPNEW	EMPLENTRY	AGE	GENDER	IMMIGRANT	EDUSEC	EDUHIGH	GRAD	FIRMSIZE	OWNPRIVATE	OWNOTHER	OWNPRIVATE	OWNOTHER
<b>EMPNEW</b>	1.000												
<b>EMPLENTRY</b>	0.080	1.000											
<b>AGE</b>	-0.041	-0.274	1.0000										
<b>GENDER</b>	-0.011	0.010	0.057	1.000									
<b>IMMIGRANT</b>	0.014	0.048	0.038	0.012	1.000								
<b>EDUSEC</b>	0.011	-0.032	-0.074	-0.089	-0.017	1.000							
<b>EDUHIGH</b>	-0.019	-0.041	0.168	0.102	0.0145	-0.927	1.0000						
<b>GRAD</b>	0.034	0.259	-0.784	0.041	0.012	-0.223	0.175	1.000					
<b>FIRMSIZE</b>	-0.056	-0.045	0.058	0.049	0.026	-0.102	0.118	-0.002	1.000				
<b>OWNPRIVATE</b>	0.013	0.042	-0.240	-0.309	-0.011	0.203	-0.234	0.061	-0.094	1.000			
<b>OWNOTHER</b>	0.067	0.057	-0.064	-0.027	0.012	0.048	-0.065	0.032	-0.056	-0.193	1.000		
<b>OWNGOV</b>	-0.006	-0.006	0.026	-0.020	0.001	0.012	-0.009	-0.032	-0.020	-0.197	-0.032	1.000	
<b>OWNMUNI</b>	-0.018	-0.011	0.033	-0.018	-0.000	0.002	0.002	-0.028	0.005	-0.151	-0.025	-0.025	1.000