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## **Unpredictably Stable. An Investigation into the Stayer-Mover Tendencies among Self-Employed**

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Does entrepreneurship lower individuals' employment turnover rates? The paper offers two reasons why this is the case: a matching mechanism and a lock-in effect. The paper offers theoretical justifications and seeks to empirically disentangle the two mechanisms. A matched employer-employee data covering the entire Danish labor force warrants the identification of a matched sample of entrepreneurs and non-entrepreneurs useful for rigorous analysis. The analysis reveals that self-employed stay longer in their employment status compared to individuals in paid-employment. This is shown to be likely due to reduced attractiveness in the wage sector and sunk costs related lock-in effects. Results, however, also indicate that entrepreneurship may resolve mismatches of individuals in the labor market. This counterintuitive finding: self-employment yields greater employment stability? has fundamental implications for the understanding of the returns (labor market outcomes) to entrepreneurship.

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**Key words:** self-employment, paid-employment, mover-stayer, job matching, lock-in effect.

## **1. Introduction**

Employment turnover has positive implications since it provides a better allocation of resources through higher quality matching giving rise to favorable productivity levels and in turn wage earnings (Topel and Ward, 1992; Neal, 1999; Light and McGarry, 1998; Jackson, 2013). It thereby reduces search for external opportunities and the likelihood of accepting eventual offers lowering the employment turnover rate (Jovanovic, 1979; Farber, 1998; Christensen et al., 2005; Munasinghe, 2000). Employment turnover, however, also has negative implications. The labor market is characterized by principal-agent relationships (see e.g. Greenwald, 1986; Hölmstrom, 1979) and the related principal-agent problems. There is consequently no guarantee of a positive gain from episodes of employment turnover. Skills are experience goods wherefore job-match and hence productivity gains only are revealed ex post (Nelson, 1970, Sorensen & Sharkey, 2013). This is especially the case for workers exhibiting high employment turnover rates (Greenwald, 1986). They represent a group in the labor market for whom the negative implications offsets the positive. High employee turnover rates entail negative performance implications for firms through severance (quitting) costs, recruitment costs, and training cost (Ton and Huckman, 2008; Arlotto et al., 2013); whereas the worker incurs searching -, learning -, and adjustment costs (Burdett, 1978; Salop and Salop, 1976; Lentz and Tranaes, 2005). In addition, both actors experience the loss of the accumulated firm-specific human capital due to its intrinsic not-redeployability. Such loss may, in turn, be associated with a decrease in firm operational performance (Gleebeek and Bax, 2004; Argote et al.1990) and in worker's earnings (Mincer and Jovanovic, 1981; Dostie, 2005). As a result, the destruction of this type of human capital represents the greater share of negative welfare consequences of employment turnover (Nagypal, 2007; Woodcock, 2006). It is therefore fundamental to identify conditions or career paths that induce high employment turnover individuals to more stable employment records.

Individuals with high employment turnover rates are often referred to as hoboos or job hoppers (see e.g. Ghiselli, 1974; Munasinghe and Sigman, 2004) and are found to earn systematically less than average.<sup>1</sup> Entrepreneurs have been identified to exhibit relative higher employment turnover rates ex-ante the transition to entrepreneurship and hence classified as being hobos (Hyytinen & Ilmakunnas, 2007; Astebro & Thompson, 2011). Accordingly, entrepreneurs are those individuals for whom the employment turnover has negative implications. For this reason, it becomes interesting to investigate whether transition to entrepreneurship may be considered a treatment that precipitates a lowering of employment turnover, thereby alleviating the net loss prompted thereof. Rooted in the Blumen et al. (1955) Mover-Stayer model, two theoretical arguments are forwarded suggesting entrepreneurship lowers the employment turnover rates of hobos. First, high turnover employment workers may in particular be better matched in an entrepreneurship career than in paid employment. The characteristics of the entrepreneurial settings and the work tasks associated with it may be particularly appealing to individuals exhibiting high employment turnover rates increasing their job-satisfaction levels. Second, lock-in effects may be particularly severe in entrepreneurial settings, which leaves them little choice but to remaining in their current occupation. These lock-in effects are organized into either being triggered by the individual's labor market value or due to sunk cost investment of being an entrepreneur.

Testing claims about changes in employment turnover tendencies with respect to entrepreneurs compared to others is a difficult empirical challenge, which may be the reason why it remains uninvestigated. First, a convincing test of these claims requires unusually comprehensive data characterizing the employment history of individuals. We use a unique Danish matched employer-employee panel dataset allowing us to track the employment history and professional affiliation of an entire labor force. Second, the research question calls for a design allowing us to infer the employment turnover of entrepreneurs had they not made that carrier choice. To unlock this challenge, we identify a treatment group of first time entrepreneurs and construct a matched control group of non-entrepreneurs

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<sup>1</sup> This is consistent with two fundamental stylized facts in labor economics: (1) the negative relation between tenure with an employer and turnover; (2) the positive relation between tenure and earnings.

(wage workers) who were equally like to have transitioned into entrepreneurship using them as a proxy for the unobserved. The analysis also seeks to disentangle the lock-in mechanisms in order to consider the magnitude of the matching effect. On one hand, the lock-in mechanism suggests job stability as an undesirable outcome, since it may result in mismatched individuals remaining stuck in their employments. On the other hand, the job matching mechanisms suggest a successful match in the job-market. We use a Mincer equation specification to estimate the predicted wage of subjects and include them in our model as a control for lock-in related to the labor market value. We also run the analysis on a sub-sample of entrepreneurs venturing into low sunk cost industries thereby controlling for variations in employment turnover relating to investment into entrepreneurship allowing us to consider the significance of the positive welfare gain from entrepreneurship through lowering of employment turnover rates.

Our analysis supports the notion that entrepreneurship is associated with a lowering of employment turnover. This is unpredictably so, considering that entrepreneurship often is considered an unstable and risky career move with a high rate of exiting (Taylor, 1999). These observed patterns can be attributed to both lock-in effects and a high quality job matching mechanism. These results also persist when only considering individuals leaving a job due to lay-offs rather than making an active choice while in employment. In a supplementary analysis, we show that these results only holds with respect to transition to paid work while not surfacing when investigating transition into entrepreneurship providing additional evidence in favor of an effect operating through quality matching.

These findings speak to several streams of literature. First, given the well-known empirical regularity in labor economics for which frequent job changes are associated with wage discounts (e.g. Topel, 1990; Farber, 1994), entrepreneurship might help reduce these labor market inefficiencies through job stability. Second, we answer the call of Sørensen & Sharkey (2013) considering entrepreneurship as a process of career movement redirecting the attention from transitions to self-employment to transitions out of self-employment and doing so beyond firm level survival analysis. This is not less important considering that movement out of self-employment is an almost equally ordinary phenomenon as moving into (see e.g. Evans and Leighton, 1989 and Taylor, 1999). Third, the paper has implications for the discussions on the

“hobo syndrome” (see e.g. Ghiselli, 1974; Munasinghe and Sigman, 2004; Astebro and Thompson, 2011) since it suggests that the hobo behavior is related to the work context and/or its interaction with individual preferences and not an innate attitude among entrepreneurs. Fourth, we complements the traditional focus in entrepreneurship on occupational choice models which explains who becomes an entrepreneur with a focus on the career mobility dynamics of entrepreneurs, relaxing the assumption of a steady-state intrinsic in occupational choice studies. Fifth, we contribute to the labor economics literature on employment turnover since the research in this vein almost exclusively investigates changes within paid employment, disregarding the study of entrepreneurship (Fairlie, 2002; Carrol and Mosakowski, 1987; Sørensen and Fassiotto, 2011). Lastly, we extend the mover-stayer literature by accommodating for the possibility that an individual mover-stayer tendency might invert across time as a result of a change in employment status (“endogenous” shock).

The remainder of this paper is organized as follows. Section 2 develops the theory. Section 3 describes data, sample construction, and method. Section 4 presents the results and section 5 concludes and discusses the implications of our findings.

## **2. Theory**

It is well established that there is a positive correlation between mobility and likelihood of future job change. The Mover-Stayer model, developed by Blumen, Kogan, and McCharty (1955), predicts that some workers (identified as movers) are inherently more likely to move between jobs than others (identified as stayers). However, an individual’s mover-stayer behavior may change over time suggesting individual time-invariant characteristics do not uniquely explain the relation between mobility patterns and job change.<sup>2</sup> This idea is consistent with recent evidence indicating that the relationship between past

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<sup>2</sup> Abbring (2002) extends the Mover-Stayer model to account for defecting movers, i.e. movers typically at risk of moving, but eventually ended up never moving. Such a group exists if the hazard rates of moving decrease sufficiently fast with duration, for instance exponentially (Abbring, 2002: 328). Movers to self-employment might be regarded as “defecting movers”, because their time to transition decreases exponentially till it approaches the stayer behavior.

mobility and current turnover is structural, since the effect persists after controlling for individual fixed effects (Munasinghe and Sigman, 2004).

Employment turnover has positive implications in terms of productivity gains and consequently wage increments (Topel and Ward, 1992; Neal, 1999; Light and McGarry, 1998; Jackson, 2013; Jovanovic, 1979). However, skills are experience goods creating the potential for principal agent problems where productivities only are revealed after hiring (see e.g. Greenwald, 1986; Hölmstrom, 1979; Nelson, 1970; Sorensen & Sharkey, 2013). Accordingly, the positive gains from employment turnover may be limited. This is in particular true for a specific group of wage earners – namely those that switch jobs relatively frequently (Greenwald, 1986). For this particular group of workers, the negative implication of employment turnover may surpass the positive. Employment turnover has negative implications for both workers and employers.

At individual level, scholars have highlighted that workers deciding to quit incur in searching costs, in costs for adjusting to the new organizational setting costs, and in learning costs (Burdett, 1978; Salop and Salop, 1976; Lentz and Tranaes, 2005). Also, workers bear more indirect costs, which are essentially related to the loss of the accumulated firm-specific human capital (Becker, 1962; Hashimoto, 1981; Lazear, 2003). Several works have indeed used this notion to explain the systematic observed positive relation between worker's tenure and earnings profile (Mincer and Jovanovic, 1981; Topel, 1991; Dostie, 2005). This pay cut is more severe for hobs compared to their more stable counterparts (Munasinghe and Sigman, 2004).

At firm level, several scholars have recently investigated the organizational consequences associated with voluntary employee turnover (Huselid, 1995; Glebbeek and Bax, 2004). The firm incurs in severance costs when a worker quits, in switching costs when a worker is terminated, and in recruiting and training costs when a new employee is hired to replace the vacancy (e.g. Arlotto et al., 2013). In addition, turnover has been shown to be negatively related to firm organizational performance, in various settings and along several dimensions of performance (e.g. Baron et al., 2001; Ton and Hucman, 2008; for a review, see

Shaw, 2011). The main mechanisms behind these negative effects are decreased productivity and losses in human and social capital.

Central to our theory is the assumption of homogeneity among movers based on observable individual attributes. From an initial working population which consists of both stayers and movers, we focus on movers and distinguish between movers to self-employment and movers to paid-employment. We argue that a transition from paid-employment to self-employment might induce a shift toward stayer behavior. Hence, the change of employment status to self-employment may act as an “endogenous” shock that reshapes an individual mover-stayer tendency.<sup>3</sup> We identify two classes of mechanisms to explain a change in mover-stayer tendency: job matching and lock-in effects.

### 2.1 Job Matching

Workers remain in jobs in which their productivity is revealed to be relatively high (high quality of the match) and select out of jobs in which their productivity is revealed to be low (low quality of the match) (Jovanovic, 1979). This explains the stylized fact that tenure (time with the same employer) and job change are inversely correlated. Higher match quality reduces search for external opportunities and the likelihood to accept eventual offers, resulting in lower probabilities of employment turnover.

There are three reasons why entrepreneurship may be a high match quality career move for high employment turnover individuals. High employment turnover may be a by-product of principal-agent problems. The emergence of such problems often occurs when the employee value independence which tend to be prevalent among entrepreneurs (Gimeno et al., 1997). This explains why a significant number of entrepreneurs report disagreement with prior employer as a primary motivation for transitioning to entrepreneurship. Transitioning to entrepreneurship means a collapse of the agent (employee) and the principal (employer) into a single person. As a result, agency-problems are not present in entrepreneurship (Lazear, 1981). Compared to an employee who occupies a role in which action needs

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<sup>3</sup> Job mobility decisions are endogenous since workers who can search for and receive attractive external offers are more likely to move (e.g. Simpson, 1990). We controlled for exogenous (involuntary) job separation, i.e. employees are fired (employer exit).



sanctioning by the organization, a founder's role is above the forces of organizational rationality (Dobrev and Barnett, 2005).

Second, high employment turnover has the potential to endow individuals with a high variety of skills thereby making them generalists. Generalists, however, tend to be undervalued in paid employment because both the process of hiring and the reward system are based on the specialized knowledge of the employee wherefore specialists earn higher income than generalist in paid employment (Lazear, 2004). Generalists therefore gravitate between mismatched employments in paid-employment thus exhibiting high turnover employment career paths. Entrepreneurship, however, offer higher returns to generalist skills, because the entrepreneurial role is characterized by generalist skills (Lazear, 2005). As a result, *ceteris paribus*, an individual moving to entrepreneurship is more likely to perceive the quality of the match with the entrepreneurial role as good rather than a comparable individual moving to an established firm.

Third, high employment turnover individuals have more often experienced the problem of redeploying their stock of firm-specific human capital into new paid employment settings. Research has revealed that redeploying firm-specific human capital into a new organization is easier than trying to craft it onto an existing one (Campbell et al., 2012). Moving to established firms may exacerbate inertial tendencies to the extent that differences in corporate culture hinder the matching process. As a result, higher levels of human capital redeployability enhance employment stability by increasing the perceived match. Individuals in entrepreneurship can increase the quality of the match by tailoring their venture to suit their qualities thereby increasing the redeployability into the entrepreneurial setting.

Collapse of principal-agent relations, generalist skills set and the redeployability of skills are likely to precipitate a higher job satisfaction, which in turn lowers employment turnover (see Cotton and Tuttle (1986) for a meta-analysis). Job satisfaction has been found to be systematically higher for individuals in self-employment compared to individuals in paid employment (Blanchflower, 2000; Puri and Robinson, 2007; Benz and Frey, 2008). This has been attributed to non-pecuniary benefits inherently related to the status of self-employment (e.g. Blanchflower and Oswald, 1998; Moskowitz and Vissing-Jorgensen,

2002; Xu and Ruef, 2004). Entrepreneurship entails greater autonomy in the work context providing an intrinsic value to the individual (Ryan and Deci, 2005). The intrinsic value of independence ensures higher levels of job satisfaction among entrepreneurs in contrast to comparable wage earners. Starting a new firm enables an individual to fulfill non-pecuniary aspirations better than moving to an existing firm with constraining norms (Campbell et al., 2012). Variety and autonomy related benefits are achieved in paid employment only under specific circumstances, such as in very small companies and or in top management positions. Moreover, movers to paid-employment are more likely to be dissatisfied because they will find it difficult as a newly hired employee to implement changes and contribute to the firm. This reasoning resonates well with Hamilton's (2000) observation that entrepreneurs systematically experience a lower income compared to employees which he interpret as evidence in favor of non-pecuniary benefits in entrepreneurship that compensate for lower pecuniary gains. Indeed, the higher non-pecuniary benefits, may ultimately also create a disconnection between exit and performance (Sorensen and Phillips, 2011; DeTienne et al., 2008) causing entrepreneurs to keep their firm active even if it's not profitable to do so.

High quality job match and job-satisfaction in entrepreneurship therefore contributes to a lowering of the employment turnover rate among entrepreneurs in contrast to comparable wage earners.

## 2.2 Lock-in Effects and Duration in Self-Employment

Individuals selecting into entrepreneurship are in danger of being locked into the entrepreneurial setting lowering their employment turnover tendencies ex post transition to entrepreneurship. Arguments in favor of lock-in effects may be grouped into two primary categories; a) selection and treatment effects and b) investments effect.

Selection and Treatment Effects. Selection-based explanations suggest that lock-in effects result from processes of sorting of low ability individuals into (ex-ante) and out of (ex-post) entrepreneurship. Individuals select into entrepreneurship based on unobservable attributes associated with poorer wage sector outcomes compared to those who remain in the wage sector (Bruce and Schuetze, 2004). Observed wage discounts or the inability to re-enter the wage sector may thereby be explained by ex-ante heterogeneity in observable (wages) and unobservable ability in paid employment. Evidence does suggest

that this selection acts as a significant lock-in effect for entrepreneurs (Bruce and Schuetze, 2004; Hyytinen and Rouvinen, 2008; Hyytinen et al., 2013). Entrepreneurs are mostly drawn from the tail of the wage distribution Elfeinbein et al. (2010) wherefore their opportunity costs are relatively low making it unattractive to move to paid employment. Consequently, entrepreneurs experience a lock-in due to relatively poor outside options (Amit et al., 1995; Arora & Nandkumur, 2011). This view receives indirect support from the regularity that poorly performing start-up may continue because the founder's economic returns in alternative employment opportunities are low (Gimeno et al, 1997) and that highly educated self-employed are more likely to exit self-employment to move to an alternative employment, because they are likely to receive a larger number of job offers (Taylor, 1999).

Selection on time-invariant unobserved heterogeneity between workers and entrepreneurs, however, only partially explain the lock in effect (Hamilton, 2000; Williams, 2000; Taylor, 1999; Bruce and Schuetze, 2004). There are wage discounts beyond the effect of negative selection in entrepreneurship providing indirect support for treatment effects (Hyytinen et al., 2013). Entrepreneurship as a profession imposes effects that inherently alter founders' subsequent opportunities to go back to paid-employment. Entrepreneurship may cause a depreciation of firm-relevant human capital (job-specific skills) previously gained in the wage sector. Entrepreneurs may lose valuable labor market experience and opportunities for training or advancement within the firm or industry in which they previously worked (Bruce and Shuetze, 2004: 576). Entrepreneurship becomes a treatment that causes employers to discount ability and value of the entrepreneurs and consequently offer wages below their reservation wage precipitating a lock-in due to relatively poor outside options. Time in self-employment increases the development of entrepreneurial human capital, which might be largely irreversible when moving back to established firms. The option to discontinue the entrepreneurial venture may therefore be unattractive since the alternative may be a job in which the gained specific human capital is relatively unproductive creating prospects of dissatisfactory work conditions. The entrepreneurs thereby face switching costs and in turn inertial tendencies (Gimeno et al., 1997) and may contribute significantly to serial entrepreneurship.

There is empirical evidence suggesting the existence of a lock-in treatment effect from entrepreneurship. Returns to entrepreneurship in the wage sector have been shown to be negative (Bruce and Schuetze, 2004, Evans and Leighton, 1989; Williams, 2000; Ferber and Waldfogel, 1998; Hyytinen and Rouvinen, 2008)<sup>4</sup>. A spell in self-employment may reduce future prospects in paid employment or discount the wage of those re-entering paid-employment. Bruce and Schuetze (2004) found that an additional year in entrepreneurship reduce future earnings in the wage sector by anywhere from 3% to 11% for men, increase the probability of unemployment by anywhere from 3% to 10% and increase the probability of part-time employment by 10-30%.

Finally, entrepreneurs may choose to remain in entrepreneurship since they otherwise may suffer from a stigma of failure (Landier, 2002). Seeking opportunities outside the firm may send signals that lower the offered wages in paid employment. Indeed, Hyytinen and Rouvinen (2008) find support for the notion that entrepreneurs may be “scarred” of exiting since they are more often than not treated unfairly upon returning to paid employment. This has been termed the lock-in effect of stigma of failure (Parker, 1996; 2005).

Investment effect. Setting up a firm requires investments in physical and human capital. Some of these investments represent sunk costs, which cannot be retrieved after having committed the investment. The amount of sunk costs highly varies across industries and contexts (Sutton, 1997). Sunk costs hamper entry (Geroski, 1995) and make it difficult to find financing for a new venture (Sahlman, 1997). Sunk costs may also inhibit the decision to exit (Harrigan, 1981). While decisions on exit purely should be based upon future prospects, it has nevertheless been shown that it may be rational to consider sunk costs when the future is uncertain (Dixit, 1989) like in entrepreneurial settings. Accordingly, the ability to retrieve past investment may be central to whether an entrepreneur will consider closing down a firm. A founder may choose to keep a firm operating even at low performances in case of large sunk costs (see e.g.

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<sup>4</sup> Studies have questioned this finding and some even argues the opposite to be the case (see e.g. Evans and Leighton, 1989; Hamilton, 2000; Fairlie, 1995; Berglann et al., 2011; Tergiman, 2011; Kaiser and Malchow-Moller, 2011; Campbell, 2013). In case the pecuniary returns from entrepreneurship experience are positive, the estimates of our investigation will tend to be conservative thereby strengthening our findings rather than weakening them.

Gimeno et al., 1997). The founder is locked in to the profession through his prior decisions on investments in the start-up.

### **3. Data and Method**

#### **3.1 Data source and sample construction**

We use the Danish labor market database maintained by Statistics Denmark (IDA) to examine the association between transition to entrepreneurship and shifts in employment turnover tendencies. IDA is a matched employer-employee dataset tracking individuals and their firm-affiliation across time covering the entire legal residents in Denmark active in the labor force. The labor market in Denmark is comparable to the U.S. labor market along several dimensions such as employment protection, average employment turnover, and rates of entrepreneurial entry and exit (Sørensen, 2007). The data employed are organized as a yearly panel ranging from 1999 to 2008 and contain information about the start-ups as well as a wealth and socio-demographic details about the founders. All information about employer-employee affiliations is yearly updated.

The data are particularly suitable to test our claim on the mover-stayer tendencies of entrepreneurs because they enable us to address three important methodological challenges associated with this empirical inquiry. First, the data include information on individuals who did not transition to entrepreneurship allowing for causal inference, by means of counterfactual analysis. Second, it offers comprehensive data characterizing the career histories of individuals at the onset of risk. Third, it allows to precisely identifying change in individuals' firm affiliation across time. Specifically, the occupation of an individual in a given year is determined by Statistics Denmark according to the individual's primary labor market status in the last week of November.

We identify a sample of individuals who become entrepreneurs in 2003. We define an individual as an entrepreneur if he is registered in the Danish entrepreneurship database as the primary founder of a newly started firm. In order to isolate the treatment effect of entrepreneurship on individuals' employment turnover tendency, we only focus on first time entrepreneurs. We categorized the individual as first time

entrepreneurs if we found no registration of the individual having established a firm in the previous 5 years.

In order to further minimize unobserved heterogeneity, we impose additional restrictions to our sample of entrepreneurs. First, in order to eliminate biases attributed to those who are not likely to be full-time in the labor force during the period of consideration, we left out individuals younger than 18 years in 1999. Similarly, we did not consider individuals that were older than 60 years in 2003 to avoid right censoring due to retirement. Second, individuals who are affiliated with more than one firm in the form of either wage-work or second start-up in a given year are left out because hybrid transitions encompass distinctive logics (Folta et al., 2010) for which the forwarded mechanisms may not apply. Third, we excluded individuals working in agriculture, fishing and quarrying industries because the labor market follows peculiar dynamics in these industries and to keep comparability with prior studies of entrepreneurship (e.g. Nanda and Sorensen, 2010).

Our final sample encompasses 1,257 new first-time entrepreneurs in 2003.

### 3.2 Construction of the Matched Control Group of Non-Entrepreneurs

Investigating whether entrepreneurship lowers individuals' employment turnover tendencies imposes an important inferential challenge. Individuals with certain skills and propensities are shown to be more likely to select into entrepreneurship (e.g. Sorensen, 2007; Astebro et al., 2011). Our claim that entrepreneurship lowers employment turnover might be spurious results of a selection effect if these observable and unobservable characteristics are also associated with job change tendencies. We address this potential selection issue by means of counterfactual analysis. The counterfactual here is a yardstick of mover-stayer behavior of a comparable individual who were equally like to transition to entrepreneurship but chose not to do so. Indeed, the counterfactual theoretically represents what the subject of interest would have done had he not made the choice of transitioning to entrepreneurship.

To find this counterfactual we create a matched sample of wage-workers that are comparable with our sample of entrepreneurs across a set of observable covariates associated with individuals' selection into

entrepreneurship (selection into treatment). For identifying the control sample, we draw on the labor market data identifying all workers who changed job in 2003 (movers). Focusing on newly hired employees allow us to assume the two groups share the same onset risk of moving. The underlying assumption is that individuals do not plan to move again even before they start working in a new context. Put differently, we assume an exact matching on the timing of prior movement. Similarly, since we only consider first-time entrepreneurs, we also impose the matched employees not to have been classified as self-employed in the prior 5 years. We also impose the same age restrictions to the control sample as we did with the entrepreneur sample. As a result we end up with a sample of potential matched wage earners who transitioned to a new job in 2003, who have not been an entrepreneur 5 year prior to 2003, who were not below the age of 18 in 1999 and above the age of 60 in 2003.

We use propensity score matching technique to identify the matched group (Rosenbaum and Rubin, 1983). This methodology has been recently used to address potential selection bias in studies of entrepreneurial outcomes (e.g. Campbell, 2013; Kaiser and Malcow-Moller, 2011; Berglann et al., 2011). The group is obtained by identifying an entrepreneur's nearest neighbor employee within the group of newly hired employees in 2003. To improve the quality of the matching model, we chose to use an exact matching specification on gender (female) since there could be systematic differences across females and males in the propensity to leave current employment. We do so with reference to gender gaps in entrepreneurship (Fischer et al., 1993; Minniti, 2009).

The variables used for the matching procedure are lagged one year, since the matching should reflect individuals' characteristics just before the 2003 transition. Ideally, the matching model should include variables that affect both selection into treatment (i.e. entrepreneurship) and the dependent variable (i.e. ex post employment turnover). We considered the extensive empirical literature addressing the determinants of entry into entrepreneurship and employment turnover in the selection of variables.

### 3.3 Variables

Dependent variable. The dependent variable, transition, is a dummy that indicates whether an individual changed his occupational affiliation. It contrasts individuals that remain in the same firm as

they were affiliated with in 2003 (transition=0) with individuals that move to a different occupation (transition=1). We also use a more fine-grained specification of this measure as a robustness test to explore where individuals go after a transition occurs. This alternative measure is a categorical variable where zero represents individual that remains with their 2003 affiliation, 1 refers to an individual that transition to a(nother) wage employment affiliation, and 2 if the individual transition to (a new) entrepreneurship occupation.

Explanatory variable. Our main independent variable is entrepreneur, a dummy which equals “1” if the individual is an entrepreneur (treatment group) and “0” if she is an employee (matched group). An entrepreneur is identified through the Danish entrepreneurship database, which is maintained by statistics Denmark and linked to the labor market data through a person identifier. This database registers the primary founder of each newly founded firm.

Matching variables. Entrepreneurs have been characterizes as being jack-of-all trades or alternatively have a taste for variety (Lazear, 2004; Lazear, 2005; Wagner, 2006; Silva, 2007; Astebro & Thompson, 2011). Such characteristics are highly collinear with tendencies of changing jobs and professional challenges. It therefore becomes important to ensure that the control and treatment samples are comparable in terms of these characteristics. We employ two variables that indicate such individual dispositions. The number of different firms the individual has been affiliated with in the years between 1999 and 2002 and the number of different industries the individual has been affiliated with in the same period. By using these measures as controls and matching variables, we also ensure that the samples are comparable in terms of mover-stayer tendencies prior to the onset of risk.

The control and treatment samples are also matched on a number of demographic variables. First, founders’ parents may act as role models wherefore individuals with an entrepreneurial parent are also more likely to become entrepreneurs themselves (Carrol & Mosakowski, 1987; Dunn & Holtz-Eakin, 2000; Halaby, 2003; Nanda & Sorensen, 2010). We use a dummy to account for parent being entrepreneurial by considering if at least one of the parents were classified as an entrepreneur between 1999 and 2002. Civil status may also impact entrepreneurial tendencies (Folta et al., 2010) not to mention



employment turnover. We match based on whether the individual is married or not. We include a gender dummy for whether the individual is female. Similarly, having children may dictate a more stable professional affiliation and have been argued to impact entrepreneurial venturing wherefore we also match on the number of children younger than 18 year of age in 2002. Individual with higher education have different opportunity costs and face a different labor market than low education employees. For this reason, we also match based on whether the individual has a bachelor degree or higher.

We also match on four variables related to professional status and conditions. First, number of years in the labor market may impact the mover-stayer tendencies through switching costs. We control for wage experience by adding a variable, which measures the number of years the individual has been active in the labor force since 1979. Wages may impact the likelihood of moving since they account for a major share of the decision to accept or reject a job. Furthermore, there are ample evidence suggesting a link between wage earnings and entrepreneurship (see Åstebro and Chen (2013) for a review). We use the log of the salary from the employment status in 2002 as a matching variable. We also control for employer size since there are evidence suggesting differences in entrepreneurial activity coming out of large firms compared to small firms (Elfeinbein et al., 2010; Parker, 2009; Sorensen, 2007). Furthermore, there are good reasons to suspect that larger firms differ in employment turnover tendencies compared to small. We therefore match on employer size by number of employees in the firm the individual was affiliated with in 2002. Finally, we match on whether the mover tendency in 2002 to 2003 was a necessity move. Necessity movement will increase employment turnover and may often also result in necessity entrepreneurship (Koellinger and Thurik, 2012). We control for necessity mover by including a matching variable measuring whether the firm to which the individual was affiliated in 2002 ceased to exist in 2003.

Controls. We control for year and industry fixed effects by including dummies for each year and each industry. The industry dummies represent the industry of the new employer in case of employees (control) or the industry of the new firm in case of entrepreneurs (treatment). These measures are coded in 2003 and defined at 1- digit level (SIC code standard). We group the industries in our sample as follows:

manufacturing, construction, wholesale and retail trade, hostels and restaurants, transport storage and communication, financial intermediation, public and personal services.

### 3.4 Method

The data has been organized for event history analysis as the research question specifically dictates a duration set-up of the investigation. Since the data is yearly registrations but the event of transition can take place at any point in time in between the registered observations, we choose to use a discrete time duration specification. Specifically, we use a logit specification predicting the probability of transitioning to a new professional affiliation. We also considered a Cox proportional hazard specification finding no difference in results suggesting the results not to be a by-product of the chosen model specification.

The validity of the matching procedure hinges on the assumption that we are able to eliminate all systematic differences affecting both outcome (employment turnover) and selection into treatment (entrepreneurship). We perform several checks to test for the validity of our model. We ran t-tests and chi-square tests across all matching variables. Table 1 reports descriptive statistics for the matching variables. It displays the means of the variables across entrepreneurs and non-entrepreneurs before and after the matching procedure and contains the results of the tests for significant differences in the variables mean values. We also report the descriptive statistics of individuals that are classified as stayers in 2003 (column 6). The data suggests that our considered sample on average consists of movers rather than stayers.

\*\*\* INSERT TABLE 1 ABOUT HERE \*\*\*

Before the matching procedure, a comparison between entrepreneurs and all newly hired employees in 2003 (Columns 1 and 2) shows that these groups are quite different along several observable dimensions. The value of these differences corresponds closely to those reported by previous studies comparing entrepreneurial entry vs non-entry using U.S. data (e.g. Hamilton, 2000; Campbell et al., 2012). The table indicates a general confirmation of what we may expect with regard to entrepreneurs and their

characteristics compared to wage earners. Two things should, however, be highlighted. First, entrepreneurs seem to have less varied job histories (number of different firms) on average. This evidence apparently stands in contrast to prior literature on jack-of-all trades and taste for variety theories (Lazear, 2005; Astebro and Thompson, 2011), which predict entrepreneurs to have held more jobs compared to non-entrepreneurs. Yet, it's fundamental to highlight that these columns only consider movers and hence has cut of the lower tail of the distribution. The higher values of number of different firms for the employees therefore reflect the well-known empirical regularities that movers tend to move more than stayers, which is also evident from comparison of column 6 and 1. Second, Table 1 shows that entrepreneurs' pre-transition wage is higher than employees. Prior work has provided evidence of both a positive (Bernhardt, 1994; Groyberg et al., 2009; Hamilton, 2000) and a negative selection (Bruece and Schuetze, 2004; Evans and Leighton, 1989; Hartog et al., 2010) into entrepreneurship. This mixed evidence has been resolved by more recent works, which find bimodal entry patterns, with those at either the top or the bottom of the earning distribution being more likely to select into entrepreneurship (Åstebro et al., 2011; Elfenbein et al., 2010). In our sample, there is evidence of a positive selection.

After the matching procedure, a comparison between entrepreneurs and matched employees (Columns 3 and 4), shows that there are no statistical differences along observable covariates across treatment and control groups, lending support to our matching model. Furthermore, we ran a probit regression to explain the likelihood of selecting into the treatment group rather than into the matched group, given the conditional variables used in the matching procedure. Table 2 reports the results of the probit. The overall validity and explanatory power of the model is very poor expressed by the insignificant values of the coefficients of all matching variables and of the Wald test.

\*\*\* INSERT TABLE 2 ABOUT HERE \*\*\*

In conclusions, we do not observe systematic differences between the treatment and control groups both within each variable, and when considering the covariates all together in the probit. Given that the

matching variables are appropriate, we can conclude that the matching procedure is successful in terms of providing a comparable yardstick of non-entrepreneurs for our analysis.

Table 3 reports the descriptive statistics and Pearson correlations between variables when considering the sample of entrepreneurs and matched non-entrepreneurs used in the main analysis.

\*\*\* INSERT TABLE 3 ABOUT HERE \*\*\*

## **4. Results**

### **4.1 Effects on Employment Turnover of a Transition to Entrepreneurship**

Figure 1 report the results of Kaplan-Meyer survival functions estimates on the time to employment turnover for entrepreneurs and the matched control group of employees. The figure lends preliminary support to our prediction, as entrepreneurs systematically stay longer in their employment status compared to employees. The log rank test confirms that there are significant differences between the survival curves representing entrepreneurs and wage earners, respectively.

\*\*\* INSERT FIGURE 1 ABOUT HERE \*\*\*

Table 4 shows the results of the discrete time duration model. Column 1 contains the results of the initial model where we do not separate the various effects forwarded theoretically.

\*\*\* INSERT TABLE 4 ABOUT HERE \*\*\*

The coefficients of our main explanatory variable, entrepreneur, indicates entrepreneurs are less likely to change job compared to matched employees, supporting the overall claim of the paper. Indeed, the estimate is significant at a 1% level suggesting strong support for the overall proposition.

Considering control variables, we also broadly find support for to prior literature on the determinants

of employment turnover. We find that individuals who held more jobs in the past are more likely to move again (Munasinghe and Sigman, 2004). Individuals with more years of wage experience are less likely to change job, suggesting that more experience is associated with higher likelihood to be in a position characterized by being a high quality match (Topel and Ward, 1992). Finally, the results suggest that individuals working for large companies and that necessity movers move more quickly again. The last observation may suggest that necessity movers are more likely to choose a lower quality fit in the immediate subsequent professional affiliation after having to find a new job as compared to those that do so for other reasons.

#### 4.2 Effects on Employment Turnover of Lock-in

Theoretically, we identified two primary reasons why we would observe a lower employment turnover among entrepreneurs than comparable non-entrepreneurs; quality match and lock-in effects. By separating the two, we will seek to get a more detailed understanding of the empirical evidence offered above. We do so by controlling for the lock-in effects and investigate if there is any explanatory power left for the quality match argument.

We forwarded two types of lock-in effects; a) selection and treatment based effects and b) investment effects. The first suggests that the individual may face a lower wage when going back to the wage employment suggesting the individuals finds this option unattractive. The second suggests that entrepreneurs operate under severe uncertainties wherefore they rationally consider sunk-cost when deciding on whether to exit their setting.

To address the selection and treatment lock-in effect, we use a Mincer (1958, 1974) equation approach in which first, we estimate the earnings of those individuals who made a transition to a new job in paid employment after 2003 to investigate whether a potential loss of labor market attractiveness is reflected into lower wages for entrepreneurs compared to matched employees. Second, based on the predicted wages we construct a proxy for the lock-in mechanism and include this measure in the logit model reported in Table 4. By including the treatment and selection lock-in effect as an explanatory in the main

regression explaining time to job change, we obtain a more unbiased estimate for how employment turnover may be lowered through job matching in entrepreneurship.

The dependent variable in the Mincer equation is the logarithm of individuals' earnings in the year of the transition to a new job in paid employment using only the observation of those that transition to a new job. We use the standard Mincer equation explanatory variables: Years of wage experience, its squared term, and Years of schooling. In addition, we also include our main explanatory variable, entrepreneur, to see whether an experience in entrepreneurship results in a pay reduction. We also add controls for female, year dummies, industry dummies, and a dummy whether individuals' new job is in the same industry as the one in which they were affiliated in 2003 at a 2-digit level. The former variable captures whether job changes (included those from entrepreneurship to wage work) within the same industry are penalized to a lesser extent or not at all (Neal, 1995; Kaiser and Malchow-Moller, 2011). Finally, we add interaction terms between entrepreneur and year dummies, to check for whether longer time in entrepreneurship further decreases job attractiveness. This allows us to separate whether it is likely to be selection lock-in effects or treatment lock-in effects that play a role in the main equation.

\*\*\* INSERT TABLE 5 ABOUT HERE \*\*\*

Table 5 reports the results of the Mincer equation regression. Entrepreneurs that goes back to wage work earn significantly less than matched employees. This penalty is suggestive of a potential lock-in effect: some individuals might prefer staying in entrepreneurship rather than receiving a pay cut when returning to the wage sector suggesting it to be a selection rather than a treatment effect. This effect seems to be independent of time in entrepreneurship as the interaction terms are insignificant. Results of the standard covariates are significant and in the direction of Mincer's model. Within industry moves (same industry) do not seem to be penalized to the same degree.

Utilizing the coefficients of the Mincer regression, we calculated the predicted wage of all individuals in our sample including those that do not move. The predicted wage represents the wage an individual is

expected to earn if she moves into wage employment given the observables used in the Mincer specification. We consider two variables for the lock-in effect of selection and treatment and which may capture the wage related decision of the individual in terms of job-change. First, we estimated the difference between the predicted wage and the actual wage, delta, which expresses whether an individual would have to take a pay-cut or a pay rise if choosing to move into a new wage worker setting. Second, we also use the raw predicted wage since it may say something about the hurdle of finding a new affiliation. Significant positive estimate suggest that even if the individual can obtain a high wage in employment, he still exhibits difficulties in in fact exiting entrepreneurship suggesting a lock-in.

\*\*\* INSERT TABLE 5 ABOUT HERE \*\*\*

Columns 2, 3 and 4 in Table 4 report the results of the logit model on transition to a new job as in column 1 only stepwise introducing the correction terms for selection and treatment lock-in effect. Column 2 adds the delta; Column 3 adds the predicted wage; Column 4 adds both terms. We find a positive estimate of the delta suggesting that a pay-cut would entail a lower likelihood of moving into a new work-context. In addition, we find a negative estimate on the predicted wage suggesting that the individual, even if faced with a high salary outside their current setting, do not transition to a new wage work setting. Both suggest them to be locked into their current setting due to either selection or treatment lock-in effects. Given the results of the Mincer equation where entrepreneurship exhibited a negative estimate, we interpret the findings to indicate that entrepreneurship in fact represents a lock-in effect. Also, since the interactions between entrepreneur and the year fixed effects in the mincer did not come out as significant suggest that the effect is more likely to be a selection effect rather than a treatment effect. It is important to note here, that the entrepreneur variable remains strongly significantly negative in the duration specification in Table 4 column 4, suggesting that the job-matching effects to remain even after controlling for the selection and treatment lock-in effects.

To evaluate the investment lock-in effect, we used a sub-sample of observations. We identified a

subsample of industries, namely consultancies, in which sunk costs are relatively small or even nonexistent wherefore the investment lock-in effect plays no role. The results of the duration model specification are displayed in Table 4 column 5. Even for this subsample of observation we do find that the coefficient associated with entrepreneur is significant and negative. Indeed, even when holding investment lock-in effect fixed we do find support for the overall proposition of the paper.

#### 4.3 Robustness Checks and Additional Analysis

Although our matching procedure has eliminated all observable differences between entrepreneurs and employees, it nevertheless still may be possibility that individuals select into the treatment based upon unobservables causing our findings. To address this concern, we select a subsample of necessity movers (entrepreneurs and matched employees), i.e. individuals who come from companies that in 2003 exit the market (lay-offs). The intuition is that since these individuals are forced to change job the endogeneity related to the job decision is at least partially attenuated. Results using this restrictive subsample are presented in Column 6 in Table 4. Even if the results are weakened, we nevertheless find a negative sign of the entrepreneurs dummy corroborate the robustness of our finding.

As supplement we also consider an alternative dependent variable. Table 6 exhibits the results of a multinomial logit on the likelihood of transitioning to a new job in wage work (1), to a new job in entrepreneurship (2), or of staying in current employment (baseline). The aim is to show that results hold only with respect to a transition to wage work and not for a transition to entrepreneurship, where job-match and lock-in effects are substantially smaller or completely absent. We find that entrepreneurs are less likely to move to wage work compared to stay in current job, while the choice between creating another firm (serial entrepreneurship) and remaining in the founded firm is not statistically significant. Finally, an unreported test shows that entrepreneurs are significantly more likely to create new firms rather than go back to wage work compared to matched employees, suggesting that they developed a preference for entrepreneurship. We also find support for the selection and treatment lock-in effect as in the standard duration specification.



## 5. Conclusions

This study considers whether a transition to entrepreneurship lowers the employment turnover tendency of workers who frequently change jobs in wage work (hoboes). Our theoretical model identifies two mechanisms behind this relation: job matching and lock-in. The empirical inquiry reveals that entrepreneurs stay longer in their employment status than comparable individuals in the wage sector. This is unpredictably so, since entrepreneurship is often viewed as an unstable and risky career, characterized by high exit rates (Taylor, 1999; Bruderl and Schlusser, 1990) and income volatility (Evans and Leighton, 1989; Hartog et al., 2010). Moreover, the evidence suggests that this greater employment stability is not only the result of lock-in effects associated with entrepreneurs' low attractiveness to the labor market, but also the outcome of job matching/satisfaction processes. Although entrepreneurs returning to wage work earn less than their counterparts, this does not appear to be the only mechanisms that keep entrepreneurs engaged with their venture. These results are robust to controlling for unobserved heterogeneity related to the initial decision of changing job and to potential lock-in effects created by industry-specific exit barriers/sunk costs.

In summary, the full range of results suggests that the employment stability effect associated with hoboes transitioning to entrepreneurship is a positive labor market outcome as it results from successful job matching mechanisms rather than from individuals being stuck in entrepreneurship for lack of alternative job opportunities.

The findings have fundamental implications for the study of entrepreneurship. First, this research focuses on adding to the understanding of the rewards available to entrepreneurs and in turn to the so-called entrepreneurship puzzle, i.e. why do individuals become entrepreneur if the risk-return hypothesis is not supported (e.g. Hyytinen et al., 2013; Campbell, 2012; Astebro and Chen, 2013). Job stability is an important desirable labor market outcome, as research on employment turnover typically emphasizes.

Second, our findings suggest that entrepreneurship represents an attractive career opportunity for those individuals who tend to change jobs more often than average, because it yields greater stability. This takes on a great importance since high employment turnover rates have negative implications for workers'

earnings (e.g. Topel, 1990; Farber, 1994), for firms' performance, and for society as a whole given the associated loss of firm-specific human capital. More broadly, this stabilizing effect contributes to research on the "hobo syndrome", by showing that the hobo behavior is related to the work context and/or its interaction with individual preferences and not an innate attitude (Ghiselli, 1974; Munasinghe and Sigman, 2004).

Third, substantial empirical evidence has documented that individuals with more varied job histories are more likely to become entrepreneurs (Elfeinbein et al., 2010). Two are the main theoretical mechanisms advocated: jack-of-all trade skills (Lazear, 2005), and taste for variety (Astebro and Thompson, 2011). Our study adds to this research by considering a key implication of this selection process: these individuals become more stable after the transition to entrepreneurship. Additionally, we provide indirect evidence that entrepreneurship is truly beneficial for these individuals, for two reasons. First, entrepreneurship rewards skills, which are underappreciated in the wage sector, i.e. JAT skills, leading to an increase of the job match, for workers whose job productive is low in the wage sector. Second, entrepreneurship offers non-pecuniary benefits, which are not available in the wage sector, i.e. autonomy, leading to an increase of the job satisfaction for workers who experience systematic problems with authority.

Our findings and the limitations of our study provide incentives for further research at the nexus of entrepreneurship and labor mobility. First, more can be done to empirically disentangle the two mechanisms further. We were able to separate the job matching mechanisms from the lock-in, by setting up an empirical strategy based on the loss of labor market attractiveness for entrepreneurs going back to wage work. Our primary goal was to exclude that the greater job stability among entrepreneurs arises from the negative effect of lock in in order to highlight the critical role of job stability in reducing labor market frictions (desirable labor market outcome). Future research may work on separating job matching from job satisfaction. Unraveling the two mechanisms is relevant for policy makers who design institutions and incentives to encourage entrepreneurship. Data limitations and the not-mutual

exclusiveness of the mechanisms prevent us from doing this.<sup>5</sup> However, since, job matching relates to worker's skills reflecting entrepreneurial ability; while job satisfaction relates to worker's preferences reflecting need for autonomy, the use of survey data may prove useful to discovering the motivations of individuals.<sup>6</sup>

Second, in contrast to prior research on the returns to entrepreneurship, which almost exclusively focus on income as labor market outcome variable, we considered a fundamental outcome of labor economics studies, i.e. job stability. Future research might investigate the relation between job stability and start-up performance. The answer has implications for whether one interprets the lower earnings that several scholars have found to be associated with entrepreneurship (e.g. Hamilton, 2000) as justified or not.

Third, although our matching procedure has been successful in eliminating all differences in observable attributes between the treatment and the control groups, there remains the possibility that systematic unobservable factors may determine a worker assignment to the treatment or the control group. The stability effect is overestimated if unobservable factors positively correlate with the likelihood of being an entrepreneur and are negatively associated with employment turnover. We tried to minimize this possibility by focusing on workers coming from lay-offs where changing job is not an active choice thereby going a long way. Yet, the lack of true experimental evidence causes us not to be able to completely rule out the possibility of spurious correlation arising from unobserved time-invariant characteristics between entrepreneurs and employees.

Our results are also informative for policy formulation. Entrepreneurship does appear to be the most desirable destination for those workers characterized as movers (hoboes). This is an important outcome for policy makers as hoboes often experience spells in unemployment and are responsible for the preponderance of the costs and social losses associated with job turnover. Policy makers should redirect

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<sup>5</sup> To the best of our knowledge, a unique attempt to separate them is Jackson (2013) who takes advantage of the school context where productivity and earnings are largely unrelated for teachers.

<sup>6</sup> Additionally, we assumed that movers are more likely to have skills that better fit entrepreneurial ability but we didn't offer a direct test.

their resource focus from unemployment benefits to incentivizing entrepreneurship in the case of workers who systematically exhibit problems with authority or earn significantly less than the level of education and work experience would predict.

Our results also offer an important implication for managers. Employees with a varied job history are likely to possess entrepreneurial abilities which are relevant for a firm innovation strategy and might introduce novelty features in the organization. Therefore, managers should devote significant attention to secure the commitment of these individuals. Beyond financial incentives, managerial effort should be dedicated towards creating a dynamic environment that supports autonomy and increases worker's responsibility on the outcome of their activity.

In conclusion, this research highlights the importance of considering entrepreneurship as a desirable career pattern for systematically mismatched or dissatisfied workers, because it lowers their employment turnover tendencies. Entrepreneurship, by increasing worker's productivity produces a more efficient allocation of these workers' resources and reduces labor market frictions.

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## Tables

**Table 1. Mean Comparison of Entrepreneurs and Non-Entrepreneur across Variables**

Variable	Entrepreneurs	Unmatched wage workers	Test for difference (1) vs (2)	Matched wage workers	Test for difference (1) vs (5)	Wage workers non- movers	Test for difference (1) vs (5)
	(1)	(2)	(3)	(4)	(6)	(5)	(6)
N. of observations	1.257	225.343	-	1257	-	1.162.839	-
Number of firms	1.754	1.967	n.s.	1.712	***	1.463	***
Number of industries	1.291	1.338	n.s.	1.260	***	1.168	***
Parents self-employed	0.056	0.038	n.s.	0.052	***	0.023	***
Married	0.579	0.490	n.s.	0.605	***	0.609	***
Children	0.593	0.466	n.s.	0.614	***	0.471	***
Bachelor degree	0.071	0.074	n.s.	0.072	n.s.	0.074	n.s.
Wage experience	14.735	13.354	n.s.	15.089	***	16.493	***
Wage earnings	340,000	260,000	n.s.	340,000	***	261673	***
Employer size	2139	6792	n.s.	2260	***	5935	***
Necessity mover	0.823	0.778	n.s.	0.814	***	-	



**Table 2. Probit Regression on Matching Model**

	Transition to Entrepreneurship
Number of firms	0.0227 (0.036)
Number of industries	0.0619 (0.057)
Parents self-employed	0.0254 (0.113)
Married	-0.0245 (0.060)
Female	-0.0372 (0.071)
Children	-0.0440 (0.057)
Bachelor degree	(0.092) (0.171)
Wage experience	-0.0015 (0.003)
Wage earnings	(0.000) 0.000
Employer size	-0.000 (0.000)
Necessity mover	0.0322 (0.067)
Constant	-0.067 (0.371)
Industry dummies	Yes
N. of observations	2,514
Pseudo R2	0.010
Log likelihood	-1742.571
Wald chi2(48)	35.47
Prob > chi2	0.909

Notes. The model predicts the likelihood of being in the treatment group (entrepreneurs) rather than in the control group (matched employees) in 2003. Robust standard errors are in parentheses.

\*p<0\_05; \*\*p<0\_01; \*\*\*p<0\_001.

**Table 3. Summary statistics and correlation matrix**

	Mean	S.D.	Min	Max	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Transition to new job	0.177	0.382	0	1													
(2) Entrepreneur	0.5	0.5	0	1	-0.169												
(3) Number of firms	1.733	0.801	1	4	0.071	0.026											
(4) Number of industries	1.275	0.506	1	4	0.066	0.031	0.467										
(5) Parent self-employed	0.054	0.227	0	1	0.003	0.009	0.049	0.032									
(6) Wage earnings/10,000	33.92	22.403	1.04	319.676	-0.037	-0.016	-0.059	-0.022	-0.042								
(7) Female	0.225	0.418	0	1	-0.001	0	-0.037	-0.051	0.013	-0.232							
(8) Married	0.592	0.492	0	1	-0.027	-0.027	-0.086	-0.059	-0.089	0.199	-0.006						
(9) Children	0.603	0.489	0	1	-0.007	-0.021	-0.045	-0.015	-0.038	0.107	0.005	0.376					
(10) Bachelor degree	0.071	0.257	0	1	0.004	-0.002	0.015	0.017	-0.012	0.256	-0.016	0.044	0.019				
(11) Wage experience (standardized values)	0.459	0.868	-1.039	2.778	-0.113	-0.02	-0.14	-0.107	-0.118	0.22	-0.11	0.339	0.026	-0.08			
(12) Wage experience, sq. (standardized values)	0.964	1.356	0.001	7.719	-0.07	-0.051	-0.107	-0.09	-0.071	0.132	-0.096	0.214	-0.178	-0.043	0.791		
(13) Employer size/1,000	2.199	5.608	0.001	43.203	0.084	-0.011	0.172	0.085	-0.014	-0.058	0.071	-0.014	-0.062	0.02	-0.086	0.005	
(14) Necessity mover	0.818	0.386	0	1	0.063	0.011	0.091	0.051	-0.014	-0.088	-0.003	-0.028	0.02	-0.026	-0.093	-0.096	0.087

**Table 4. Logit regression on transition to a new job. Marginal effects reported.**

	Transition to a new job					
	Full Sample				Consultants Subsample	Lay-off Subsample
	(1)	(2)	(3)	(4)	(5)	(6)
Entrepreneur	-0.084*** (0.011)	-0.036*** (0.008)	-0.095*** (0.013)	-0.076*** (0.013)	-0.113* (0.050)	-0.030+ (0.017)
Delta		0.026*** (0.006)		0.022*** (0.005)	0.039+ (0.023)	0.012 (0.012)
Wage predicted			-0.037* (0.017)	-0.088*** (0.022)	-0.217* (0.085)	-0.116** (0.041)
Number of firms	0.008* (0.004)	0.011+ (0.006)	0.007* (0.004)	0.008+ (0.005)	0.024 (0.020)	0.008 (0.011)
Number of industries	0.018** (0.006)	0.020* (0.009)	0.017** (0.006)	0.017* (0.007)	0.016 (0.024)	0.064* (0.029)
Parents self-employed	-0.012 (0.011)	-0.022 (0.016)	-0.011 (0.010)	-0.018 (0.012)	0.070 (0.076)	0.019 (0.036)
Wage earnings	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Female	-0.010 (0.008)	0.007 (0.011)	-0.026* (0.011)	-0.034* (0.013)	-0.120* (0.053)	-0.015 (0.024)
Married	0.007 (0.006)	0.007 (0.010)	0.007 (0.006)	0.007 (0.008)	0.002 (0.031)	0.003 (0.020)
Children	-0.005 (0.006)	-0.013 (0.010)	-0.005 (0.006)	-0.011 (0.008)	0.038 (0.033)	-0.034 (0.024)
Bachelor degree	-0.005 (0.011)	-0.042* (0.018)	0.010 (0.012)	0.000 (0.016)	0.010 (0.052)	0.014 (0.030)
Wage experience	-0.035*** (0.007)	-0.046*** (0.009)	-0.024** (0.007)	-0.019* (0.009)	-0.044 (0.039)	0.001 (0.010)
Wage experience, squared	0.003 (0.004)	0.004 (0.005)	-0.001 (0.004)	-0.006 (0.005)	0.003 (0.020)	-0.014 (0.009)
Employer size	0.002*** (0.001)	0.003*** (0.001)	0.002*** (0.001)	0.003*** (0.001)	0.016* (0.007)	0.002 (0.002)
Necessity mover	0.033*** (0.007)	0.055*** (0.010)	0.029*** (0.006)	0.041*** (0.009)	0.064+ (0.033)	- -
Constant	-1.695*** (0.351)	-2.009*** (0.377)	3.945 (2.886)	9.432** (3.119)	15.668* (7.325)	-0.505 (1.473)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
N. of observations	8,504	5,630	8,504	5,630	1,025	1,347
Pseudo R2	0.067	0.049	0.067	0.051	0.088	0.047
Chi2	482.829	270.939	489.142	285.069	84.615	57.559
Prob> Chi2	0.000	0.000	0.000	0.000	0.000	0.000
Log likelihood	-3706.723	-2859.026	-3704.795	-2852.334	-502.125	-549.326

Notes In Model 6, necessity mover is omitted because parent firm survival equals 0 for all observations.

Robust standard errors in parentheses.

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.1

**Table 5. The Mincer Wage Regression**

	Wage (log)
Wage experience	0.206*** (0.035)
Wage experience, squared	-0.099*** (0.022)
Female	-0.468*** (0.049)
Entrepreneur	-0.740*** (0.124)
Spinoff	0.127** (0.040)
Years of schooling <sup>a</sup>	0.230** (0.082)
Entrepreneur*Year dummy (2005) <sup>b</sup>	0.256+ (0.143)
Entrepreneur*Year dummy (2006) <sup>b</sup>	0.278+ (0.150)
Entrepreneur*Year dummy (2007) <sup>b</sup>	0.112 (0.162)
Entrepreneur*Year dummy (2008) <sup>b</sup>	0.177 (0.176)
Constant	12.329*** (0.175)
Industry dummies	Yes
Year dummies	Yes
N. of observations	1,402
R-squared	0.303
F (27, 1374)	24.58

Notes. Number of observations corresponds to individuals (entrepreneurs and matched employees) who transition to a new job in paid employment after 2003. Robust standard errors are in parentheses. \*p<0\_05; \*\*p<0\_01; \*\*\*p<0\_001.

<sup>a</sup> Years of schooling is a variable categorizing the type of education, based on number of years of schooling: 10, 12 (for scientific and applied education), 14, 16 (both for practical training and nursing), 18, and 20. This variable in this model replaces bachelor because it's closer to Mincer's original model specification.

<sup>b</sup> Compared against omitted category Entrepreneur\*Year dummy (2004).

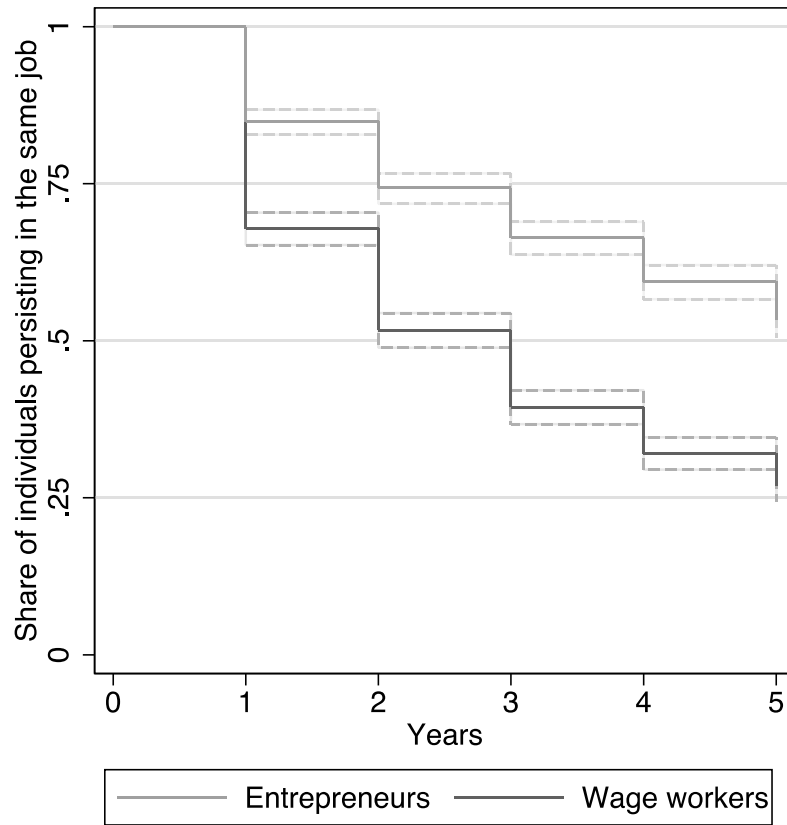
**Table 6. Multinomial logistic regression on transition to a new job. Marginal effects reported.**

	Transition to wage employment	Transition to self- employment
	(1)	(2)
Entrepreneur	-0.074*** (0.013)	-0.001 (0.002)
Delta	0.020*** (0.005)	0.001 (0.001)
Wage predicted	-0.079*** (0.021)	-0.005 (0.004)
Number of firms	0.008+ (0.005)	0.000 (0.001)
Number of industries	0.018* (0.007)	-0.000 (0.001)
Parents self-employed	-0.016 (0.012)	-0.001 (0.002)
Wage earnings	-0.000 (0.000)	0.000 (0.000)
Female	-0.028* (0.013)	-0.004 (0.003)
Married	0.006 (0.007)	0.000 (0.001)
Children	-0.011 (0.008)	0.000 (0.001)
Bachelor degree	0.000 (0.016)	-0.000 (0.002)
Wage experience	-0.019* (0.009)	-0.000 (0.001)
Wage experience, squared	-0.003 (0.005)	-0.003 (0.002)
Employer size	0.003*** (0.001)	-0.000 (0.000)
Necessity mover	0.041*** (0.009)	0.000 (0.001)
Constant	8.799** (3.197)	8.799** (3.197)
Industry dummies	Yes	Yes
Year dummies	Yes	Yes
N. of observations		5,630
Pseudo R2		0.057
Chi2		4655.624
Prob> Chi2		0.000
Log likelihood		-3091.590

Robust standard errors in parentheses  
 \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.1

## Figures

**Figure 1. Kaplan-Meier Survival estimates**



Note. The log-rank test for equality of survivor functions takes a value of 213.11 (p-value < 0.001).