Entrepreneurship and employment stability — Job matching, labour market value, and personal commitment ☆

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ABSTRACT

This paper challenges the conventional belief that entrepreneurship is an unstable career path. Using longitudinal matched employer–employee data from Denmark, the analysis reveals that a transition to entrepreneurship decreases individual's employment turnover tendency. Three explanations are identified and empirically explored: *(i)* job matching, *(ii)* labour market value, and *(iii)* personal commitment. Entrepreneurs appear to be more productive and thus better matched compared to wageworkers. However, they also appear to be locked in entrepreneurship because of their anticipated lower value in the labour market and because of their personal attachment to the venture. The counter-intuitive finding – entrepreneurship yields greater employment stability – only holds with respect to subsequent transitions to wagework and not for new venture founding. The results have implications for our understanding of entrepreneurial entry and labour market dynamics.

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Executive summary

Although there is an active and growing literature on the returns to entrepreneurship (Hamilton, 2000; Hyytinen et al., 2013), little is known about the effect of entrepreneurship on individual's job stability. This is surprising given that job stability may be the result of workers being better matched to a specific firm, and in turn being more productive in that organizational setting (Jackson, 2013; Jovanovic, 1982). Moreover, entrepreneurs tend to have a history as job hoppers (e.g. Astebro and Thompson, 2011). Hence, it becomes interesting to understand the sources of this job hopping tendency and whether becoming an entrepreneur induces a change in this behaviour.

Accordingly, this paper addresses the question of whether entrepreneurship is associated with a downward shift in the individual's turnover rate. Longitudinal data covering the population of individuals active in the Danish labour market are used to estimate differences in turnover rates between entrepreneurs and comparable wageworkers identified by means of a propensity score matching technique. While entrepreneurship is often portrayed as an unstable career associated with high failure rates, we find that, conditional on moving, entrepreneurship yields greater job stability. The paper offers empirical evidence around three mechanisms potentially contributing to this downward shift of individual's employment turnover rate: *(i)* job matching;

(ii) labour market value; and *(iii)* personal commitment. Entrepreneurs appear to be better matched in their employment status where job matching is modelled as average residuals in an income regression with firm and individual fixed effects. Yet, we also find evidence of lock-in effects. Lower turnover among entrepreneurs is partly attributed to an expected pay cut upon returning to the wage sector which discourages exit and to a personal commitment effect ascribed to psychological attachment and escalation of commitment.

These findings are central for our understanding of the rewards available to potential entrepreneurs and thus for better modelling the decision to become entrepreneur. In addition, there are implications for both policy makers and researchers, which we discuss below.

Implications for policy makers

We believe our results contribute to an understanding of the net effects of policies aiming at channelling workers into entrepreneurship. First, the costs associated with subsidising entrepreneurship should be evaluated in light of the expected time in entrepreneurship relative to the expected tenure in an established firm. Our results suggest that these policies should target individuals with above average turnover tendencies to reap the benefit of employment stability and, in turn, alleviate the frictional costs associated with high employment turnover. Second, our evidence of higher residual earnings for entrepreneurs compared to movers in the wage sector suggests that policies attracting movers to entrepreneurship may also increase their productivity by securing them a high quality match. However, our results also point out that entrepreneurship lowers individuals' labour market value, which in turn hinders exit from entrepreneurship and introduces frictions at the point of re-entry in the wage sector. This corroborates the need to adopt a selective approach rather than a one-size-fits-all approach. Policies should target individuals whose benefits associated with stability and job matching are the highest. This will minimize the risk of failure or offset the cost of the entrepreneurial discount in case of exit and return to the wage sector.

Implications for researchers

This research improves our understanding of the entrepreneurial entry decision. First, finding greater employment stability among entrepreneurs contributes to a more comprehensive understanding of the rewards available in entrepreneurship. This has fundamental implications for whether we interpret the monetary returns as justified, especially in light of the fact that leaving an entrepreneurial venture is costly (Gimeno et al., 1997).

Second, the finding that movers are more productive in entrepreneurship, exhibiting higher earning residuals, extends the debate on whether entrepreneurship does pay. While it is well documented that entrepreneurs on average earn less, emerging research has started questioning it (see e.g. Astebro and Chen, 2014; Manso, 2016). Drawing on recent advances in labour economics to estimate match effects (Jackson, 2013), we suggest that looking at the residual earnings rather than at the observed earnings differentials may prove promising to re-estimate the monetary returns. This method may be better at capturing the unobservable component of entrepreneurial ability. An interesting research route could be to compare the two approaches to identify sources of discrepancies and ultimately shed more light on the entrepreneurial earnings puzzle.

Finally, our analysis suggests that the documented high employment turnover rates among wageworkers before moving to entrepreneurship (Astebro and Thompson, 2011) can be ascribed to an interaction between employment contexts and individual preferences (job mismatch), and less to innate attributes of this selected group, i.e. a taste for variety. Sorting out the mechanisms of job mismatch and taste for variety would be another interesting topic for future research.

1. Introduction

Although scholars of entrepreneurship have extensively focused on whether entrepreneurship pays (see e.g. Georgellis et al., 2007; Hamilton, 2000), little is known about the effect of entrepreneurship on job stability. This gap is surprising because job stability plays a central role in determining individual's choices about where to work, firms' hiring and retention policies, and in public policy concerned with the welfare effects of turnover (see e.g. Jackson, 2013). Job stability is of particular interest in the entrepreneurial setting because an increasing number of policies are aimed at subsidising entrepreneurship. It has thus become important to understand whether these policies have a long-lasting effect and whether potential stability among entrepreneurs is a desirable outcome in the labour market. Accordingly, this paper examines whether and why the transition to entrepreneurship affects job stability.

Entrepreneurship is often portrayed as a risky, unstable career choice. Most periods of entrepreneurship are relatively short lived (see e.g. Kaiser and Malchow-Moller, 2011; Taylor, 1999). Start-ups fail relatively quickly (Evans and Leighton, 1989), and entrepreneurs have skewed and volatile earnings (Parker, 1997). For example, a recent study by Kaiser and Malchow-Moller (2011) using Danish data found that among new entrepreneurs, only 35.6% had persisted in entrepreneurship after five years. Hence, entrepreneurship may be viewed as a transitory occupation that entrepreneurs leave relatively quickly.

We challenge this view and suggest that entrepreneurship is in fact associated with greater employment stability. We propose and test three theoretical mechanisms. The first is a positive matching process between individuals that select into entrepreneurship and the inherent features of being an entrepreneur. The second is a lock-in effect attributable to relatively poorer outside options in the labour market. Finally, the third mechanism is another form of lock-in, wherefore personal commitment to the business causes behavioural delays.

This study has important implications for ongoing conversations in entrepreneurship. First, research on the returns to entrepreneurship typically documents that entrepreneurship does not pay (see e.g. Hamilton, 2000). Yet, a growing number of studies appears to question this view by accounting for alternative explanations such as income underreporting

(Astebro and Chen, 2014), or the option value of experimenting (Manso, 2016). Considering whether and why entrepreneurship may yield greater job stability offers a new perspective to solve this conundrum by accounting for tenure in entrepreneurship. Second, research indicates that entrepreneurs tend to change jobs more often than the average worker before moving to entrepreneurship (Lazear, 2004). Understanding why this is the case is central for policies aiming at alleviating labour market frictions. Indirect evidence suggests that job hopping is the result of individuals' innate attributes, i.e. hobos (Astebro and Thompson, 2011). However, if turnover tendencies decrease after moving to entrepreneurship and result in better job matches, the previous job hopping behaviour can be attributed to an interaction between employment context and individual preferences (i.e. a job mismatch).

Testing the relationship between entrepreneurship and employment turnover requires a research design accounting for the endogenous choice to become an entrepreneur. For this purpose, we use longitudinally linked employer–employee data mapping the employment histories of the entire Danish labour force to identify first-time entrepreneurs in 2003. We then extract a comparable group of wageworkers who also changed jobs in the same year. Among these, we identify a suitable control group by implementing a comprehensive propensity score-matching procedure based on information about the labour market, demographics, and the social relations of individuals active in the labour force. This matched group of wageworkers serves as a counterfactual sample and represents the unobservable employment turnover behaviour of firm founders had they not chosen to become entrepreneurs. Finally, we consider differences in employment turnover rates between entrepreneurs and their matched counterparts over a five-year period.

The empirical analysis revealed that entrepreneurship is associated with lower employment turnover rates, and provided evidence of the presence of the aforementioned mechanisms (i.e. job matching and lock-in effects). Building on recent advances in the labour economics literature, which estimated the effects of job-matching (see e.g. Jackson, 2013), we found that the entrepreneurs experience higher match quality than their counterparts. In addition, by using a Mincer wage equation to estimate the labour market value of individuals, we computed the wage premium derived from changing to (a new) wagework setting and used it as a control variable in the duration analysis. Entrepreneurship appears to decrease individual's labour market value, which in turn lowers the incidence rate of transitioning to a new affiliation. Moreover, the results showed that entrepreneurs working with a spouse or whose firm exhibited negative net capital tended to stay longer, which is consistent with the notion that personal commitments are a source of lock-in effect. In addition, the supplementary analysis showed that the results hold even when restricting the sample to necessity movers (e.g. individuals who changed their jobs because they were laid off), further mitigating the potential bias caused by the unobserved heterogeneity associated with entrepreneurship as being a career choice. Finally, the results apply only to subsequent transitions to wagework, not to subsequent transitions to entrepreneurship (serial entrepreneurship). We interpreted this result as further corroborating the proposed mechanisms.

2. Theory

This paper postulates that entrepreneurship results in lower rates of subsequent job transitions because of either desirable outcomes (higher utility) or undesirable outcomes (lock-in). It is therefore important to account for these two potential antithetic effects by distinguishing between job matching (a positive labour market outcome), and lock-in related to labour market value and personal commitment (a negative labour market outcome).

2.1. Job matching

Job matching models in which turnover is a function of the (un)productive interaction between the individual's and the employer's characteristics (Woodcock, 2014) are used to explain employment turnover. Such models suggest that workers remain in jobs where their productivity is shown to be relatively high (i.e. high-quality match), whereas leave jobs where their productivity is shown to be low (i.e. low quality match) (Jovanovic, 1979). High-quality matches are associated with earnings growth over time (Topel and Ward, 1992), reduced searches for external opportunities, and thus lower turnover rates (Mincer and Jovanovic, 1981). Accordingly, a decrease in employment turnover rates after the transition to entrepreneurship might be associated with a positive match between the characteristics of the individual that self-select into entrepreneurship and the inherent characteristics of being an entrepreneur.

Some workers may find that entrepreneurship is a high-quality job match, for three reasons. First, there is a prevailing tendency for entrepreneurs to value independence (Taylor, 1996). The preference for independence can trigger agency problems in wagework settings, which is why a significant number of entrepreneurs report disagreement with a former employer as the primary motivation for the transition to entrepreneurship (Klepper, 2007; Klepper and Thompson, 2010). In the context of entrepreneurship, the agent (employee) and the principal (employer) collapse into a single entity, which causes these agency-related problems to disappear (Lazear, 1981). This effect may lower tendencies to individual employment turnover because entrepreneurship offers a better match for those who prefer independence. Non-pecuniary benefits such as autonomy also play an important role in determining the quality of the match and therefore employment turnover (Jackson, 2013).

Second, entrepreneurs exhibit high turnover rates ex ante a transition to entrepreneurship (Astebro and Thompson, 2011), which might be due to strategic sorting (Sorensen, 2007): individuals self-select a number of different jobs to develop a varied skill set that will help them realize their ultimate goal of becoming an entrepreneur. Alternatively, these individuals might move between jobs simply because they have a taste for variety (Astebro and Thompson, 2011). Because such individuals gain experience in a larger set of skills and job roles, they can be characterized as generalists rather than specialists in terms of

their skill sets. Generalists tend to be undervalued in wagework because the hiring process and reward systems are based on the specialized knowledge of the employee, whereas entrepreneurship offers high returns for generalist skills (Lazear, 2004). Hence, the wage offers received by individuals with a history of high employment turnover may be lower in the labour market compared to entrepreneurship, making the latter relatively more attractive in terms of matching skills.

Third, moving across firms entails redeploying human capital to a new setting. The transferability of employees' skills is likely to be higher if they become firm founders than if they join established firms (Campbell et al., 2012). Working in different firms provides the individual with different kinds of firm-specific human capital. Lazear (2009) suggested that firm-specific human capital could be viewed as a specific firm-dependent mix of various general skills. The cost of investing in the skills mix corresponding to the weights assigned by a given employer may be higher than in an entrepreneurial setting where the firm founder can design the preferred skills mix. Therefore, new ventures tend to place a higher value on the different skill mixes acquired by individuals who change jobs. It follows that the overlap between firm-specific human capital and the skills required to establish a new venture is likely to be higher (and therefore generate a high-quality match) in entrepreneurship compared to alternative employment options.

2.2. Labour market value

There are reasons to conjecture that entrepreneurs will do well when returning to wage work. As emphasized by Baptista et al. (2012), entrepreneurs obtain human capital in the form of organizing, supervising and coordinating firm activities. This makes them attractive in the labour market for management positions. The authors find evidence that entrepreneurs are more likely to be hired at managerial levels of the organizational hierarchy in smaller firms with relatively lower wage levels and that they tend to be promoted faster compared to individuals without entrepreneurial experience.

Entrepreneurship can, however, change a founder's set of opportunities upon returning to wagework (Hyytinen et al., 2013) through the depreciation of the human capital previously developed in the employment sector. Founders can lack experience in the current labour market, as well as opportunities for training and advancement in the firm or industry in which they previously worked (Bruce and Schuetze, 2004, p. 576). In addition, potential employers may undervalue the abilities of former entrepreneurs. This is corroborated by Kaiser and Malchow-Moller (2011) who highlight that the tasks undertaken by entrepreneurs differ substantially than those undertaken in wage work. The human capital acquired in entrepreneurship may hence not be easily transferable and applicable in wage settings. Kaiser and Malchow-Moller (2011) emphasize that even if the human capital is transferable, a past entrepreneurial spell may send different signals in terms of innate abilities which are undesirable in wagework settings. Entrepreneurs may thus receive a wage offer below their reservation wage, thus contributing to the lock-in effect because of relatively poor and limited employment options in the labour market. Moreover, the duration of the entrepreneurial spell may contribute to the development of entrepreneurial human capital, which might prove to be an irreversible investment with adverse effects on the move back to employment in an established firm.

Empirical evidence suggests the existence of a lock-in effect based on the negative returns to entrepreneurship in the wage sector (Bruce and Schuetze, 2004; Evans and Leighton, 1989; Hyytinen and Rouvinen, 2008).[1] Self-employment may reduce future prospects of wagework, or it may reduce the wages of those who re-enter wagework. Bruce and Schuetze (2004) found that for male workers, an additional year in self-employment reduced future earnings in the wage sector by 3% to 11%, increased the probability of unemployment by 3% to 10%, and increased the probability of part-time employment by 10% to 30%. In addition, experimental evidence indicates that compared to non-entrepreneurs, entrepreneurs receive significantly fewer job offers when they attempt to reenter the wage sector (Koellinger et al., 2015). Entrepreneurs returning to wagework could be penalized in the labour market because their skill set may be less applicable or because of statistical discrimination if the recruiter assumes that an entrepreneur who seeks wagework has experienced the failure of a firm (Koellinger et al., 2015). This unfair treatment in the labour market has been associated with the "stigma of failure" (Landier, 2006).

2.3. Personal commitment

Entrepreneurs facing poor firm performance may delay the decision to exit (DeTienne et al., 2008; Gimeno et al., 1997). This delay is mainly attributed to behavioural effects (Elfenbein and Knott, 2017). Recent experimental evidence suggests that equity stakes in the firm are a sufficient condition to induce behavioural delay (Elfenbein et al., 2017). We identify two sources of such delay. First, the entrepreneur's psychological attachment, which might have a predominant effect (McCarthy et al., 1993). This psychological attachment may be reinforced by a sense of responsibility for the firm and its stakeholders, especially if they have social links with the entrepreneur. These ties, in turn, can create a psychological lock-in effect based on personal responsibility. The most salient cases of emotional attachment to the new venture are family firms. It is well documented that this emotional attachment delays exit by lowering the threshold of firm performance that is considered acceptable (Gómez-Mejía et al., 2007). The aim is to prevent a loss in the socio-economic wealth that the entrepreneur receives from the involvement in the family business (DeTienne and Chirico, 2013). The entrepreneur may thus delay his or her exit due to an over-attachment to the startup.

Second, individuals may fall into the trap of biased decision-making due to an escalation of commitment, thus persisting in a failing course of action. In the context of entrepreneurship, substantial personal investment can cause the founder to delay

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[1] Some question this finding and argue that the opposite applies (see e.g. Campbell, 2013; Fairlie, 2002; Hamilton, 2000; Kaiser and Malchow-Moller, 2011).

exit (DeTienne et al., 2008). The investment of energy, time, and effort in the firm causes founders to develop a feeling of psychological ownership of the firm (Pierce et al., 2001). The perception that the startup would lose value if the entrepreneur were to leave may be a plausible effect of such a bias, especially considering that overconfidence and over-optimism are typically observed among entrepreneurs (Busenitz and Barney, 1997; Parker, 2013) together with founders' tendency to feel indispensable. Accordingly, in the expectation that conditions will improve, entrepreneurs may wait to incur a concrete financial loss before closing down their firm.

3. Data and method

The Danish labour market database (IDA) and the Danish Entrepreneurship Database are maintained and updated by Statistics Denmark. These databases are used to examine the association between transitions to entrepreneurship and shifts in employment turnover tendencies. The IDA is a matched employer–employee dataset tracking individuals and their firm affiliations over time, including the entire active labour force of legal residents in Denmark. The Danish labour market is comparable to the U.S. labour market in several dimensions, such as employment protection, average employment turnover, and entry and exit rates (Sorensen, 2007).

The Entrepreneurship Database covers all newly registered businesses and their founders/owners. All firms are legally required to register with the Danish Business Authorities. Founders register their firms using their personal social security number, which instantly generates a unique firm registration number. These two registers are combined by using identifiers at the individual and firm levels, which correspond to the social security number of the individual and the registration number of the firm. The data consist of yearly panels for 1999 to 2008, and provide information about individuals, affiliations, and social and demographic characteristics.

These data are particularly suitable for investigating employment turnover tendencies among entrepreneurs because they allow to address three important methodological challenges. First, the database includes information about individuals who did not transition to entrepreneurship, allowing the identification of a suitable counterfactual sample. Second, it provides comprehensive information about the career histories of individuals. Third, it tracks precisely the changes in individuals' firm affiliations over time. An individual's occupation in a given year is determined by Statistics Denmark according to the individual's labour market status during the last week of November in that year.

Our sample frame consists of individuals who transitioned to entrepreneurship in 2003. Based on this reference point, the analysis includes information about the labour market dynamics from 1999 and five years after the transition, until 2008. An individual is defined as an entrepreneur if s/he is recorded in the Danish Entrepreneurship Database as the primary founder of a firm newly registered in 2003. In order to isolate the treatment effect of entrepreneurship on individuals' employment turnover tendencies, while avoiding the presence of confounding effects as much as possible, we focused strictly on first-time entrepreneurs who did not register a new firm from 1999 to 2002.

Additional restrictions were imposed on the sample of entrepreneurs to minimize the likelihood that our findings could be attributable to confounding factors. First, individuals affiliated with more than one firm in the form of either an entrepreneurial venture and wagework or a second start-up in a given year were excluded because hybrid transitions involve distinctive logics (Folta et al., 2010), which may be associated with entrepreneurial stability. For example, wagework may provide a stable income that sustains the start-up and thus contributes to lowering employment turnover beyond entrepreneurship-related factors. Second, individuals aged under 18 years in 1999 and individuals aged over 60 years in 2003 were excluded to eliminate biases caused by censoring. Third, individuals working in the agriculture, fishing, quarrying, and construction industries were excluded because of the different labour market dynamics in these industries compared to other industries, as well as to ensure comparability with prior studies of entrepreneurship. Fourth, a wage restriction was imposed to exclude individuals earning below a minimum amount (DKr10,000) in 2003. This level was chosen to exclude part-time occupations, new and undeveloped start-up firms, and individuals who underwent interval censoring in their affiliation with the labour market. The same restrictions were imposed on the wageworkers.

Table 1 provides an overview of how the sample of entrepreneurs and potential comparable wageworkers changed when we imposed the restrictions. Table 1 also presents some statistics related to how the average wage in 2002 changed when these restrictions were imposed. The final sample of entrepreneurs included 1255 first-time entrepreneurs in 2003. Among the restriction criteria, the decision to examine only non-hybrids had the largest impact on the number of observations used in the analysis. In addition, in 2003, the average wage of entrepreneurs increased sharply when the minimum wage was established.

3.1. Identification of a control group of wage workers

The investigation to determine whether entrepreneurship lowered individuals' employment turnover tendencies entailed an important inferential challenge because entrepreneurship is not randomly assigned. An increasing amount of empirical evidence suggests that individuals self-select entrepreneurship based on certain attributes, such as the preference for autonomy (Taylor, 1996), a taste for variety (Astebro and Thompson, 2011), and individual abilities (Elfenbein et al., 2010; Lazear, 2005). The claim that entrepreneurship lowers employment turnover might be a spurious result of the selection effect if these observable and unobservable characteristics were also associated with job change tendencies. This potential selection problem was addressed by identifying a counterfactual sample of wageworkers. The individuals included in the control sample represent the employment turnover among individuals who were equally likely to transition to entrepreneurship but who chose not to

Table 1
Sampling and restrictions.

	Restriction criteria				
	Full sample	Only 2003 movers	Non-hybrids	Age and industry	Wage minimum
Entrepreneurs					
Observations	8802	8689	1988	1934	1255
Individuals	6681	6568	1988	1934	1255
Mean 2002 wage	299,122	301,299	271,184	271,934	335,472
Non-entrepreneurs					
Observations	2,105,029	799,568	164,098	137,892	134,529
Individuals	1,924,914	619,453	164,098	137,892	134,529
Mean 2002 wage	261,716***	262,531***	236,475***	255,969***	260,615***

Stars indicate statistical difference from entrepreneurs.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

do so. Theoretically, this counterfactual sample represents the subject of interest (i.e., an entrepreneur) had s/he chosen not to transition to entrepreneurship.

A counterfactual sample of 1255 wageworkers was drawn from the 134,529 individuals who were identified after imposing the same restrictions on moving wageworkers as those imposed on the entrepreneur group (see Table 1). A propensity score matching technique (Rosenbaum and Rubin, 1983) and more precisely a nearest-neighbor approach was employed to identify this comparison group. This methodology has been used to address the potential self-selection bias in previous studies of entrepreneurial outcomes (Campbell, 2013; Kaiser and Malchow-Moller, 2011).[2] The covariates associated with individuals who chose entrepreneurship were identified and used in the matching procedure. An exact matching specification based on gender was used because there could be systematic differences between females and males in their propensity to leave current employment. In addition, a common onset of risk was used by considering only wageworkers who also changed jobs in 2003. The underlying assumption was that the individuals had no plan to move before starting to work in a new context.

The variables used for the matching procedure were measured in 2002 because matching is aimed at reflecting individuals' characteristics just before the 2003 transition. The matching model includes variables that affected both selection in the treatment group (i.e., entrepreneurship) and the dependent variable (i.e., ex post-employment turnover).

3.2. Variables

3.2.1. Dependent variable

This study investigates the time to the first job transition after 2003. This contrasts individuals who continued in the same firm in 2003 (transition = 0) with individuals who left the firm they worked for in 2003 to work for a different firm (transition = 1). Wage equations also were considered in the analysis of the match effect and the labour market value effect. Here the dependent variable was the yearly wage in Danish currency (DKr) divided by 10,000.

3.2.2. Explanatory variables

The primary explanatory variable is a dummy variable equal to 1 if the individual became an entrepreneur in 2003 (treatment group) and 0 if s/he moved to a new wagework setting in 2003 (matched control group). This dummy variable represents the entrepreneurs identified in the registration records and the control sample that was extracted using the matching procedure. An entrepreneur is hence defined by business ownership. Apart being well defined and unambiguously observable, this definition also makes the present study consistent and comparable with prior related contributions (see e.g. Baptista et al., 2012, Kaiser and Malchow-Moller, 2011).

3.2.3. Matching variables

Entrepreneurs are characterized as jacks-of-all-trades or as having a taste for variety (Astebro and Thompson, 2011; Lazear, 2004). Such characteristics are highly collinear with the tendency to change jobs. Therefore, it was fundamental to ensure that the control and treatment samples were comparable in terms of these characteristics. To this end, two variables indicating prior employment turnover tendencies were included: the number of firms and the number of industries with which the focal individual had been affiliated between 1999 and 2002. Using these measures as controls and matching variables ensured that the samples were comparable in terms of employment turnover prior to the onset of risk, thereby equating the groups according to variables that were related directly to the dependent variable.

In addition, the control and treatment groups were matched according to several demographic variables. First, parents may act as role models: individuals with entrepreneurial parent(s) may exhibit a higher likelihood of becoming entrepreneurs (Nanda and Sørensen, 2010). A dummy variable was used to measure whether at least one of the individual's parents was

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[2] The results are not sensitive to the chosen matching specification. Other techniques have produced consistent results. The consistency of the results may be a by-product of the richness of the data from which the matched sample was drawn.

an entrepreneur between 1999 and 2002. Civil status may also affect both entrepreneurship activity (Folta et al., 2010) and employment turnover. Thus, marital status was included as a dummy variable indicating whether the individual was married or not. Having children may dictate a more stable professional affiliation and may affect entrepreneurship. The two groups were matched according to the presence of children younger than 18 years. A high level of education may represent different opportunity costs and imply different labour market opportunities compared to lower levels of education. Thus, the two groups were matched according to whether the individual had a bachelor's degree or higher.

Four variables related to professional status and conditions were used in the matching procedure. First, the number of years in the labour market may affect employment turnover through switching costs. The wage earner's experience was included as the number of years the individual had been active in the labour force since 1979. We also considered its squared term.[3] Second, wage may affect the likelihood of changing jobs because it accounts for a major influence on the decision to accept or reject a job. Furthermore, evidence suggests a link between wage earnings and entrepreneurship (Astebro and Chen, 2014). We used yearly wages in Danish currency in 2002 divided by 10,000. Third, there are differences in entrepreneurship activity based on leaving a large rather than a small firm (Elfenbein et al., 2010; Hvide, 2009). In addition, there are good reasons to suspect that employees of larger firms might differ in employment turnover tendencies compared to those in small firms. Thus, we included employer size, which was measured by the number of employees in the firm to which the individual was affiliated in 2002. Finally, the change in affiliation between 2002 and 2003 may have been due to a necessity move. Necessity moves increase employment turnover and often result in necessity entrepreneurship (Koellinger and Thurik, 2012). Necessity movers were matched by including a dummy variable that reflected whether the firm to which each individual was affiliated in 2002 was still in existence in 2003.

3.2.4. Controls

The fixed effects of year and industry were included throughout the analysis. Industry dummy variables represented the industry of the new employer in the case of wagework and the industry of the new firm in the entrepreneurial case. These measures were coded in 2003 and defined by two digit NACE codes.

3.3. Sample and moments

The validity of the matching procedure hinged on the assumption that systematic differences affecting both outcome (employment turnover) and selection for the treatment group (entrepreneurship) were eliminated. Table 2 reports the mean of the matching variables and associated tests of differences across four samples: the treatment sample of 1255 entrepreneurs; the control sample of 1255 matched wageworkers; the sample of movers from which the control sample was drawn; and the sample of workers affiliated with the same firm in 2002 and 2003 (i.e., "stayers").

Based on these observable factors, there were no statistical differences between entrepreneurs and matched wage workers. This result indicates that the propensity score-matching procedure was successful in producing two groups with no systematic differences in these observable factors.[4]

The results shown in Table 2 generally confirmed our expectations related to entrepreneurs and their characteristics compared to wage earners. Two things warrant some elaboration. First, on average, the entrepreneurs had less varied job histories (number of firms and number of industries) compared to the moving wageworkers, which would seem to contradict findings in the literature and theoretical assumptions about ' jacks-of-all-trades' and their taste for variety (Astebro and Thompson, 2011; Lazear, 2004). This finding may be explained in part by the sample of entrepreneurs investigated, which excludes hybrid entrepreneurs. It also reflects that the comparison included movers but not the lower tail of the distribution of employment turnover. Indeed, the group of stayers exhibited a significantly lower level of employment turnover.

Second, entrepreneurs' pre-transition wages had a higher mean than the stayers' wages did. This finding might seem counterintuitive because stayers supposedly are better matched than movers are, and better-matched individuals should exhibit higher wages because of their higher productivity. Three factors contributed to this finding. First, as Table 1 indicates, the entrepreneurs' average wage increased sharply because of the restrictions imposed; there was no comparable increase in the average wage of wageworkers. Second, these statistics were affected by extreme earners among the entrepreneurs, who were often sampled at both the top and the bottom of the earnings distribution (Astebro et al., 2011; Elfenbein et al., 2010). A more detailed look at the nature of the significant difference in earnings between entrepreneurs and wage workers ex ante indicates that this reason affected the descriptive statistics. Third, even if the lower tail of the income distribution were deleted, there might still be a large share of part-time workers in the stayer category, which would have lowered the average wage.

Table 3 reports Pearson correlations between the variables in the sample of entrepreneurs and matched wage earners used in the main analysis.

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[3] We included age and age squared among the matching variables. However, the correlation between age and work experience proved extremely high, and we decided to remove age from the list of variables in order to avoid multicollinearity problems.

[4] We also ran a probit regression to explain the likelihood of selection for the treatment group rather than the matched group, including the conditional variables used in the matching procedure. The overall validity and explanatory power of the model was poor, as shown by the insignificant coefficients of all the matching variables and the Wald χ^2 test. The results of the $Pseudo - R^2$ were also low, suggesting the relatively poor ability to explain the variation in whether the individual belonged to the control sample or the treatment sample.

Table 2
Descriptive statistics across occupational groups.

	Entrepreneurs	Matched wage workers	Movers	Stayers
Number of Firms	1.750	1.768	1.959***	1.472***
Number of industries	1.290	1.304	1.341***	1.172***
Parent is entrepreneur	0.056	0.059	0.037**	0.023***
Wage earnings/10,000	33.547	33.925	26.061***	29.013***
Married	0.577	0.582	0.491***	0.612***
Children	0.592	0.613	0.466***	0.494***
Parent firm size/1000	2.121	2.167	6.537***	5.677***
Necessity entrepreneur	0.822	0.828	0.777***	1.000***
Wage experience	14.740	15.140	13.404***	17.233***
Female	0.224	0.224	0.449***	0.498***
Education	0.071	0.072	0.075	0.072***
Observations	1255	1255	134,529	908,964

Stars indicate statistical difference from entrepreneurs.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

4. Results

In total, 1511 of the investigated sample of 2510 individuals changed jobs between 2004 and 2008. Fig. 1 reports Kaplan-Meier survival functions for the time to first job transition after 2003, comparing entrepreneurs with the matched wageworkers. It provides preliminary support for the proposition that entrepreneurs exhibit lower turnover rates than comparable wageworkers do. A log-rank test confirmed that the difference between the two groups was statistically significant. The entrepreneurs showed a five-year median survival time, whereas the median for wageworkers was three years. The mean values were 3.853 and 2.892 for the two groups, respectively. The entrepreneurs' incidence rate was 0.121, and the incidence rate of the matched wageworkers was 0.255.

Theoretically, the fact that the entrepreneurs exhibited lower turnover rates than the comparable wageworkers did might have been caused by any of the three mechanisms identified in the theory section of this paper. It is therefore important to give separate accounts of all the three mechanisms: job matching, labour market value, and personal commitment effects.

4.1. Job matching effect

As an explanation for the observed empirical phenomenon, the job matching mechanism suggests that entrepreneurs are better matched in their new affiliation than the comparable wageworkers are. The quantification of match-specific productivity effects is an important empirical challenge in labour economics (Lazear and Oyer, 2007, p. 20). Jackson (2013) proposed an orthogonal match fixed-effect approach, as follows:

$$w_{ijt} = \lambda w_{it-1} + \theta_i + \theta_j + \sum_{\tau=1999}^{2008} \pi_\tau I_{t=\tau} + \varepsilon_{ijt} \qquad (1)$$

where w_{ijt} is the wage of individual i at firm j at time t. The lagged wage of the individuals (w_{it-1}), individual fixed effects (θ_i), firm fixed effects (θ_j), and year dummies ($I_{t=\tau}$) are on the right-hand side. This approach implies the assumption that individuals' quality of match in their occupations is reflected in their wage (Woodcock, 2015). Accordingly, match can be measured as the average of the residual for an individual in a specific firm.

Table 3
Correlation coefficients across considered variables (N=2510).

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
[1]	Entrepreneur												
[2]	Number of firms	−0.01											
[3]	Number of industries	−0.01	0.49										
[4]	Parent is entrepreneur	−0.01	0.01	−0.01									
[5]	Wage earnings/10,000	−0.01	−0.03	−0.05	−0.06								
[6]	Married	0.00	−0.06	−0.04	−0.09	0.18							
[7]	Children	−0.02	−0.04	−0.02	−0.02	0.08	0.37						
[8]	Parent firm size/1000	0.00	0.16	0.11	0.02	−0.04	−0.04	−0.06					
[9]	Necessity mover	−0.01	0.06	0.05	0.02	−0.06	−0.02	0.01	0.09				
[10]	Wage experience	−0.02	−0.14	−0.11	−0.15	0.26	0.33	0.02	−0.06	−0.09			
[11]	Wage experience^2	−0.05	−0.10	−0.06	−0.08	0.17	0.20	−0.18	0.03	−0.09	0.79		
[12]	Female	0.00	−0.04	−0.02	0.05	−0.23	−0.02	0.04	0.06	−0.01	−0.10	−0.09	
[13]	Education	0.00	0.00	0.03	−0.01	0.22	0.03	0.03	0.02	−0.01	−0.10	−0.06	−0.02

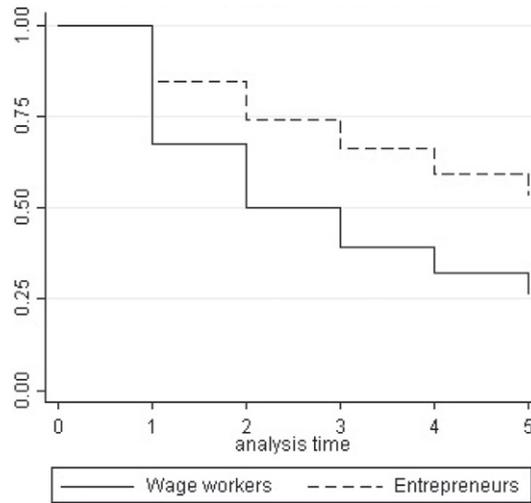Absolute values greater than 0.02 are significant at a 5% level.

Fig. 1. Kaplan-Meier survival estimates. Note: Log-rank test statistic is 213.11 ($p < 0.001$).

The match measure is computed using yearly wage data, individual identities, and firm identities for 1999 through 2008. Two affiliations were identified for each of the 1255 individuals: the affiliation immediately prior to 2003 and the affiliation immediately after 2003. Thus, the match effect was computed as the average of the residuals within individual-firm observations. Fig. 2 displays the kernel density distributions of the average residuals ex post 2003, split between entrepreneurs and non-entrepreneurs.

Fig. 2 depicts the tendency towards positive values for entrepreneurs *vis-a-vis* wage workers. The average value of the match for entrepreneurs was 526,134 while the corresponding value for wage workers was −6,447.331. The results of a t-test suggested that they were significantly different (t = 4.001), indicating that entrepreneurs are better matched compared to the matched wageworkers.

4.2. Labour market value effect

This paper argues that theoretically, entrepreneurs are penalized in the labour market upon their return to wagework. Building on Hamilton (2000), we conducted a quantile regression analysis to investigate the position of the subjects in the distribution of wages earned in the first new job after 2003. Specifically, we considered the 10*th*, 50*th* and 90*th* quantiles. The entrepreneur dummy variable and control variables often used in wage equations were included as regressors. A
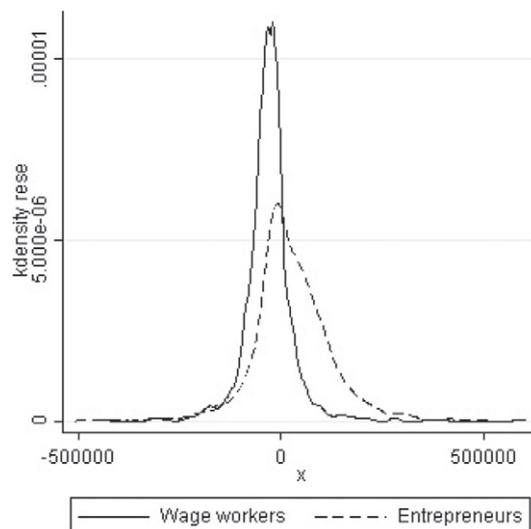

Fig. 2. Matching effect estimates across entrepreneurs and comparable wageworkers ex post 2003.

negative estimate for the entrepreneurship dummy indicates the penalization of entrepreneurs based on the matched sample of entrepreneurs and wageworkers.

Columns 1 to 3 in Table 4, report the results of the quantile regressions, which consider 1414 of the 1511 transitions to wagework. The remaining transitions after 2003 were to entrepreneurship, and they are not considered to determine individuals' value in the labour market. Entrepreneurs suffer a labour market penalty in the lower earnings quantiles. The coefficients are negative and significant at the 10*th* and the 50*th* quantiles. However, the significance did not appear in the 90*th* quantile, suggesting that there was no penalization of high wage earners. At the median, entrepreneurs earned approximately DKR94,000 less than comparable wage earners in their first job after 2003.

Columns 4 to 6 in Table 4 refer to the results of a time duration analysis, explaining transitions to the first new job after 2003. The model estimates discrete time transitions because the data describe yearly observations; however, transitions could occur at any point in time between these registered observations. A logit specification was applied to predict the hazard of transitioning to a new professional affiliation.[5] The total sample, the low wage earners (bottom 10% in wage earnings), and the high wage earners (top 10% in wage earnings) are considered in turn in these columns.

The negative estimates associated with the entrepreneur dummy suggest that the entrepreneurs suffer a lower hazard in changing their affiliation compared to the matched counterfactual sample of wageworkers. The estimates vary based on the sub-sample considered. Although both estimates were statistically significant, the estimate of the low wage sample (-0.165) was lower than for the high wage sample (-0.041), suggesting that the observed effect in the total sample could be partially attributed to a value effect of the labour market. The hazard rate of wageworkers in changing affiliation is 1.18 ($1/exp(-0.165)$) times higher than for the entrepreneurs at the lower end of the income distribution, whereas the corresponding difference is 1.04 ($1/exp(-0.041)$) at the upper tail of the income distribution.

However, individuals chosing to leave their 2003 affiliation in subsequent years may not have been randomly selected. For instance, they may have selected to leave that setting, or they may have been offered other options because of some unobservable factors. In other words, we did not observe the wages of those who did not move, which could have created an attrition bias in the estimates of the labour market values and hence biases in the results shown in Table 4. To investigate this potential issue, we applied a Heckman specification of the quantile regressions shown in Table 4, in which the first stage models whether they left their 2003 job affiliation or not, and the second stage explains the amount of the wage they received in their new affiliation. The results are presented in columns (1) and (2) of Table 5. The results of the selection equation are consistent with those shown in column (4) in Table 4, as expected. Column (2) in Table 5 shows that the entrepreneurs are penalized in the labour market, wage experience is associated with an increasing value at a decreasing rate, and females earn less. In addition, there are positive returns for education, and those moving into the same industry earn more (industry-specific human capital). Moreover, the coefficient of the inverse Mills ratio is positive, suggesting that the expected wage of those staying is higher than for those leaving. This result is consistent with the findings in Hamilton (2000).

In the next step, the Heckman estimates were used to calculate the expected wage in an outside option for all individuals in each year. This estimated quantity, *predicted labour market value*, represents the labour market value of each of the individuals according to their observable factors. Subtracting the actual wage earnings from the predicted labour market value provides the wage premium that the individuals would obtain by transitioning to a new job. A negative premium indicates that the current wage is higher than the market value wage, whereas a positive premium suggests that the wage in the external job option is more attractive.[6]

The wage premium variable was added to the discrete time duration specification model to account for the potential lock-in effect caused by individuals' labour market values. The results are presented in column 3 of Table 5. The estimated wage premium is positive, suggesting that attractive outside options precipitate a transition. Because the coefficient of entrepreneurs in the Heckman model is negative (-12.779), the entrepreneurs generally had a lower wage premium compared to the wageworkers in the counterfactual sample. Therefore, the entrepreneurs tend to be locked-in because of their labour market value. However, column 3 shows negative coefficients for the entrepreneur dummy variable, suggesting that entrepreneurs exhibit greater tendencies to stability even after controlling for the labour market value effect.

4.3. Personal commitment effect

A personal commitment effect, we argued, could delay exit as a result of escalation of commitment and psychological attachment. Accordingly, we split the entrepreneur dummy variable in two. First, to account for a psychological attachment as the source of exit delay, we exploited variations in whether the new firm was a family business. In this particular case, a split was created based on whether the entrepreneur's spouse was working for the new firm. When the founder's spouse is employed in the start-up, a behavioural delay is likely to occur because of emotional commitment. Second, to account for the escalation of commitment, a split based on whether the net capital of the firm was positive or negative was considered. A negative net capital is likely to produce delay because the entrepreneur may wait to incur a concrete financial loss in the hope that conditions

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[5] We also considered a Cox proportional hazard specification; the results were unchanged, suggesting that they were not a by-product of the chosen model.
[6] There was a decline in the number of observations because for a small number of individuals, wages were missing for one or more years. This decrease in the number of observations appeared to be random based on the difference between those observed and those not observed.

Table 4
Wage (1, 2 & 3) and Transition (4, 5 & 6) regressions – marginal effect reported.

	Quantile regressions against *ex post* wage			Discrete time duration models		
	10*th* quantile (1)	50*th* quantile (2)	90*th* quantile (3)	Total sample (4)	Low wage sample (5)	High wage sample (6)
Entrepreneur	−12.732*** [1.353]	−9.413*** [0.691]	−3.993 [2.695]	−0.076*** [0.006]	−0.165*** [0.056]	−0.041** [0.017]
Number of firms				0.009** [0.004]	0.047** [0.024]	0.013 [0.012]
Number of industries				0.014** [0.005]	−0.064* [0.037]	−0.013 [0.016]
Parent is entrepreneur				−0.005 [0.010]	−0.012 [0.048]	0.038 [0.040]
Wage/10,000				0.000 [0.000]	0.000 [0.001]	0.000 [0.000]
Married				0.005 [0.006]	−0.019 [0.029]	0.041** [0.021]
Children				−0.005 [0.006]	0.040 [0.029]	−0.012 [0.022]
Parent firm size/1000				0.001*** [0.000]	0.004* [0.002]	0.006** [0.003]
Necessity mover				0.030*** [0.005]	−0.030 [0.041]	0.006 [0.019]
Wage experience	2.691*** [0.944]	4.345*** [0.787]	9.618*** [1.842]	−0.029*** [0.005]	−0.020 [0.023]	−0.004 [0.018]
Wage experience^2	−1.65*** [0.568]	−1.858*** [0.433]	3.401** [1.385]	0.006** [0.003]	0.018 [0.022]	0.012 [0.011]
Female	6.696*** [1.360]	−10.424*** [0.791]	−16.578*** [1.998]	−0.010 [0.007]	−0.046 [0.042]	−0.019 [0.034]
Education	5.844* [3.437]	10.204*** [2.580]	41.797** [20.074]	−0.010 [0.010]	−0.057 [0.074]	0.001 [0.019]
Same industry	2.115* [1.248]	2.179*** [0.810]	3.499 [2.249]			
Year/industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1414	1414	1414	8449	859	860
Individuals	1414	1414	1414	2510	251	251
R^2/$Pseudo - R^2$	0.141	0.157	0.205	0.069	0.157	0.074
Log likelihood				−3691.290	−302.085	−364.284
χ^2				508.890***	110.860***	52.750**

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, Standard errors in parentheses.

will improve. This decision-making process is likely to be biased by the entrepreneur's over-optimism about future prospects and overconfidence in the firm's future ability to reduce the current debt/equity ratio.

Five percent (60) of entrepreneurs employed spouses in the company; and 131 (6%) of the 1255 start-ups reported negative net capital in 2004 (i.e. one year after founding). The same number of firms had negative net capital in 2008, but in this case, it represented 17.5% of observations. The results of the discrete time duration analysis considering the two splits are presented in columns 1 and 2 of Table 6.

Having the spouse working for the start-up induced entrepreneurs to keep the startup operating for longer. This finding is consistent with the presence of psychological attachment. The results of a Wald test indicate that the estimates for an employed spouse and an unemployed spouse are significantly different (Wald $\chi^2 = 22.97$***). The estimate for negative net capital is significantly negative. Furthermore, it is significantly lower than the comparable estimate for positive net capital (Wald $\chi^2 = 26.94$***), which indicates that financial investment induces entrepreneurs to delay exit and explains why entrepreneurs stay longer in the entrepreneurial setting than comparable wageworkers stay in the job setting.

The results for the control variables provide broad support for prior research on the determinants of employment turnover. The results shown in Table 6 suggest that individuals who have been employed in a greater number of jobs in the past are more likely to move again, as indicated by the significant positive estimates associated with the number of firms and the number of industries. Better-educated individuals exhibit a lower hazard of changing jobs serially. Individuals with more years of wage earning experience are less likely to change jobs, suggesting that longer experience is associated with a higher likelihood of staying in a position characterized by a high-quality match. The longer the individual has been active in the labour market, the more likely it is that a high-quality match has been achieved (Topel and Ward, 1992). Finally, the results suggest that individuals working for large companies and necessity movers are more likely to make another move. This last observation might suggest that necessity movers are more likely to obtain a low quality match in the immediately subsequent professional affiliation because they were forced to find a new job, compared to movers who moved for other reasons.

Table 5
Heckman regression against wage after transition and regressions explaining transition to a different job – Marginal effects reported.

	Heckman selection equation (1)	Heckman wage equation (2)	Discrete time equation (3)
Entrepreneur	−0.061**	−12.541***	−0.041***
	[0.026]	[1.413]	[0.007]
Wage premium			0.001***
			[0.000]
Number of firms	−0.009		0.013**
	[0.016]		[0.006]
Number of industries	0.006		0.018**
	[0.023]		[0.009]
Parent is entrepreneur	0.044		−0.007
	[0.056]		[0.017]
Wage/10,000	−0.003***		0.000
	[0.001]		[0.000]
Married	−0.003		0.002
	[0.023]		[0.009]
Children	−0.033		−0.008
	[0.028]		[0.009]
Parent firm size/1000	0.007**		0.003***
	[0.003]		[0.001]
Necessity mover	0.067**		0.054***
	[0.029]		[0.008]
Wage experience	−0.010	5.160***	−0.049***
	[0.028]	[0.947]	[0.008]
Wage experience^2	0.002	-2.653***	0.012**
	[0.016]	[0.609]	[0.005]
Female	0.016	−11.310***	0.007
	[0.038]	[1.325]	[0.011]
Education	0.121**	16.293***	−0.043**
	[0.059]	[3.520]	[0.017]
Same industry	−0.046	2.545**	
	[0.043]	[1.187]	
Inverse Mills ratio (ρ)		0.916***	
		[0.031]	
Year/industry dummies	Yes	Yes	Yes
Observations	2080	2080	6489
Individuals	1414	1414	2134
Censored observations	666	666	
Log likelihood		−6738.187	−3330.583
χ^2		361.550***	303.960***
Pseudo − R^2			0.049

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, Standard errors in parentheses.

4.4. Robustness checks and additional analysis

Although the matching procedure was designed to eliminate as many observable differences between entrepreneurs and employees as possible, individuals could have selected entrepreneurship because of unobservable factors, which could have caused potential biases in the estimates, as they might not be fully captured by the observable factors considered. To address this concern, we selected a sub-sample of necessity movers (entrepreneurs and matched employees) that included individuals from companies that exited the market in 2003 (i.e. layoffs). The endogeneity related to the job decision is attenuated at least partially because these individuals were forced to change jobs; hence, the change was less likely to be an active choice of the individual. The results for this restricted sub-sample are presented in Table 7, where columns 1 and 2 show spouse and net capital, respectively. The results are consistent with the results displayed in Table 6. This test also provides initial indication that the identified effect of greater stability is caused to a lesser extent by entrepreneurship being attractive to specific types of individuals. In other words, it offers strong support for the results being a treatment effect of entrepreneurship on individuals' turnover tendencies, rather than being driven by individuals with poor outside options self-selecting in entrepreneurship.

A further supplementary analysis was conducted using an alternative dependent variable. Instead of the transition dummy variable, a categorical variable was used to discriminate between subsequent transitions to wagework or to entrepreneurship. The suggested theoretical mechanisms underlying the lower turnover rates pertain primarily to subsequent transitions to wage work. Therefore, we did not expect the results to hold in the case when entrepreneurs exited the firm to start another venture (i.e. serial entrepreneurs). To verify this prediction, columns 3 to 6 in Table 7 present the results of a multinomial logit model of the likelihood of transitioning to a new job in wagework (3 & 5) or to a new job in entrepreneurship (4 & 6), as opposed to staying in the current employment (baseline). These results are consistent with the prior findings in relation to the transition to wagework. However, they did not explain variations that characterize further transitions to entrepreneurship after 2003.

Table 6
Considering personal commitment lock-in effects on duration to transition to new job – Marginal effects reported.

	Working spouse equation (1)	Net capital equation (2)
Entrepreneur		
No working spouse	−0.034***	
	[0.008]	
Working spouse	−0.195***	
	[0.036]	
Positive net capital		−0.015***
	[0.005]	
Negative net capital		−0.075***
	[0.006]	
Wage premium	0.001***	0.001***
	[0.000]	[0.000]
Number of firms	0.014**	0.007**
	[0.006]	[0.003]
Number of industries	0.020**	0.009**
	[0.009]	[0.005]
Parent is entrepreneur	−0.007	−0.004
	[0.018]	[0.008]
Wage/10,000	0.000	0.000
	[0.000]	[0.000]
Female	0.007	0.005
	[0.011]	[0.005]
Married	0.004	0.001
	[0.010]	[0.005]
Children	−0.007	−0.004
	[0.010]	[0.005]
Education	−0.049***	−0.023**
	[0.018]	[0.009]
Wage experience	−0.052***	−0.025***
	[0.009]	[0.006]
Wage experience^2	0.012**	0.006**
	[0.005]	[0.003]
Parent firm size/100 0	0.003***	0.001***
	[0.001]	[0.000]
Necessity mover	0.054***	0.027***
	[0.009]	[0.006]
Year/industry dummies	Yes	Yes
Observations	6489	6489
Individuals	2134	2134
Log likelihood	−3314.733	−3314.386
χ^2	315.100***	376.030***
Pseudo − R^2	0.054	0.054

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, Standard errors in parentheses.

5. Conclusion

Public policy has increasingly turned to entrepreneurship to boost employment and economic growth. To evaluate the net effect of entrepreneurship-related policies it is important to account for how long individuals remain entrepreneurs. Surprisingly, we know very little about the effect of entrepreneurship on job stability. Entrepreneurship is often depicted as an unstable and risky career choice that is characterized by high exit rates, short employment periods (Taylor, 1999), and high income volatility (Evans and Leighton, 1989). The present study tests this view by investigating the effect of a transition to entrepreneurship on individuals' employment turnover rates.

This paper finds the opposite, namely that individuals who moved to entrepreneurship exhibited lower employment turnover rates than comparable individuals who moved to the wage sector. Further analyses show that this finding was caused by the interaction between individual attributes and the characteristics specific to the entrepreneurial setting. Entrepreneurs are found to be better matched compared to the counterfactual sample of wageworkers, as measured by higher earnings residuals. Moreover, the findings show that entrepreneurs are penalized upon re-entering the labour market. This expected penalty partially contributes to reduce turnover among entrepreneurs. Finally, entrepreneurs who work with their spouse or who have negative net capital tend to stay longer, which is consistent with the notion that personal commitment locks-in entrepreneurship.

Supplementary analysis confirms the robustness of the findings. By exploiting exogenous variations in layoffs, the results are robust to the unobserved heterogeneity related to the choice to become an entrepreneur. Moreover, the results only hold if the subsequent transition was to wagework, not to entrepreneurship. In the case of serial entrepreneurs, that is, founders who left their firm to start a new one, the findings provided further support for the proposed mechanisms. Serial entrepreneurship

Table 7
Necessity movers and duration of transition to new job – Marginal effects reported.

| | Necessity movers | | Competing risk analysis | | | |
| | Transition to other job | | Transition to wage work | Transition to entrepreneurship | Transition to wage work | Transition to entrepreneurship |
	(1)	(2)	(3)	(4)	(5)	(6)
Entrepreneur						
No working spouse	−0.049*		−0.048***	0.014		
	[0.027]		[0.013]	[0.068]		
Working spouse	−0.258***		−0.242***	0.003		
	[0.077]		[0.044]	[0.018]		
Positive net capital		−0.039*			−0.023***	0.008
		[0.022]			[0.007]	[0.038]
Negative net capital		−0.109***			−0.095***	0.002
		[0.018]			[0.006]	[0.012]
Wage premium	0.001	0.001	0.002***	0.000	0.001***	0.000
	[0.001]	[0.001]	[0.001]	[0.002]	[0.000]	[0.001]
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1245	1245	6505	6505	6505	6505
Log likelihood	−579.879	−583.810		−3617.597		−3617.597
χ^2	78.630***	75.100***		381.430***		381.430***
$Pseudo - R^2$	0.073	0.067		0.050		0.050

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, Standard errors in parentheses.

did not entail the loss of match quality or re-entry into the labour market. Therefore, no penalization was found, which may have allowed these individuals to circumvent the personal commitment mechanism. For this reason, the transition pattern to entrepreneurship was equalized between the entrepreneurs and the comparable wageworker.

This study has implications for research on entry decision and returns to entrepreneurship in particular. First, the finding that entrepreneurship yields greater job stability for individuals who select in entrepreneurship adds to the rewards available to entrepreneurs and has important implications for whether we interpret the monetary returns as justified. Accounting for the time dimension is particularly important since switching out of an entrepreneurial venture is a costly process (Gimeno et al., 1997). Second, the study brings a novel perspective to the well-known entrepreneurship puzzle, i.e. why entrepreneurs earn less than comparable employees (Hamilton, 2000). An emerging literature appears to challenge the existence of this puzzle (Astebro and Chen, 2014). For example, Manso (2016) finds evidence of biases, such as experimentation bias, when using cross-sectional comparisons of observed earnings between entrepreneurs and counterfactual employees. Accounting for these biases makes entrepreneurial earnings more attractive. Along the same vein, we find that movers are more productive in entrepreneurship compared to counterfactual employees, as they exhibited higher earnings residuals, after controlling for individual and firm level fixed effects. Comparing residual earnings with observed earnings differentials may prove a fruitful research avenue to solve the entrepreneurship puzzle and more cleanly isolate the entrepreneurial ability component. Third, the study contributes to a growing literature on the consequences of an entrepreneurial experience. Our finding that entrepreneurs are penalized upon re-entering the wage sector is in line with Kaiser and Malchow-Moller (2011) documenting that entrepreneurs exhibit lower hourly wage returning to wage employment and that switching industry increases the penalty. Similarly, Baptista et al. (2012) showed that former business owners exhibit a lower return from their experience compared to counterfactuals without entrepreneurial experience, but progress faster up the job hierarchy in small firms. This apparent puzzle is reconciled by looking at the long-term monetary returns rather than at the re-entry wage, i.e. the wage right after closing or selling the start-up. Accordingly, Daly (2015) and Campbell (2013) suggested a positive effect of long-term earnings from entrepreneurial experience. In sum, the tendency for entrepreneurs to have lower re-entry wages could be associated with some sort of negative signal or stigma (Koellinger et al., 2015). We add to this literature by more intimately tying this finding to the turnover tendencies of entrepreneurs and by demonstrating that the expected pay cut hinders entrepreneurs' decision to exit. Fourth, the present study shows that high turnover individuals are more likely to self-select in entrepreneurship, consistent with previous research (Astebro and Thompson, 2011). Yet, in contrast to previous research suggesting this job-hopping behaviour is the result of innate traits (e.g. taste for variety), we offer evidence in favour of a matching-based explanation. Since the turnover tendency changes when transitioning to entrepreneurship, the underlying rationale can be ascribed to an interaction between individual attributes with the specific features of the entrepreneurial work context. Future research can build on this finding to better sort out the two mechanisms of job mismatch and taste for variety in explaining the relation between job hopping and transition to entrepreneurship. Finally, the paper forwards evidence suggesting that lower turnover rates among entrepreneurs can be attributed to a job matching effect, a labour market value effect, and a personal commitment effect. While we have distinguished among these three rationales, more can be done in the future to evaluate the relative importance of each of them in explaining the job stability outcome.

This article has implications for practitioners. It improves our understanding of the rewards to entrepreneurship, which can be used to help individuals better evaluate the choice of becoming entrepreneurs. Our results suggest that individuals who tend to change jobs in the wage sector due to a systematic mismatch in terms of both preference and skills may consider entrepreneurship as an attractive career option.

The results of this study have implications for policy makers who aim to understand the net effects of policies that attract individuals to an entrepreneurial career. The value of these measures should be viewed in relation to the time individuals spend as entrepreneurs compared to their average tenure as employee. Our findings suggest that policy makers should target job hoppers to maximize the returns from stability and at the same time reduce the welfare costs associated with high turnover. The main reason is that these individuals are likely to find a better job match in entrepreneurial settings, where better matches results in productivity gains. Yet, our empirical inquiry also indicates that entrepreneurship decreases the individual labour market value upon re-entering the wage sector, consistent with previous literature (Baptista et al., 2012). Hence, it is important to adopt a selective approach to minimize the risk of exiting from entrepreneurship and at the same time to strengthen policies reducing the stigma of failure.

Our findings also have implications for managers of established firms concerned with employees' turnover. Contextual settings were shown to be significant in predicting employment turnover rates. This result could offer new insights into the organizational features of established firms, which could consider establishing a context that entrepreneurial individuals might find attractive. Mimicking the entrepreneurial contexts in established firms may allow such firms to attract and retain employees with an entrepreneurial disposition, thus reaping the benefits they bring. This potential is in line with previous research on how organizational structure fosters or hinders entrepreneurship (see e.g. Ozcan and Reichstein, 2009).

Even by providing robust evidence of the proposed associations between the transition to entrepreneurship and a lower tendency to individual employment turnover, this paper is not free from limitations. Most of these are highlighted and discussed throughout the text. However, some limitations pertain to the use of propensity score matching to generate a counterfactual group of non-entrepreneurs. Although this approach is increasingly used to conduct counterfactual analysis in entrepreneurship studies (Berglann et al., 2011; Campbell, 2013; Daly, 2015; Kaiser and Malchow-Moller, 2011), it has limitations. The primary concern is the potential violation of the assumption of conditional independence, which requires that all variables correlated with the probability of being in the treatment (control) group and the outcome variable are observable and included in the propensity score estimation. The matching procedure used in this study takes advantage of the richness of the data; the more comprehensive the list of matching variables, the more likely it is that the assumption of conditional independence will hold. However, the inclusion of further attributes would not have provided more than a marginal and non-significant improvement in the quality of the current analysis, and it would have significantly reduced the size of the sample from which the control sample was drawn. To mitigate concerns about the validity of the matching procedure and to avoid overly restricting the size of the control sample, we included a rich set of pre-transition variables that were correlated with both the probability of being in the entrepreneur group and turnover tendencies. We considered the number and quality of these variables against the potential loss of including additional ones with the aim of deriving the most suitable control sample. We also conducted several checks to confirm the suitability of the control sample.

Propensity score matching can produce biases in the presence of unobservable factors. Although we included several observables, it is possible that such factors might have determined the assignment of an individual to the treatment group or the control group. In this case, the stability effect would be overestimated if unobservable factors were positively correlated with the likelihood of being an entrepreneur, and they would be negatively associated with employment turnover. However, this potential bias is likely to be limited in this investigation for three reasons. First, unobserved factors are typically correlated with entrepreneurial outcomes, and they correspond neatly to preferences and skills (Elfenbein et al., 2010). Both mechanisms are embedded in the proposed mechanisms that we tested ex post. Second, we used matching variables that capture the lagged value of the turnover tendency (i.e., the number of prior firms and the number of prior industries), thereby partly capturing the unobservable factors by applying an auto-correlation process in the propensity score matching. Finally, we aimed at minimizing the possibility of selection based on unobservable factors by replicating the analysis using a sub-sample of displaced workers whose job change might not be based on their active choice. Layoffs produce fairly exogenous variations in entrepreneurial activity by decreasing wages, increasing the likelihood of unemployment, and lowering the reservation wage for entrepreneurship (Von Greiff, 2009). For these individuals, the choice of entrepreneurship may be determined partly by exogenous events, leaving less room for the potential effects of the unobservable factors on the matching process. The results were unchanged when this sub-sample was analyzed.

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