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Marco Caliendo
University of Potsdam and IZA

Frank M. Fossen
University of Nevada, Reno and IZA

Alexander S. Kritikos
DIW Berlin, University of Potsdam and IZA

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IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

What Makes an Employer?*

As the policy debate on entrepreneurship increasingly centers on firm growth in terms of job creation, it is important to better understand which variables influence the first hiring decision and which ones influence the subsequent survival as an employer. Using the German Socioeconomic Panel (SOEP), we analyze what role individual characteristics of entrepreneurs play in sustainable job creation. While human and social capital variables positively influence the hiring decision and the survival as an employer in the same direction, we show that none of the personality traits affect the two outcomes in the same way. Some traits are only relevant for survival as an employer but do not influence the hiring decision, other traits even unfold a revolving door effect, in the sense that employers tend to fail due to the same characteristics that positively influenced their hiring decision.

JEL Classification: J22, J23, L26

Keywords: employer, entrepreneurship, business venturing, recruitment, firm growth, employment growth, personality

Corresponding author:
Alexander S. Kritikos
DIW Berlin
Mohrenstr. 58
10117 Berlin
Germany
E-mail: akritikos@diw.de

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1 Introduction

When starting their business activities, some entrepreneurs immediately hire employees. Others chose a different strategy and begin without employees; whether it is because they are experimenting with entrepreneurship (Manso, 2016), circumventing constraints, such as lack of access to capital, or because they simply prefer not to hire others (Hurst and Pugsley, 2011). After an interim period, typically within the initial three years after opening the business (Fairlie and Miranda, 2017), some, but by far not all, entrepreneurs who started without employees decide to hire. As the policy debate on entrepreneurship centers more and more on those who create jobs and remain in business as employers, and as there are these two different entry paths, the main goal of this paper is to comprehensively analyze how a large set of individual characteristics influence the first hiring decision of entrepreneurs, accounting for the two entry paths and for how these characteristics affect subsequent survival as an employer.

The relevance of this goal is underlined when we consider developments in entrepreneurship; in particular, the substantial increase in the numbers of non-agricultural self-employed persons in many industrialized economies such as the United Kingdom and the Netherlands (OECD, 2018). In Germany, there was an increase from 3 million self-employed individuals in 1991 to over 4.3 million in 2011 (Mai and Marder-Puch, 2013), before the numbers started to decline slowly (Statistisches Bundesamt, 2018). Separating employer-entrepreneurs, who hire others in their business (from here on 'employers'), from the non-employers, who do not hire employees in their business, shows that non-employers account for most of the increase: their numbers nearly doubled over this period while the number of employers grew by only 15 percent. Similarly, the OECD (2018) reports that the increases in the number of self-employed persons in countries like the UK and the Netherlands is mostly explained by rising numbers of non-employers. Without a doubt, it is important that individuals create jobs for themselves when they become entrepreneurs. When they create jobs for others, these entrepreneurs exhibit higher growth ambitions and are also more likely to be innovators, thus having a greater impact on the economy (Haltiwanger et al., 2013).

Research on hiring decisions in newly created firms is emergent, concentrating analysis on whether socio-economic characteristics influence the decision of hiring a first employee (see e.g. Burke et al., 2002, Henley, 2005, Fairlie and Miranda, 2017, Coad et al., 2017).[1] So far, there is no evidence addressing the question of whether the individual personality also affects

[1] Others investigate the influence of institutional factors (e.g., Carroll et al., 2000, Millán et al., 2013), industry characteristics (Mata, 1996), and changes in unemployment levels (Henley, 2005) on the hiring probability.

this decision. The literature emphasizes, however, that personality systematically impacts entrepreneurial decisions in general (Zhao and Seibert, 2010); including entrepreneurial entry (see e.g. Vereshchagina and Hopenhayn, 2009, Caliendo et al., 2009, 2012, 2014), survival in entrepreneurship (Ciavarella et al., 2004, Caliendo et al., 2010, 2014), and entrepreneurial income (Levine and Rubinstein, 2017, Hamilton et al., 2018, de Meza et al., 2019). We build on this literature, analyzing whether personality influences in initial hiring decisions.

Research also remains silent regarding the question whether the path to hiring the first employee matters. The hiring decision is analyzed either by pooling all entries, irrespective of the timing of the hiring decision (e.g., Henley, 2005), or by explicitly focusing on those who hire out of a non-employer position (e.g., Coad et al., 2017). Thus, the second contribution of this paper is to differentiate between *direct* transitions from employee to employer, characterized by individuals hiring in the year of their transition to being an entrepreneur, and *indirect* transitions, where individuals start their entrepreneurial activities by gaining experience as non-employers before hiring for the first time in subsequent years.

Thirdly, creating firms and hiring employees has a more lasting impact on the economy, the longer employers are able to employ others in their firms. At the same time, we observe as we will show later that the survival of employers remains below what is typically observed as the survival probability in entrepreneurship. Low employer survival occurs because many employers return to the status of non-employers. Therefore, it is of economic interest to better understand what makes an entrepreneur survive as employer in the market. We identify those individual characteristics that specifically influence the failure in the status of an employer.[2]

To answer these three research questions, we empirically analyze the full dynamics of transitions between the potential labor-market states of employer, non-employer[3], paid employee, and non-employed. Using the German Socio-economic Panel (SOEP), a rich dataset that includes demographics, employment information, and personality traits, we conduct a comprehensive analysis of individual characteristics relevant for employer-entrepreneurship that includes, in addition to information on the personality, other important variables underlying entrepreneurial decision making, such as human capital, financial capital, previous income, previous employment, unemployment experience, and the industry a person is active in.

[2] This question significantly differs from earlier analysis of firm failure as a substantial share of employers return to the status of non-employers, thus remaining entrepreneurs.
[3] Non-employers are also known as solo self-employed or own-account workers.

Our results show that personality traits unfold differing effects from other individual characteristics when comparing their influence on the hiring decision and on employer survival. For instance, human capital variables influence both the hiring decision and the survival as an employer in the same direction. In contrast, for some personality characteristics, such as high scores in 'risk tolerance,' 'trust in others,' and the Big Five factor 'openness to experience,' we reveal a revolving door effect: these variables drive the transitions not only into, but also out of, employer-entrepreneurship. Other traits, such as 'agreeableness,' 'conscientiousness,' and 'locus of control,' only matter for survival, but do not affect the hiring decision. Overall, our analysis of personality traits provides first indications of why many employers fail. Moreover, when comparing the two entry paths of becoming an employer, these differ in the sense that individuals who choose to hire after an interim period as a non-employer lack access to capital and may use the status as a non-employer to circumvent that restriction.

The remainder of the paper is organized as follows. Section 2 provides a conceptual background and reviews related research. Section 3 presents data and summary statistics. In Section 4, we describe our empirical strategy. Section 5 provides the estimation results. Section 6 discusses the findings and Section 7 concludes.

2 Literature Review and Conceptual Background

2.1 Earlier Empirical Results on Hiring First Employees

A vigorous literature concentrates on the analysis of which variables influence the decision to start a business. In their seminal paper, Blanchflower and Oswald (1998) ask "What makes an entrepreneur?" and analyze the choice between paid employment and self-employment. Hurst and Pugsley (2011) document that many nascent entrepreneurs have no intention of growing. Subsequent literature emphasizes the importance of heterogeneity among entrepreneurs (see, *inter alia*, Levine and Rubinstein, 2017), but rarely differentiates between the sizes of the started businesses in terms of employment.

However, little is known empirically about what makes entrepreneurs turn into employers. Literature concentrates on the question of how economic, demographic, and educational characteristics or access to capital influence entrepreneurs in their hiring decision, with some approaches pooling over the entry paths (direct and indirect) and others analyzing one entry path, mostly those who are becoming employer out of a non-employer position. For instance, van Praag and Cramer (2001), who use Dutch data, and Henley (2005), who uses British data, present analyses without differentiating between entry paths and find that the hiring decision is

positively influenced by higher education levels and self-employed parents.[4] Coad et al. (2017), who use Danish data and consider those who make a transition from non-employer to employer, only find such influence for higher education levels, while they cannot confirm the intergenerational link. Fairlie and Miranda (2017), who use US data and study the determinants of entrepreneurs hiring their first employee from a non-employer position as well, do not even find evidence that higher education levels positively influence the hiring decision.

The decision to hire a first employee should also be positively related to work experience and negatively to unemployment exposure. Earlier research points in this direction for those who gathered a certain amount of work experience (Cowling et al., 2004) and were coming out of paid employment (Andersson and Wadensjö, 2007). Further, there is some evidence that individuals coming out of unemployment are less likely to hire (Caliendo et al., 2015, Coad et al., 2017). For another variable, the age of the entrepreneur, which should be related to work experience if it is controlled for times of non-employment, research shows that middle-aged individuals are more likely to start the hiring process (Cowling et al., 2004, Henley, 2005).

The lack of capital may also constrain those who aim to create larger businesses. Indeed, both Burke et al. (2000) and Henley (2005) observe that holding equity positively influences the probability of hiring in a new firm. Observations are again different when the focus is turned to those who start hiring from a non-employer position. Coad et al. (2017) do not observe a significant influence of capital for this group, but they find that the non-employer's income in the previous year increases the hiring probability. The results of Fairlie and Miranda (2017), who focus on previous year's business assets and revenues, are consistent with the latter finding: The business variables they use unfold the same positive influence on the probability of hiring the first employee as higher incomes in the previous year, while access to capital is insignificant. Finally, gender influences the hiring probability in the direction that males are more likely than females to hire employees in their firms (e.g., Burke et al., 2002, Cowling et al., 2004).[5]

Overall, as previous empirical research does not consistently differentiate between the two paths of becoming an employer, it provides inconclusive answers as to whether variables such as education levels, self-employed parents, or having access to capital influence the hiring decision. Previous research remains also silent with respect to the question of what role personality traits play in this process and whether those variables influencing the hiring decision unfold the same or a diverging influence on survival as an employer.

[4] Similarly, Lechmann and Wunder (2017) report the influence of self-employed parents on becoming an employer.
[5] Moreover, Astebro and Tag (2017) show that the legal form of the firm is also associated with the hiring decision.

2.2 Drivers of the Hiring Decision and of Remaining an Employer

Given the findings and limitations from existing studies, we discuss in this section why other factors, in particular personality traits, are important for the hiring decision and employer survival. It is assumed that people select their occupation based on expected utility. Individuals become entrepreneurs when the expected utility from this choice exceeds the expected utility from being a paid employee or non-employed (see e.g. Evans and Jovanovic, 1989). This means that the decision of hiring others is guided by the question of whether the expected increase in utility from employing one (additional) employee, primarily through higher expected profit,[6] is larger than the expected marginal disutility, primarily through the wage cost paid to this employee (see Carroll et al., 2000) and through the additional effort of monitoring the employee. Based on this simple conceptualization, we consider under what conditions entrepreneurs demand labor. Next to the baseline models of entrepreneurship by Kihlstrom and Laffont (1979), Banerjee and Newman (1993), the approach by Lucas (1978) provides several reasons why some entrepreneurs may hire employees while others remain non-employers.[7]

Lucas (1978) stresses that individuals need to have entrepreneurial talent to start an own firm successfully and characterizes the main talent as the ability to manage others more productively than do existing firms. While such talent is unobservable *per se*, we discuss which variables may capture this talent, affect managerial abilities and, thus, influence the hiring decision as well as the ability to sustainably run the business. We follow personality theory, which suggests that managerial abilities play a mediating role between the association of the individual personality and the specific entrepreneurial decisions of hiring others and keeping them in the firm, while running the business successfully (see e.g. Baum and Locke, 2004).

Employers face costly and risky decisions as well as demanding tasks: They must conduct the screening and selection processes when recruiting and, subsequently, manage employees, payroll, and social security payments. Moreover, entrepreneurs also have to signal general abilities to their future employees, particularly when the firm is new. Such signals might make it easier to attract employees into their new venture given the asymmetric information about their

[6] Of course, the productivity of employees also depends on their education levels (see Millán et al., 2014). Moreover, the hiring of an employee may also increase utility as work tasks can be shared.

[7] Beyond the individual characteristics of the entrepreneur other variables may also influence their labor demand; for instance, the choice of the industry or the economic environment such as the local demand or unemployment levels (e.g., Parker, 2018). However, in this paper, we refrain from discussing the influence of such external variables on the entrepreneurial hiring decision.

entrepreneurial abilities (see Bublitz et al. 2017). Entrepreneurs, thus, need a variety of competencies and abilities that are related to their human and social capital, to their access to financial capital, and to their personality.

Past research allows for deriving expectations that (even if empirical findings are inconclusive) entrepreneurs are more likely to hire others in their business and to remain employers, the higher their education levels, the more work experience, and the less unemployment exposure they have. They are also more likely to hire if they grew up in an entrepreneurial family. Past research further proposes that there will be a positive relationship between the access to financial capital of entrepreneurs and the propensity to be an employer. It also indicates that capital access is less important for entrepreneurs who hire out of a non-employer position whereas the level of their previous income as a non-employer then matters more.

Although personality traits are not yet analyzed in relation to the hiring decision and the survival in the status of an employer, these do influence the managerial abilities of entrepreneurs seeking to have employees. Concepts measuring personality differentiate between broad constructs, such as the so-called Big Five traits, and more specific personality characteristics that are related to the entrepreneurial process. The Big Five model consists of five distinct traits: openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism.[8] As we discuss below, only two of the Big Five traits are likely to be related to the hiring decision: Extraversion and openness to experience. Extraversion might be important for those who want to become employers, as this factor captures the ability to interact with other individuals, thus with employees as well as business partners or investors (Zhao and Seibert, 2010), furthermore allowing the goal of the business to be adaptable and influenced by these stakeholders (Sarasvathy, 2001). Consequently, this ability might be relevant in the direct context of selecting future employees. Individuals with higher scores in the Big Five factor of openness to experience are more likely to become entrepreneurs aiming to explore novel ideas (Schumpeter, 1942) and may plan larger businesses employing others in order to exploit their novel ideas.[9]

Beyond these broad traits, there are some specific traits related to entrepreneurial activities that are not well captured by the Big Five traits, including risk tolerance, the willingness to trust others, and locus of control.[10] As proposed by Kihlstrom and Laffont (1979), we expect risk

[8] For details on this concept and how it relates to entrepreneurial activities, see e.g. Zhao and Seibert (2010).
[9] Interestingly, the combination of these two Big Five factors, extraversion and openness to experience, corresponds to the higher order trait plasticity (see Digman, 1997, and DeYoung et al., 2002). We also use the higher order traits approach in our empirical analysis.
[10] For details on this concept and how it relates to entrepreneurial activities, see e.g. Rauch and Frese (2007).

tolerance to play a significant role in the sense that more risk tolerant individuals are more likely to hire.[11] As for trust in others, it is intuitively clear that employing others requires a certain amount of trust that freshly hired employees will support the new venture (Caliendo et al., 2012); thus, higher scores in trust should increase the hiring probability. Further, a more internal locus of control may increase the probability of starting to hire when the business is opened, because individuals with a stronger internal locus of control believe that their own actions (hiring) will determine the later outcomes of their ventures (Rotter, 1966).

In contrast to those variables not related to personality, previous research shows that personality traits influence different entrepreneurial decisions in differing ways (Caliendo et al., 2014). We expect that traits different from those influencing the hiring decision will influence the survival of employers. Among the Big-Five traits, openness to experience might influence the establishing of a new business, but we do not expect relevance for managing others thereafter. Extraversion might be another important trait at the beginning of an entrepreneurial venture, when entrepreneurs have to assign tasks, but its influence on survival as an employer should fade over time as the time spent for networking changes during the different start-up phases (Greve and Salaff, 2003). In contrast, the three other Big Five factors – agreeableness, conscientiousness, and neuroticism, which are less likely to be related to the hiring decision – could become key for employer survival.[12] Low levels of agreeableness might improve the negotiation abilities of entrepreneurs. This is important for keeping a firm in business and might also be relevant in direct negotiations with employees, for instance about wages. High levels of conscientiousness may help entrepreneurs to be well organized and methodical when managing others. Low levels of neuroticism may enable them to calmly manage their employees in stressful situations or when they act as employers in an unstructured market environment.

Specific personality characteristics, namely risk tolerance and trust, may also unfold diverging effects. Based on previous analysis (Caliendo et al., 2010), we expect an inverse U-shaped influence of risk tolerance on survival as an employer.[13] That is, the very risk averse employers are likely to run projects that are too small to sustain their businesses, whereas very risk tolerant employers may risk failure of their businesses at a scale large enough to make recovery impossible. Additionally, a high level of trust in others–vital for the decision to hire the first employee–is expected to unfold no further influence in the later process. Rather, to the

[11] Wu and Knott (2006) suggest that entrepreneurs appear more risk-seeking than others with regard to uncertainty about their own entrepreneurial abilities. This may include their ability to make good hiring choices.
[12] These three Big-Five factors correspond to the second meta-trait stability, as defined by Digman (1997).
[13] Thus, among all employers, those with low or high risk tolerance may leave this status with higher probability than employers whose risk tolerance falls within the medium range.

contrary, trustful employers risk being exploited by their employees and customers. Among personality characteristics, only internal locus of control is expected to unfold the same influence on hiring and on managing employees. The belief that the own actions will determine the future outcomes of the own venture seems essential for employers who take on the responsibility of employing others, to steer their businesses through changing conditions, and, when necessary, to exert pressure on their employees in order to realize desired outcomes.

Overall, based on the specific mechanisms at work, we formulate three hypotheses: (H1) variables that capture the human and social capital of individuals influence the propensity of hiring employees for the first time and of remaining an employer in the same direction. That means, individuals are more likely to hire others in their business and remain employers, the higher their education levels, the more work experience they have, the less unemployment exposure they have, and if they grew up in an entrepreneurial family.

(H2) Variables that capture the non-cognitive part of managerial abilities, i.e. personality traits, unfold differing influences on the propensity of hiring employees and of remaining an employer. That is, (H2a) individuals are more likely to hire for the first time, the higher they score in the factors of extraversion and openness for experience, as well as in risk tolerance, internal locus of control, and trust. (H2b) Individuals are more likely to exit the status of an employer and become non-employer, employee, or non-employed, the higher they score in the factors of agreeableness and neuroticism, the lower they score in the conscientiousness factor, and the less internal their locus of control. With respect to risk tolerance, the exit probability will be lower if employers exhibit a medium score in risk tolerance.

(H3) Individuals with better access to financial capital are expected to have a higher probability of starting firms that employ others, especially if hiring concurrently with starting the firm. For individuals out of a non-employer position, the propensity to hire for the first time increases with increasing entrepreneurial incomes.

3 Data and Descriptive Results

3.1 Data

For our analysis, we use the German Socio-economic Panel (SOEP), a representative annual household panel survey of Germany (Goebel et al., 2019) that provides extensive information on individual characteristics. We use the 2005-15 waves to estimate our transition models. In addition, the 2003-04 waves are used to measure some of the individual personality traits, while 2016 is used to identify transitions between 2015 and 2016. Respondents who indicate that their

primary labor activity is self-employment are asked whether they have no employees (labeled as non-employers), or 1-9, or 10 or more (labeled as employers). Partners are not employees, so a non-employer could have one or more co-founders, but we have no further information on entrepreneurial teams in the data. In our sample, we only include individuals aged between 19 and 59, excluding individuals working for a self-employed family member, farmers, as well as persons in the military, civil service, or education, as these persons might be restricted in their occupational choices. We denote those who are unemployed or not participating in the labor market as non-employed. Our final sample, without missing values in the variables used in the main model, consists of 53,987 person-year observations.

The SOEP includes short versions of established psychological inventories of personality traits in several waves. This allows us to analyze the influence of a comprehensive set of traits in a large representative sample. In inventories of the Big Five, locus of control, and trust constructs, the respondents are asked how much they agree with different statements about themselves (on 7-point Likert scales). Fifteen items assess the Big Five personality traits (three items for each trait), ten items measure the locus of control, and three questions elicit how much one is inclined to trust others. The personality constructs are obtained by averaging the scores from the respective items; factor analysis confirms the validity of the constructs (see Caliendo et al., 2014, for details). Risk aversion is measured over repeated survey waves by a single question about the general willingness to take risks on an 11-point scale.

As an alternative to the Big Five, we also use the two meta-traits of plasticity and stability in separate regressions. We compute the plasticity score by taking the average over the two Big Five traits openness to experience and extraversion plus the stability score by averaging over the other three Big Five traits conscientiousness, agreeableness, and emotional stability (the reverse of neuroticism).

Since personality characteristics are not elicited every year, we use these variables for subsequent observation years of the same individual when no more recent measure is available. By imputing forward, i.e., only using values measured in the past, we alleviate potential reverse causality issues. For the regressions, we standardize all personality variables to facilitate interpretation of the coefficients, except risk tolerance, as this variable enters our model in quadratic form. Definitions of the explanatory variables are provided in Table A1 of the Appendix.

3.2 Summary Statistics

Table 1 provides a transition matrix showing the numbers of observations that switch from one employment state to another between survey interviews in two subsequent years. Individuals

counted on the diagonal remain in their current state. The matrix shows that year-to-year transitions occur between all states, including, for example, direct transitions from paid employment to employer-entrepreneurship. About 57% of all transitions to employer-entrepreneurship originate from non-employers, 36% from paid employment, and 7% from non-employment (i.e., unemployment or non-participation). Out of the exits from employer-entrepreneurship, 59% become non-employers, 31% paid employees and 10% non-employed. Figure 1 further shows estimated Kaplan-Meier survivor functions of employers and entrepreneurs in general (employers and non-employers combined). Employers exhibit lower survival rates than entrepreneurs in general because employers regularly return to being non-employers. These descriptive findings highlight the importance of a joint analysis of all possible transitions.

We show descriptive statistics by employment states in Table 2. We test for equal means in the samples of non-employer entrepreneurs versus paid employees and employers versus non-employers. The three groups differ significantly from each other in many characteristics.

Socio-economic variables and employment experience: Research highlights that men are more frequently self-employed than women (see Fairlie and Robb, 2009). Our differentiation between non-employers and employers makes clear that gender is nearly balanced among non-employers, whereas only 27% of employers are women. Concerning human capital, employers have more formal education than non-employers, who are, again, better educated then paid employees. The likelihood of having had an entrepreneurial father at the age of 15 years also decreases when we turn from employers to non-employers and paid employees.

Personality: Employers have a stronger internal locus of control and a greater risk tolerance than non-employers, who, in turn, score higher in these characteristics than employees. Non-employers score higher than employers in Big-Five characteristics associated with a personality leaning toward entrepreneurial entry: Non-employers are more open to experience and more extraverted than employers (and score higher than employees), but employers score lower in agreeableness and higher in conscientiousness than non-employers, which indicates that employers have a personality that supports entrepreneurial survival (see Caliendo et al., 2014).

Business and income characteristics: Employers differ from non-employers in their choice of industry. There are significantly more employers in the trade sector while non-employers dominate public and personal services. On average, employers have been continuously in their status for 2.2 more years than non-employers, but paid employees have spent even more

years in employment (variable 'duration'). Employers also have significantly higher capital income and labor income in comparison to the other groups while non-employers realize higher capital but lower labor income than employees on average (see also Sorgner et al., 2017).

Entry paths: Table 3 shows sample means for observations making a transition to become an employer or a non-employer. Employers differ with respect to their entry path. Those starting directly as employers, coming from an employed position, have somewhat more education years, less unemployment experience, and are younger than those who hire their first employee coming from a non-employer position. They have more capital income and, in particular, more management experience (over 70% of those making a direct transition from paid employment to the position of an employer gathered management experience in the last 5 years). They also run businesses in different sectors.

In the following econometric estimations, we go beyond the descriptive associations and estimate the effects of the individual characteristics, *ceteris paribus*, on the probability of switching to another labor market state.

4 Empirical Methodology

The aim of our econometric analysis is to estimate the effects of individual characteristics on transitions into and out of employer-entrepreneurship, taking into account different origin and destination states. We model employment transitions in a random utility framework and distinguish between four employment states: Solo-entrepreneurship (se), which denotes being a non-employer, employer-entrepreneurship (ee), paid employment (pe), and non-employment (ne). We estimate discrete time competing risk models of all possible transitions between these states based on individual panel data.[14] We assume that person *i*, who is in employment state $j \epsilon J = \{se, ee, pe, ne\}$, in period *t*, perceives that he or she would derive the following utility U_{jk} in the state *k* in the future period *t*+1:

$$U_{jk}(x_{it}, d_{it}) = \beta'_{jk}\, x_{it} + \varphi_{jk}(d_{it}) + \varepsilon_{itjk}, \qquad (1)$$

where x_{it} is a vector of individual characteristics, $\varphi_{jk}(d_{it})$ is a flexible function of the duration d_{it} in the current state, and ε_{itjk} is an i.i.d. error term.[15] We assume that the parameters β_{jk} of the

[14] Thus, we model the extensive margin of becoming and remaining an employer, but not the intensive margin, i.e., the number of employees hired. A model of the intensive margin could be derived from a marginal utility concept. While the SOEP survey reports the number of employees of a self-employed respondent within intervals, the observation numbers within these categories become too small for the econometric analysis, so we do not distinguish between employers by the number of employees hired.

[15] We relax the i.i.d. assumption in robustness checks described below and find robust results.

characteristics x_{it} as well as the duration effects may vary both across the destination state and the current state. This means that the covariates may shift tastes for the alternatives and these effects may differ depending on the current state.

The probability of transition from state *j* to *k* conditional on the duration in the current state d_{it} and the covariates x_{it} equals the probability that perceived utility in state *k* exceeds utility in all other states, *l*, including the current state *j*. Let $transition_{it} \epsilon J$ denote a discrete variable indicating the choice of the destination state that is observed in *t*+1. If $transition_{it} = j$, there is no change in employment states between *t* and *t*+1, otherwise we observe a transition. With the standard assumption of type I extreme value disturbed error terms ε_{itjk} (McFadden, 1974), we obtain a multinomial logit (MNL) model for each current state. The probability of a transition (or of staying) conditional on x_{it} and d_{it}, i.e. the hazard rate, is

$$Prob(transition_{it} = k|x_{it}, d_{it}, j) = Prob\big(U_{jk}(x_{it}, d_{it}) > U_{jl}(x_{it}, d_{it}) \;\; \forall\, l \neq k\big)$$

$$= \frac{e^{\beta'_{jk}x_{it}+\varphi_{jk}(d_{it})}}{\sum_{l\epsilon J} e^{\beta'_{jl}x_{it}+\varphi_{jl}(d_{it})}}. \qquad (2)$$

We choose the current state as the base category, i.e. we normalize $\beta_{jj} = 0$ and $\varphi_{jj}(d_{it}) = 0$, so we write for the transition probabilities

$$Prob(transition_{it} = k|x_{it}, d_{it}, j) = \frac{e^{\beta'_{jk}x_{it}+\varphi_{jk}(d_{it})}}{1+\sum_{l\neq j} e^{\beta'_{jl}x_{it}+\varphi_{jl}(d_{it})}} \; for\; k \neq j \qquad (3)$$

and for the probabilities of remaining in the current state

$$Prob(transition_{it} = j|x_{it}, d_{it}, j) = 1 - \sum_{l\neq j} Prob(transition_{it} = l|x_{it}, d_{it}, j). \qquad (4)$$

Thus, we estimate four MNL models for the four original states with four choice options in each model (including the base category of remaining in the current state). We model the baseline hazard functions $\varphi_{jk}(d_{it})$ as second-degree polynomials of the duration in the current state. The rationale is that the probability of switching from one employment state to another may change with tenure in the current state. For example, the likelihood of a transition from solo-entrepreneurship to employer-entrepreneurship may decrease over time due to habituation of working without employees or it may increase due to the expansion of relevant experience and networks. By conditioning on our flexible specification of the baseline hazards, the model of the transition probabilities, estimated on the panel data in person-period format, can equivalently be written as a general survival model (cf. Jenkins, 1995; Caliendo et al., 2010). We use

annual data because covariates are not available at a higher frequency. By employing the discrete time competing hazards model, we account for state dependence and avoid survivorship bias. Our approach consistently accounts for right-censored spells, as all survival models do, and for left-censored spells, because retrospective employment history information in our data allows us to recover the duration of employment spells even in cases when the spell started prior to the first survey interview of a person. As explanatory variables, we include a rich set of socio-economic variables; like gender, education levels, labor market histories, parental entrepreneurship, capital income as an indicator of wealth, and measures of personality characteristics. We also control for the industry an individual is currently working in (7 categories). All variables are measured *before* potential transitions occur, which mitigates issues of reversed causality.[16]

Still, we should emphasize that our data are not perfect, as we are not fully able to control for the quality of the entrepreneurial ideas and abilities. These are not randomly distributed and those who have better ideas or better entrepreneurial abilities are more likely to hire immediately. This is not a threat to identification as long as our observed variables influence the business ideas or the entrepreneurial abilities and, subsequently, these influence the employment transitions. In this case, we are still able to estimate the causal (reduced form) effects of those individual factors we are able to observe on the hiring decision and on employer survival. Although we control for a large set of individual characteristics, including personality traits, our approach would become problematic in the case of reversed causality–i.e. that the business idea or entrepreneurial abilities influence our observed characteristics–or if an unobserved factor influenced both, the business idea and our observed variables. If this scenario is relevant, our aims would be more moderate: we would then only be able to assess whether the hiring decision and employer survival are correlated with the personality and other characteristics of the business founder. While, in the estimation of survival as an employer or non-employer, in future research it would be interesting to add firm-level variables such as worker productivity (if available from a different data source). However, such an approach would have to deal with endogeneity of firm-level explanatory variables because these reflect success of the business, which is correlated with survival shocks.

We model unobserved heterogeneity in a robustness check. In this specification, we drop the assumption that the error term ε_{itjk} is i.i.d. and instead assume that it consists of an individual and destination-state specific component ν_{ik} and a remaining time-varying error term ϵ_{itjk}. As

[16] Borghans et al. (2008) emphasize the importance of using antecedent measures of personality in predicting occupational choices.

we focus on entrepreneurship, we model two types of unobserved time-invariant individual entrepreneurial ability or preference. The random variable $\nu_{i,se}$ is relevant for any transitions into solo-entrepreneurship and $\nu_{i,ee}$ for any transitions into employer-entrepreneurship of individual i, regardless of the current state and time period. The two random effects are allowed to be correlated. We do not model further random effects in our main estimations (i.e., $\nu_{i,pe} = \nu_{i,ne} = 0$).[17] By modelling two types of potentially correlated unobserved entrepreneurial ability $\nu_{i,se}$ and $\nu_{i,ee}$, we avoid reliance on the Independence of Irrelevant Alternatives Assumption. A caveat is that we do not model changes in the distribution of unobserved heterogeneity over time due to dynamic selection (Van den Berg and Drepper, 2016).

5 Econometric Results

5.1 Entries into Employer-entrepreneurship

Table 4 provides the central results of our estimation of the transition model. We report multiplicative effects on odds ratios. Values larger (smaller) than 1 indicate that a higher value in an explanatory variable increases (decreases) the probability of the transition at hand relative to not making a transition, the base category. Stars indicate that differences from 1 (no effect) are significant. Estimates for transitions not directly involving employer-entrepreneurship and for extensions of the model appear in Tables 5 to 8 and in the Appendix.[18]

In the discussion of our estimation results, we first focus on those who become employers in Table 4 (Columns 1-3) and then on exit from this position (Columns 4-6). Starting with personality traits,[19] we observe that risk tolerance and trust influence the hiring decision. Higher scores in risk tolerance and in trust have positive effects on becoming an employer out of paid employment (the positive effect of trust is significant in some specifications, e.g., Table A9 in the Appendix), while the decision to become a non-employer is less affected by risk and trust (Table 5). Since the model includes both a linear and a squared term of the willingness to take risk, the positive effect of risk tolerance is revealed from predicted probabilities in Figure 2. Moreover, the meta-trait plasticity, combining the two Big-Five traits openness to experience and extraversion, unfolds a significant influence as does openness to experience alone when the

[17] In a further robustness check, we included a third unrestricted and correlated random effect for transitions into paid employment ($\nu_{i,pe}$), obtaining very similar results, but the computation time was substantially longer.
[18] To conserve space, we do not report results for the year dummies and further variables that are insignificant in the estimations at hand, as indicated in the table notes. Full results are available upon request.
[19] The personality variables are jointly significant at the 1%-level for entry into employer-entrepreneurship from paid employment.

Big-Five traits are estimated without controlling for specific personality traits (Table 6). In contrast, for locus of control, which is deemed important for entrepreneurial survival, we do not observe any influence on employer entry. Extraversion does not affect the hiring decision either.

Among the previously investigated variables, where empirical research came to inconclusive results, we observe that education levels and self-employed parents are positively related to the hiring decision, but only when entrepreneurs hire immediately after leaving paid employment (Table 4). An additional year of education then increases the odds of a transition from paid employment to employer-entrepreneurship relative to the probability of no transition by 10%.[20] Moreover, the odds of turning from an employee into an employer are 74% larger for a respondent whose father was self-employed when he or she was 15 years old. Table 5 shows that both variables also unfold a similar influence on the transition to a non-employer (the effects on the odds of becoming an employer or a non-employer are not statistically different), but these variables do not unfold any influence among those non-employers who decide to hire later on (Table 4, column 2).

As to work experience, on the one hand, we observe that individuals are more likely to become employers if they have less unemployment exposure. The estimated effects of age can be interpreted as effects of work experience as we control for education and the time spent in unemployment. Table 4 and Figure 5 show that there is an inverse U-shaped relation: middle-aged individuals, thus with a sufficient amount of work experience, are more likely to become employers than younger or older individuals. In contrast, neither unemployment exposure nor age unfold any influence on becoming a non-employer out of paid employment (Table 5). Individuals of all ages and with different amounts of unemployment experience experiment with this status.

Turning to access to capital, we find effects on entry into employer-entrepreneurship, as predicted in Section 2.2. There is a positive influence of capital income on starting larger entrepreneurial activities (Table 4), i.e. hiring others in the firm from the beginning, while this variable does not impact those who become non-employers (Table 5). Concerning industry sectors, paid employees in the construction industry, in trade and hospitality and business services are more likely to hire from the start when they become entrepreneurs. There are no significant effects of the industry on subsequent hiring for those who begin as a non-employer.

[20] In other words, this is the semi-elasticity of the transition odds with respect to the years of schooling. The marginal effect of a year of education on the annual probability of a transition from paid employment to employer-entrepreneurship is 0.04 percentage points, this is a third of the annual baseline transition probability of 0.11%.

We further consider previous gross labor income, used as a proxy for entrepreneurial abilities (see Hamilton, 2000). In our additional specification (Table 7), we include labor income before taxes in the month before the interview in *t* (and before potential transitions occur) in real 1000 euro in prices of 2005. In case of paid employment, our income measure is gross wage income; in case of entrepreneurship, business profits that accrue to the entrepreneur; in case of non-employment, labor income is zero.[21] As Table 7 reveals, this variable has a significantly positive effect on entries into employer-entrepreneurship while the relative effect on the odds is below 1 and insignificant for transitions to a non-employer (Table A3). If the previous gross labor income is interpreted as a proxy for entrepreneurial abilities, this observation supports the hypothesis that more able entrepreneurs are more likely to hire. A different interpretation could be that higher incomes might relax credit constraints that might be a barrier to hiring employees.

Examining the influence of other socio-demographic characteristics shows that men are more likely to create larger businesses with employees than women (confirming earlier findings), while transitions from paid employment to non-employers do not differ significantly by gender. Other socio-demographic variables, such as the marital status or the number of children, do not affect transitions from an employed position to the two states of entrepreneurship.

5.2 Differences in the Entry Path

To examine whether the two paths toward the hiring decision matter, we compare the estimation results for transitions from paid employment directly to employer-entrepreneurship discussed above with our results for the hiring decision of non-employers. Table 4 (Columns 1 and 2) presents the main results, further estimation results are shown in Tables 6 and 7.

Some variables unfold the same positive or negative effects on non-employers as on those coming from an employed position when they decide to hire others. Among them are personality traits, where we again observe significant effects on this transition for risk tolerance (*F*-test of joint significance of the linear and squared terms in Table 4) and for trust (in some specifications, see Table A11). Among all non-employers, the more risk tolerant have a higher probability of deciding to become employers (Figure 3), which is similar to the effect of risk tolerance on the transition from paid employment. Among non-employers, further on, also the negative influence of unemployment experience is significant as are the two age variables that reflect work experience. While these variables have no bite in the transition to a non-employer (Table 5), they do affect the process of becoming an employer in both paths (Table 4). Table 4

[21] We do not include labor income in the main specification because of potential endogeneity concerns that might arise despite the fact that we measure income before transitions.

and Figure 6 also confirm that middle-aged individuals are more likely to become an employer out of the status of a non-employer.

For other variables that affect transitions to employer-entrepreneurship, such as the education level, self-employed parents, and the trait openness to experience (or the meta-trait plasticity, Table 6), we do not observe a significant influence on the decision to hire the first employee while being a non-employer. At the same time, these variables already unfold their influence when individuals become non-employers. This allows for two interpretations. First, these variables are determinants of both paths of becoming an employer, even though they have no further statistical power when analyzing transitions of non-employers to employers, providing one potential explanation why studies exclusively analyzing this transition (e.g., Fairlie and Miranda 2017) might have missed these effects. Alternatively, and second, it could be that these variables are only relevant for direct transitions to employer. For instance, the education level might be necessary to serve as a signal of managerial ability toward potential employees when the venture is new. In contrast, when the venture without employees survived for some years, non-employers can signal their entrepreneurial abilities to potential stakeholders through this survival. Thus, general education may be less important as a signal to attract employees.

Importantly, the financial background also plays different roles across the two entry paths. Capital income does not influence the hiring decision of non-employers (whereas it does in the transition from the status of an employee). Instead, income success as a non-employer, thus the feedback from the market, plays a crucial role for the question how to move on: non-employers with higher incomes are more likely to hire (Table 7), non-employers with lower incomes are more likely to return to an employed position (Table A3).

5.3 Survival as Employer

Given that we showed in Section 3.2 that the survival probability of individuals in the status of an employer is significantly lower than the survival of entrepreneurs in general,[22] it is crucial to further investigate employer survival. First, it is clear that the entry path into employer-entrepreneurship also matters for exit. As estimations shown in Table 8 (columns 4 and 5) reveal, employers exhibit a strong tendency to revert to the employment status they had before becoming an employer. Those who came from paid employment return more often to an employment

[22] This observation is fully confirmed when we estimate the survivor functions using the survival model described in Section 4.

position when they end their career as an employer, while those who started hiring as a non-employer return more often to the status of a non-employer when they dismiss their employees.

We examine which factors and variables influence the survival as an employer (Columns 4-6 of Tables 4 and 7). The decision to exit the status of an employer is certainly motivated by the success of the business. In our analysis, we capture the success by introducing the income of employers (Table 7) as an explanatory variable. Indeed, employers realizing high incomes in this status are less likely to return to a non-employer or an employed position, thus showing that positive market feedback is key for the future firm size.

Table 4 shows that individual variables still matter for the survival of employers. Higher education levels and having self-employed parents increase the probability of remaining an employer, i.e. these variables reduce the hazard of exiting from this state. An additional year of schooling e.g. decreases the annual odds of an employer moving to non-employment by 23%.

Regarding personality characteristics, we expect that Big Five factors other than those influencing the hiring decision, will affect employer survival. Indeed, individuals give up as employers less frequently if they are more conscientious and less agreeable. When not controlling for further personality characteristics (Table 6), more emotionally stable individuals, i.e. those with low scores in neuroticism, also remain employers with higher probability (as are those scoring high in the meta-trait stability). However, high scores in openness to experience or in the meta-trait plasticity–both having positively influenced transition to the status of an employer–unfold a revolving door effect. Individuals with high scores significantly more often end their experience as employers.

As to the specific personality characteristics, while controlling for the Big Five traits, we observe that higher scores in internal locus of control increase the survival probability of employers (Table 4). Moreover, the transition from employer-entrepreneurship to paid employment is significantly more likely at both the low and high ends of the risk tolerance distribution (Figure 4). Employers with medium risk tolerance are more likely to survive, while risk tolerance does not influence exit from solo-entrepreneurship toward paid employment (Table 5). Moreover, like the openness to experience factor, trust unfolds a negative influence on survival: more trustful employers are more likely to leave this position behind and to return to paid employment. Trustful entrepreneurs might risk being exploited by others, including their employees. The three personality characteristics with a revolving door effect (openness to experience, high risk tolerance, and trust) significantly improve the model of survival as an employer, the *p*-value of a likelihood- ratio test is 0.053.

Turning to the question how previous unemployment exposure, age, and access to capital affect the survival of employers, we observe two main results. Individuals with more time in unemployment are more likely to leave the status of an employer. The impact of age (capturing previous labor market experience) on survival as an employer is similar to the impact on entry: middle aged individuals are not only more likely to become employers, they are also less likely to return to paid employment than younger employers (Figure 7). In contrast, access to financial capital is not a limiting factor for remaining an employer; capital income does not unfold any remarkable influence on survival of employer businesses.[23]

In addition, demographic characteristics matter for employer survival. Women, who are less likely to become employers, are also less likely to remain in this status than men. In contrast, the number of children unfolds a positive influence on survival. Employers with more children are more likely to retain this status. They seem to more cautiously examine the hiring decision, but once they hire, they are more likely to continue as an employer.

5.4 Further Specifications and Robustness Tests

In this section, we first analyze whether further variables not discussed in the earlier sections significantly influence the transition processes to and from employer-entrepreneurship. Second, we present results from additional robustness checks.

In Section 5.1, we discuss that individuals with higher incomes, reflecting success as non-employers, are more likely to hire. We now test whether work overload as a non-employer also drives the decision in the same direction. Table A4 in the Appendix reveals that non-employers who have a high work-overload (more than 50 hours per week) are more likely to create jobs. Thus, the hiring decision of non-employers might also be influenced by the fact that these individuals are struggling to keep up with demand. A different issue concerns previous work experience, which might be helpful in becoming an employer and managing others. In a further specification (Table A5), we include dummy variables indicating experience from previous self-employment and previous managerial experience as an employee within the last five years.[24] Both variables are highly significant, in particular in the direct transition from the position of an employee to an employer. More importantly, while individuals with managerial

[23] Still, limited access to financial capital might inhibit business growth. However, this important question is beyond the scope of our analysis. See Evans and Jovanovic (1989) for research in this direction.
[24] We construct these variables from the panel information and can only do so for individuals observed for at least five consecutive years. Since this leads to sample selection that is potentially non-random, we do not include these variables in the main specification.

experience are more likely to become employers out of paid employment, this experience does not help them to become a sustainable employer. They are as likely to end their employer position as individuals without such experience.[25]

We test the robustness of our results with respect to various specification choices. One of our main variables capturing entrepreneurial abilities, namely education years, might be endogenous in our estimation model if unobserved ability is correlated with education and has a direct effect on the transition probabilities we investigate. To address this potential concern, we use an instrumental variables approach as a robustness check. We use parental education (two dummy variables indicating whether the father and the mother, respectively, earned the "Abitur" secondary school degree that qualifies for university entrance in Germany) as instruments for own education.[26] We implement a control function approach (Wooldridge, 2014), i.e., we first regress the years of education variable on maternal and paternal education along with the explanatory variables, and then include the residual as an additional independent variable in our competing risks models. The first-stage *F* statistic of the excluded instruments is larger than 20 in all four subsamples defined by the current employment state indicating that the instruments are not weak. The estimated effects of the education variable become larger, but remain qualitatively the same (see Tables A6 and A7 in the Appendix). This confirms that the estimated education effects are not driven by omitted variable bias.

In Table A8, we test for nonlinear effects of education by including three education dummies instead of the years of education variable used in our main estimations. An additional insight we gain from this test is that the group with the highest level of education (18 or more years, corresponding to a masters degree) drives the negative effect of education on the probability of a transition from employer-entrepreneurship to non-employment. Being in this group decreases the odds of failure as an employer by 95%.

Tables A9 and A10 present the results from modelling two types of unobserved heterogeneity in entrepreneurial ability and estimating the four multinomial logit models jointly, as discussed in Section 4. The variances of the two types of latent entrepreneurial ability, $\nu_{i,se}$ and $\nu_{i,ee}$, are significantly different from zero (reported at the bottom of the tables). Nevertheless,

[25] The effects of managerial experience on exit to paid employment and to solo-entrepreneurship cancel each other out, as additional calculations reveal. Reasons for this outcome are discussed in Busenitz and Barney (1997).
[26] Although the use of parental education as an instrument for education is not without critique, Hoogerheide et al. (2012) conclude from Bayesian analysis using SOEP data that the potential bias introduced by using paternal education as an instrument for schooling in a wage regression is typically within an acceptable range.

the estimated coefficients remain similar to the baseline results and, thus, are not very sensitive to the modeling of unobserved heterogeneity.

We further analyze the effects of personality traits by coding the personality variables in a different way. Instead of including standardized scores, in Table A11 we include dummy variables indicating whether an individual's score is larger than the sample median. While this does not change the direction of the significant effects, some effects that are insignificant in the main estimation become significant when using the dummy variables. For instance, scoring above the median in trust has a positive effect on the hiring probability of non-employers.

6 Discussion

In this paper, we conduct a comprehensive analysis of how personality and other individual characteristics of entrepreneurs influence not only their first demand for labor, but also their survival as employer. We also aim to find out in what sense it matters whether individuals hire for the first time right when they start their business or when they hire after having experienced a certain amount of time as being a non-employer. While existing research highlights high exit probabilities among all individuals who become entrepreneurs (e.g., Hyytinen and Rouvinen, 2008; Quatraro and Vivarelli, 2008), our survival analysis indicates an even higher exit probability of employers, with personality variables providing reasons for this observation.

Table 9 summarizes our main results. Looking at the influence of personality characteristics, we observe that it is basically risk tolerance and trust, and to some extent the meta-trait plasticity that influence the hiring decision – a remarkable result for several reasons. It reinforces the importance of risk tolerance as a crucial variable of running an own business (as suggested by Kihlstrom and Laffont, 1979) and reveals that this variable is particularly important for the hiring decision – a decision that increases business risk considerably – while it does not influence the entry into the status of a non-employer.[27] The result further shows that having trust in others is a fundamental characteristic for being able to start a growing business. It enables entrepreneurs to count on the members of their future team in two ways, in the sense that these employees will fulfill the expectations the entrepreneurs are putting in them, but also by receiving valuable feedback from these team members on entrepreneurial decisions. This observation also clarifies why, in countries with generally low trust levels, firms remain small and often hire family members. A third reason making this result remarkable is the fact that several further personality traits that are important for survival in the status of an employer do

[27] See also March and Shapira (1987) who discuss how managers deal with such risks.

not influence the decision to hire employees, so there does not seem to be positive self-selection with regard to these personality traits.

Assessing the two entry paths of becoming an employer, it should be noted that the personality characteristics risk tolerance and trust influence the hiring decision independently of the entry path. Furthermore, a certain amount of work experience (low unemployment exposure in combination with being middle aged) unfolds a significant influence on both entry paths. We interpret this in the sense that individuals coming from an employed position in the same industry typically have knowledge of the markets they aim to enter. They might be better able to address the needs in these markets with their own products and to enable their staff to address these needs. This is why they may be more likely to hire. Individuals with no, or a limited amount of, work experience and those coming out of unemployment are more likely to lack this knowledge. Individuals feeling less certain in their decision-making process on whether to hire employees will more often refrain from doing so and remain non-employers.

Other factors affecting the hiring decision of employees when they start up as employers right away, such as formal education and self-employed parents, are not significant for the hiring decision of non-employers, but our analysis also reveals that these variables unfold a significant influence when individuals initially become non-employers. This clarifies the source of the inconsistent results in the existing studies. For example, individuals with higher levels of education are more likely to become an entrepreneur, be it an employer or a non-employer, but among all non-employers, the education level has no further bite in explaining a transition to an employer (as found e.g. by Fairlie and Miranda, 2017). Thus, education and intergenerational links are not just generally important for becoming an employer but also an entrepreneur. What remains unclear and needs further analysis is whether work experience and unemployment exposure are the only human and social capital variables that are genuinely important for the hiring decision. It could be that formal education and self-employed parents influence the hiring decision only when entrepreneurs hire right away. Their influence may fade away once entrepreneurs run a business as non-employers for a certain time. What speaks in favor of the this interpretation is the earlier finding that a high education level may allow entrepreneurs to signal general abilities to their future employees, in particular when the firm is new, but might not be necessary once a new venture without employees has been in the market for some time (see Bublitz et al., 2017).

Last, but not least, with regard to the timing of the hiring decision, it seems that financial variables play a crucial role. Having access to own financial capital increases the probability of

becoming an employer right away, whereas capital income does not influence the decision of becoming a non-employer (in support of Hypothesis 3). More importantly, the subsequent hiring decision among non-employers is not influenced by capital income either. However, higher earnings as a non-employer makes it more likely to start the hiring process. This observation allows for the interpretation that those who aim to create larger businesses but face capital constraints may overcome this barrier by starting as non-employers and waiting until they realize a sufficient amount of income in this position before they start hiring.

This leads to our last question, what influences the survival of employers? There is a strict distinction between the influence of personality characteristics and variables capturing the human and social capital of employers on their survival. Next to the positive influence of a high income on employer survival, the latter characteristics, which already influenced the hiring decision in a positively way, also increase the probability of survival as an employer, thus supporting our first hypothesis.[28]

A second set of variables are key for the survival as an employer, but not for becoming an employer. These variables include three Big-Five factors, namely low scores of agreeableness and neuroticism, and high scores of conscientiousness, as well as high scores for internal locus of control. Entrepreneurs working conscientiously, being emotionally stable, and having appropriate negotiation skills, as well as believing that their own business success primarily depends on their own entrepreneurial actions, matter for the survival of their employer businesses. As these traits do not influence the hiring decision, individuals with any intensity of these characteristics become employers, and individuals who have the "wrong type" then survive with significantly lower probability. This supports Hypothesis 2 with respect to some traits.

For a third set of individual variables, we even find a "revolving door effect:" high scores in trust and risk tolerance and in the meta-trait plasticity drive the hiring decision. If these individuals continue to be willing to take high risks in their newly ventured business or remain trustful of others who may exploit this willingness to trust, they fail as employers more often precisely due to the very same characteristics that influenced their entry into this status in the first place. Thus, it is a matter of finding the right balance of risk tolerance and trust in others. It is essential that entrepreneurs have the capacity to be aware of the limitations of risk and trust, i.e., the possibility that risky decisions may lead to losses and that trust will be betrayed. Overall,

[28] Interestingly, those who gathered experience as managers in firms owned by others are not more successful in managing their employees in their own firms compared to those who lack such experience. Running an own business seemingly requires a managerial skill set different from that of being a manager in a firm owned by others.

our analysis reveals that no personality trait affects the hiring decision and the survival as an employer in the same direction. Thus, there is a partially adverse self-selection process with regard to personality traits, which provides insights why a large share of employers fail.

Our analysis faces limitations and raises further research questions. First, and foremost, we use a household survey collecting individual data. Therefore, our analysis with respect to firm characteristics is limited to the income of the entrepreneurs from their firms and to the industry sector. Further, the characteristics of the hired employees and the local environment, such as labor availability or local demand for products and services, are not available in our data.[29] As we have neither information on the workforce composition, nor on their productivity in the firm, access to data that includes such information would make it possible to extend the current research.[30] Moreover, comparisons between countries or policy regimes could shed light on how institutional factors, such as labor market and business regulations, influence the hiring decision of entrepreneurs and the sustainability of employer businesses, and whether the influence of personality characteristics on entry into and exit out of the status of an employer differs over varying institutional environments.

7 Conclusions

This paper analyzes which individual variables drive the decision of entrepreneurs to hire employees for the first time and which ones influence their subsequent survival as an employer. We draw three main conclusions from our analysis. First, human and social capital positively influence the hiring decision and the survival as an employer. Second, personality traits play a much stronger role for the survival as an employer than for the hiring decision, but none of the traits unfolds the same influence on entry into and exit out of the status of an employer, while some even unleash a revolving door effect. Third, the two entry paths of becoming an employer–i.e., directly out of paid employment or after spending some time as a non-employer entrepreneur–differ, particularly in the sense that individuals choose either one of the paths depending on differences in their access to financial capital.

[29] With respect to the latter point and its influence on the hiring decision, parallel research provides first results. While there is evidence of countercyclical effects of the regional economic environment on business entry (Konon et al., 2018), it remains unclear how changes in this environment affect the hiring decision. For the US manufacturing sector, Lee and Mukoyama (2015) find that firms founded during recessions start with more employees than firms founded during boom periods. Sedlácek and Sterk (2017), who analyze entries into all industries, find the opposite, namely that firms that started during boom periods create more jobs.

[30] For example, parallel research suggests that the better educated entrepreneurs are able to attract more talented employees increasing the survival probability of the firms (Dahl and Klepper, 2015) and that the survival of employers then again depends on the turnover of their employees (Gjerløv-Juel and Guenther, 2019).

These findings allow for several policy conclusions. As the policy debate centers more and more on business growth, first of all, this debate must take into account that failure rates of employers are higher than the failure rates in solo-entrepreneurship. As a substantial share of employers return to the status of a non-employer, it seems that entrepreneurs experiment with being an employer, as they do with other entrepreneurial activities. These findings should be addressed when designing policy instruments. Firstly, our results emphasize that a highly educated workforce is imperative, also for vibrant entrepreneurial activity with sustainable job creation. Secondly, given that our results indicate that limited access to capital seems to prevent some entrepreneurs from directly hiring their first employees when they start their entrepreneurial venture, existing public loan offers need to be shaped in a way that they better reach entrepreneurs with growth ambitions but limited amount of own capital. Thirdly, when designing instruments to support growing businesses, such as coaching offers, it is important that these offers take a more holistic approach. They should not only focus on the entry decision but also on employer survival. Coaching at the point of the hiring decision may not compensate for missing human or social capital, but it may compensate for deficits resulting from missing work experience by helping to understand the markets where entrepreneurs aim to grow their businesses. Having demonstrated the importance of accounting for personality traits, such coaching offers may subsequently also support employers in finding the right balance of risk tolerance and trust in others.

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Tables

Table 1: Matrix of transitions between employment and entrepreneurship states

		Columns: state in *t*+1				
Rows: state in *t*		(1)	(2)	(3)	(4)	Total
(1) Non-employment	Obs.	4,819	1,619	148	30	6,616
	%	72.8	24.5	2.2	0.5	100.0
(2) Paid employment	Obs.	1,585	40,108	194	164	42,051
	%	3.8	95.4	0.5	0.4	100.0
(3) Solo-entrepreneurship	Obs.	101	190	2,148	259	2,698
	%	3.7	7.0	79.6	9.6	100.0
(4) Employer-entrepreneurship	Obs.	38	118	226	2,240	2,622
	%	1.4	4.5	8.6	85.4	100.0
Total	Obs.	6,543	42,035	2,716	2,693	53,987

Notes: The transition matrix shows the numbers of observations in our estimation sample that switch from one employment status to another one between the survey interviews in two subsequent years. Observations on the diagonal remain in the current state. Source: Authors' calculations based on SOEP, 2005-2016.

Table 2: Sample means by employment state

					t-tests of equal means (*p*-values)	
	Non-employed	Paid employees	Non-employers (= solo-entrepreneurs)	Employers	Non-employers vs. paid employees	Employers vs. non-employers
Socio-economic variables:						
female	0.789	0.508	0.499	0.272	0.337	0.000
education years	12.116	12.769	13.870	14.322	0.000	0.000
married	0.766	0.679	0.645	0.688	0.000	0.001
no. of children	0.962	0.597	0.565	0.687	0.066	0.000
age	43.070	43.376	45.418	45.944	0.000	0.018
unemploym. exp.	2.072	0.592	0.840	0.301	0.000	0.000
migration backgr.	0.158	0.109	0.103	0.106	0.336	0.790
disability degree	3.754	2.949	1.127	2.172	0.000	0.000
east	0.238	0.241	0.239	0.215	0.780	0.037
father entrepreneur	0.078	0.073	0.126	0.201	0.000	0.000
father highschool	0.116	0.122	0.236	0.198	0.000	0.001
mother highschool	0.067	0.059	0.133	0.117	0.000	0.076
Personality:						
openness	4.510	4.446	5.052	4.746	0.000	0.000
conscientiousness	5.853	5.944	5.895	6.022	0.004	0.000
extraversion	4.791	4.821	5.113	5.048	0.000	0.037
agreeableness	5.459	5.350	5.385	5.237	0.064	0.000
neuroticism	4.140	3.769	3.695	3.511	0.002	0.000
risk tolerance	4.243	4.591	5.443	5.674	0.000	0.000
int. locus of control	27.409	28.860	29.683	31.482	0.000	0.000
trust	2.278	2.370	2.515	2.452	0.000	0.000
plasticity	9.300	9.266	10.164	9.794	0.000	0.000
stability	15.173	15.527	15.583	15.748	0.157	0.003
Industry:						
manufacturing & agri.		0.289	0.112	0.118	0.000	0.000
construction		0.051	0.080	0.135	0.000	0.000
trade & hospitality		0.143	0.104	0.199	0.000	0.000
transport & commun.		0.049	0.031	0.028	0.000	0.584
financial services		0.065	0.073	0.063	0.084	0.129
business services		0.080	0.209	0.219	0.000	0.380
public & pers. serv.		0.301	0.350	0.223	0.000	0.000
Income, hours, tenure, and prior experience:						
capital inc. (annual)	2.778	2.479	7.535	16.609	0.000	0.000
labor inc. (monthly)	0.000	2.571	2.302	5.539	0.000	0.000
hours of work	0.000	37.777	38.220	51.163	0.086	0.000
duration	5.087	12.651	6.145	8.323	0.000	0.000
self-empl. experience	0.055	0.025	1.000	1.000	0.000	
management exper.	0.079	0.328	0.095	0.127	0.000	0.000
Observation years	6,616	42,051	2,698	2,622		

Notes: Means by employment state in the estimation sample (unweighted). The personality variables are shown before standardization. Capital and labor income are in real 1000 euro in prices of 2005. The last two columns shows *p*-values of tests of equal means between non-employers and paid employees or employer-entrepreneurs, respectively. Some variables not used in the main analysis are based on fewer observations because of missing values. Section 3.1 defines the personality variables and Table A1 in the Appendix the socio-demographic variables. Source: Authors' calculations based on SOEP, 2005-2015 (with some variable values from 2003/04).

Table 3: Sample means by transition types

	Entry into employer-entre-preneurship from			Entry into solo-entrepreneur-ship from			*t*-tests of equal means (*p*-values)	
	paid empl.	solo-entrep.	non-empl.	paid empl.	non-empl.	emplo-yer		
	(1)	(2)	(3)	(4)	(5)	(6)	(1) vs. (2)	(1) vs. (4)
Socio-economic variables:								
female	0.317	0.305	0.633	0.531	0.601	0.283	0.794	0.000
education years	14.009	13.521	12.333	13.735	13.280	13.772	0.097	0.397
married	0.683	0.676	0.600	0.649	0.649	0.686	0.877	0.506
no. of children	0.738	0.571	1.033	0.768	0.959	0.597	0.070	0.779
age	41.750	44.251	40.200	41.990	41.662	44.996	0.003	0.809
unemploym. exp.	0.351	0.549	1.020	0.833	1.562	0.516	0.056	0.010
migration backgr.	0.085	0.100	0.267	0.134	0.095	0.093	0.608	0.146
disability degree	2.591	2.046	2.333	1.881	2.297	0.863	0.658	0.576
east	0.201	0.236	0.167	0.196	0.257	0.190	0.410	0.900
father entrepreneur	0.165	0.162	0.200	0.144	0.101	0.159	0.947	0.597
father highschool	0.278	0.161	0.034	0.237	0.225	0.172	0.004	0.377
mother highschool	0.167	0.095	0.034	0.161	0.147	0.096	0.033	0.894
Personality:								
openness	4.754	4.891	4.644	4.964	5.029	4.867	0.240	0.082
conscientiousness	5.998	6.027	5.756	5.876	5.858	5.956	0.737	0.195
extraversion	4.953	5.148	5.167	4.893	5.032	5.090	0.079	0.612
agreeableness	5.404	5.306	5.267	5.364	5.532	5.347	0.305	0.691
neuroticism	3.488	3.682	3.800	3.785	3.820	3.751	0.102	0.018
risk tolerance	5.659	5.888	5.067	5.284	5.351	5.544	0.309	0.122
int. locus of control	30.146	29.598	29.633	28.608	28.243	29.522	0.368	0.015
trust	2.543	2.510	2.389	2.479	2.387	2.431	0.551	0.296
plasticity	9.707	10.035	9.811	9.861	10.061	9.957	0.078	0.420
stability	15.909	15.660	15.222	15.466	15.570	15.547	0.221	0.044
Industry:								
manufacturing & agri.	0.195	0.147		0.144		0.115	0.193	0.201
construction	0.110	0.131		0.072		0.150	0.513	0.215
trade & hospitality	0.220	0.151		0.129		0.177	0.071	0.023
transport & commun.	0.030	0.023		0.031		0.022	0.646	0.981
financial services	0.079	0.089		0.067		0.088	0.733	0.657
business services	0.134	0.208		0.144		0.195	0.052	0.783
public & pers. serv.	0.213	0.224		0.366		0.235	0.800	0.002
Income, hours, tenure, and prior experience:								
capital income	12.827	7.092	10.290	3.239	2.543	8.478	0.087	0.002
gross labor income	3.969	3.175	0.000	2.511	0.000	3.585	0.006	0.005
hours of work	44.778	47.064	0.000	31.631	0.000	49.208	0.149	0.000
duration	7.280	3.382	2.967	6.887	2.791	3.655	0.000	0.624
self-empl. experience	0.441	1.000	0.480	0.337	0.376	1.000	0.000	0.055
management exper.	0.718	0.080	0.143	0.455	0.235	0.106	0.000	0.000
Observations	164	259	30	194	148	226		

Notes: Means in *t* by types of transition between *t* and *t*+1 in the estimation sample (unweighted). The personality variables are shown before standardization. Capital and labor income are in real 1000 euro in prices of 2005. The last two column shows *p*-values of *t*-tests of equal means. Some variables not used in the main analysis are based on fewer observations because of missing values. Section 3.1 defines the personality variables and Table A1 in the Appendix the socio-demographic variables. Source: Authors' calculations based on SOEP, 2005-2015 (with some variable values from 2003/04).

Table 4: Effects on entry into and exit out of employer-entrepreneurship

	Entry into employer-entrep. from			Exit from employer-entrep. to		
	paid em-ploym.	solo-entrep.	non-em-ployment	paid em-ploym.	solo-en-trep.	non-em-ployment
female	0.3520***	0.5853***	0.3528**	1.5438*	0.8081	7.6398***
	(0.0757)	(0.1053)	(0.1790)	(0.4002)	(0.1659)	(3.5130)
education years	1.1020**	0.9881	0.9278	1.0166	0.9509	0.7672***
	(0.0440)	(0.0291)	(0.0883)	(0.0409)	(0.0314)	(0.0686)
married	1.1528	1.3519*	0.4392*	0.9347	1.2113	1.1777
	(0.2444)	(0.2449)	(0.2045)	(0.2286)	(0.2330)	(0.5085)
no. of children	0.9310	0.8341*	0.9614	1.1309	0.8117**	1.0026
	(0.0979)	(0.0828)	(0.2247)	(0.1465)	(0.0807)	(0.2431)
age	1.2229**	1.2561***	1.4822	0.7663**	1.0443	0.9538
	(0.1195)	(0.1087)	(0.3636)	(0.0861)	(0.1092)	(0.2029)
age squared	0.9976**	0.9971***	0.9950*	1.0030**	0.9996	1.0003
	(0.0012)	(0.0010)	(0.0029)	(0.0013)	(0.0012)	(0.0026)
unemploym. exp.	0.7256***	0.8135**	0.7626**	0.9686	1.2056**	1.5624***
	(0.0822)	(0.0699)	(0.0808)	(0.1439)	(0.1087)	(0.2336)
disability degree	1.0023	1.0191*	0.9915	1.0165***	0.9813**	0.9934
	(0.0087)	(0.0115)	(0.0138)	(0.0060)	(0.0087)	(0.0138)
east	0.9264	1.0893	1.0375	0.6286*	0.6603**	0.4518
	(0.1991)	(0.2073)	(0.6252)	(0.1771)	(0.1368)	(0.2643)
father entrepreneur	1.7352**	1.3218	2.5316	0.4471**	0.9473	1.0548
	(0.3971)	(0.2716)	(1.4475)	(0.1589)	(0.2252)	(0.6327)
capital income	1.0067***	1.0009	1.0113**	1.0010*	0.9982	1.0008
	(0.0012)	(0.0013)	(0.0048)	(0.0006)	(0.0036)	(0.0011)
openness	1.1552	0.8714	0.9448	1.0778	1.1696*	1.2399
	(0.1191)	(0.0766)	(0.1946)	(0.1289)	(0.1044)	(0.2310)
conscientiousness	1.1026	1.1360	0.8303	0.8230	0.8676*	1.2242
	(0.1140)	(0.0901)	(0.1877)	(0.1073)	(0.0701)	(0.2866)
extraversion	0.9940	1.0457	1.3444	0.9237	1.0484	0.8754
	(0.0947)	(0.0885)	(0.2631)	(0.0972)	(0.0853)	(0.1774)
agreeableness	1.0471	1.0030	0.9101	1.1192	1.1686*	0.9983
	(0.0955)	(0.0754)	(0.1890)	(0.1377)	(0.1035)	(0.2035)
neuroticism	1.0112	1.0828	0.9405	1.0708	1.1361	0.7839
	(0.0913)	(0.0850)	(0.1820)	(0.1251)	(0.1025)	(0.1829)
risk tolerance	0.7970	0.8894	0.8923	0.6771**	1.0068	1.5540
	(0.1231)	(0.1239)	(0.2371)	(0.1194)	(0.1342)	(0.5274)
risk tolerance sq.	1.0373***	1.0182	1.0181	1.0423***	0.9980	0.9713
	(0.0144)	(0.0129)	(0.0267)	(0.0161)	(0.0125)	(0.0311)
Joint sign., *p*-value	0.0000***	0.0537*	0.5926	0.0129**	0.9370	0.2163
int. locus of control	1.0566	0.9651	1.2823	1.0614	0.8030***	0.6859*
	(0.1088)	(0.0775)	(0.2506)	(0.1283)	(0.0672)	(0.1559)
trust	1.1705	1.1003	1.1840	1.2167*	1.0053	0.8129
	(0.1166)	(0.0832)	(0.3001)	(0.1364)	(0.0787)	(0.1718)
construction	2.7593***	1.2596		0.3692**	1.1201	0.7715
	(0.8986)	(0.3939)		(0.1807)	(0.3376)	(0.5857)
trade & hospitality	3.0028***	1.3502		0.6485	0.8580	1.0004
	(0.7781)	(0.3496)		(0.2323)	(0.2462)	(0.5149)
transport & commu-nication	0.9539	0.7504		0.7172	0.7064	1.3277
	(0.4602)	(0.3367)		(0.3996)	(0.4483)	(1.2347)
financial services	1.6475	1.1404		0.4046*	1.4635	0.8540
	(0.5531)	(0.3453)		(0.1947)	(0.5005)	(0.6995)
business services	1.7673*	1.0589		0.5343*	1.0415	0.3248
	(0.5468)	(0.2691)		(0.1912)	(0.3142)	(0.2394)
public & pers. serv.	1.2735	0.7844		0.3956***	1.1761	0.4159
	(0.3319)	(0.2017)		(0.1414)	(0.3392)	(0.3068)
duration	0.7489***	0.7332***	0.6344***	0.7445***	0.7350***	0.7487***
	(0.0261)	(0.0291)	(0.0773)	(0.0384)	(0.0301)	(0.0689)
duration squared	1.0064***	1.0083***	1.0175***	1.0060***	1.0069***	1.0075**
	(0.0009)	(0.0013)	(0.0050)	(0.0017)	(0.0012)	(0.0031)
N	42,051	2,698	6,616	2,622	2,622	2,622
Log-likelihood	-8,032	-1,700	-3,771	-1,193	-1,193	-1,193

Notes: Competing risk models of transition probabilities. Odds ratios reported. Values larger (smaller) than 1 indicate that a variable increases (decreases) the probability of the transition in comparison to remaining in the current state. For remaining transitions see Table 5. Year dummies and migration background included but not shown for brevity. */**/***: Odds ratio significantly different from 1 at the 10%/5%/1% level based on cluster robust standard errors. Source: Authors' calculations based on SOEP, 2005-2016.

Table 5: Effects on remaining transition probabilities

	Entry into solo-entrepreneurship from		Exit from solo-entrepreneurship to		Transition from	
	paid employm.	non-employment	paid employm.	non-employment	non-empl. to paid employm.	paid empl. to non-employm.
female	0.8145	0.3432***	1.3614	3.1234***	0.6473***	2.0016***
	(0.1455)	(0.0768)	(0.2665)	(0.8256)	(0.0564)	(0.1344)
education years	1.0789**	1.1134***	1.0181	0.9839	1.0182	0.9800
	(0.0330)	(0.0431)	(0.0312)	(0.0456)	(0.0147)	(0.0125)
married	0.9998	0.6912*	1.1829	1.1678	0.9362	1.3235***
	(0.1772)	(0.1505)	(0.2143)	(0.3278)	(0.0778)	(0.0938)
no. of children	1.1274	0.9347	1.2661***	1.3241*	0.9324*	0.8440***
	(0.1111)	(0.0842)	(0.1099)	(0.1923)	(0.0366)	(0.0351)
age	0.9521	1.4670***	0.8441**	0.8402	1.1771***	0.8409***
	(0.0771)	(0.1457)	(0.0707)	(0.0984)	(0.0372)	(0.0212)
age squared	1.0007	0.9953***	1.0017*	1.0021	0.9975***	1.0018***
	(0.0010)	(0.0012)	(0.0010)	(0.0013)	(0.0004)	(0.0003)
unemploym. exp.	1.0269	0.8886***	1.0506	1.0506	0.9725**	1.1749***
	(0.0622)	(0.0383)	(0.0475)	(0.0469)	(0.0134)	(0.0148)
migration backgr.	1.1576	0.5600**	0.9824	0.2378**	0.7893**	1.1972**
	(0.2589)	(0.1613)	(0.2400)	(0.1347)	(0.0772)	(0.1007)
disability degree	0.9951	0.9927	1.0230***	1.0100	0.9943*	1.0023
	(0.0070)	(0.0079)	(0.0079)	(0.0138)	(0.0030)	(0.0021)
east	0.7938	1.1831	0.7311	0.7960	1.3093***	1.1343*
	(0.1622)	(0.2808)	(0.1654)	(0.2174)	(0.1097)	(0.0740)
father entrepreneur	1.6489**	1.1236	0.9074	0.6418	1.0412	0.9296
	(0.3639)	(0.3366)	(0.2202)	(0.2523)	(0.1375)	(0.1032)
capital income	0.9988	0.9964	0.9999	0.9876*	0.9917*	1.0012
	(0.0031)	(0.0054)	(0.0022)	(0.0069)	(0.0049)	(0.0016)
openness	1.5322***	1.4494***	0.8566*	0.9344	0.9680	1.1050***
	(0.1435)	(0.1546)	(0.0801)	(0.1168)	(0.0357)	(0.0345)
conscientiousness	0.9769	0.9413	0.9796	1.1301	1.1370***	1.0077
	(0.0798)	(0.0921)	(0.0814)	(0.1284)	(0.0420)	(0.0291)
agreeableness	0.9687	1.1858*	1.0344	1.1847	0.9576	0.9969
	(0.0807)	(0.1103)	(0.0834)	(0.1388)	(0.0356)	(0.0318)
neuroticism	1.0692	0.9630	0.9862	0.9470	0.9870	1.0833***
	(0.0856)	(0.1041)	(0.0829)	(0.1112)	(0.0359)	(0.0318)
risk tolerance	0.9334	1.0651	0.8623	0.9798	1.2000***	0.9762
	(0.1275)	(0.1572)	(0.1150)	(0.1903)	(0.0649)	(0.0430)
risk tolerance sq.	1.0199	1.0081	1.0138	1.0123	0.9809***	1.0022
	(0.0131)	(0.0139)	(0.0133)	(0.0186)	(0.0058)	(0.0047)
int. locus of control	0.9031	1.0048	0.8578*	0.8080*	0.9899	0.9346**
	(0.0727)	(0.0878)	(0.0749)	(0.0940)	(0.0353)	(0.0284)
trust	1.1173	1.0869	0.9074	0.7702**	1.0446	0.9731
	(0.0946)	(0.1014)	(0.0687)	(0.0842)	(0.0383)	(0.0286)
construction	2.0786**		0.8067	0.4918		1.4047***
	(0.6927)		(0.3190)	(0.2472)		(0.1730)
trade & hospitality	1.4962		1.0391	0.7325		1.1270
	(0.4023)		(0.3298)	(0.2881)		(0.0937)
transport & communication	1.0261		0.8507	0.6797		0.9345
	(0.4559)		(0.4676)	(0.5324)		(0.1337)
financial services	2.0027**		0.6514	1.3613		1.1236
	(0.6854)		(0.2716)	(0.6150)		(0.1392)
business services	2.1485***		0.8488	0.4480**		0.8254*
	(0.5531)		(0.2446)	(0.1767)		(0.0956)
public & pers. serv.	1.7792***		0.7927	0.5333**		0.8477**
	(0.3866)		(0.2027)	(0.1629)		(0.0638)
duration	0.7709***	0.7535***	0.8053***	0.7332***	0.6715***	0.8406***
	(0.0243)	(0.0475)	(0.0305)	(0.0443)	(0.0147)	(0.0094)
duration squared	1.0057***	1.0080**	1.0058***	1.0072***	1.0125***	1.0037***
	(0.0008)	(0.0038)	(0.0013)	(0.0018)	(0.0011)	(0.0003)
N	42,051	6,616	2,698	2,698	6,616	42,051
Log-likelihood	-8,032	-3,771	-1,700	-1,700	-3,771	-8,032

Notes: Competing risk models of transition probabilities. Odds ratios reported. Values larger (smaller) than 1 indicate that a variable increases (decreases) the probability of the transition in comparison to remaining in the current state. Year dummies and extraversion included but not shown for brevity. */**/***: Odds ratio significantly different from 1 at the 10%/5%/1% level based on cluster robust standard errors. Source: Authors' calculations based on SOEP, 2005-2016.

Table 6: Alternative sets of personality variables

	Entry into employer-entrep. from			Exit from employer-entrep. to		
	paid em-ploym.	solo-entrep.	non-em-ployment	paid em-ploym.	solo-entrep.	non-em-ployment
Big Five model:						
openness	1.2193*	0.9094	0.9720	1.0940	1.1594*	1.2187
	(0.1278)	(0.0774)	(0.2006)	(0.1246)	(0.1013)	(0.2298)
conscientiousness	1.1058	1.1342	0.8637	0.8069*	0.8490**	1.1760
	(0.1119)	(0.0885)	(0.1773)	(0.1030)	(0.0672)	(0.2513)
extraversion	1.0569	1.0556	1.4047*	0.9511	1.0304	0.8724
	(0.1002)	(0.0895)	(0.2664)	(0.1031)	(0.0840)	(0.1587)
agreeableness	1.0371	0.9853	0.8902	1.1619	1.1579*	0.9394
	(0.0960)	(0.0723)	(0.1777)	(0.1463)	(0.0992)	(0.1903)
neuroticism	0.9222	1.0551	0.8657	0.9898	1.2051**	0.8870
	(0.0818)	(0.0794)	(0.1609)	(0.1125)	(0.1037)	(0.1869)
2 meta-traits model:						
plasticity	1.2365**	0.9688	1.2876	1.0417	1.1852*	1.0307
	(0.1177)	(0.0835)	(0.2701)	(0.1157)	(0.1028)	(0.1880)
stability	1.1454	1.0440	0.9250	0.9689	0.8697*	1.1510
	(0.1050)	(0.0826)	(0.1360)	(0.1124)	(0.0707)	(0.2575)
Specific traits:						
risk tolerance	0.7895	0.8577	0.9280	0.6959**	1.0442	1.5111
	(0.1231)	(0.1160)	(0.2290)	(0.1169)	(0.1379)	(0.5193)
risk tolerance sq.	1.0392***	1.0204	1.0173	1.0396***	0.9957	0.9735
	(0.0145)	(0.0126)	(0.0255)	(0.0155)	(0.0126)	(0.0315)
int. locus of control	1.0895	0.9778	1.2739	1.0174	0.7836***	0.7572
	(0.1071)	(0.0772)	(0.2420)	(0.1141)	(0.0621)	(0.1464)
trust	1.1735	1.0668	1.2098	1.2544*	1.0123	0.8485
	(0.1147)	(0.0777)	(0.2883)	(0.1463)	(0.0778)	(0.1716)

Notes: Competing risk models of transition probabilities. The Big Five model, 2 meta-traits model, and specific traits model are estimated separately. The first three models do not include the more specific personality variables (willingness to take risks, locus of control, and trust) and the fourth only includes these, but not the more general traits. The control variables are the same as in the main estimation (Table 4). Odds ratios reported. Values larger (smaller) than 1 indicate that a variable increases (decreases) the probability of the transition in comparison to remaining in the current state. The remaining transitions are shown in Table A2. */**/***: Odds ratio significantly different from 1 at the 10%/5%/1% level based on cluster robust standard errors. Source: Authors' calculations based on SOEP, 2005-2016 (with some variable values from 2003/04).

Table 7: Inclusion of previous monthly labor income

	Entry into employer-entrep. from		Exit from employer-entrep. to		
	paid em-ploym.	solo-entrep.	paid em-ploym.	solo-entrep.	non-em-ployment
gross labor income	1.0472*	1.1048***	0.9388*	0.5367***	0.7624
	(0.0278)	(0.0395)	(0.0328)	(0.1263)	(0.2047)
Other variables	Yes	Yes	Yes	Yes	Yes
N	39,242	2,392	2,240	2,240	2,240
Log-likelihood	-7,345	-1,468	-983	-983	-983

Notes: Competing risk models of transition probabilities. This specification includes labor income in the month before the interview as an additional explanatory variable. Odds ratios reported. Values larger (smaller) than 1 indicate that a variable increases (decreases) the probability of the transition in comparison to remaining in the current state. The remaining transitions are shown in Table A3. The other independent variables are the same as in Table 4 but not shown for brevity. */**/***: Odds ratio significantly different from 1 at the 10%/5%/1% level based on cluster robust standard errors. Source: Authors' calculations based on SOEP, 2005-2016.

Table 8: Inclusion of the prior employment status

	Entry into employer-entrep. from			Exit from employer-entrep. to		
	paid em-ploym.	solo-entrep.	non-em-ployment	paid em-ploym.	solo-entrep.	non-em-ployment
prev. non-employed	0.5951*	0.6955		2.3209	1.6795	1.4486
	(0.1705)	(0.2027)		(1.2993)	(0.6539)	(1.0547)
prev. paid employee		0.8891	0.7946	5.6026***	0.5122**	0.6045
		(0.2368)	(0.4167)	(1.8468)	(0.1467)	(0.3759)
prev. solo-entrep.	2.0464**		3.2662	0.9824	2.1251***	0.4070
	(0.6683)		(2.7237)	(0.4125)	(0.5385)	(0.2331)
prev. employer-ent.	16.4775***	2.4970***	9.3861***			
	(3.4597)	(0.5972)	(7.5341)			
Other variables	Yes	Yes	Yes	Yes	Yes	Yes
N	42,051	2,698	6,616	2,622	2,622	2,622
Log-likelihood	-7,902	-1,638	-3,692	-1,131	-1,131	-1,131

Notes: Competing risk models of transition probabilities. This specification includes dummy variables indicating the employment state before the current employment spell (base cat.: unknown). Odds ratios reported. Values larger (smaller) than 1 indicate that a variable increases (decreases) the probability of the transition in comparison to remaining in the current state. The remaining transitions are available on request. The other independent variables are the same as in Table 4 but not shown for brevity. */**/***: Odds ratio significantly different from 1 at the 10%/5%/1% level based on cluster robust standard errors. Source: Authors' calc. based on SOEP, 2005-2016.

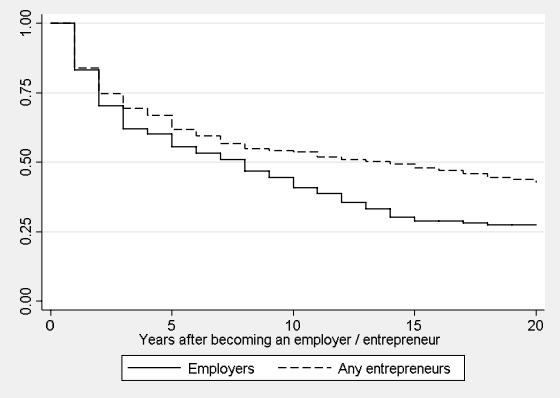
Table 9: Summary of estimation results

	Entry into employer-entrepreneurship from		Entry into solo-entrep. from	Survival in employer-entrep.
	paid employment	solo-entrep.	paid employment	
Openness to experience	+[1]	**0**	+	- (to solo-entrep.)
Extraversion	**0**	**0**	**0**	**0**
Conscientiousness	**0**	**0**	**0**	+ (to solo-entrep.)
Agreeableness	**0**	**0**	**0**	- (to solo-entrep.)
Neuroticism	**0**	**0**	**0**	-[1] (to solo-entrep.**)**
Plasticity	+	**0**	+	- (to solo-entrep.)
Stability	**0**	**0**	**0**	+ (to solo-entrep.)
Internal locus of control	**0**	**0**	**0**	+
Risk tolerance	+	+	**0**	**Inv. U-shape** (to employment)
Trust	+[2]	+[3]	**0**	- (to employment)
Education levels	+	**0**	+	+ (to non-employment)
Self-employed parents	+	**0**	+	+ (to employment)
Age	**Inverse U-shape**	**Inverse U-shape**	**0**	**Inv. U-shape** (to employment)
Capital income	+	**0**	**0**	- (to employment)
Unemployment exp.	-	-	**0**	-
Previous income	+	+	**0**	+

Notes: [1]: Only significant when not controlling for specific personality traits in addition to the Big Five. [2]: Only significant when modelling unobserved heterogeneity. [3]: Only significant when using a dummy for trust levels above the sample median.

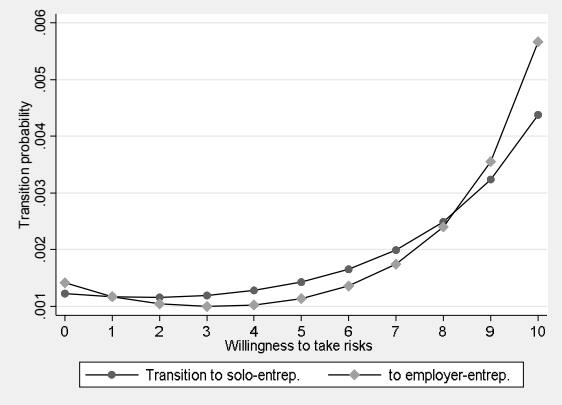
Figures

Figure 1: Kaplan-Meier survivor functions



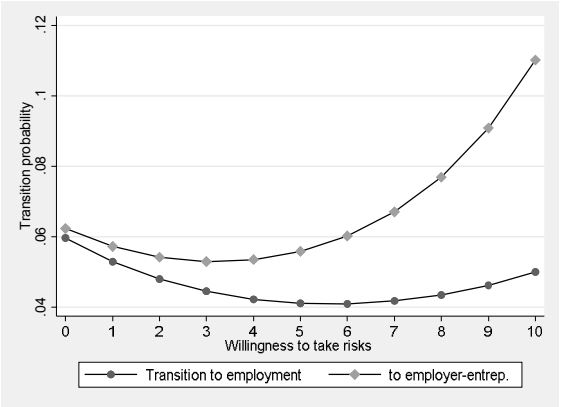
Note: Estimated Kaplan-Meier survivor functions for employers and entrepreneurs in general.
Source: Authors' calculations based on SOEP, 2005-2016.

Figure 2: Effect of the willingness to take risks on the prob. of exit from paid employment



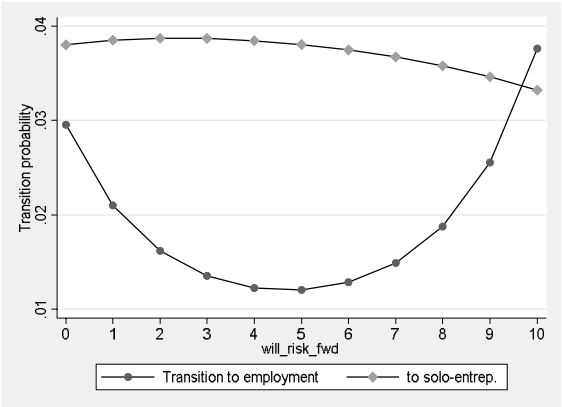
Note: Predicted mean annual transition probabilities from paid employment to solo-entrepreneurship and employer-entrepreneurship as functions of the willingness to take risks, evaluated at the mean values of the other explanatory variables in the sample of paid employees.
Source: Authors' calculations based on SOEP, 2005-2016.

Figure 3: Effect of the willingness to take risks on the prob. of exit from solo-entrepreneurship



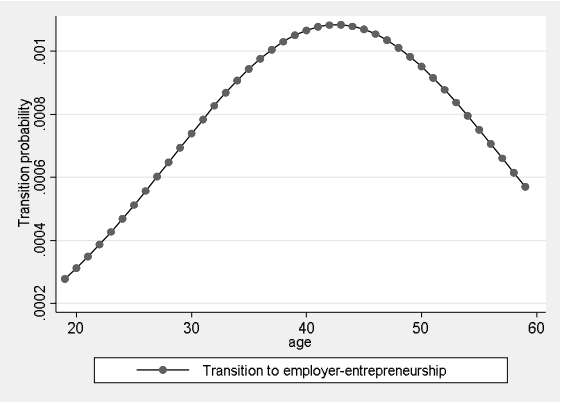
Note: Predicted mean annual transition probabilities from solo-entrepreneurship to paid employment and employer-entrepreneurship as functions of the willingness to take risks, evaluated at the mean values of the other explanatory variables in the sample of non-employers.
Source: Authors' calculations based on SOEP, 2005-2016.

Figure 4: Effect of the willingness to take risks on the prob. of exit from employer-entrep.



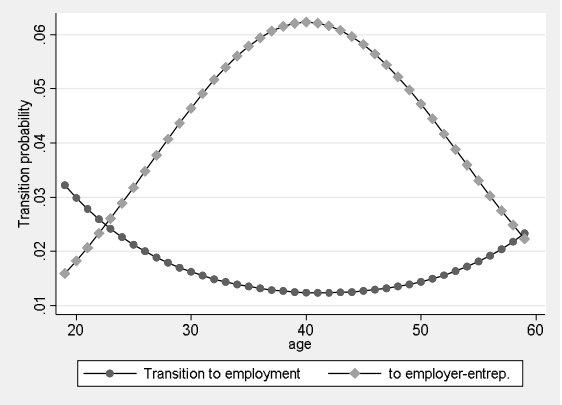
Note: Predicted mean annual transition probabilities from employer-entrepreneurship to paid employment and solo-entrepreneurship as functions of the willingness to take risks, evaluated at the mean values of the other explanatory variables in the sample of employers.
Source: Authors' calculations based on SOEP, 2005-2016.

Figure 5: Effect of age on the probability of exit from paid employment



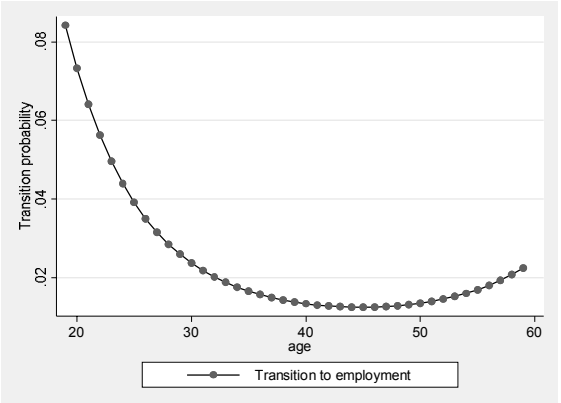
Note: Predicted mean annual transition probability from paid employment to employer-entrepreneurship as a function of age, evaluated at the mean values of the other explanatory variables in the sample of paid employees.
Source: Authors' calculations based on SOEP, 2005-2016.

Figure 6: Effect of age on the probability of exit from solo-entrepreneurship



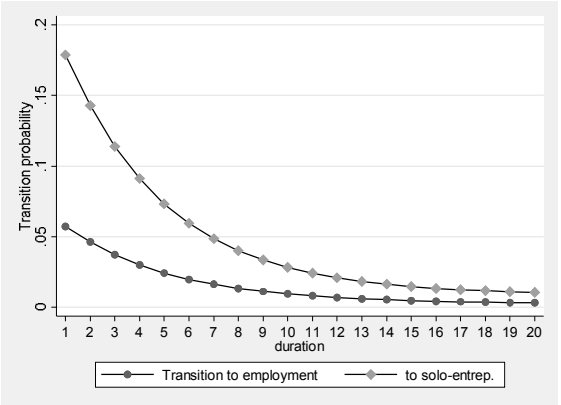
Note: Predicted mean annual transition probabilities from solo-entrepreneurship to paid employment and employer-entrepreneurship as functions of age, evaluated at the mean values of the other explanatory variables in the sample of non-employers.
Source: Authors' calculations based on SOEP, 2005-2016.

Figure 7: Effect of age on the probability of exit from employer-entrepreneurship



Note: Predicted mean annual transition probability from employer-entrepreneurship to paid employment as a function of age, evaluated at the mean values of the other explanatory variables in the sample of employers.
Source: Authors' calculations based on SOEP, 2005-2016.

Figure 8: Effect of spell duration on the prob. of exit from employer-entrepreneurship



Note: Predicted mean annual transition probabilities from employer-entrepreneurship to paid employment and solo-entrepreneurship conditional on the spell duration, evaluated at the mean values of the other explanatory variables in the sample of employers.
Source: Authors' calculations based on SOEP, 2005-2016.

Online Appendix: Supplementary Tables

Table A1: Description of the explanatory variables

Variable	Definition
education years	Standard years of schooling required to obtain the highest degree obtained by the respondent.
married	Dummy for a married and not separated person.
no. of children	Number of children under 17 in the household.
unemployment exp.	Years of unemployment exposure.
migration background	Born outside Germany or without German citizenship, or at least one parent was born outside Germany or has no German citizenship.
disability degree	Officially assessed and certified degree of disability in percent.
east	Dummy for a person living in the area of former East Germany or Berlin.
father entrepreneur	Dummy for a person whose father was self-employed when the respondent was 15 years old.
capital income	Real income from interest, dividends and property rents before taxes in the previous year in 1000 euro in prices of 2005. Some respondents report the exact amount of their financial income, while others only indicate a range. For the latter respondents, we impute the mean income of those who give the exact amount within this range.
openness, conscientiousness, estraversion, agreeableness, neuroticism	Scores in the Big Five personality traits. For each of the 5 traits, respondents are asked how much they agree with 3 different statements about themselves on 7-point Likert scales, then we take the averages and standardize. See Caliendo et al. (2014) for more details on the measurement of the personality characteristics and the wording of the items.
risk tolerance	Respondents are asked how much they are generally willing to take risks on a scale from 0 to 10.
int. locus of control	A high score indicates an internal and a low score an external locus of control. Elicited using 10 items.
trust	A high score indicates a high willingness to trust others. Elicited using 3 items.
plasticity	Average of openness to experience and extraversion.
stability	Average of conscientiousness, agreeableness, and emotional stability (the reverse of neuroticism).
primary & secondary sectors	Dummy for a person working in agriculture, forestry, fishing, mining and quarrying, manufacturing, energy and water supply, or whose industry classification is missing. Omitted base category.
construction	Working in the construction industry.
trade & hospitality	Working in hotels, restaurants, wholesale, commission or retail trade, or repair.
transport & communic.	Working in transport, travel agencies, or post and telecommunications.
financial services	Working in financial intermediation, insurance and pension funding, or real estate.
business services	Working in renting, information technology, research & development, or other business activities.
public & personal services	Working in public administration, education, health and social work, sewage and waste disposal, activities of membership organizations, recreational and sports activities, or other service activities.
duration	Tenure in the current employment state (solo-entrepreneurship, employer-entrepreneurship, paid employment, unemployment/non-participation). For left-censored spells, we use the retrospectively elicited duration since the last job change.
gross labor income	Real labor income before taxes in the month before the interview in 1000 euro in prices of 2005.
hours of work	Actual work time per week.
work overload	Dummy for a person working more than 50 hours a week.
self-empl. experience	Dummy for a person with experience in self-employment in the previous five years.
management experience	Dummy for a person with experience in management as an employee in the previous five years.
father highschool	Dummy for a person whose father obtained a high school degree qualifying for university entrance.
mother highschool	Dummy for a person whose mother obtained a high school degree qualifying for university entrance.

Notes: Dummy variables equal 1 if the condition holds and 0 otherwise.

Table A2: Alternative sets of personality variables – remaining transition probabilities

	Entry into solo-entrepreneurship from		Exit from solo-entrepreneurship to		Transition from	
	paid employm.	non-employment	paid employm.	non-employment	non-empl. to paid empl.	paid empl. to non-empl.
Big Five model:						
openness	1.5913***	1.5334***	0.8612	0.9915	0.9675	1.1023***
	(0.1459)	(0.1666)	(0.0792)	(0.1199)	(0.0353)	(0.0341)
conscientiousness	0.9642	0.9330	0.9842	1.1457	1.1202***	1.0068
	(0.0786)	(0.0923)	(0.0787)	(0.1287)	(0.0407)	(0.0289)
extraversion	0.9133	1.0587	0.9684	0.8734	1.0357	0.9611
	(0.0735)	(0.1131)	(0.0823)	(0.1156)	(0.0380)	(0.0290)
agreeableness	0.9437	1.1587	1.0301	1.1214	0.9568	0.9896
	(0.0781)	(0.1081)	(0.0816)	(0.1281)	(0.0353)	(0.0312)
neuroticism	1.0299	0.9221	1.0370	1.0131	0.9759	1.1017***
	(0.0794)	(0.0958)	(0.0849)	(0.1193)	(0.0342)	(0.0316)
2 meta-traits model:						
plasticity	1.3520***	1.4721***	0.8564*	0.8965	1.0118	1.0497*
	(0.1075)	(0.1328)	(0.0740)	(0.1160)	(0.0349)	(0.0309)
stability	0.9153	1.1110	0.9874	1.1555	1.0601*	0.9298**
	(0.0702)	(0.1090)	(0.0834)	(0.1317)	(0.0367)	(0.0270)
Specific traits:						
risk tolerance	0.9457	1.0707	0.8803	0.9387	1.1852***	0.9737
	(0.1285)	(0.1570)	(0.1135)	(0.1802)	(0.0640)	(0.0428)
risk tolerance sq.	1.0203	1.0108	1.0103	1.0145	0.9825***	1.0026
	(0.0130)	(0.0139)	(0.0128)	(0.0182)	(0.0058)	(0.0047)
int. locus of control	0.8916	1.0490	0.8593*	0.8369	1.0120	0.9218***
	(0.0683)	(0.0908)	(0.0707)	(0.0975)	(0.0345)	(0.0273)
trust	1.1173	1.1053	0.9080	0.7794**	1.0347	0.9625
	(0.0954)	(0.1045)	(0.0687)	(0.0817)	(0.0372)	(0.0279)

Notes: Competing risk models of transition probabilities. The Big Five model, 2 meta-traits model, and specific traits model are estimated separately. The first three models do not include the more specific personality variables (willingness to take risks, locus of control, and trust) and the fourth only includes these, but not the more general traits. The control variables are the same as in the main estimation (Table 4). Odds ratios reported. Values larger (smaller) than 1 indicate that a variable increases (decreases) the probability of the transition in comparison to remaining in the current state. Transitions from and to employer-entrepreneurship are shown in Table 6. */**/***: Odds ratio significantly different from 1 at the 10%/5%/1% level based on cluster robust standard errors. Source: Authors' calculations based on SOEP, 2005-2016 (with some variable values from 2003/04).

Table A3: Inclusion of previous monthly labor income – remaining transition probabilities

	Entry into solo-entrepreneurship from	Exit from solo-entrepreneurship to	Transition from
	paid employment	paid employment	paid employment to non-employment
gross labor income	0.9795	0.8516***	0.7751***
	(0.1390)	(0.0455)	(0.0288)
Other variables	Yes	Yes	Yes
N	39,242	2,392	39,242
Log-likelihood	-7,345	-1,468	-7,345

Notes: Competing risk models of transition probabilities. This specification includes labor income in the month before the interview as an additional explanatory variable. Odds ratios reported. Values larger (smaller) than 1 indicate that a variable increases (decreases) the probability of the transition in comparison to remaining in the current state. Transitions from and to employer-entrepreneurship are shown in Table 7. The other independent variables are the same as in Table 4 but not shown for brevity. */**/***: Odds ratio significantly different from 1 at the 10%/5%/1% level based on cluster robust standard errors. Source: Authors' calculations based on SOEP, 2005-2016.

Table A4: Including work overload

	Entry into employer-entrep. from		Exit from employer-entrep. to		
	paid employm.	solo-entrep.	paid employm.	solo-entrep.	non-employment
work overload	2.7181***	2.2398***	0.7561	0.8646	0.4893
	(0.6205)	(0.3900)	(0.1917)	(0.1521)	(0.2169)
Other variables	Yes	Yes	Yes	Yes	Yes
N	41,586	2,488	2,456	2,456	2,456
Log-likelihood	-7,830	-1,529	-1,098	-1,098	-1,098

Notes: Competing risk models of transition probabilities. This specification includes work overload (more than 50 hours a week) as an additional explanatory variable. Odds ratios reported. Values larger (smaller) than 1 indicate that a variable increases (decreases) the probability of the transition in comparison to remaining in the current state. The remaining transitions are available from the authors on request. The other independent variables are the same as in Table 4 but not shown for brevity. */**/***: Odds ratio significantly different from 1 at the 10%/5%/1% level based on cluster robust standard errors. Source: Authors' calculations based on SOEP, 2005-2016 (with some variable values from 2003/04).

Table A5: Including previous self-employment or management experience

	Entry into employer-entrep. from			Exit from employer-entrep. to		
	paid employm.	solo-entrep.	non-employment	paid employm.	solo-entrep.	non-employment
self.-employment experience	12.1659***		16.0933***			
	(3.0357)		(9.3240)			
management experience	3.5418***	0.4031***	0.0000***	4.6595***	0.3858***	0.3944
	(0.8005)	(0.1114)	(0.0000)	(1.1545)	(0.1028)	(0.3419)
Other variables	Yes	Yes	Yes	Yes	Yes	Yes
N	38,186	2,378	5,838	2,399	2,399	2,399
Log-likelihood	-6,894	-1,451	-3,202	-1,042	-1,042	-1,042

Notes: Competing risk models of transition probabilities. This specification includes dummy variables indicating experience in self-employment or management in the previous five years as additional explanatory variables. Odds ratios reported. Values larger (smaller) than 1 indicate that a variable increases (decreases) the prob. of the transition in comparison to remaining in the current state. The remaining transitions are available from the authors on request. The other independent variables are the same as in Table 4 but not shown for brevity. */**/***: Odds ratio sign. different from 1 at the 10%/5%/1% level based on cluster robust std. errors. Source: Authors' calc. based on SOEP, 2005-16 (some var. from 2003/04).

Table A6: Accounting for potential endogeneity of education

	Entry into employer-entrep. from			Exit from employer-entrep. to		
	paid em-ploym.	solo-entrep.	non-em-ployment	paid em-ploym.	solo-entrep.	non-em-ployment
reduced form resid.	0.8067**	1.2143	1.4541**	1.0007	1.1929	1.0145
	(0.0839)	(0.1476)	(0.2613)	(0.0973)	(0.1691)	(0.1746)
female	0.3516***	0.6075***	0.3641*	1.5750*	0.8063	8.4388***
	(0.0796)	(0.1106)	(0.1904)	(0.4148)	(0.1714)	(4.2717)
education years	1.3266***	0.8286	0.6631**	1.0148	0.8326	0.7377**
	(0.1237)	(0.0977)	(0.1146)	(0.0737)	(0.1079)	(0.0929)
married	1.1354	1.2200	0.4097*	0.8796	1.1307	0.9223
	(0.2515)	(0.2299)	(0.2045)	(0.2232)	(0.2252)	(0.4092)
no. of children	0.9428	0.8163**	0.9919	1.1451	0.8101**	0.9994
	(0.0999)	(0.0837)	(0.2533)	(0.1508)	(0.0850)	(0.2474)
age	1.2204*	1.2888***	1.6093*	0.7833**	1.0399	0.9935
	(0.1259)	(0.1130)	(0.4045)	(0.0884)	(0.1095)	(0.2233)
age squared	0.9977*	0.9969***	0.9942*	1.0027**	0.9997	0.9999
	(0.0012)	(0.0010)	(0.0030)	(0.0013)	(0.0012)	(0.0027)
unemploym. exp.	0.7220**	0.7996**	0.7378***	1.0139	1.2004*	1.6469***
	(0.0923)	(0.0752)	(0.0819)	(0.1464)	(0.1208)	(0.2408)
disability degree	1.0052	1.0175	0.9884	1.0176***	0.9815**	0.9934
	(0.0088)	(0.0115)	(0.0133)	(0.0061)	(0.0085)	(0.0141)
father entrepreneur	1.5412*	1.5544**	3.5525*	0.4507**	1.0321	1.5312
	(0.3644)	(0.3343)	(2.3223)	(0.1600)	(0.2505)	(0.8887)
capital income	1.0050***	1.0006	1.0153***	1.0009	0.9981	1.0007
	(0.0015)	(0.0014)	(0.0049)	(0.0006)	(0.0036)	(0.0011)
openness	1.0580	0.9203	1.1120	1.0851	1.1821*	1.2032
	(0.1157)	(0.0861)	(0.2364)	(0.1313)	(0.1062)	(0.2464)
conscientiousness	1.1172	1.0229	0.7267	0.8676	0.8773	1.2297
	(0.1200)	(0.1062)	(0.1476)	(0.1171)	(0.0721)	(0.2907)
agreeableness	1.0298	1.0885	0.9162	1.0701	1.1641*	0.9547
	(0.0967)	(0.0911)	(0.2052)	(0.1332)	(0.1043)	(0.2037)
neuroticism	1.0102	1.1335	0.8472	1.0229	1.1264	0.7449
	(0.0954)	(0.0921)	(0.1552)	(0.1242)	(0.1027)	(0.1756)
risk tolerance	0.7542*	0.8538	0.8878	0.6923**	1.0147	1.3396
	(0.1199)	(0.1225)	(0.2318)	(0.1248)	(0.1369)	(0.4437)
risk tolerance sq.	1.0420***	1.0216	1.0154	1.0380**	0.9958	0.9829
	(0.0151)	(0.0133)	(0.0260)	(0.0166)	(0.0130)	(0.0303)
int. locus of control	0.9976	0.9996	1.3356	1.0569	0.8273**	0.6805
	(0.1087)	(0.0816)	(0.2712)	(0.1310)	(0.0714)	(0.1598)
trust	1.0640	1.1402	1.2800	1.2533*	1.0677	0.8012
	(0.1100)	(0.0959)	(0.3333)	(0.1477)	(0.1036)	(0.1786)
construction	2.6752***	1.0161		0.3470**	1.1665	0.9478
	(0.9283)	(0.3364)		(0.1783)	(0.3613)	(0.6743)
trade & hospitality	3.1495***	1.2973		0.6225	0.7666	1.0738
	(0.8247)	(0.3492)		(0.2231)	(0.2320)	(0.5664)
transport & commu-nication	0.9454	0.8402		0.6925	0.6635	1.3137
	(0.4539)	(0.3843)		(0.3894)	(0.4256)	(1.2573)
financial services	1.2984	1.2073		0.3904*	1.5080	0.3965
	(0.4520)	(0.3706)		(0.1875)	(0.5359)	(0.4189)
business services	1.2778	1.3767		0.5155*	1.5424	0.3533
	(0.4597)	(0.4441)		(0.1957)	(0.7191)	(0.3211)
public & pers. serv.	1.0257	0.9361		0.3834**	1.5090	0.4283
	(0.2861)	(0.2708)		(0.1475)	(0.5700)	(0.3473)
duration	0.7517***	0.7276***	0.5971***	0.7499***	0.7435***	0.7417***
	(0.0271)	(0.0301)	(0.0719)	(0.0396)	(0.0331)	(0.0714)
duration squared	1.0066***	1.0084***	1.0192***	1.0060***	1.0066***	1.0077**
	(0.0009)	(0.0013)	(0.0048)	(0.0017)	(0.0013)	(0.0033)
N	39,657	2,547	6,200	2,489	2,489	2,489
Log-likelihood	-7,547	-1,612	-3,544	-1,156	-1,156	-1,156

Notes: Competing risk models of transition probabilities. This specification accounts for potential endogeneity of education using a control function approach. The reduced form residuals are from a regression of education on the exogenous variables including father's and mother's secondary high school degree as instruments. Odds ratios reported. Values larger (smaller) than 1 indicate that a variable increases (decreases) the probability of the transition in comparison to remaining in the current state. The remaining transitions are shown in Table A7. Year dummies, migration background, the east dummy, and extraversion included but not shown for brevity. */**/***: Odds ratio significantly different from 1 at the 10%/5%/1% level based on cluster robust standard errors. Source: Authors' calculations based on SOEP, 2005-2016 (with some variable values from 2003/04).

Table A7: Accounting for potential endogeneity of education – remaining transition probabilities

	Entry into solo-entrepreneurship from		Exit from solo-entrepreneurship to		Transition from	
	paid employm.	non-employment	paid employm.	non-employment	non-empl. to paid employm.	paid empl. to non-employm.
reduced form resid.	0.6182***	0.7074***	0.8721	1.0121	1.0649*	0.9843
	(0.1103)	(0.0797)	(0.1009)	(0.1702)	(0.0402)	(0.0392)
female	0.9564	0.3402***	1.4411*	3.3877***	0.6261***	2.0684***
	(0.1740)	(0.0745)	(0.2801)	(0.9994)	(0.0565)	(0.1480)
education years	1.6255***	1.4248***	1.1705	0.9775	0.9690	0.9961
	(0.2887)	(0.1571)	(0.1320)	(0.1627)	(0.0323)	(0.0385)
married	1.1065	0.6954	1.1624	1.1475	0.9453	1.3406***
	(0.2062)	(0.1555)	(0.2262)	(0.3494)	(0.0816)	(0.0999)
no. of children	1.0793	0.9213	1.3239***	1.2886*	0.9577	0.8479***
	(0.1134)	(0.0868)	(0.1189)	(0.1968)	(0.0389)	(0.0372)
age	0.9187	1.3425***	0.8378**	0.8449	1.1854***	0.8385***
	(0.0758)	(0.1419)	(0.0718)	(0.1009)	(0.0396)	(0.0223)
age squared	1.0011	0.9963***	1.0018*	1.0020	0.9975***	1.0018***
	(0.0010)	(0.0012)	(0.0010)	(0.0014)	(0.0004)	(0.0003)
unemploym. exp.	1.1459*	0.9169*	1.0253	1.0528	0.9757	1.1868***
	(0.0853)	(0.0415)	(0.0551)	(0.0531)	(0.0146)	(0.0189)
migration backgr.	1.2298	0.6030*	1.0203	0.2646**	0.7766**	1.1767*
	(0.2740)	(0.1722)	(0.2612)	(0.1503)	(0.0791)	(0.1046)
disability degree	0.9982	0.9947	1.0235***	1.0083	0.9937**	1.0025
	(0.0068)	(0.0079)	(0.0079)	(0.0155)	(0.0031)	(0.0022)
east	0.5945**	1.0076	0.8105	0.8434	1.2862***	1.1370*
	(0.1454)	(0.2392)	(0.1907)	(0.2481)	(0.1112)	(0.0828)
father entrepreneur	1.2244	0.8285	0.8467	0.6450	1.0291	0.9251
	(0.3452)	(0.2645)	(0.2279)	(0.2696)	(0.1436)	(0.1100)
capital income	0.9936	0.9939	0.9997	0.9833**	0.9933	1.0010
	(0.0040)	(0.0054)	(0.0020)	(0.0082)	(0.0047)	(0.0016)
openness	1.3064**	1.3318***	0.8299*	0.9612	0.9852	1.1244***
	(0.1608)	(0.1449)	(0.0848)	(0.1340)	(0.0383)	(0.0388)
conscientiousness	1.0851	1.0144	1.0714	1.1500	1.1265***	1.0108
	(0.1022)	(0.1091)	(0.1148)	(0.1677)	(0.0432)	(0.0315)
agreeableness	0.9811	1.1690*	0.9808	1.2150	0.9646	0.9897
	(0.0807)	(0.1069)	(0.0857)	(0.1600)	(0.0370)	(0.0325)
neuroticism	1.0887	0.9728	0.9959	0.9929	0.9821	1.0880***
	(0.0882)	(0.1064)	(0.0875)	(0.1230)	(0.0370)	(0.0329)
risk tolerance	0.8920	1.0250	0.9794	1.0152	1.2159***	0.9567
	(0.1247)	(0.1519)	(0.1417)	(0.2104)	(0.0690)	(0.0436)
risk tolerance sq.	1.0248*	1.0128	1.0020	1.0100	0.9787***	1.0041
	(0.0135)	(0.0144)	(0.0143)	(0.0203)	(0.0061)	(0.0049)
int. locus of control	0.8227**	0.9581	0.8370**	0.8087*	0.9930	0.9346**
	(0.0698)	(0.0871)	(0.0759)	(0.0996)	(0.0370)	(0.0300)
construction	2.7544***		0.7864	0.5573		1.4194***
	(0.9905)		(0.3276)	(0.2869)		(0.1830)
trade & hospitality	1.8360**		1.0036	0.7114		1.1146
	(0.5384)		(0.3296)	(0.2882)		(0.0984)
business services	1.1592		0.6465	0.4760		0.8280
	(0.4339)		(0.2172)	(0.2377)		(0.1087)
public & pers. serv.	1.2835		0.6095*	0.5297*		0.8278**
	(0.3147)		(0.1766)	(0.2011)		(0.0675)
duration	0.7831***	0.7709***	0.8177***	0.7333***	0.6637***	0.8399***
	(0.0258)	(0.0482)	(0.0324)	(0.0463)	(0.0152)	(0.0098)
duration squared	1.0058***	1.0076**	1.0056***	1.0074***	1.0128***	1.0038***
	(0.0008)	(0.0037)	(0.0013)	(0.0018)	(0.0011)	(0.0003)
N	39,657	6,200	2,547	2,547	6,200	39,657
Log-likelihood	-7,547	-3,544	-1,612	-1,612	-3,544	-7,547

Notes: Competing risk models of transition probabilities. This specification accounts for potential endogeneity of education using a control function approach. The reduced form residuals are from a regression of education on the exogenous variables including father's and mother's secondary high school degrees as instruments. Odds ratios reported. Values larger (smaller) than 1 indicate that a variable increases (decreases) the probability of the transition in comparison to remaining in the current state. Transitions from and to employer-entrepreneurship are shown in Table A6. Year dummies, extraversion, trust and further industries included but not shown for brevity. */**/***: Odds ratio significantly different from 1 at the 10%/5%/1% level based on cluster robust standard errors. Source: Authors' calculations based on SOEP, 2005-2016 (with some variable values from 2003/04).

Table A8: Nonlinear education effects

	Entry into employer-entrep. from			Exit from employer-entrep. to		
	paid em-ploym.	solo-entrep.	non-em-ployment	paid em-ploym.	solo-entrep.	non-em-ployment
10.5y ≤ educ < 13y	0.7974	1.2630	0.4599	4.7298	0.9120	0.5632
	(0.3332)	(0.4214)	(0.2489)	(4.6744)	(0.4807)	(0.4070)
13y ≤ educ < 18y	0.9601	1.0439	0.9021	5.0942	1.1501	0.6605
	(0.4423)	(0.3646)	(0.5842)	(5.1036)	(0.6098)	(0.5229)
18y ≤ educ	1.8644	1.1282	0.1328*	5.1707	0.5604	0.0444**
	(0.8533)	(0.4161)	(0.1572)	(5.2975)	(0.3125)	(0.0574)
Other variables	Yes	Yes	Yes	Yes	Yes	Yes
N	42,051	2,698	6,616	2,622	2,622	2,622
Log-likelihood	-8,024	-1,698	-3,759	-1,186	-1,186	-1,186

Notes: Competing risk models of transition probabilities. This specification includes dummy variables indicating years of education. Odds ratios reported. Values larger (smaller) than 1 indicate that a variable increases (decreases) the probability of the transition in comparison to remaining in the current state. The remaining transitions are available from the authors on request. The other independent variables are the same as in Table 4 but not shown for brevity. */**/***: Odds ratio significantly different from 1 at the 10%/5%/1% level based on cluster robust standard errors. Source: Authors' calculations based on SOEP, 2005-2016 (with some variable values from 2003/04).

Table A9: Accounting for unobserved heterogeneity

	Entry into employer-entrep. from			Exit from employer-entrep. to		
	paid em-ploym.	solo-entrep.	non-em-ployment	paid em-ploym.	solo-entrep.	non-em-ployment
female	0.3437***	0.4955***	0.3447**	1.5371*	0.7335	7.8809***
	(0.0765)	(0.1180)	(0.1786)	(0.4000)	(0.1900)	(3.6716)
education years	1.1153**	0.9807	0.9323	1.0196	0.9307*	0.7740***
	(0.0489)	(0.0385)	(0.0829)	(0.0410)	(0.0388)	(0.0685)
married	1.2303	1.3047	0.4331*	0.9420	1.1710	1.1978
	(0.2686)	(0.3159)	(0.2162)	(0.2283)	(0.2889)	(0.5143)
no. of children	0.8864	0.8231	0.9322	1.1242	0.7918**	1.0045
	(0.1028)	(0.0997)	(0.2292)	(0.1464)	(0.0922)	(0.2433)
age	1.2576**	1.3673***	1.5108*	0.7731**	1.0115	0.9537
	(0.1335)	(0.1512)	(0.3779)	(0.0871)	(0.1286)	(0.2025)
age squared	0.9973**	0.9961***	0.9948*	1.0029**	0.9999	1.0003
	(0.0013)	(0.0013)	(0.0030)	(0.0013)	(0.0014)	(0.0026)
unemploym. exp.	0.7438***	0.7545***	0.7674***	0.9778	1.2294	1.5979***
	(0.0742)	(0.0786)	(0.0783)	(0.1490)	(0.1560)	(0.2472)
migration backgr.	0.7675	0.7422	1.7704	0.5758	0.5264*	0.7944
	(0.2408)	(0.2424)	(0.8449)	(0.2088)	(0.2021)	(0.4692)
disability degree	0.9964	1.0282**	0.9892	1.0163***	0.9768**	0.9933
	(0.0091)	(0.0137)	(0.0153)	(0.0060)	(0.0103)	(0.0137)
east	0.9317	1.1199	0.8121	0.6328	0.6419*	0.4466
	(0.2164)	(0.2781)	(0.4779)	(0.1778)	(0.1702)	(0.2684)
father entrepreneur	1.8894**	1.3838	3.0762*	0.4513**	0.9992	1.0437
	(0.4886)	(0.3937)	(1.7664)	(0.1598)	(0.2850)	(0.6352)
capital income	1.0075***	1.0010	1.0115**	1.0010*	0.9985	1.0009
	(0.0017)	(0.0022)	(0.0058)	(0.0006)	(0.0038)	(0.0010)
conscientiousness	1.1374	1.1981*	0.8443	0.8225	0.8309*	1.2116
	(0.1237)	(0.1233)	(0.1935)	(0.1068)	(0.0836)	(0.2822)
agreeableness	1.0551	0.9468	0.8688	1.1202	1.2719**	0.9938
	(0.1043)	(0.0931)	(0.1842)	(0.1375)	(0.1344)	(0.2028)
neuroticism	1.0071	1.0880	0.8773	1.0714	1.0917	0.7736
	(0.0949)	(0.1086)	(0.1708)	(0.1253)	(0.1163)	(0.1868)
risk tolerance	0.7809	0.8973	0.9119	0.6823**	1.0813	1.5899
	(0.1248)	(0.1524)	(0.2470)	(0.1211)	(0.1693)	(0.5487)
risk tolerance sq.	1.0399***	1.0203	1.0176	1.0416***	0.9908	0.9694
	(0.0154)	(0.0160)	(0.0273)	(0.0162)	(0.0142)	(0.0314)
int. locus of control	1.0213	0.9732	1.3069	1.0632	0.7594**	0.6828*
	(0.1104)	(0.0996)	(0.2803)	(0.1275)	(0.0833)	(0.1566)
trust	1.2057*	1.0834	1.2164	1.2121*	1.0247	0.8069
	(0.1188)	(0.1068)	(0.3018)	(0.1354)	(0.0980)	(0.1725)
construction	2.8936***	1.6401		0.3664**	1.3494	0.7641
	(1.0253)	(0.6637)		(0.1781)	(0.5145)	(0.5790)
trade & hospitality	3.0122***	1.2866		0.6483	1.0150	0.9813
	(0.8245)	(0.4302)		(0.2323)	(0.3607)	(0.5133)
transport & commu-nication	0.8979	0.5610		0.7187	0.8205	1.3030
	(0.4565)	(0.3812)		(0.3996)	(0.6155)	(1.2177)
financial services	1.5624	1.2149		0.3986*	1.5513	0.8619
	(0.5857)	(0.5146)		(0.1917)	(0.7124)	(0.7016)
business services	1.8547*	1.0597		0.5285*	1.2345	0.3178
	(0.6099)	(0.3470)		(0.1890)	(0.4740)	(0.2372)
public & pers. serv.	1.2884	0.7607		0.3966***	1.4214	0.4103
	(0.3526)	(0.2499)		(0.1417)	(0.5168)	(0.3034)
duration	0.7580***	0.7855***	0.6393***	0.7404***	0.7709***	0.7470***
	(0.0267)	(0.0434)	(0.0778)	(0.0386)	(0.0354)	(0.0704)
duration squared	1.0061***	1.0060***	1.0174***	1.0062***	1.0054***	1.0076**
	(0.0010)	(0.0018)	(0.0051)	(0.0016)	(0.0014)	(0.0032)
Variance of latent ability	9.0692***	9.0692***	9.0692***		6.3913***	
	(4.6207)	(4.6207)	(4.6207)		(2.0856)	

Notes: Jointly estimated competing risk models of transition probabilities. The model accounts for two types of latent entrepreneurial ability for solo-entrepreneurship and employer-entrepreneurship with estimated covariance 0.7731 (std.-err.: 0.1821). N=53,987. Log-likelihood=-14,643. Odds ratios reported. Values larger (smaller) than 1 indicate that a variable increases (decreases) the probability of the transition in comparison to remaining in the current state. The remaining transitions are shown in Table A10. Year dummies, openness and extraversion included but not shown for brevity. */**/***: Odds ratio significantly different from 1 at the 10%/5%/1% level based on cluster robust standard errors. Source: Authors' calculations based on SOEP, 2005-2016 (with some variable values from 2003/04).

Table A10: Accounting for unobserved heterogeneity – remaining transition probabilities

	Entry into solo-entrepreneurship from		Exit from solo-entrepreneurship to		Transition from	
	paid employm.	non-employment	paid employm.	non-employment	non-empl. to paid employm.	paid empl. to non-employm.
female	0.8159	0.3092***	1.3464	3.1462***	0.6470***	2.0017***
	(0.1527)	(0.0778)	(0.2646)	(0.8329)	(0.0563)	(0.1344)
education years	1.0906***	1.1292***	1.0181	0.9831	1.0187	0.9801
	(0.0353)	(0.0487)	(0.0312)	(0.0455)	(0.0147)	(0.0125)
married	0.9914	0.7028	1.1974	1.1709	0.9354	1.3236***
	(0.1870)	(0.1688)	(0.2180)	(0.3286)	(0.0777)	(0.0938)
no. of children	1.1525	0.9114	1.2667***	1.3264*	0.9326*	0.8441***
	(0.1187)	(0.0955)	(0.1108)	(0.1936)	(0.0366)	(0.0352)
age	0.9713	1.5471***	0.8416**	0.8427	1.1769***	0.8408***
	(0.0810)	(0.1685)	(0.0702)	(0.0985)	(0.0372)	(0.0212)
age squared	1.0005	0.9946***	1.0017*	1.0021	0.9975***	1.0018***
	(0.0010)	(0.0013)	(0.0010)	(0.0013)	(0.0004)	(0.0003)
unemploym. exp.	1.0438	0.8819***	1.0556	1.0521	0.9727**	1.1750***
	(0.0629)	(0.0420)	(0.0473)	(0.0468)	(0.0134)	(0.0148)
migration backgr.	1.1521	0.5554*	0.9930	0.2375**	0.7892**	1.1970**
	(0.2751)	(0.1807)	(0.2410)	(0.1339)	(0.0772)	(0.1007)
disability degree	0.9937	0.9894	1.0239***	1.0088	0.9943*	1.0023
	(0.0076)	(0.0085)	(0.0079)	(0.0138)	(0.0030)	(0.0021)
east	0.8088	1.3120	0.7283	0.7970	1.3063***	1.1338*
	(0.1747)	(0.3446)	(0.1656)	(0.2185)	(0.1095)	(0.0740)
father entrepreneur	1.7973**	1.1451	0.9220	0.6311	1.0364	0.9299
	(0.4330)	(0.4010)	(0.2218)	(0.2482)	(0.1368)	(0.1032)
capital income	0.9986	0.9943	1.0000	0.9876*	0.9918*	1.0012
	(0.0033)	(0.0076)	(0.0021)	(0.0067)	(0.0049)	(0.0016)
openness	1.5380***	1.5216***	0.8536*	0.9354	0.9677	1.1051***
	(0.1508)	(0.1821)	(0.0800)	(0.1177)	(0.0357)	(0.0345)
conscientiousness	0.9781	0.9557	0.9826	1.1313	1.1368***	1.0078
	(0.0844)	(0.1028)	(0.0817)	(0.1283)	(0.0420)	(0.0291)
neuroticism	1.0609	0.9697	0.9862	0.9465	0.9873	1.0832***
	(0.0908)	(0.1081)	(0.0827)	(0.1108)	(0.0359)	(0.0318)
risk tolerance	0.9150	1.0377	0.8622	0.9858	1.1998***	0.9762
	(0.1303)	(0.1696)	(0.1146)	(0.1908)	(0.0648)	(0.0430)
risk tolerance sq.	1.0227*	1.0116	1.0136	1.0117	0.9809***	1.0022
	(0.0138)	(0.0157)	(0.0133)	(0.0185)	(0.0058)	(0.0047)
int. locus of control	0.9064	1.0230	0.8578*	0.8051*	0.9900	0.9345**
	(0.0797)	(0.1082)	(0.0755)	(0.0943)	(0.0352)	(0.0284)
trust	1.1101	1.0509	0.9105	0.7719**	1.0453	0.9733
	(0.0991)	(0.1131)	(0.0687)	(0.0844)	(0.0383)	(0.0286)
construction	2.2934**		0.8029	0.4950	0.6717***	1.4043***
	(0.8152)		(0.3192)	(0.2465)	(0.0147)	(0.1729)
trade & hospitality	1.5188		1.0510	0.7298	1.0125***	1.1274
	(0.4290)		(0.3338)	(0.2878)	(0.0011)	(0.0937)
financial services	2.0853**		0.6465	1.3478		1.1235
	(0.7597)		(0.2706)	(0.6133)		(0.1391)
business services	2.1766***		0.8557	0.4538**		0.8259*
	(0.5933)		(0.2463)	(0.1787)		(0.0956)
public & pers. serv.	1.7279**		0.7959	0.5294**		0.8480**
	(0.3972)		(0.2049)	(0.1622)		(0.0638)
duration	0.7733***	0.7797***	0.8038***	0.7304***		0.8405***
	(0.0252)	(0.0575)	(0.0305)	(0.0444)		(0.0094)
duration squared	1.0056***	1.0066	1.0059***	1.0073***		1.0037***
	(0.0009)	(0.0046)	(0.0012)	(0.0018)		(0.0003)
Variance of latent ability	6.3913***	6.3913***				
	(2.0856)	(2.0856)				

Notes: Jointly estimated competing risk models of transition probabilities. The model accounts for two types of latent entrepreneurial ability for solo-entrepreneurship and employer-entrepreneurship with estimated covariance 0.7731 (std.-err.: 0.1821). N=53,987. Log-likelihood=-14,643. Odds ratios reported. Values larger (smaller) than 1 indicate that a variable increases (decreases) the probability of the transition in comparison to remaining in the current state. Transitions from and to employer-entrepreneurship are shown in Table A9. Year dummies, extraversion and agreeableness included but not shown for brevity. */**/***: Odds ratio significantly different from 1 at the 10%/5%/1% level based on cluster robust standard errors. Source: Authors' calculations based on SOEP, 2005-2016 (with some variable values from 2003/04).

Table A11: Personality dummy variables

	Entry into employer-entrep. from			Exit from employer-entrep. to		
	paid em-ploym.	solo-entrep.	non-em-ployment	paid em-ploym.	solo-entrep.	non-em-ployment
female	0.3598***	0.5686***	0.3661**	1.6840**	0.8564	8.6136***
	(0.0747)	(0.1014)	(0.1842)	(0.4257)	(0.1744)	(4.0469)
education years	1.1151***	0.9871	0.9357	1.0218	0.9491	0.7681***
	(0.0438)	(0.0288)	(0.0901)	(0.0423)	(0.0319)	(0.0670)
married	1.1486	1.3510*	0.4273*	0.9543	1.2286	1.2046
	(0.2479)	(0.2451)	(0.1963)	(0.2355)	(0.2328)	(0.5544)
no. of children	0.9296	0.8299*	0.9711	1.1398	0.8108**	0.9730
	(0.0984)	(0.0843)	(0.2242)	(0.1456)	(0.0798)	(0.2517)
age	1.2310**	1.2603***	1.4381	0.7627**	1.0624	0.9638
	(0.1199)	(0.1094)	(0.3569)	(0.0842)	(0.1105)	(0.2051)
age squared	0.9976**	0.9971***	0.9953	1.0030**	0.9994	1.0002
	(0.0012)	(0.0010)	(0.0030)	(0.0013)	(0.0012)	(0.0026)
unemploym. exp.	0.7115***	0.8133**	0.7734**	0.9660	1.1969*	1.5565***
	(0.0826)	(0.0688)	(0.0787)	(0.1477)	(0.1103)	(0.2390)
migration backgr.	0.7109	0.9783	1.5772	0.5723	0.6562	0.8014
	(0.2108)	(0.2422)	(0.7325)	(0.2043)	(0.2027)	(0.4794)
disability degree	1.0017	1.0189*	0.9900	1.0158***	0.9800**	0.9953
	(0.0087)	(0.0116)	(0.0140)	(0.0059)	(0.0092)	(0.0147)
east	0.9164	1.0954	0.9558	0.6195*	0.6700*	0.4156
	(0.1978)	(0.2071)	(0.5760)	(0.1803)	(0.1397)	(0.2610)
father entrepreneur	1.7328**	1.3522	2.5060*	0.4522**	0.9523	0.8429
	(0.4002)	(0.2790)	(1.3911)	(0.1589)	(0.2237)	(0.5431)
capital income	1.0069***	1.0009	1.0111**	1.0010*	0.9979	1.0007
	(0.0011)	(0.0013)	(0.0046)	(0.0006)	(0.0036)	(0.0011)
openness dum.	1.0001	0.7385*	0.9143	1.2517	1.4166*	1.2499
	(0.1893)	(0.1300)	(0.3699)	(0.3182)	(0.2784)	(0.4894)
conscientiousness dum.	1.1819	1.2998*	1.2613	0.5883**	0.7565	2.1426
	(0.2237)	(0.2038)	(0.5774)	(0.1361)	(0.1307)	(1.1118)
Extraversion dum.	1.0399	1.1524	1.2690	0.7682	1.0646	0.7311
	(0.1806)	(0.1870)	(0.4654)	(0.1690)	(0.1787)	(0.2678)
agreeableness dum.	1.0318	0.9683	0.4652*	1.2572	1.1270	0.6956
	(0.1828)	(0.1458)	(0.2021)	(0.3027)	(0.1868)	(0.2368)
neuroticism dum.	1.0588	1.2878	0.7984	0.8321	1.2820	0.5578
	(0.1922)	(0.2033)	(0.3492)	(0.1896)	(0.2142)	(0.2368)
risk tolerance	0.7934	0.8777	0.9096	0.6753**	0.9884	1.5483
	(0.1221)	(0.1221)	(0.2362)	(0.1199)	(0.1304)	(0.5227)
risk tolerance sq.	1.0396***	1.0194	1.0168	1.0429***	0.9995	0.9714
	(0.0143)	(0.0129)	(0.0258)	(0.0163)	(0.0126)	(0.0300)
int. locus of control dum.	0.9671	0.9647	1.6731	1.1687	0.6562***	0.6599
	(0.1667)	(0.1453)	(0.6795)	(0.2656)	(0.1067)	(0.2575)
trust dum.	1.3681	1.3652*	1.8760	1.2019	0.9709	1.1735
	(0.2744)	(0.2354)	(0.9021)	(0.2788)	(0.1643)	(0.4858)
construction	2.6990***	1.2608		0.3847*	1.0939	0.8338
	(0.8829)	(0.3950)		(0.1895)	(0.3312)	(0.6255)
trade & hospitality	2.9847***	1.3289		0.6493	0.8723	1.0351
	(0.7840)	(0.3448)		(0.2303)	(0.2506)	(0.5221)
transport & communication	0.9150	0.7779		0.7330	0.7049	1.3409
	(0.4418)	(0.3387)		(0.3936)	(0.4592)	(1.2531)
financial services	1.5783	1.1003		0.4088*	1.4275	0.7332
	(0.5386)	(0.3328)		(0.2010)	(0.4896)	(0.5610)
business services	1.7735*	1.0368		0.5335*	1.0280	0.3164
	(0.5481)	(0.2632)		(0.1914)	(0.3121)	(0.2438)
public & pers. serv.	1.3045	0.7837		0.3703***	1.1843	0.4123
	(0.3394)	(0.2036)		(0.1321)	(0.3391)	(0.3065)
duration	0.7455***	0.7314***	0.6412***	0.7408***	0.7326***	0.7359***
	(0.0263)	(0.0288)	(0.0751)	(0.0390)	(0.0297)	(0.0701)
duration squared	1.0065***	1.0084***	1.0171***	1.0062***	1.0070***	1.0080***
	(0.0009)	(0.0013)	(0.0048)	(0.0016)	(0.0011)	(0.0031)
N	42,051	2,698	6,616	2,622	2,622	2,622
Log-likelihood	-8,043	-1,698	-3,773	-1,194	-1,194	-1,194

Notes: Competing risk models of transition probabilities. This specification reduces the personality variables (except risk tolerance and its square) to dummy variables that are 1 if a score is larger than (or equal to) the sample median and 0 otherwise. Odds ratios reported. Values larger (smaller) than 1 indicate that a variable increases (decreases) the probability of the transition in comparison to remaining in the current state. The remaining transitions are available from the authors on request. Year dummies included but not shown for brevity. */**/***: Odds ratio significantly different from 1 at the 10%/5%/1% level based on cluster robust standard errors. Source: Authors' calculations based on SOEP, 2005-2016 (with some variable values from 2003/04).