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How Does Firm Survival Differ between Business Takeovers and New Venture Start-ups?

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ABSTRACT

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Focusing on entrepreneurship entry modes, we investigate two research questions regarding firm survival: how does the survival probability differ between business takeovers and new venture start-ups? And how do the determinants of survival differ between the two entry modes? Using a large French dataset, we find that business takeovers have a higher survival chance than new venture start-ups. Yet, the differences between two entry modes partially disappear when controlling for differences in founder and firm characteristics. Moreover, we identify differences in the determinants of survival between the two groups, highlighting the distinction between the two forms of entrepreneurship.

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1. Introduction

Acquiring an existing business or creating a new one are two different entry modes of entrepreneurship (Parker and Van Praag, 2012). The latter has been treated as the common interpretation of "entrepreneurship", as substantiated by a significant amount of literature focusing on new venture start-ups, while the former is regarded as a less entrepreneurial and risky form of entrepreneurship (Cooper *et al*., 1994). The takeover entry mode is regarded as less hazardous than the new venture entry mode because acquired firms have already established infrastructures and systems, such as employees, products and customer base (Dyke *et al*., 1992; Shepherd *et al*., 2000), whereas new venture start-ups suffer from liability of newness that can increase their risk of failure (Aldrich and Auster, 1986; Bates, 1990). Our study recognizes the differences between these two types of entry modes, and investigates their survival probabilities as well as their respective determinants of survival.

The firm survival literature explains firm survival using three main factors, viz., the entrepreneurs' characteristics, firm structure and strategy, and industry factors (Aldrich and Auster, 1986; Bates, 1990; Bosma *et al*., 2004; Brüderl *et al*., 1992; Cooper *et al*., 1994; Duchesneau and Gartner, 1990; Elfenbein *et al*., 2010; Ganotakis, 2012; Gimeno *et al*., 1997; Santarelli and Vivarelli, 2007; Shepherd *et al*., 2000; Stearns *et al*., 1995; Stuart and Abetti, 1990; Stucki, 2014; Vivarelli, 2013. So far, little is known, how new venture start-up and business takeover as two distinguished entry paths into entrepreneurship differ in firm survival. This is an important oversight from both a practical and theoretical perspective. First, knowledge about the two entry modes may help setting up differentiated public and private aid programs for both (Audretsch and Thurik, 2001). Second, it may help increase the explanatory power of survival models (Grilo and Thurik, 2008).

Our study investigates two research questions linking firm survival and entrepreneurship entry modes. *First*, how the survival probability differs between business takeovers and new venture start-ups. *Second*, how individual-level and firm-level characteristics affect the

survival rates of business takeovers and new venture start-ups. In other words, how do the survival determinants, at individual- and firm-level, differ between business takeovers and new venture start-ups.

In order to answer these questions, we analyze a large sample of business takeovers and new ventures start-ups over an observation period of 68 months. With respect to our first research question, we find that business takeovers survive longer than new venture start-ups, which corroborates previous findings from Bates (1990) and Dyke *et al*. (1992). However, if we create matched samples and control for differences in founder- and firm-level characteristics between the two groups by using propensity score matching, the differences in their survival rates partially disappear.

In a next step, we contrast the survival determinants of new venture start-ups with those of business takeovers, and find that most factors affect the survival rate of both groups in a similar way. However, some differences remain. For instance, we find that entrepreneurs' small firm work experience and entrepreneurial motivation influence new venture start-ups' survival chances; however, for takeovers, these factors do not matter. Moreover, we find a negative association of public aids with business takeovers' survival chances, while this association does not exist for new venture start-ups.

Our study contributes to the literature on firm survival (Aldrich and Auster, 1986; Bates, 1990; Brüderl *et al*., 1992; Cooper *et al*., 1994; Duchesneau and Gartner, 1990; Elfenbein *et al*., 2010; Gimeno *et al*., 1997; Santarelli and Vivarelli, 2007; Shepherd *et al*., 2000; Stucki, 2014; Vivarelli, 2013) by pointing out that new venture start-ups and takeovers are two distinguished entrepreneurship paths in terms of their survival chances and survival determinants. Our paper also adds to the small but growing literature on new venture start-up versus business takeover (Bastié *et al*., 2013; Block *et al*., 2013; Cooper and Dunkelberg, 1986; Kay and Schlömer-Laufen, 2016; Parker and Van Praag, 2012). Finally, we also add to the literature on small firm effects (Elfenbein *et al*., 2010; Gompers *et al*., 2005) as well as to the literature on entrepreneurial motivation and how it impacts firm survival (Baptista *et al*., 2014; Block and Sandner, 2009; Block and Wagner, 2010), as we show that the impact of small firm experience and entrepreneurial motivation on firm survival differs across the two entrepreneurship entry modes.

The remainder of the article is structured as follows. Section 2 summarizes the literature on new venture start versus business takeover. Section 3 and 4 introduce our data source, sample, variables, and methods. Section 5 presents our results which are discussed in Section 6.

2. Literature review

Cooper and Dunkelberg's (1986) study about the path to entrepreneurship distinguishes between four modes of entry into entrepreneurship: starting a new firm, inheriting a (family) firm, acquiring an outside firm (e.g., through a management buy-in), and acquiring one's former employer (e.g., through an employee buyout). Family firm takeover and employee buyout are restricted to family members and internal employees, while outside business takeover and new venture start-up are the two most common entry modes for outsiders.

New venture start-ups differ from takeover firms with respect to risk of failure, initial financial capital, and founders' profiles. First, business takeovers are often less risky than new venture start-ups (Bastié *et al*., 2013; Block *et al*., 2013; Parker and Van Praag, 2012). New entrants in the market face uncertainties resulted from entry barrier, competition, and regulatory rules, which may jeopardize their existence and force them to drop out (Bates, 1990). Parker and Van Praag (2012) show that new venture start-ups have a greater standard deviation of revenue than business takeovers, substantiating that the former are more volatile than the latter. In this regard, business takeovers are oftentimes more attractive to investors and banks than are new venture start-ups. Bastié *et al*. (2013) find that takeovers receive more loans from the bank than new venture start-ups, as an existing business has a contractible credit history and a record of operation which make them more reliable and trustworthy than newly founded firms.

Second, business takeovers are on average more costly than new venture start-ups, as is shown by Parker and Van Praag (2012), who find that the former have a higher industry entry cost than the latter. The cost of purchasing an existing firm not only covers its assets and establishments, such as production lines and distribution channels, but also includes its stakeholder networks with suppliers and customers that are accumulated through previous operations and will facilitate the further development of the acquired firms (Bastié *et al*.,

2013). Therefore, the average start-up capital required for entrepreneurship is likely to be higher for business takeovers than for new venture start-ups.

Third, business acquirers and new venture starters are different with respect to their characteristics, experience, and socio-demographic factors. The more entrepreneurial entry mode, i.e., new venture start-up, is preferred by higher educated people (Bastié *et al*., 2013; Block *et al*., 2013; Parker and Van Praag, 2012), persons with industry experience (Bastié *et al*., 2013), and female (Bastié *et al*., 2013; Kay and Schlömer-Laufen, 2016), while management experience (Bastié *et al*., 2013; Parker and Van Praag, 2012) and the entrepreneurs' age (Block *et al*., 2013) are positively related to the takeover entry mode. Moreover, country-level characteristics can also influence individual preference for entry modes. Block *et al*. (2013) find that in countries with a higher innovation level, greater administrative burden, and easier access to bank loans, individuals prefer business takeover to new venture start-up. In contrast, in countries with a higher risk tolerance level, individuals are more likely to opt for new venture start-up.

3. Data source and sample

As data source, we use the French data set SINE (*Système d'Information sur les Nouvelles Entreprises*) which contains information about entrepreneurs and their firms. It is created and maintained by the French institute INSEE (*Institut National de la Statistique et des Études Économiques)*. In September 2002, INSEE sent a questionnaire to entrepreneurs of all new venture start-ups and business takeovers occurring in the first half of 2002 in France, and asked the respondents to report about themselves and their firms. Two follow-up surveys were sent out in September 2005 and September 2007. Because the survey was mandatory, the response rate was very high (92,966 out of 100,731 firms contacted). Such a broad coverage of new venture start-ups and business takeovers increases credibility and generalizability of our empirical findings.

According to INSEE, a new venture start-up is defined as the creation of a new legal entity that is attributed to a new nine-digit registration number, while business takeover refers to cases in which an entrepreneur takes over an outside venture.[1]

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[1] The SINE dataset includes three types of business takeovers: family firm takeovers, management buyouts and outside takeovers. The first two types of takeovers are excluded from our analysis because they are

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Our estimation sample consists of 34,872 entrepreneurs, among which 3,758 (10.78%) chose to take over an existing firm, and 31,114 (89.22%) chose to start a new venture from scratch. The estimation sample does not include individuals who did not work as employees prior to entrepreneurship, such as former self-employed individuals, students, homemakers, and long-time unemployed individuals.

4. Methods and variables

4.1 Propensity score matching

Our analysis is aimed at comparing the survival chances and determinants of new venture start-ups with the survival chances and determinants of business takeovers. While our dependent variable *survival months* is a firm level variable, we investigate as determinants of firm survival both individual and firm level variables. Takeovers account for about one tenth of all firms in the SINE data set. As entrepreneurs may not be randomly assigned to new venture start-ups and takeovers, a direct comparison between takeovers and new venture start-ups may yield an estimation bias. For instance, prior studies show that industry experience, management experience and start-up capital play an important role in an individual's entrepreneurship entry mode choice (Bastié *et al.*, 2013; Block *et al.*, 2013; Kay and Schlömer-Laufen, 2016; Parker and Van Praag, 2012). To reduce such a potential bias, we implement a propensity score matching approach to construct a subsample of new venture creators that are similar to business acquirers in terms of individual and firm level characteristics (Becker and Ichino, 2002; Caliendo and Kopeinig, 2008).

In the work of Rosenbaum and Rubin (1983), propensity score is defined as "the conditional probability of assignment to a particular treatment given a vector of observed covariates" (p.41). The propensity score measures the propensity of observing an event conditioning on all relevant factors that may influence the occurrence of that event. In other words, it measures the likelihood of an event that could have happened (but never did) when taking into account all possible factors that may impact its appearance. In our case, we consider all factors that may affect an individual's entrepreneurship entry mode choice across new venture start-up and business takeover. Drawing on previous literature about entry mode

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unavailable for non-family members and outside employees respectively (Bastié *et al.*, 2013; Parker and Van Praag, 2012).

choice, we conduct a logit regression using the full SINE sample, with the dependent variable equaling one if an entrepreneur chooses business takeover, and zero if s/he chooses new venture start-up. Using the regression results, propensity scores are predicted. A high propensity score assigned to a new venture creator implies that the entrepreneur had a strong likelihood of choosing takeover as his/her entrepreneurship entry mode, but, in fact, s/he chose to start a new firm from scratch. Because we need new venture creators to be as similar to business acquirers as possible, we select those 3,758 new venture creators with the highest propensity scores from the SINE sample. This way, we obtain two equally sized samples of new venture start-ups and takeovers for further analysis.

4.2 Cox proportional hazards model

The Cox proportional hazards model (Cox, 1972) has an advantage over simple logit regression because it is able to deal with right-censored observations, i.e., firms that were still operating at the end of the observation period. Cox regression was initially used in biometrics research, but was later applied in the management field to study firm survival (Agarwal and Audretsch, 2001; Audretsch and Mahmood, 1995; Taylor, 1999). We use the Cox proportional hazards model to analyze the survival determinants of new venture start-ups and business takeovers:

$$h_j(t) = h_0(t) \exp(\beta_1 x_{j1} + \beta_2 x_{j2} + \cdots + \beta_k x_{jk}),$$

where $h_j(t)$, representing the hazard rate of firm j at time t, is a function of the baseline hazard $h_0(t)$ and a vector of independent variables $x_{j1}, ..., x_{jk}$. $h_0(t)$ refers to the hazard rate if all independent variables are equal to one; $x_{j1}, ..., x_{jk}$ are k covariates that measure an entrepreneur's individual characteristics and a firm's characteristics.

4.3 Variables

4.3.1 Dependent variable

<u>Survival months:</u> We define a firm's survival time as the number of months between its creation or acquisition and its cessation. In our sample, all firms were either founded or acquired between January and June 2002. Since the third (and final) wave of the survey was conducted in September 2007, the survival months of new venture start-ups and takeovers

are between 1 month and 68 months. [2] The data is right-censored, as many firms were still alive when the last survey was conducted.

4.3.2 Independent variables

Work experience: An entrepreneur's previous work experience is measured in three dimensions. First, work experience from large versus small firms is assumed to influence firm survival (Elfenbein *et al*., 2010; Stuart and Abetti, 1990; Sørensen and Phillips, 2011). In our analysis, three categorical variables, *small*, *medium* and *large firm experience,* are coded to measure the entrepreneur's principal work experience acquired through working in firms with less than 49 employees, between 50 and 249 employees, and more than 250 employees, respectively (Klapper and Richmond, 2011). Second, an entrepreneur's management experience is assumed to influence firm survival (Duchesneau and Gartner, 1990; Dyke *et al*., 1992; Ganotakis, 2012). We code *management experience* as one if the entrepreneur reports to be a former CEO or a senior manager; otherwise, the dummy variable equals zero. Third, an entrepreneur's industry experience is assumed to play a vital role in discovering and exploiting attractive market opportunities and prolong its survival time (Bosma *et al*., 2004; Boyer and Blazy, 2014; Gimeno *et al*., 1997; Roberts *et al*., 2011). The variable *same sector experience* measures whether the entrepreneur has worked in the same business sector prior to his/her move to entrepreneurship.

Educational attainment: The entrepreneur's educational level is assumed to be positively linked to the new venture's survival time (Bates, 1990; Boyer and Blazy, 2014). We include four dummy variables to measure the entrepreneur's highest educational degree preceding entrepreneurship (*no diploma*, *lower than A-level diploma*, *A-level diploma*, *A-level plus two years education*, *A-level plus over two years education*). Moreover, a dummy variable *entrepreneurial training* is included to measure whether an individual has received entrepreneurial training before s/he enters into entrepreneurship.

Entrepreneurial motivation: First, we add a variable *full-time entrepreneurship* to measure the entrepreneur's devotion of time to his or her start-up or business takeover (Folta

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[2] Unfortunately, due to authorization limits we are unable to track the ownership change of new venture start-ups or takeovers during the observation period. Neither do we know whether the firm exits because of liquidation or individual reasons. We stress this as a limitation in the last section of the paper.

et al., 2010; Raffiee and Feng, 2014; Schulz *et al.*, 2016). This dummy variable equals one if an entrepreneur claims not to be involved in any other business activities in addition to their his/her entrepreneurial projects; it equals zero if the entrepreneur is a part-time or hybrid entrepreneur (Folta *et al.*, 2010). Second, *opportunity entrepreneurship* is equal to one if an individual chooses entrepreneurship because s/he has a new business idea or discovers a business opportunity; *necessity entrepreneurship* refers to individuals who report that they are pushed into entrepreneurship; *mixed motivation* pertains to individuals who feel constrained, but proactively choose entrepreneurship. Third, *growth ambition* measures whether the entrepreneur pursues growth for his or her firm, and *long-term orientation* refers to the entrepreneur's long-term planning for the firm.

Support for entrepreneur: Because entrepreneurial knowledge and experience can be transferred within a close relational circle, entrepreneurs with self-employed parents are assumed to be more likely to succeed than those without self-employed parents (Cooper *et al.*, 1994; de Jong and Marsili, 2015; Duchesneau and Gartner, 1990). Moreover, entrepreneurs may have received financial support such as social benefit before starting their business. Furthermore, one-person firms may face higher mortality risks than firms with multiple founders (Boyer and Blazy, 2014; Duchesneau and Gartner, 1990). We capture these three types of support for entrepreneurs by incorporating three dummy variables into the model: *entrepreneurs in close relational circle, received social benefit* and *solo entrepreneurship*.

Socio-demographic status: Using the SINE data collected in 1998, Boyer and Blazy (2014) find a postive relationship between new ventures' survival time and entrepreneurs' age, but a negative association between survival and non-EU citizenship. We include the entrepreneur's *age*, *gender* and *citizenship* in the model to analyze the entrepreneur's socio-demographic impacts on firm survival.

Firm characteristics: Drawing from the literature that shows innovative start-ups are more risky than non-innovative start-ups (Boyer and Blazy, 2014), we consider three types of innovation that may affect firm survival: *product innovation, process innovation* and *organizational innovation*. Moreover, a new firm's financial structure and financial constraints which are measured by its *amount of start-up capital, received public aid* and

percentage of self-funding, are taken into account since these measures are assumed to be success factors for newly created firms (Bates, 1990; Brüderl *et al*., 1992; Cooper *et al*., 1994; Liu and Li, 2017; Stucki, 2014). Finally, according to the finding of Headd (2003) and Stam *et al*. (2010), which show that firms in urban areas are less likely to survive, we assume firm location to be a potential survival determinant and we add a dummy variable *urban* to measure its effect.

Industry factors: We include seven industry dummies in the regressions to capture industry differences: *agricultural food, non-agricultural food, commerce, transportation, real estate, business service* and *personal service*.

5. Results

An overview of the full sample consisting of all new venture start-ups and business takeovers is presented in Table 1. Irrespective of entrepreneurship entry mode, 55% of all new firms founded in the first half year of 2002 were still active in September 2007, and the average survival time (including censored data) is 52 months. Table 1 also reports t-test results that compare the takeover sample with the new venture start-up sample *before* and *after* the propensity score matching approach is applied.

--- Table 1 here ---

5.1 Univariate comparison and descriptive statistics

Descriptive statistics and univariate comparison of survival probability using unmatched samples

Figure 1 graphs Kaplan-Meier survival estimates for the business takeover sample and the full sample of new venture start-ups. We observe a higher survival rate for the former than for the latter, particularly in the first months. A Log-rank test also suggests that business takeovers and new venture start-ups have different survival distributions ($\chi^2 = 30.38$, p<0.001). To further check whether our analysis is robust, we do a t-test to compare the survival rates of business takeovers with new venture start-ups.

--- Figure 1 here ---

Table 1 shows that the survival time (in months) and the survival rate of new venture start-ups differ from those of business takeovers. The mean survival time of business takeovers is four and a half months longer than the mean survival time of new venture start-ups (56.06 vs. 51.51 months); the survival rates, however, are only marginally different, with business takeovers having a slightly higher survival probability than new venture start-ups (57% vs. 55%).

T-test results further show significant differences across the two types of entrepreneurship regarding many individual and firm-level variables. Regarding individual attributes, for instance, we find that individuals who choose new venture start-up are more likely to have management experience (28% vs. 19%) and same sector experience (66% vs. 61%), while business acquirers are more likely to be opportunity entrepreneurs (87% vs. 76%) have growth ambitions (58% vs. 47%), and pursue long-term entrepreneurship (92% vs. 90%). With respect to firm characteristics, t-tests reveal significant differences between takeovers and new venture start-ups regarding their financial structure. For example, creating a new venture requires less capital than acquiring one (e.g., 19% vs. 2% for the category less than € 2,000), and new venture start-ups are more likely than business takeovers to receive public aid (32% vs. 28%) and are more often self-funded (59% vs. 29%). These differences between the two groups underline the necessity to create matched samples which reduce selection effects.

Descriptive statistics and univariate comparison of survival probability using matched samples

Previous studies have found that an individual's choice of whether to start a new venture from scratch or to take over an existing one depends on the individual's previous work experience, socio-demographic status and financial capability (Bastié *et al*., 2013; Block *et al*., 2013; Kay and Schlömer-Laufen, 2016; Parker and Van Praag, 2012; Rocha *et al*., 2015). To account for these differences and potential selection effects, we apply a propensity score matching approach to construct a sample of 3,758 new venture start-ups, which consists of

new venture creators similar to those who chose business takeovers in terms of work experience, socio-demographic status and other individual-level characteristics.

We graph the Kaplan-Meier survival estimates for business takeovers and matched new venture start-ups in Figure 2. We observe that the curve representing the survival function of new venture start-ups (dashed curve) shifts upwards, indicating that the discrepancy between new venture start-ups and takeovers regarding their survival rates narrows after the propensity score matching approach is implemented. Still, a difference remains, particularly in the first months after new venture start-up or business takeover has occurred.

--- Figure 2 here ---

Table 1 presents the t-test between the matched new venture start-up sample and the takeover sample. Comparing the survival rate for new venture start-ups before and after matching, we observe an increase from 55% to 58%; the survival rate of new venture start-ups is no longer statistically different from the survival rate of business takeovers. The differences in survival months between new venture start-ups and business takeovers reduces from 4.55 to 3.23 months; yet, it is still statistically significant ($p<0.001$).

As a result of the matching the two samples become more comparable. With regard to some variables, such as *small, medium* and *large firm experience,* we do not observe statistically significant differences anymore between the takeover and the matched new venture start-up sample. Nevertheless, the matching is not perfect. With regard to other characteristics such as entrepreneurial motivation and educational attainment differences remain. A perfect match is hard to achieve since in the propensity score matching approach we consider multiple covariates that may affect an entrepreneur's entry mode choice. However, even if t-tests of some variables still show some sample differences, the means of the matched sample are now much closer to the means of the takeover sample than this was the case before matching. For instance, before matching, only 25% of new venture start-ups were founded with over € 16,000 as start-up capital (whereas the proportion for business takeovers was 77%); but, after matching, this proportion increases to 73%.

5.2 Multivariate analysis of survival probabilities using Cox regressions

In Table 2, we perform two Cox regressions to compare the survival probabilities of new venture start-ups with those of business takeovers. Model I uses the (full) unmatched sample of 34,872 firms and Modell II uses the (reduced) matched sample of 7,516 firms. In both models, we include a dummy variable *business takeover* to capture the impact of entrepreneurship entry mode on firms' exit risk. The estimation result of Model I shows that business takeovers have a lower likelihood to exit than new venture start-ups (hazard ratio is 0.92, $p<0.01$), suggesting a significant difference between these two types of entrepreneurship regarding their survival chances. However, the variable *business takeover* becomes insignificant in Model II, which is based on a matched sample of takeovers and new venture start-ups. This implies that business takeovers no longer have higher survival chances than new venture start-ups once it is controlled for differences in the person of the entrepreneur and the firm which he or she operates. The differences in survival probability between the two groups may thus be due to selection effects and may have little to do with the fact that one mode of entry into entrepreneurship is riskier than the other.

--- Table 2 here ---

5.3 Comparison of survival determinants using Cox regressions and Chow tests

We analyze the effect of a set of independent variables on the survival probabilities of new venture start-ups versus business takeovers using Cox regressions. Table 3 reports the estimation results based on three subsamples: the complete new venture start-up sample (31,114 firms, Model I), the matched new venture start-up sample (3,758 firms, Model II) and the business takeover sample (3,758 firms, Model III). Moreover, we conduct several Chow tests to compare the estimates of Model III with the estimates of Model I and Model II, respectively. The Chow tests determine whether the respective effect sizes are statistically significantly different from each other.

The comparison of Models I and III reveals some differences among a number of variables regarding their influence on survival probabilities of new venture start-ups versus business takeovers. Entrepreneurs' *same sector experience* reduces the risk of failure for both new venture start-up and business takeover. However, such experience has a higher influence with business takeovers than with new venture start-ups. Similarly, the positive impact of *long-term entrepreneurship* on firm survival is larger for business takeovers than for new venture start-ups. At the firm-level, *organizational innovation* increases the mortality risk for new venture start-ups but does not affect business takeovers. Moreover, *start-up capital* significantly extends new venture start-ups' survival time: the greater the amount of start-up capital, the lower the risk of business failure. In contrast, takeovers' exit probability is greater if their start-up capital is higher, although this effect is statistically insignificant. Furthermore, to our surprise, *received public aid* does not help prolong business takeover's longevity; instead, it significantly increases their mortality rate. A similar effect cannot be found with new venture start-ups.

Comparing Models II and III, the picture becomes somewhat different. Using matched samples, the Chow test results show that some of the differences in the survival determinants between the two groups disappear. Hence, some of the differences in the survival determinants of the two groups are due to a different group composition not due to the entrepreneurship entry mode itself. Among those survival determinants that have similar effects with both groups are educational attainment, same sector experience and being located in an urban area. Still, the two groups differ in some determinants of firm survival. For example, the widely discussed small firm effect (Stuart and Abetti, 1990; Elfenbein *et al.*, 2010; Klapper and Richmond, 2011; Sørensen and Phillips, 2011) seems to only hold for new venture start-ups and not for business takeovers. Work experience in a small firm does not increase survival chances in a business takeover situation. Another difference between the two groups relates to the effect of opportunity entrepreneurship. Being an opportunity entrepreneur makes a difference and increases survival chances with new venture start-ups but not with business takeovers. Finally, it can be observed that public aid is negatively associated with the survival chances of business takeovers whereas it shows no relationship with new venture start-ups.

--- Table 3 here ---

6. Discussion and conclusion

The large literature on firm survival (Aldrich and Auster, 1986; Bates, 1990; Brüderl *et al*., 1992; Cooper *et al*., 1994; Duchesneau and Gartner, 1990; Elfenbein *et al*., 2010; Gimeno *et al*., 1997; Santarelli and Vivarelli, 2007; Shepherd *et al*., 2000; Stucki, 2014; Vivarelli, 2013) is remarkably silent on how entrepreneurship entry modes influence firm survival. The present study investigates two research questions in this regard. The first research question is about differences in survival rates between business takeovers and new venture start-ups; the second research question concerns the respective survival determinants of the two entry modes.

As regards the first research question, we find that business takeovers have a higher survival rate and exist longer than new venture start-ups. This finding is in line with prior research (Bates, 1990; Dyke *et al*., 1992). Yet, new venture start-ups and business takeovers are two very distinct groups. Business takeover are typically larger, require more capital, and attract a different kind of entrepreneur than new venture start-ups. When accounting for these differences through a matched sample design, we find that the difference in survival probability between the two entrepreneurship entry modes reduces strongly. Thus, it seems to be less the entry mode but rather the characteristics set of the entrepreneur and the firm that is responsible for the differences in survival probability. Starting a new venture seems not per se associated with a higher mortality risk than business takeover. This is against some prior literature arguing that business takeovers should have higher survival rates than new venture start-ups as they already possess a (functioning) business model including established relationships with customers and suppliers (Bastié *et al*., 2013; Block *et al*., 2013). In other words: the differences in survival probabilities between the two entry modes are more the result of a selection rather than treatment effect.

As regards the second research question, we find that most of the survival determinants have similar effects in both types of entrepreneurial entry mode. Having work experience

from the same sector is conducive for opportunity exploration and exploitation and increases firm's survival chances for both entry modes (Brüderl *et al*., 1992; Bosma *et al*., 2004). A similar result is obtained for entrepreneur's educational attainment, which is positively associated with survival probability. Prior literature argues that highly educated individuals have a greater ability to discover and exploit business opportunities and to solve difficult problems when running their firms (Bates, 1990; Boyer and Blazy, 2014; Cooper *et al*., 1994; Ganotakis, 2012; Gimeno *et al*., 1997). This positive effect of education on firm survival seems to hold for both new venture start-ups and business takeovers. In line with previous research (Preisendörfer and Voss, 1990), we find for both groups an inverted u-shape pattern for the relationship between entrepreneur's age and firm survival. Middle- aged entrepreneurs between 35 and 49 years seem to have the highest survival chances. This finding can be explained by the fact that middle-aged entrepreneurs have already been able to accumulate relevant business experience and created relevant business networks but at the same time do not suffer from a high level of risk aversion which characterizes many older entrepreneurs. Finally, we find that irrespective of entrepreneurship entry mode firms located in urban areas are more likely to exit than firms in rural areas. This finding contradicts the idea that urban firms have a competitive advantage over rural firms because of better access to human and financial resources. Instead, our finding supports the argument that competition between firms and competition for resources may be more intense in urban versus rural areas (Headd, 2003; Stam *et al*., 2010), making survival more difficult.

Still, some differences between the two groups can be observed. The widely discussed positive effect of work experience from small firms on entrepreneurship (Stuart and Abetti, 1990; Elfenbein *et al*., 2010; Klapper and Richmond, 2011; Sørensen and Phillips, 2011) seems to only hold for new venture start-ups and not for business takeovers. Elfenbein *et al*. (2010) show that small firms generate more entrepreneurs than large firms, and that these entrepreneurs earn more at the initial stage of entrepreneurship than their counterparts from large firms. Gompers *et al*. (2005) explains this positive effect of small firm experience through flat hierarchies the valuable networks that employees from small firms can build with founders, suppliers, customers and even competitors. Another argument draws from the jack-of-all-trades theory proposed by Lazear (2005). Small firm employees are more likely

than large firm employees to develop a broad and balanced set of business skills as they are usually assigned multifaceted and multidimensional tasks (Hyytinen and Maliranta, 2008). Prior research shows that balanced skills increase entrepreneurship success (Lazear, 2004). Our finding that small firm experience matters more for new venture start-ups versus business takeovers can be explained through such a jack-of-all-trades perspective of entrepreneurship. Compared to new venture start-ups, business takeovers require a lower degree of balanced skills as the firm is already more developed and specialized and has already found its business model. It seems that in business takeovers specialized knowledge and skills may be more valuable than in new venture start-ups. Such knowledge and skills are typically obtained from working in large firms.

Another difference between two entry modes concerns opportunity entrepreneurship which seems to have a survival-enhancing effect only with new venture start-ups but not with business takeovers. Opportunity entrepreneurship is an indicator of entrepreneurial motivation. Compared to other types of entrepreneurs, opportunity entrepreneurs have a strong intrinsic motivation to become entrepreneurs. Our empirical results imply that such an intrinsic motivation has a stronger survival-enhancing effect for new venture start-ups versus business takeovers, which makes intuitively sense as the entrepreneurial motivation is a crucial factor particularly in the early phases of building a venture where the liabilities of newness and smallness are strong. In contrast, with business takeovers the survival chances depend less on entrepreneurial motivation. The firm has already found its business model and benefits from established relationship with customers and suppliers. Our finding is also in line with Gimeno *et al*. (1997) who show that intrinsically motivated entrepreneurs are less likely to exit, because they care strongly about the non-financial aspects of entrepreneurship. Supporting our argumentation, Binder and Coad (2013) as well as Block and Köllinger (2009) show that entrepreneurs who voluntarily pursue entrepreneurial activities are more satisfied with their lives than entrepreneurs who choose to create a new firm to avoid unemployment.

Finally, it can be observed that public aid is negatively associated with the survival chances of business takeovers and shows no relationship with new venture start-ups. This finding suggests a non-existent or even negative impact of public aid on entrepreneurship

success. Even though our empirical analysis does not allow for a causal interpretation, our finding points to possible inefficiencies of a national entrepreneurship support system. This inefficiency seems to be stronger for business takeovers than for new venture start-ups. Programs such as the French national funding scheme ACCRE (*Aide aux Chômeurs Créateurs ou Repreneurs d'Entreprise*) which supports unemployed people to become entrepreneurs need to be critically evaluated in light of our results.

Our study has a number of limitations that offer fruitful avenues for further research. As we are unable to identify the exact reasons for business exit, we cannot distinguish between voluntary and involuntary exit. This is a limitation as Wennberg *et al*. (2010) show that the survival determinants may differ between the two types of exit. Further research could go deeper in this issue and investigate the like between entrepreneurship entry mode and the type of business exit. Another limitation concerns the static nature of our independent variables. Our dataset only allows us to measure the characteristics of the venture and the entrepreneur and the initial stage. Most importantly, we cannot observe the dynamics of the entrepreneurial team. It might very well be that business takeover and new venture start-up differ in this regard and that founder turnover is more likely to occur with one entrepreneurship entry mode than with the other. Future research could investigate how entrepreneurship entry mode influences entrepreneurial team composition and founder turnover and how this in turn influences firm survival.

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Table 1: Characteristics of new venture start-ups versus business takeovers before and after matching

	Full sample	Before matching			After matching		
	(mean)	New venture start-up (mean)	Business takeover (mean)	t-test of mean differences	New venture start-up (mean)	Business takeover (mean)	t-test of mean differences
Survival months	52.00	51.51	56.06	-14.91***	52.83	56.06	-7.30***
Survival rate	0.55	0.55	0.57	-2.39*	0.58	0.57	1.28
Type of work experience							
Small firm experience	0.72	0.71	0.79	-11.11***	0.78	0.79	-1.65
Medium firm experience	0.12	0.12	0.09	6.54***	0.10	0.09	1.24
Large firm experience	0.16	0.17	0.12	8.11***	0.13	0.12	0.97
Management experience	0.27	0.28	0.19	14.24***	0.24	0.19	5.32***
Same sector experience	0.65	0.66	0.61	5.67***	0.58	0.61	-2.54*
Educational attainment							
No diploma	0.13	0.13	0.14	-1.03	0.13	0.14	-0.71
Lower than A-level diploma	0.37	0.35	0.47	-13.60***	0.43	0.47	-3.60***
A-level diploma	0.18	0.18	0.19	-1.42	0.21	0.19	2.21*
A-level plus two years education	0.12	0.12	0.10	5.10***	0.11	0.10	1.96*
A-level plus over two years education	0.20	0.21	0.11	19.01***	0.12	0.11	1.74
Received entrepreneurial training	0.36	0.36	0.36	0.14	0.36	0.36	-0.24
Entrepreneurial motivation							
Full-time entrepreneurship	0.83	0.82	0.91	-17.79***	0.87	0.91	-5.85***
Opportunity entrepreneurship	0.77	0.76	0.87	-18.55***	0.84	0.87	-3.81***
Mixed motivation	0.21	0.22	0.12	15.99***	0.16	0.12	3.83***
Necessity entrepreneurship	0.02	0.02	0.01	11.05***	0.01	0.01	0.27
Growth ambition	0.48	0.47	0.58	-12.75***	0.59	0.58	1.05
Long-term entrepreneurship	0.90	0.90	0.92	-4.84***	0.92	0.92	0.43
Support for the entrepreneur							
Entrepreneurs in close relational circle	0.68	0.68	0.66	2.18*	0.70	0.66	3.00**
Received social benefit	0.06	0.07	0.04	6.95***	0.06	0.04	3.06**
Solo entrepreneurship	0.51	0.54	0.33	25.91***	0.36	0.33	3.23**
Socio-demographic status							
Age under 35	0.40	0.40	0.45	-6.26***	0.43	0.45	-1.39
Age between 35 and 49	0.47	0.47	0.47	-0.03	0.48	0.47	0.69
Age over 50	0.13	0.13	0.08	11.34***	0.09	0.08	1.27
Female	0.23	0.22	0.33	-13.43***	0.35	0.33	1.97*
French	0.89	0.89	0.92	-6.96***	0.92	0.92	0.17
Firm characteristics							
No innovation	0.58	0.59	0.51	9.34***	0.48	0.51	-2.61**
Product innovation	0.22	0.22	0.23	-1.73	0.27	0.23	4.40***
Process innovation	0.08	0.08	0.08	-0.05	0.08	0.08	0.82
Organizational innovation	0.16	0.15	0.24	-13.35***	0.20	0.24	-3.94***
Start-up capital: <2k	0.17	0.19	0.02	51.95***	0.02	0.02	-1.75
Start-up capital: 2-16k	0.52	0.56	0.20	50.06***	0.25	0.20	5.37***
Start-up capital: 16-80k	0.22	0.19	0.40	-25.40***	0.46	0.40	5.11***
Start-up capital: >80k	0.09	0.06	0.37	-39.61***	0.27	0.37	-9.78***
Received public aid	0.32	0.32	0.28	5.10***	0.34	0.28	5.30***
Percentage of self-funding	0.55	0.59	0.29	54.89***	0.29	0.29	0.71
Urban	0.64	0.65	0.52	15.39***	0.53	0.52	1.04
N firms	34,872	31,114	3,758		3,758	3,758	

Notes: Welch's t-test is presented. Significance level: * p<0.05, ** p<0.01, *** p<0.001

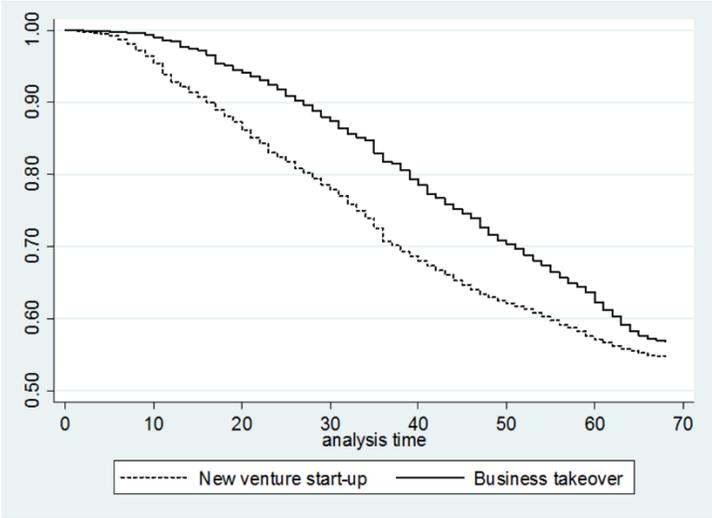**Figure 1: Kaplan-Meier firm survival estimates by entrepreneurship entry modes (before matching)**

Figure 2: Kaplan-Meier firm survival estimates by entrepreneurship entry modes (after matching)
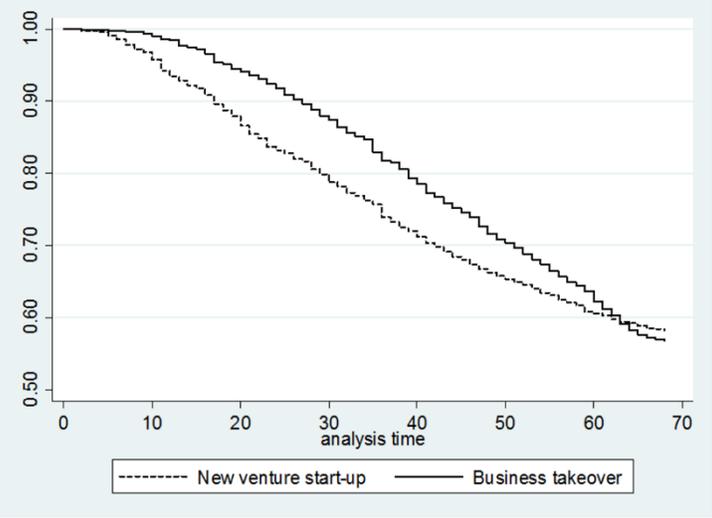
Table 2: Cox regressions of firm *survival months* with matched and unmatched sample

	Model II: Unmatched sample	Model II: Matched sample
	Cox regression	Cox regression
	Hazard ratio	Hazard ratio
Entrepreneurship entry mode		
Business takeover	0.92**	0.98
	(0.03)	(0.04)
Type of work experience		
Benchmark: small firm experience		
Medium firm experience	0.97	1.05
	(0.03)	(0.07)
Large firm experience	1.02	0.97
	(0.02)	(0.06)
Management experience	0.89***	0.88*
	(0.02)	(0.05)
Same sector experience	0.82***	0.70***
	(0.01)	(0.03)
Educational attainment		
Benchmark: no diploma		
Lower than A-level diploma	0.88***	0.84***
	(0.02)	(0.04)
A-level diploma	0.82***	0.83**
	(0.02)	(0.05)
A-level plus two years of education	0.79***	0.70***
	(0.03)	(0.05)
A-level plus over two years of education	0.66***	0.53***
	(0.02)	(0.04)
Received entrepreneurial training	0.93***	0.85***
	(0.02)	(0.03)
Entrepreneurial motivation		
Full-time entrepreneurship	0.97	0.89*
	(0.02)	(0.05)
Benchmark: necessity entrepreneurship		
Opportunity entrepreneurship	0.98	0.73
	(0.05)	(0.15)
Mixed motivation	1.16**	0.88
	(0.06)	(0.18)
Growth ambition	1.13***	1.07
	(0.02)	(0.04)
Long-term entrepreneurship	0.60***	0.50***
	(0.02)	(0.03)
Support for the entrepreneur		
Entrepreneurs in close relational circle	0.96*	0.99
	(0.02)	(0.04)
Received social benefit	1.13***	1.16
	(0.04)	(0.09)
Solo entrepreneurship	1.14***	1.11**
	(0.02)	(0.04)
Socio-demographic status		
Benchmark: age under 35		
Age between 35 and 49	0.86***	0.86***
	(0.02)	(0.03)
Age over 50	0.91***	0.82**
	(0.03)	(0.06)
Female	1.03	1.01
	(0.02)	(0.04)
French	0.83***	0.90
	(0.02)	(0.06)

Firm characteristics		
Benchmark: No innovation		
Product innovation	0.99	0.93
	(0.02)	(0.04)
Process innovation	0.98	0.95
	(0.03)	(0.07)
Organizational innovation	1.03	0.94
	(0.02)	(0.04)
Benchmark: start-up capital <2k		
Start-up capital 2-16k	0.85***	1.31
	(0.02)	(0.18)
Start-up capital 16-80k	0.75***	1.23
	(0.02)	(0.17)
Start-up capital>80k	0.63***	1.03
	(0.02)	(0.15)
Received public aid	0.99	1.02
	(0.02)	(0.04)
Percentage of self-funding	1.07**	1.02
	(0.02)	(0.06)
Urban	1.18***	1.13***
	(0.02)	(0.04)
N firms	34,872	7,516
Log pseudolikelihood	-159,168.52	-27,425.68
Wald chi2	1,866.94***	518.49***

Notes: Exponentiated coefficients are presented; standard errors are in the parentheses. The dependent variable is the firm's survival time measured by its survival months. Hazard ratio is an estimate of risk. A lower than one hazard ratio suggests that the corresponding variable reduces the firm's failure risk, i.e., it contributes to firm survival; otherwise, it endangers firm survival. Significance level: * p < 0.05, ** p < 0.01, *** p < 0.001.

Table 3: Cox regression on determinants of *survival months* for new venture start-up versus business takeover

	New venture (unmatched sample)	New venture (matched sample)	Business takeover	Chow test	Chow test
	Hazard ratio	Hazard ratio	Hazard ratio	p value	p value
	Model I	Model II	Model III	I vs. III	II vs. III
Type of work experience					
Benchmark: small firm experience					
Medium firm experience	0.97	1.29**	0.87	0.328	0.002
	(0.03)	(0.11)	(0.08)		
Large firm experience	1.02	0.97	0.99	0.751	0.841
	(0.03)	(0.09)	(0.08)		
Management experience	0.89***	0.90	0.92	0.636	0.799
	(0.02)	(0.07)	(0.07)		
Same sector experience	0.84***	0.73***	0.69***	0.005	0.763
	(0.02)	(0.04)	(0.04)		
Educational attainment					
Benchmark: no diploma					
Lower than A-level diploma	0.90***	0.90	0.79**	0.136	0.315
	(0.02)	(0.07)	(0.06)		
A-level diploma	0.83***	0.89	0.78**	0.582	0.334
	(0.03)	(0.08)	(0.07)		
A-level plus two years of education	0.80***	0.68***	0.75**	0.762	0.369
	(0.03)	(0.08)	(0.08)		
A-level plus over two years of education	0.68***	0.56***	0.59***	0.399	0.568
	(0.02)	(0.07)	(0.08)		
Received entrepreneurial training	0.95*	0.92	0.85**	0.073	0.386
	(0.02)	(0.05)	(0.05)		
Entrepreneurial motivation					
Full-time entrepreneurship	0.97	0.82*	0.88	0.280	0.503
	(0.02)	(0.07)	(0.08)		
Benchmark: necessity entrepreneurship					
Opportunity entrepreneurship	0.98	0.45**	1.21	0.513	0.013
	(0.05)	(0.11)	(0.41)		
Mixed motivation	1.16**	0.58*	1.30	0.766	0.050
	(0.06)	(0.15)	(0.45)		
Growth ambition	1.14***	1.08	1.05	0.093	0.610
	(0.02)	(0.06)	(0.06)		
Long-term entrepreneurship	0.61***	0.52***	0.47***	0.032	0.941
	(0.02)	(0.04)	(0.04)		
Support for the entrepreneur					
Entrepreneurs in close relational circle	0.96*	0.97	1.05	0.113	0.324
	(0.02)	(0.05)	(0.06)		
Received social benefit	1.14***	1.22	1.07	0.449	0.316
	(0.04)	(0.13)	(0.13)		
Solo entrepreneurship	1.14***	1.07	1.16**	0.908	0.401
	(0.02)	(0.06)	(0.06)		
Socio-demographic status					
Benchmark: age under 35					
Age between 35 and 49	0.87***	0.88*	0.82***	0.436	0.460
	(0.02)	(0.05)	(0.05)		
Age over 50	0.91**	0.83	0.82	0.380	0.961
	(0.03)	(0.09)	(0.09)		
Female	1.03	0.98	1.07	0.542	0.296
	(0.02)	(0.06)	(0.06)		
French	0.82***	0.90	0.91	0.230	0.861
	(0.02)	(0.09)	(0.09)		
Firm characteristics					
Benchmark: no innovation					
Product innovation	1.00	1.00	0.96	0.558	0.637
	(0.02)	(0.06)	(0.06)		
Process innovation	0.99	1.03	0.90	0.381	0.374
	(0.03)	(0.10)	(0.10)		

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Organizational innovation	1.05*	0.96	0.90	0.033	0.602
	(0.03)	(0.07)	(0.06)		
Benchmark: start-up capital <2k					
Start-up capital 2-16k	0.84***	1.12	1.34	0.009	0.574
	(0.02)	(0.23)	(0.26)		
Start-up capital 16-80k	0.73***	0.98	1.27	0.002	0.386
	(0.02)	(0.21)	(0.24)		
Start-up capital>80k	0.58***	0.69	1.17	0.000	0.068
	(0.03)	(0.15)	(0.23)		
Received public aid	0.97	0.93	1.15*	0.006	0.014
	(0.02)	(0.06)	(0.07)		
Percentage of self-funding	1.05*	1.00	1.17	0.219	0.219
	(0.02)	(0.08)	(0.11)		
Urban	1.19***	1.13*	1.18**	0.672	0.693
	(0.02)	(0.06)	(0.06)		
N firms	31,114	3,758	3,758	34,872	7,516
Log pseudolikelihood	-141,086.46	-12,371.75	-12,783.79		
Wald chi2	1671.30***	285.12***	340.90***		

Notes: In the above Cox regression model, exponentiated coefficients are presented; standard errors are in the parentheses. The dependent variable is the firm's survival time measured by its survival months. Significance level: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.