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Waiting to start a business venture.
Empirical evidence on the determinants.

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1. INTRODUCTION

Not all venture projects make it to market. The reasons for the delay of entry may be multicausal and heterogeneous in nature. Often, the conceptualization of a venture simply needs more effort in sales preparation, market screening, or other fields of activity, such as financing. However, we know little about delaying entries in general. From a simple economic perspective, we may describe the waiting situation as a choice between collecting more information to ensure a better implementation of the business option and accelerating the start up to boost income streams.

The decision to wait can be important for the overall development of a business. Following research on strategic management and industrial organizations, we should expect the extent of waiting to have a direct effect on a firm's post-entry success curve (Lieberman and Montgomery 1998; Gastrogiovanni 1996 or Holden and Riis 1994). Empirical research supports this view and shows that pioneers face a greater risk of failure but that that early entry may also lead to increased profit shares by setting up market barriers for future competitors.

Nevertheless, traditional research on management and industrial organizations focuses on a business context that differs from "ordinary entrepreneurship activity". Usually, greater market complexity, high diversity in the capability to process information, and real options to actively create market structures are more relevant for big players. In contrast, ordinary, new, small business activity (e.g., self-employment) is associated with a low level of innovation (novelty), a high(er) share(s) of imitative business activity, and a lower level of power to influence market conditions. Most important, self-employed and small business entrepreneurs will focus on maintaining stable income streams rather than developing great market shares.

In our study, we follow the theoretical modeling framework that has been suggested by Lévesque and Shepherd (2002 and 2004), Choi et al. (2008), and Lévesque et al. (2009), who focus on the theoretical reasoning for waiting time periods in the context of opportunity exploitation. We account for these factors by modeling the waiting time period as a function of a set of covariates, which we relate to local economic attributes and individual characteristics. Our empirical investigation concentrates on a specific population of business founders who have been engaged in starting a new business from the position of unemployment. The advantage of studying this group is that we can focus on a quite homogeneous subset of small business creators in terms of motivation, business strategy, and single firm formation as well as the relevance of financial constraints (see Dencker et al. 2009; Hinz and Jungbauer-Gans 1999; Bhave 1994). Furthermore, because we include only people who attended a training seminar on planning for their self-employment period, we are able to identify a reliable starting point for the people's attraction to starting a venture.

2. ECONOMETRIC APPROACH

The econometric setting of our analysis can be described as a standard duration time problem where we are interested in the effect of a set of covariates on the likelihood that an event will occur in a certain time interval, given that the individual is observed in this interval (for an introduction, see also Gutierrez 2002). Note that the event of interest may be right censored and is likely to be unobserved in the period of observation.

Let T be a random variable that addresses the duration until a specific event. t is the realization of T. The cumulative distribution function $F(T < t)$ describes the failure function over time. Conditioning the sum of failures on the survivors at t defines the hazard rate h at t. To include individual variation, let the hazard rate h be conditional on a set of covariates x. The function $g(.)$ represents any functional form that allows us to model the relationship among the elapsed time, the covariates, and the failure event. β is a vector that will be estimated:

$$h_j(t,x) = g(t, \beta_0 + x_j \beta_x) . \quad (1)$$

Instead of focusing on the hazard rate, we may rewrite (1) in terms of the accelerated failure time metric:

$$\ln(T) = \beta_0 + x_j \beta_x + \varepsilon, \qquad \text{with } \varepsilon \sim g(.), \tag{2}$$

where the error term captures the properties that are related to the characteristics of $g(.)$. As denoted above, T is a positive random variable that describes the time (t) until an event occurs ($T < t$). For example, if the survival times describe a Weibull distribution, the error term is assumed to follow an extreme value distribution. The difference from formula (1) is that instead of focusing on the hazard at t, the duration $\ln(T)$ will be modeled. Nevertheless, t and T are defined in terms of the process time and need the definition of a reference point t_0 and an event that is of interest:

Figure 1: Definition of process time; near here

In our analysis (see Figure 1), t and T will be related to the time that elapses from the time at which i is at risk until the time at which he or she enters self-employment. The individual will enter the risk pool if he or she finishes training. We will denote this waiting process with the waiting time function $w(t)$. The duration T^w is the post-training period (the end of the program is denoted as t^w_0) until (if observed) the individual enters self-employment. Focusing on the end date of the training instead of the start date is important because individuals who are in training are not at risk of becoming self-employed. Right censoring ($T^w > t^w_n$) may be present because not all individuals select self-employment during the time span under observation.

3. DATA DESCRIPTION AND VARIABLES

Data sources

For our study, we use a dataset that is based on administrative data that are taken from the German Federal Employment Agency and that cover potential start-ups out of a position of unemployment. The advantage of using these data is that they allow us to study a fairly homogeneous population with respect to different meanings. For example, the data suggests that entering self-employment is mainly motivated by overcoming unemployment for most of the founders. Most of the included founders start alone as small businesses and do not focus on high growth strategies (for empirical evidence see Pfeiffer and Reize 2000; Hinz and Jungbaur-Gans

1999). Furthermore, our sample includes only individuals who have passed a self-employment training seminar, which are based on the same quality requirements in terms of aims, topics, and duration. In total, variance related to issues such as business novelty, business preparation, and planning or related to individual market strategies is rather limited.

The data are drawn from a sample from the Integrated Employment Biographies (IEB) and contain information from four administrative sources.[1] These data originate from registers of the Federal Employment Service and include employment and benefit histories since 1975 and official registrations for job search, unemployment, and participation in active labor market programs since 2000. The information is organized in records and provides exact start and end dates for each notification. Source-specific information adds data on each individual's schooling, employment type, job characteristics, income, and job search characteristics as well as detailed information on the individual's qualifications. In addition, we supplemented this information with data from the Establishment History Panel (EHP, see Spengler 2008), which allows for the inclusion of firm-level characteristics of past employment episodes. Regional labor market information[2] is taken from the official statistics of the Federal Employment Services. For a detailed overview of the variables that are used, see Table A1 and Table A2 the appendix.

Construction of the analysis sample

A core challenge in investigating the determinants and outcome of waiting time periods is to find adequate proxies that allow for a sufficiently valid identification of two points in time that make waiting visible: (1) willingness to start training and (2) entry into self-employment. In our research, we will link the first aspect to the point in time at which individuals entered a self-employment training scheme. For the second aspect, we will concentrate on the date on which an individual first received a bridging allowance (*Überbrückungsgeld*) or a start-up subsidy (*Existenz-gründungszuschuss, Ich-AG*).[3] Other employment states within the period between the end of the training scheme and entry into self-employment are outside the scope of this study.

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[1] These data cover nearly 80 percent of all employed individuals in Germany (primarily excluding the self-employed and civil servants) and the total of all employment positions that are captured by the social security system. For a general description of the data, see Jacobebbinghaus and Seth (2007).

[2] Local information focuses on the level of labor market districts, as suggested in Arntz and Wilke (2009) and Oberschachtsiek (2010).

[3] The legal system ensures that individuals are allowed to enter this promotion scheme only if this training will prepare them for a subsequent period of self-employment. Usually, the training is expected to be supported by a scheme called a bridging allowance, which is offered to foster transitions from unemployment to self-employment and which provides a financial subsidy for a period of six months in

We restrict our sample to individuals who entered a self-employment training scheme. Entries in this sample are included only if the associated promotion period did not exceed more than 96 days (above the 95th percentile) to exclude observations with incorrect information. We further restrict our sample to individuals with only a single self-employment entry because isolating the correct date of entry is not possible if more than one is observed. This restriction results in a sample of less than 220 individuals. Furthermore, we exclude individuals who are more than 58 years of age to eliminate problems that are associated with strategic behavior in bridging periods or the start-up subsidy until retirement (n = 85). We also remove observations with extreme local labor market conditions.[4] Finally, 11,348 observations are included in the study, of which 10,999 have nonmissing information on all the variables.

Variables

As emphasized above, the set of explanatory variables that are included in our study should account for individual (*c*) and regional characteristics (*r*), which cover qualifications and motivational aspects at the individual level and rivalry and demand at the regional level. At the heart of the latter set of characteristics are those attributes that we use to describe the level of regional economic complexity. Time (*t*) is used as a control variable for the inflow of information.

Note that we distinguish between attributes that are related to the level of economic conditions and those that refer to the development of the economic conditions. The level is the value of the attribute at time *t*, and the development (dynamic) is defined as the relative change from t_0 to *t*, which we standardize to 100 in t_0. Focusing on the effect of external conditions, there is no reason to assume monotone correlations in duration. Hence, we control for squared effects. We assume high economic dynamics (information volatility), relative risks (firm hazards), and rivalry levels (entries) to be proxies for market complexity.

Demand is measured via the local unemployment rate, the vacancy ratio, and the variation of both these measures over time. The unemployment rate is taken from official statistics and is

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the amount of the potential unemployment benefit. The start-up subsidy has a slightly different focus in the promotion setting but also provides financial support (here, the duration is three times per year) and also (legally) requires that the individual quit unemployment by entering self-employment. For more detailed information on both schemes, see, for instance, Caliendo and Kritikos (2010).

[4] Observations are excluded from the analysis sample if the local unemployment rate is greater than 25 percent, the observation originates from a region with a local firm hazard that is greater than 15 percent, the unemployment index is greater than 160, or the vacancy lies above 55 percent. We use this restriction to remove potentially influential points. Further details on the reasoning for the restrictions are available from the authors upon request.

defined on a monthly basis. The vacancy ratio is defined as the number of local (officially reported) vacancies divided by the number of unemployed individuals. As discussed above, temporal change is measured by an index that sets the level of unemployment (the vacancy ratio) in t_0 for every individual at 100. In cases of improved labor market conditions, opportunity costs will increase so that assessing business options becomes more difficult (e.g., due to an increasing performance threshold).

The volatility of external wage work options is used as an additional indicator for complexity. We refer to this measure as the indicator of riskiness, as proposed by Parker (1996). We address this information by considering the volatility of the local unemployment rate. In cases of increased variance, we should expect the relative costs of entering wage work to rise, hence reducing the option value of wage work. However, demand may also be affected by increased riskiness, which makes obtaining accurate estimates more difficult.

To approximate competition, we focus on the local density of the founders who have made the transition from unemployment to self-employment. To standardize the level of entries, we use the number of self-employed individuals (out of unemployment) in a local labor market. Therefore, we define the extent of market rivalry (competition) based on the monthly number of entries in the bridging allowance in relation to the total number of unemployed individuals in each month per region. The reasoning behind this measure is that each labor market has an absorptive capacity that is determined by the pool of unemployed individuals to allow for self-employment entries. High levels of entry make assessing the best entry strategy and evaluating the distance to market saturation difficult.

The proportion of vanishing establishments (exits and movements; firm hazard) per year and region is used as an inverse measure of regional economic prosperity for incumbent firms (addressing the downside loss; for details, see Choi et al. 2008). The reasoning behind this attribute is that firm mobility and firm deaths reflect a decrease in the degree of expected economic prosperity for incumbents in the local market and an increase for new markets of firms that operate in niches. As firm hazards increase, we should expect the cost of assessing the value of the business option to increase (owing to increased complexity).

Finally, consistent with earlier research, we study the individual level by using attributes such as gender, age, formal education, and profession (e.g., Pfeiffer and Reize 2000; Choi et al. 2008; Oberschachtsiek 2012). In addition, data that are related to the individual's employment background are used to address the individual's productivity (crafts master, management

experience, commercial training, and wage premium) and motivation (unemployment duration, minor employment).

In addition, assuming that complexity is positively associated with the founder's human capital, we focus on the individual's qualifications to approximate the complexity of the venture.

4. DETERMINANTS OF WAITING

Descriptive results

The pattern of entries over time is reported in Figure 2. It shows (both graphs) that entries strongly concentrate on the first year after finishing the training scheme. We use a Kaplan-Meier (Kaplan and Meier 1958) procedure to report the cumulative failure function, where a "failure" is defined via entry into self-employment (graph on the left). Almost 72% of the total sample and 83% of the entry population enter self-employment within the first year (see marked line) after finishing the training. We find that the slope of the cumulated failure function increases at a decreasing rate. In addition, the corresponding hazard function displays an almost L-shaped pattern, as seen on the right side of the graph. Following this distribution, we find that t function has with a nonmonotonic slope after a strong decline in the first 20 months of observation. This finding indicates that the likelihood of entering self-employment increases after approximately 50 months of observation.

Figure 2: Time pattern of waiting; near here

Multivariate Analysis

The model selection is performed by using the Bayesian Information Criteria (BIC), which we use to test Weibull, Log-logistic, and Gamma functions for the underlying baseline hazard/duration function. Referring to the BIC, we should focus on the Weibull distribution because it shows the best fit to the data. Support for preferring a Weibull distribution is also given based on testing the shape parameter of the Gamma distribution of the baseline acceleration function (H_0: Kappa = 1, Prob > Chi2 = 0.000; for further details, see Rodriquez 2005 and Raftery

1986).[5] All the modeling approaches generally suggest a decreasing likelihood of observing entries as waiting time elapses.

The results of the multivariate analysis are reported in Table 1. Note that the regression estimates are based on the accelerated failure time metric so that the coefficients are interpreted as time scaling factors for the log duration. We distinguish five models for which we focus on the distinct contribution of selected sets of covariates in explaining the waiting time. Following Moulton (1990), we correct the standard errors for intraregional correlations between observations. All the models include a random effects estimator to control for unobserved observation-specific frailty (for details see Gutierrez 2002).

Table 1: Waiting time duration analysis; near here

Model 1 in Table 1 shows the regression results for the model that concentrates on individual characteristics. As expected, the founder's qualifications increase the conditional exit probability (or, in this case, accelerates waiting), which supports the hypothesis that highly qualified individuals have faster learning cycles. In detail, the results show that *crafts masters*, *previous managers*, individuals with a previous *premium income,* and individuals with *short unemployment* periods before entering self-employment training have a statistically significantly (see Table 1 for details) shorter waiting time than individuals without these characteristics. In addition, our findings show that *age* and *gender* have statistically insignificant effects on waiting time, which is contrary to the findings of most other studies that focus on self-employment entries. However, one should recall that the observations that we investigate in this study cover of a specific population.

Model 2 additionally includes information that is related to external conditions in the empirical model and includes only linear effects. We find statistically significant effects for only the rate of self-employment activities relative to the local unemployment rate (*start-up-unemployment ratio*). The estimated coefficient shows that the likelihood of entering self-employment increases with the level of self-employment activities. To some extent, this finding

[5] The Cox model (Cox 1972), which allows for the most flexible modeling of the hazard function, is not feasible. Tests show that the accuracy of this modeling technique is violated owing to the time-variant and nonlinearity effects of the covariates on the hazard rate. However, parametric modeling tends to underreport hazards in both the mid and long run. Nevertheless, we decided to use parametric modeling because the results do not substantially change if we focus on the results that are based on the Cox model.

indicates either that rivalry may have a positive impact on entries due to entry strategies (e.g., market share and competitive displacement) or that a high rate of entry simply tends to reflect the local role models for entries in general and to signal a positive market environment (Wagner and Sternberg 2004). The results are also interesting with respect to other covariates because they show that neither demand (*unemployment rate*, *vacancy ratio*) nor the vitality of the external option value (*level of variation in local unemployment*) has a significant impact on waiting time.

In Model 3, we also control for nonlinear effects of external characteristics on waiting time to allow for a more complete picture regarding market complexity. However, we find no statistically significant evidence of an overall nonlinear pattern. Relaxing the statistical significance to the 85% level (not reported in Table 1) reveals diminishing marginal effects of *local firm hazard* (positive linear and negative squared term) on waiting, which provides a slight indication of a diminishing marginal effect of the riskiness of entering a period of self-employment. Introducing squared effects causes *higher education* to become statistically significant, indicating a correlation between qualifications and the nonlinearity of opportunity costs. This finding indicates that the elasticity in reacting to external (regional) changes differs across individuals' qualifications.

Models 4 and 5 differ in the way in which they control for regional information. While Models 2 and 3 concentrate on the level of regional economic conditions, Models 4 and 5 focus on the development of regional labor market conditions beginning at the end of self-employment training. Rather than the level of market complexity, these models focus on the market development over time. Therefore, the covariates are standardized to t_0 and vary only if conditions change over time. The results of Model 4 show that increasing *local firm hazard* decreases hazards from self-employment (indicating longer periods until entry into self-employment) and that increasing regional self-employment intensity (indicated by the *start-ups-unemployment ratio*) shortens the expected waiting time (thereby accelerating entries into self-employment). In turn, lower prosperity and lower rivalry (compared to the initial market situation) make firms wait longer.

Controlling for squared effects in Model 5 reveals that the insignificance of the linear term that is associated with the *unemployment rate* is related to a misspecification of the nonlinear nature of the correlation between local unemployment and waiting time. We find a similar result for regional self-employment intensity. The lack of significance of *local firm hazard* and *the vacancy-unemployment ratio* when we control for squared effects may indicate an overspecification of the model. These results are important, as the statistical modeling shows an

improvement in the entropy of the model. Although we did not find statistically significant effects for environmental factors, we can speculate that environmental factors may have a nonlinear effect on waiting periods.

In summary, beyond the asymptotically decreasing likelihood of observing entries across time, our results provide strong support for the importance of external economic conditions (level and development) in explaining waiting times (see BIC in Table 1). This indicates that the effect of the environmental attributes on waiting time is rather complex.

Our results also highlight the importance of studying not only the option value of the business but also the option value of wage work positions (as related to the opportunity costs argument). We find that if the option value of wage work positions increases, waiting will be longer and that if more entries exist in the local market (from a position of unemployment), then entries are accelerated. Furthermore, we find that if the economic prosperity for business activities worsens (increasing firm hazards compared to t_0), waiting will be longer and that an increase in the external option value (increase in vacancies and decrease in unemployment risk) prolongs waiting periods.

5. SUMMARY AND CONCLUSIONS

Summary

This study focuses on two major questions that are related to the length of time that an individual waits before starting a new business. We first address the determination of waiting and study the effects that may prolong or shorten the period of waiting. Consistent with earlier research (Lévesque and Shephard 2002 and 2004; Choi et al. 2008 and Lévesque et al. 2009), we focus on studying the role of time, individual characteristics, and regional economic conditions.

Findings and implications

Our results show that entries become less likely as time elapses (as expected) and that higher qualifications are associated with shorter waiting times. This finding indicates that more qualified people tend to start their businesses earlier than less qualified people. Although this finding is in line with our expectations, whether the association between founder qualifications and waiting times is related to higher opportunity costs or the faster learning cycles of highly qualified

people remains unclear. Nevertheless, individual characteristics play an important role in explaining waiting time periods (Choi et al. 2008). Furthermore, we also find that information about the regional market conditions is important. In particular, the most important regional factor in explaining waiting is the proportion of start-ups in the market (e.g., approximating rivalry). We find that increasing entry rates shorten waiting periods. We also find that an increase in the external option value (increase in vacancies and decrease in unemployment risk) prolongs waiting periods. The latter finding is important because it highlights the relative risks of external (wage work) income options.

Overall, our findings show that waiting is a complex phenomenon. An important finding of our research is that individual characteristics are the most important factor in explaining waiting time periods and that opportunity costs seem to play a substantial role in this context. This factor, however, has been excluded from previous modeling approaches. Furthermore, our research supports the idea that external dynamics are important in explaining waiting time periods.

Limitations and links for future work

Despite its contributions, our study has limitations. For instance, we could not fully observe the quality of the training, the quality of the waiting period, and the quality of the business project. Future research could be more focused on adequately addressing heterogeneity related to the business projects, which we only approximated by studying the founder's human capital owing to our sample restrictions. Furthermore, we were not able to observe the true (learning) behavior during the waiting time. Future research should take these limitations into account. In addition, ongoing research may benefit from studying the outcome of waiting time periods in terms of self-employment sustainability.

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Tables and Figures

Figure 1: *Definition of process time*

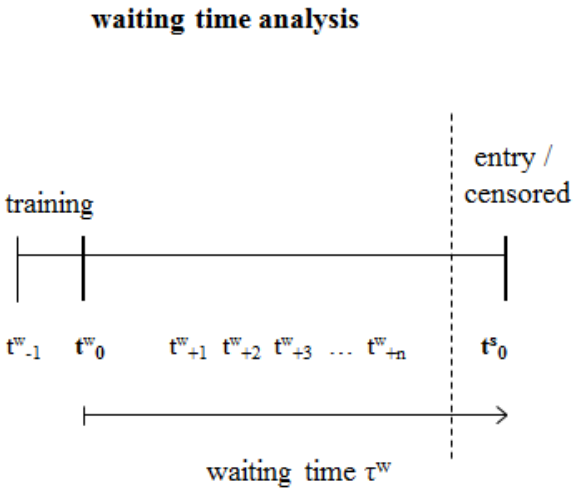
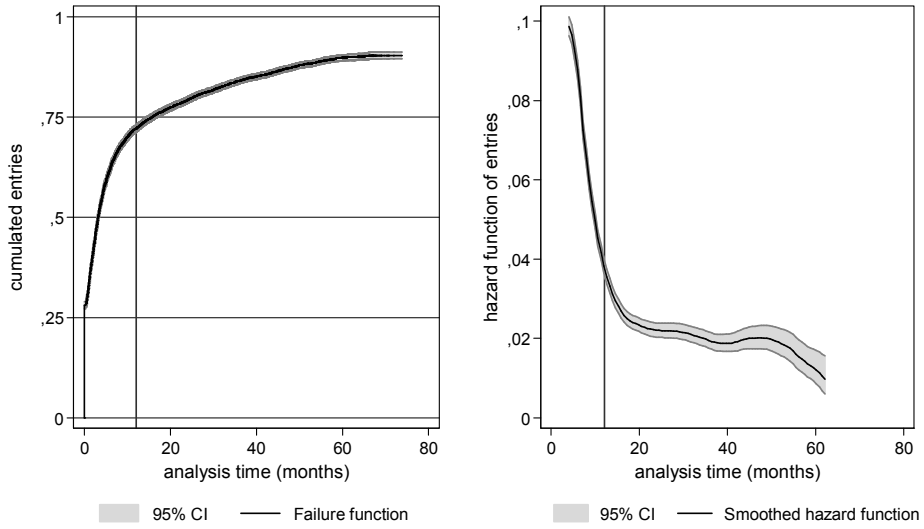


Figure 2: time pattern of waiting



source: ieb, own calculations

Table 1: Waiting Time Duration Analysis (AFT metric, Weibull baseline function)

	Individual Characteristics	Including local economic conditions			
		Level-information		Change-Information	
	Model 1	Model 2	Model 3	Model 4	Model 5
Individual Information					
male	-0,041	-0,012	0,008	-0,03	-0,038
age	0,008	0,01	0,011	0,011	0,011
Higher education	-0,178	-0,183	-0,240**	-0,117	-0,118
College/University degree	-0,041	-0,12	-0,108	-0,1	-0,099
Crafts master	-0,613***	-0,498*	-0,470*	-0,514**	-0,529**
Management	-0,637***	-0,709***	-0,684***	-0,689***	-0,672***
Commercial competence	-0,188*	-0,108	-0,111	-0,108	-0,089
Small Business Background	-0,094*	-0,1	-0,087	-0,120**	-0,111*
Wage Premium	-0,430***	-0,281**	-0,301**	-0,302**	-0,292**
Short unemployment before	-0,281**	-0,179***	-0,184***	-0,260***	-0,253***
Minor employment before	0,243	0,349**	0,333**	0,335*	0,344**
Eastern Germany		-0,036	-0,214	1,018	0,65
Local Level Information (t^w_0)					
Level of variation in local unemployment		-0,49	-1,374	-1,883	-1,98
Level of unemployment (rate)		0,014	0,236		
Local firm hazard		0,413	1,938		
Vacancy / Unemployment ratio		0,065**	0,132**		
Start ups / Unemployment ratio		-2,147***	-1,471		
Local Level Information (squared)					
Level of variation in local unemployment (sq)			0,567		
Level of unemployment (rate) (sq)			-0,005		
Local firm hazard (sq)			-0,077		
Vacancy / Unemployment ratio (sq)			-0,001		
Start ups / Unemployment ratio (sq)			-1,073		
Local Change Information $[(t^w_0 - t^w_{+t})/ t^w_0]$					
Unemployment rate Index				-0,061	-0,462***
Local firm hazard Index				0,056**	1,275
Vacancy / Unemployment ratio Index				0,002*	-0,003
Start ups / Unemployment ratio Index				-0,203**	-0,300**
Local Change Information (squared)					
Unemployment rate Index (sq)					0,002***
Local firm hazard Index (sq)					-0,006
Vacancy / Unemployment ratio Index (sq)					0,000
Start ups / Unemployment ratio Index (sq)					0,013
_cons	1,452**	-3,545	-12,905*	1,988	-42,792
ln_p_cons	-0,756***	-0,607***	-0,583***	-0,645***	-0,614***
ln_the_cons	-0,790*	-0,104	-0,042	-0,208	-0,188
N	146933	146933	146933	146933	146933
BIC	51410,667	50970,445	50869,437	51169,127	51086,965

Note: Estimates are based on a Weibull specification of the baseline acceleration function (AFT-metric). Time is measured in days. Models include a gamma distributed observation specific frailty term to capture unobserved heterogeneity (for details see Gutierrez 2002). Legend: * p<.05; ** p<.01; *** p<.001.

Appendix

Table A1: Definition of the variables

Variable	Description
Male	Sex is male. Source: Employment History.
Age	Age of the founder at the beginning of the self-employment episode. Source: Employment History.
Higher education	Schooling equals high school degree or higher (Germany: "Abitur" or "Fachabitur"). Source: Job Search Register.
College/University degree	The founder holds an academic diploma (university or college). Source: Job Search Register.
Master craftsman	The founder has worked as a crafts master or foreman (job position) in his or her last employment episode before starting the business. Employment episodes with a daily income lower than 5 Euro or lasting less than 60 days (valid employment episode) are excluded. Source: Employment History.
Management	The founder worked in a management position in the last employment episode before starting the business. Source: Job Search Register.
Commercial competence	The founder is experienced and (formally) trained in a commercial profession. Source: Job Search Register (apprenticeship information); Employment History (using the two-digit classification of a selected set of professions; experience).
Small Business Background	Size of the Establishment: Composite value of the number of employees of the establishments during the last five years before setting up the business. Only those employment records that last for more than 3 months with an income greater than zero are included. Source: Establishment History Panel. Small Business: The founder has usually worked (composite value of the last five years) in establishments with less than 20 employees. Source: Establishment History Panel.
Wage Premium	Identifies whether a founder who earned 1.66 times more than the expected monthly wage income in the last valid employment episode. The expected income is a regressed function of the income and a selected set of covariates (e.g., age, schooling, job changes, gender, job position, and size of the establishment) conditional on the type of profession and part- or full-time status. Source: Employment History.
Short unemployment before	The unemployment duration before setting up the business is less than 3.5 months (difference between last employment and beginning of the promoted self-employment episode; missing values are imputed). Source: Employment History.
Minor employment before	Founder worked in a minor employment position during the last valid employment episode before setting up the business. Source: Employment History.
Job classification	Distinguishes seven clusters of professions based on a one-digit job classification related to the last valid employment episode. Source: Employment History.
Eastern Germany	Takes the value of one if the individual lives in Eastern Germany. Source: Job Search Register.
Level of variation in local unemployment	Captures the variation of the monthly unemployment rate for each local labor market district. The index reflects the square root of the squared mean error of time series estimation. Source: Employment Statistics.
Level of unemployment (rate)	Monthly unemployment rate of the local labor market district. This information is merged with the microlevel data after splitting the dataset into three-month periods. Berlin is treated as one region (unweighted average). Source: Employment Statistics.
Local firm hazard	Share (%) of vanishing establishments (local firm hazard): Identifies the share of establishments that are found in t-1 but that do not exist in t in the local labor market district. Source: Establishment History Panel.
Vacancy-Unemployment ratio	Ratio of the number of official registered vacancies to the number of the registered local unemployed people.
Start-up-Unemployment ratio	Ratio of the number of self-employment entries out of unemployment to the number of the registered local unemployed people.
Unemployment rate Index	Time-varying covariate that covers a normalized unemployment rate relative to the starting point (index = UER*100/UER). Source: Employment Statistics.
Local firm hazard Index	Time-varying covariate that covers a normalized local firm hazard relative to the starting point Source: Employment Statistics.
Vacancy-Unemployment ratio Index	Time-varying covariate that covers a normalized vacancy-unemployment ratio relative to the starting point. Source: Employment Statistics.
Start-up-Unemployment ratio Index	Time-varying covariate that covers a normalized start-up-unemployment ratio relative to the starting point. Source: Employment Statistics.

Table A2: Descriptive Statistics (sample a: waiting time, n = 10999)

Variable	Mean	Std. Dev.	Min	Max
Individual characteristics				
Gender (male)	0,66	0,473	0	1
Age	38,26	8,456	19	58
Higher education	0,31	0,461	0	1
College/University degree	0,17	0,377	0	1
Master craftsman	0,02	0,154	0	1
Management	0,04	0,206	0	1
Commercial competence	0,15	0,355	0	1
firm size working background (0-25)	0,45	0,497	0	1
category 1 (26-50)	0,12	0,322	0	1
category 2 (51-250)	0,27	0,444	0	1
category 3 (251-500)	0,09	0,284	0	1
category 4 (500-)	0,08	0,265	0	1
Wage Premium	0,26	0,437	0	1
Short unemployment before	0,29	0,454	0	1
Minor employment before	0,06	0,234	0	1
Job classification (group 1)	0,02	0,140	0	1
group 2	0,39	0,488	0	1
group 3	0,33	0,469	0	1
group 4	0,07	0,257	0	1
group 5	0,04	0,195	0	1
group 6	0,07	0,247	0	1
group 7	0,09	0,283	0	1
Eastern Germany	0,28	0,451	0	1
Level of variation in local unemployment	0,42	0,164	0,16	1,01
External economic conditions				
	t_0 (first observation)			
No of entries in bridging allowance	80,02	119,298	1	1548
Level of unemployment	11,85	5,201	4,67	24,91
Local firm hazard	9,72	1,992	6,24	14,89
Vacancy / Unemployment ratio	12,19	8,180	0,6	44,5
Start ups / Unemployment ratio	0,23	0,110	0,003	1,161
	t_n (last observation)			
No of entries in bridging allowance	144,47	207,604	1	1548
Level of unemployment	13,14	4,778	5,07	24,79
Local firm hazard	11,61	1,519	6,85	14,89
Vacancy / Unemployment ratio	2,22	3,295	0,1	44,7
Start ups / Unemployment ratio	0,38	0,169	0,003	1,856

Job classification: group 1 "primary sector"; group 2 "craft, manufacturing"; group 3 "commercial, administration"; group 4 "transport, security, post services"; group 5 "medical care"; group 6 "education and social care"; group 7"else"

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