

Founders' experience and self-employment duration: the importance of being a 'jack-of-all-trades' ; an analysis based on competing risks

Oberschachtsiek, Dirk

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IAB-Discussion Paper

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Articles on scientific dialogue

Founders' Experience and Self-Employment Duration

The Importance of Being a 'Jack-of-all-Trades'. An Analysis
Based on Competing Risks

Dirk Oberschachtsiek

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The Importance of Being a 'Jack-of-all-Trades'. An Analysis
Based on Competing Risks.

Dirk Oberschachtsiek (IAB)

Mit der Reihe „IAB-Discussion Paper“ will das Forschungsinstitut der Bundesagentur für Arbeit den Dialog mit der externen Wissenschaft intensivieren. Durch die rasche Verbreitung von Forschungsergebnissen über das Internet soll noch vor Drucklegung Kritik angeregt und Qualität gesichert werden.

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Abstract

This paper investigates how founders' experience and professional background affect the duration of periods of self-employment, and to what extent the duration is affected by a balanced skill set in particular. In this context, an occupational choice framework based on a competing risk setting is used that considers an exit choice as a time varying incident. Particularly, a tailor-made variable is used reflecting the balancing property of the individuals' professional background. The results show that most self-employed individuals find themselves unemployed again. Industrial experience, experience in the service or product, high motivation and professional background as a crafts master are clearly associated with comparative advantages in self-employment. It turns out that a broad range of competences is not sufficient in order to prolong the expected duration. However, a comprehensive set of skills combined with sales/business experience can extend the duration of self-employment.

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1 Introduction

Self-employment promotion has become an important issue of policy over the last two decades. This concerns both business development and active labour market policy. In Germany, for instance, a programme of active labour market policy called 'bridging allowance' was launched to help people who are unemployed to set up their own business, thus offering self-employment as an alternative to unemployment. However, the determinants that affect the duration of self-employment are difficult to identify.

Major deficits address the mechanisms that lead people to abandon self-employment. Taylor (1999), Johansson (2000) and van Praag (2003), for instance, show that most entrepreneurs exit self-employment with a sequential employment observation and that a high degree of qualification (school and vocational training, experience) may also encourage exits. However, to the best of the author's knowledge, there are only two existing studies that analyse the exit choice of formerly unemployed founders with a competing risk setting (for Spain: Cueto and Mato 2006; for Sweden: Andersson and Wandensjö 2007). Moreover, evidence related to experience and professional background is scarce.

In addition, two stylised facts are clear: firstly, the duration depends on a variety of attributes related to establishment, founder and environment of the business (e.g. type of start-up, capital structure of the establishment, motivation and qualification of the founder; Georgellis et al. 2005; van der Sluis et al. 2003; Caliendo and Kritikos 2007). Secondly, exit incidents are time dependent (Brüderl and Schüssler 1990; Jovanovic 1982 ; Ericson and Pakes 1995).

This study uses both a dataset that offers a broad variety of detailed attributes related to the founder's profile (especially the professional background) and a parametric duration model to focus on the competing risk nature of leaving self-employment. The dataset contains information on previously unemployed founders who applied for bridging allowances in the north of Lower Saxony between 1995 and 2000. The regional limitation means a low variation of labour market conditions and reduces potential interaction effects between individual and regional variables.

In contrast to previous research, the study focuses mainly on testing a hypothesis proposed by Lazear (2005), which emphasises that a balanced skill set on the part of the founder is associated with comparative advantages for self-employment. So far, most studies do not account for the comparative income implications of the "Jack-of-all-trades"-hypothesis (Lazear 2005; Wagner 2006; Hyytinen and Ilmakunnas 2007; Moog 2004). I use different attributes comprising differentiated experiences and also account for interaction effects of comprehensive experience and commercial background of the founder.

The paper is organised as follows: Section 2 presents the analytical framework that identifies exits as a time-dependent incident. Section 3 describes the dataset followed by Section 4 which includes a profile description of the start-up projects and

the exit structure. Section 5 contains the multivariate analysis and presents the results of the investigation. Finally, the results are summarised and discussed in Section 6.

2 Framework

Theoretical model

Let us consider an individual i with j alternative occupations. Given a rational choice setting, i will choose the alternative that yields the highest discounted income Y_j . Depending on the resources in t_0 , any self-employment project may offer a variety of incomes – for instance, due to a variation in the price policy or production technology. Thus, similarly to the wage offer distributions in an ordinary occupational choice setting, all self-employment incomes may also follow a random distribution. $E^\sigma(Y_j)$ is a potential income that represents the mean of the (subjective) distribution $f(Y_j)$. σ_j describes the risk associated with the distribution of the potential income. In any given situation, i chooses the occupation with the highest $E^\sigma(Y_j)$ (hereafter written as $E(Y_j)$), which is the risk-weighted expected income from that occupation.

In t_0 , i chooses to start a business ($j = s$) from a position of unemployment ($j = a$) if $E(Y_{j=s})$ is greater than $E(Y_{j \neq s})$. Having started the self-employment, i evaluates $E(Y_{j=s})$ and $E(Y_{j \neq s})$. Being self-employed σ_j begins to vary, which leads to an adjustment in $E^\sigma(Y_j)$. For simplicity, let us assume that the information about $f(Y_{j=s})$ improves [$f(Y_{j \neq s})$ worsens] so that the risk decreases ($\sigma_{t=0; j=s} > \sigma_{t>0; j=s}$) [and $\sigma_{j \neq s}$ increases]. Moreover, given any job search for alternative occupations in $j \neq s$, i realises that $E(Y_{j \neq s})$ decreases in time while $j = s$.¹ Thus, an exit occurs when the expected income from $j = s$ becomes less than any other expected income, $j \neq s$. This can be described as follows:

$$\lambda_t = E_t(Y_{j=s}) - E_t(Y_{j \neq s}) \quad \text{resp.}, \quad \lambda_t = E_t(Y_{j=s}) - E_t(Y_{j \neq s} \times \delta)$$

In this formula, lambda (λ_t) indicates the advantage i gains from $E_t(Y_{j=s})$ compared to $E_t(Y_{j \neq s})$. Positive values of λ_t reflect that i remains self-employed, negative values indicate an exit. Delta ($\delta = f(t)$) is a function of time and represents the time-dependent depreciation of the value of the human capital for any occupation in $j \neq s$. Consequently, the duration of self-employment (τ) is a function of λ and t .

¹ Bruce and Schütze (2004) show that experience in self-employment has a limited value with respect to wages.

$$\tau = f(\lambda; t) \quad \text{resp.,} \quad \tau = f(\beta x_0; t)$$

At the beginning of the period of self-employment, λ is related to the resources in $t_0(x_0)$, so that we may rewrite λ as $\beta x_0(t)$, where β represents the scale of the comparative advantage associated with x_0 . Positive values of β are associated with a comparative advantage for the self-employment observation and cause a longer duration in self-employment.

With $j \in \{s, w, a\}$, we may account for two competing exit risks from the self-employment state. $j = a$ captures unemployment benefits, $j = w$ represents a wage or salary job. Since the income in $j = a$ is normally lower than the income $j = w$, we may expect $E_t(Y_{j=a}) < E_t(Y_{j=w})$. Thus, exits into wage work will occur sooner than exits into unemployment - given $E_t(Y_{j=s}) < E_t(Y_{j \neq s})$.

Potential determinants on the self-employment duration

References for comparative advantages in self-employment are to be found in earlier research. Usually, there is a three-factor description of relevant attributes in the literature, covering environmental and firm attributes and characteristics of the founder (e.g. Brüderl et al. 1991). Unlike with this common strategy, the discussion below is limited to the two latter aspects, with a special contribution to the professional background of the founder:

Firm characteristics

One of the most significant determinants for new firm survival and self-employment duration found in the literature relates to the resources of the start-up project. In particular, research in industrial relations shows that the firms' persistence advances with an increase of the financial endowment and with opportunities to raise debt capital (Jovanovic 1982; Brüderl and Schüssler 1990; Ericson and Pakes 1995). A better financial endowment allows a longer period of bridging during the early stages with lower sales. Determinants related to the finance argument are the amount of start-up capital, private assets, the amount of the previous income, the legal form of the firm and the type of start-up (e.g. takeover, see Brüderl and Schüssler 1990; van Praag 2003). Moreover, the investment policy of the founder also reflects the motivation related to the start-up project (Fichman and Levinthal 1991).

Characteristics of the founder

As pointed out in many studies, the founder is the driving force behind the start-up project (e.g. Lazear 2005; Cressy 1996; Chandler and Hanks 1998; Benz and Frey 2008). Individual characteristics provide capabilities and qualities that may largely determine the prospects of success. However, statistical evidence related to the self-employment duration or other success indicators is ambiguous (e.g. for the schooling of the founder, see van der Sluis et al. 2003). Conversely, the entry-choice literature may provide more stable references. Men and women have differ-

ent risk attitudes (Georgellis and Wall 2005), with females being more risk averse and less likely to invest. Similar results may be found for younger and older founders. Furthermore, qualification and motivation reflect comparative advantages. The likelihood of entering self-employment increases with a higher degree of qualification. Also, highly motivated founders tend to have higher non-pecuniary benefits from the self-employment and tend to make greater efforts to develop the business (Benz and Frey 2008; Rauch and Frese 2000).

Professional background

The most important aspect concerning professional experience relates to the extent the founders' human capital could be useful for the venture (Gimeno et al. 1997, Wießner 2001; Brüderl et al. 1991). For instance, Wießner (2001) shows that founders who report a high degree of applicable experience, face a lower exit probability than founders who do not. Important experience may be related to the industry, the service or product provided as well as prior experience of being self-employed and experience in sales/business (e.g. Gimeno et al. 1997). Unlike with directly applicable knowledge or experience, Lazear (2005) emphasises that a broad set of skills (e.g. due to training or experience) is equally important. In this context, Lazear (2005) shows that individuals who have a balanced skill set are more likely to enter a managerial position or self-employment. The argument behind this model highlights the importance of competencies in many fields to cope with a variety of challenges and tasks, an entrepreneur or manager faces. We may find this balancing property indicated by a high number of fields in operation or a master craftsman qualification (Lazear 2005; Wagner 2003, 2006). Master craftsmen are highly qualified workers with competencies in technical fields and sales/business. Moreover, the field of occupation may be important, too, if occupation-specific unemployment rates are taken into account, which may lead to a variation in opportunity costs.

3 Method

Data

The data set consists of a survey conducted in 2001 and 2002 in the governmental district of Lueneburg (located in the north east of lower Saxony, Germany). Based on a pre-sampling survey in the local labour offices in this area, I identified 7,418 proposals for the self-employment promotion scheme, known as a bridging allowance between 1995 and 2000.² In 326 cases, I identified a rejection of the application. The survey was conducted using 100% of the rejected cases and a 30% random sample of the approved applications.³

² The bridging allowance provides a six-month payment of unemployment benefits while setting up a business. It is only granted if the business concept has passed a positive evaluation by a competent authority. For further details, see Caliendo and Kritikos (2007).

³ The survey consists of two waves with a reminder to improve the participation rate. In 500 cases, we were unable to find a valid mailing address.

In November 2002, I contacted 2,500 applicants, 964 participated in the survey (gross participation rate: 39%). All applicants surveyed report that they started a new business following the application. The questionnaire asked for details of the type of start-up, the point in time the business was set up, the firm characteristics (legal form, investments, number of employees at the beginning), the founder's professional background, plus information concerning the education and vocational training of the founder. In addition, the questionnaire asked about the motivation for setting up the business, the development of the firms' performance and the employment status after quitting self-employment.

To account for potential survey bias (e.g. retrospective answers, survey participation), I limit the analysis to self-employment beginning between 1998 and 2000. Additionally, this limitation also means a lower variation of the economic conditions, which reduces potential interaction effects between the founders' human capital and the labour market (e.g. opportunity costs). The overall sample size consists of 645 self-employment observations (1998: $n = 184$, 1999: $n = 292$, 2000: $n = 169$) with a maximum in the observation period of 55 months.

Variables

Survey data allow a simple identification of the exit and the duration until this event occurs. The duration time is defined as the difference between the start-up date and the point in time of ending self-employment. To handle the status after quitting self-employment, I roughly distinguish between exits into unemployment and into periods of employment. All other states are summarised as "others" (covering maternity leave, retirement and periods out of labour force).

The explanatory variables describe the founders' professional background, education, details of the start-up project and the firms' characteristics as well as information on the year of the start-up to control for environmental variation. For further information, see Table A1 in the Appendix.

4 Descriptive Results

Profile of the founders

Individuals who set up a business when unemployed, differ from those who set up a business from a position of employment in various ways. However, previous studies show that most of these distinctions refer to establishment characteristics, to the financial endowment related to the start-up project and to the founders' motivation (Hinz and Jungbauer-Gans 1999; Pfeiffer and Reize 2000). Fewer differences are found for the degree of qualification. However, the profile of founders who were unemployed in the preceding period varies across studies (Hinz and Jungbauer-Gans 1999). A rough overview is displayed in table 1. Descriptive statistics are to be found in Table A2.

Consistent with other studies, most of the founders surveyed are male (70%), aged between 30 and 45 (almost 62% of those interviewed) and are well educated (e.g.

Reize 2004; Lückgen et al. 2006). On average, 35% obtained secondary school results qualifying them for university admission, about 26% hold a university diploma and 34% had been unemployed for less than 4 months before starting the business. The unemployment duration may be an indicator for the founders' qualification, his job opportunities and the motivation to start the business (Addison et al. 2004; van Praag 2003; Böheim and Taylor 2006).

About 65% of the previously unemployed founders state that ending or bridging unemployment was the major issue to become self-employed. However, 46% of the founders answer that they are highly motivated due to the level of freedom and self-fulfilment. Roughly 50% of the founders interviewed state that they are strongly, or very strongly motivated due to the chance of ending or bridging unemployment (push motives) and are at the same time motivated by the level of freedom and self-fulfilment (pull motives). This is in line with the findings of Caliendo and Kritikos (2007), who also show that individuals starting a new business when unemployed are to a large extent motivated not only by push but also by pull motives.

Table 1
Profile of the founders in previous studies

Study	Hinz, Jungbauer-Gans (1999)	Wießner (2001)	Reize (2004)	Caliendo, Kritikos (2007)
Dataset	survey: 229 registrations of businesses in Greater Munich; founded in 1995 (78 promoted with bridging allowance)	survey: 3,846 formations of companies promoted with bridging allowance in selected regions in Germany (1994/1995)	GSOEP: 239 self-employment observations started by previously unemployed people between 1983 and 1999	survey: 1,585 founded businesses promoted with bridging allowance in 2003
Variables				
gender (male)	70%	~74%	68%	76%
age (in years)	39 y	~39 y	~35 y	39 y
upper graduation	50%	28.2%	/	46%
university degree	39%	14.7%	22%	-
> 0 to 2,500 euros	-	15.6%	-	8.7%
< 5,000				
>2,500 to 10,000 euros	-	/	-	20.6%
> 25,000 euros	20%	27.6%	-	-
motive: self-fulfilment	~41 %	-	-	53.7%
Start-up with employees	~24%	-	-	-

Wießner (2001) points out that founders who were unemployed may suffer from a deficit in competence in sales or commercial affairs. This is not found here. The current sample contains 22% founders who are experienced in sales/business and 20% who are experienced in business management – at least 7% hold a master degree and are thus trained in their specialised area and in management.

According to Lazear (2005), comparative advantages in self-employment activities should be strongly related to a balanced skill set. About 12% of the population sat-

isfy this characteristic (individuals experienced in three or more fields of operation) - 48% are experienced only in one field of operation.⁴ And about 32% of the founders have experience from previous employment that is directly relevant for the service or product provided in the new business.

The share of founders who start their business with higher assets (over 25,000 euros) is less than 24% and about 38% start with not more than 5,000 euros. Compared to other studies based on founders from a position of unemployment, those interviewed here are financially better off and, on average, start with a capital endowment that is closer to the capital structure of founders that do not start out of unemployment.⁵ This is also the case with respect to the share that starts with employees (28%).

Exits and self-employment duration

Table 2 presents the percentage share of founders who quit self-employment during the time under observation and shows the average length of the observations until the exit. The total share of exits is 24.5% representing 158 founders. In 93 cases, these founders state that insufficient economic success was the main reason for leaving self-employment. Job offers are a less important factor and are stated by 27 individuals. Thus, most of the founders who quit self-employment can be observed with a sequential unemployment observation (50%) and 33% enter dependent employment again. Studies that do not focus on self-employment following on from unemployment show an inverse relation (Taylor 1999; Johansson 2000).⁶

Table 2
Exit and the duration until exit

	exit		duration until exit
	n	%	Ø (months)
exits total	158	24.5	18.51
exits to			
salary work	50	31.6	16.55
unemployment or participation in measures	77	48.7	18.60
else	31	19.66	21.41

Source: own calculations

⁴ For further results concerning the balancing profile of nascent entrepreneurs, see Wagner (2003, 2006). In the 2003 study, Wagner shows that about 31% (12%) of the nascent entrepreneurs have changed their occupation once (twice or more). In the 2006 study, he reports that the average nascent entrepreneur is experienced in about 3.6 different occupational tasks/fields.

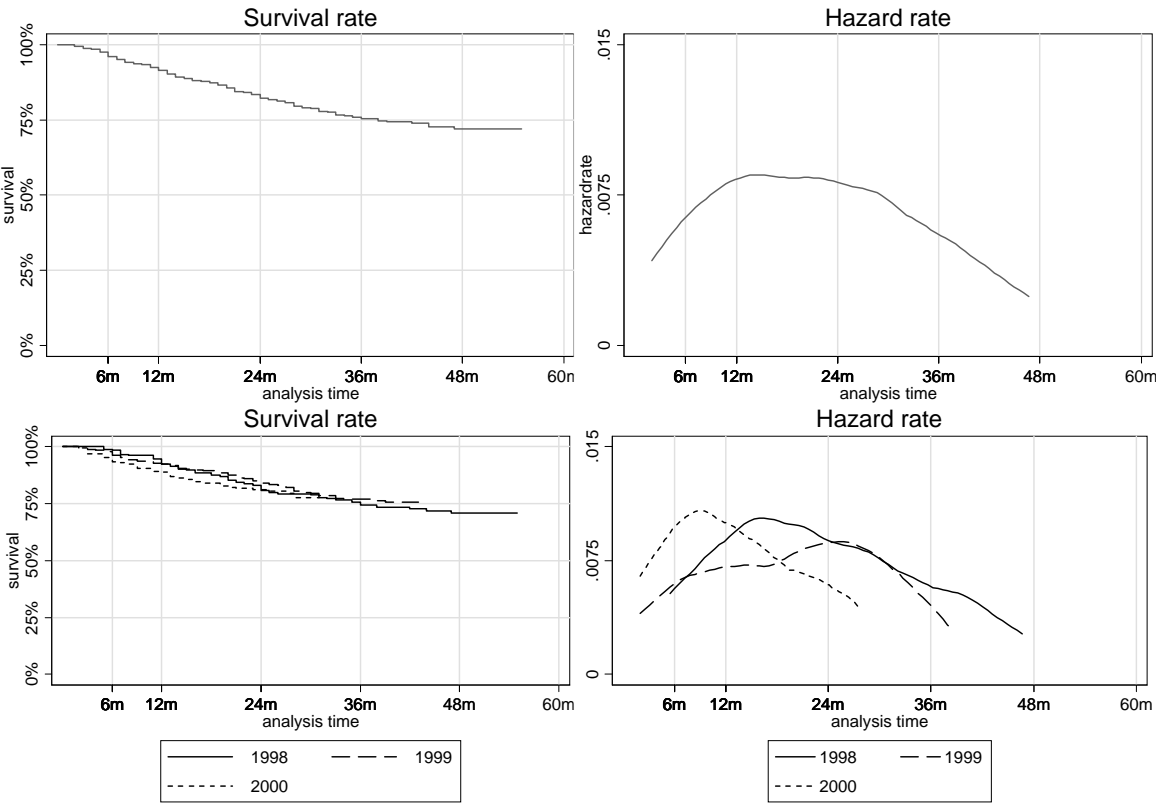
⁵ Note that Wießner (2001) and Hinz and Jungbauer-Gans (1999) report a higher proportion of founders beginning from a position of unemployment (Wießner: 52%; Hinz and Jungbauer-Gans: 45%) who start with low assets (<5,000 euros).

⁶ For exits into wage work / voluntary exits (male, 79-cohort), Taylor (1999) finds a share of 48% while Johansson (2000) finds 39%.

Table 2 also indicates that quitting self-employment (ignoring censoring) differs in rapidity depending on the status that follows the period of self-employment. Exits into employment periods (average: 16.7 months) are observed 1.5 months earlier than exits into unemployment observations (average: 18.2 months). Van Praag (2003) finds similar results for the US, focused on young males (most of them were employed before starting the business).

Figure 1 gives an overview of the distribution of the exit events. The graphs on the left show the distribution of the survival functions; the hazard functions are displayed on the right-hand side. 92% of the founders are still active after a period of 12 months which falls to 83% at the end of the second year (76% after 3 years) and decreases in the fourth year to a survival rate of 72%.⁷ It can be shown that the hazard rate varies across time. The probability of an exit increases up until the end of the first year in operation, reaches a high plateau up to the second year and then falls monotonously. This finding is consistent with the results of previous studies (e.g. Brüderl and Schüssler 1990); Wagner 1994; Strotmann 2007), which also show an inverse u-shaped pattern of the hazard function.

Figure 1
Survival and hazard functions



Source: own calculations

⁷ Reize (2004): 75% after two years – Wießner (2001): 85% after two years – Caliendo and Kritikos (2007): 68% after two years.

Figure 1 also shows that the pattern differs across entry cohort. This may reflect the potential importance of the environment since we can exclude cohort effects which would be associated with a parallel shift. Founders starting businesses in 2000 exit earlier than those who did so in 1999 and 1998. Those who set up in 1999 show the lowest and a fairly left skewed hazard distribution.

5 Self-employment duration and human capital

Econometric setting

Duration models allow an explicit specification of the expected duration given a specific time dependency of the response variable, which fits to the model described in section two. The time dependency that is associated with the exit probability can be captured by a parametric specification of the underlying distribution of the observed quits.

Technically the duration of the self-employment τ_i is a function of the time t_i and a set of covariates x_i that scales the duration. τ can be considered a random variable with values of t (observed duration) from $t = 0$ (start-up) to T (end of observation). x covers the range of explanatory variables. The relation between the expected duration, the observed time and the covariates can be expressed as follows:

$$\tau_i = \exp(-x_i \beta_x) t_i$$

The qualities of the model are simple: τ increases with t and the covariates accelerate or decelerate the expected duration. With respect to the periods of self-employment, this means that the duration in self-employment will be exclusively explained by the characteristics of the start-up project and time. The derivation of the regression model given $\log(\tau) = Z$ yields the following expression (Gutierrez 2002):

$$Z_i = \beta_0 + x_i \beta_i + \varepsilon_i,$$

The properties of the error term (with mean 0 and standard deviation σ) determine the systematic misspecification of the regression function. Setting the properties of the error term thus defines a specific baseline distribution of the hazards that is homogenous for all observations. The inverse u-shaped hazard distribution found in figure 1 is captured in the model due to a lognormal distribution of τ [$\tau \sim \text{log-normal}(\beta_0, \sigma)$].⁸ The beta-coefficients (β) are scale parameters for the log duration and approximately describe a percentage change of the expected duration by a sin-

⁸ I also tested other model specifications (loglogistic, gamma distributions) – The lognormal performs best using BIC/AIC criteria for model selection (Rodriquez 2005).

gle change in the covariate (Cleves et al. 2004: 209). The parameter sigma (σ) specifies the fixed baseline distribution of the hazards.⁹

Note that duration models treat all changes that are not under consideration as censored. This allows a simple analysis of competing risks assuming that all of these types of exits are potentially observable (Lancaster 1990).

Determinants of the self-employment duration

Table 3 shows the results for exits with and without competing risks. The estimation strategy is based on two models. The first one (Model I) describes the duration in self-employment with a reduced set of variables. The second one (Model II) gives a more detailed perspective on the human capital setting and includes the motivation of the founder.

Firm characteristics

One of the most important success factors discussed in the literature are attributes related to the start-up project (e.g. Brüderl and Schüssler 1990; Wagner 1994; Strotmann 2007). However, this picture is not completely borne out in this study. Table 3 shows that the firm resources seem to be less important for the duration – irrespective of the exit status. Setting up a business with employees or starting with a takeover does not have a significant effect on the self-employment duration. Statistical evidence is limited to the importance of a higher amount of start-up capital (over 25,000 euros). Firms with more start-up capital expect self-employment durations that are 1.4 (see row A; row B: 1.47) times as long as those without.

A moderate significance of the firms' characteristics for the self-employment duration of the formerly unemployed is not surprising. Hinz and Jungbauer-Gans (1999) show that – compared to other start-up-projects – start-ups from a position of unemployment usually start with a lower capital endowment, but are able to derive a comparable output level (exit / benefit). This might be largely in line with the findings of Chandler and Hanks (1998) who find a substitutable relationship between financial capital and human capital/effort.¹⁰ Parker and van Praag (2006) point out that the amount of the financial endowment is statistically important but its effect is lower than the effect of the founders' human capital.

Occupational background

Looking at the founders' human capital structure, I find no statistical significant effect related to the field of occupation – here in reference to trade. Assuming that the former field of occupation is related to the industry assignment of the business, this means that I do not see any industry effects on the self-employment duration (in the

⁹ I also used a flexible specification of the sigma-parameter and a test for unobserved heterogeneity (Gutierrez 2002). The test statistics do not reveal any significance for unobserved heterogeneity or a superiority of a flexible sigma-specification.

¹⁰ For results concerning the positive correlation between the financial endowment the founders qualification see Brüderl et al. (1992), Cressy (1996) and Parker and van Praag (2006).

non-competing risk setting).¹¹ This is in contrast to the findings of the industrial-relations related research on entrepreneurship (e.g. Brüderl and Schüssler 1990; Wagner 1994; Strotmann 2007).

Table 3
Determinants of self-employment duration

Model	I A	II B	I C	I D	II E	II F
	exits total		exits to wage work unemployment		exits to wage work unemployment	
X						
cohort						
year 1998			ref			
year 1999	-0.045	-0.037	-0.199	-0.184	-0.147	-0.115
year 2000	-0.274	-0.221	-0.425	-0.383	-0.37	-0.297
investment > € 25,000	0.391*	0.474**	0.281	0.214	0.422	0.282
start-up with employees	-0.019	-0.015	0.401	-0.116	0.423	-0.111
takeover	-0.146	-0.15	0.45	-0.218	0.427	-0.183
field of occupation						
trades			ref			
sales/business	-0.221		-0.576	0.116		
technical	0.128		-0.175	0.409		
social/education	-0.265		-0.362	-0.481		
medical	0.452		0.674	1.301*		
position						
blue collar			ref			
qualified / white collar	0.278		-0.082	0.443*		
leading / management	0.426*		-0.274	0.712*		
gender (male)	0.023	0.039	-0.1	-0.006	-0.123	-0.01
age	-0.021**	-0.013	-0.004	-0.037***	-0.004	-0.022*
short unemployment duration	0.420**	0.294*	0.39	0.561**	0.349	0.394
exp. with the service/product	0.322*	0.301*	0.011	0.480**	-0.043	0.478**
university		0.243			-0.115	0.616**
master/foreman		1.108**			0.596	1.452*
management		-0.106			-0.373	-0.046
experienced in sales/business		-0.258			-0.613*	-0.082
broad experience		-0.159			-0.539	-0.179
broad sales		0.869			1.091	1.867*
prior self-employment		-0.561***			-0.429	-0.715***
high pull motivation		0.400*			-0.017	0.785**
const (x)	4.922***	4.840***	6.597***	6.291***	6.682***	5.974***
Ln_sig						
const (σ)	0.391***	0.361***	0.646***	0.546***	0.631***	0.497***
N	645	645	645	645	645	645
exits	158	158	50	77	50	77
LI	-482.513	-471.646	-211.997	-285.846	-210.278	-275.967
chi2	37.479	59.213	13.821	34.928	17.258	54.687
AIC	999.026	981.293	457.994	605.692	458.557	589.933
BIC	1075.004	1066.208	533.971	681.67	543.472	674.849

level of significance: *: p < 0.05, **: p < 0.01; ***: p < 0.001

Source: own calculations: lognormal distribution

¹¹ Wießner (2001) for example shows that about 85% to 98% of the founders did not change the field of occupation.

A longer expected duration in self-employment may be seen for founders who were previously employed in a management position (in respect to simple occupations 1.43 times longer). However, Model II shows that the effect of a management position is to a large extent covered by an effect of a master/foreman status. Founders who have been trained or are experienced as a master craftsmen or foremen face a self-employment duration that is almost twice as long as founders who have not. Contrary to Model I, I do not find any evidence for the importance of being experienced in a management position in Model II, which is different to the findings by Cueto and Mato (2006) and Taylor (1999). As noted earlier, the effect of the master/foreman status strongly reflects the importance of a combined setting in sales/business, management and technical capabilities which seem to be extremely positive associated with long self-employment durations.

As I find no statistical importance of the occupational field for the general setting, the competing risk setting uncovers the overall effect of the covariates and shows the comparative advantage of single attributes for specific exit status (types of exit). However, the occupational field becomes important if I focus on the exit into unemployment. Founders with a medical background exit earlier into an unemployment observation (in reference to trades). This effect is also economically strong (130% longer self-employment duration). Similarly, founders with a qualified professional background or with leading experience (white collar jobs) are also less likely to exit earlier into an unemployment observation. Obviously, there is a positive selection of qualified persons who are less likely to re-enter unemployment.

Broad experience and commercial experience

Interesting effects emerge for the commercial background of a founder in the competing risk setting (Model II uses a stricter definition for commercial background, see Table A1 in the Appendix for details). Founders who are experienced or trained in sales/business have an expected duration until an exit into employment that is 1.6 times shorter than founders who are not qualified in sales/business. This demonstrates comparative advantages of a commercial background for a dependent employment. In contrast, founders who are experienced in various different operations (broad experience) and have a commercial background are less likely to exit self-employment earlier into unemployment. The interaction of sales/business and broad experience reflects comparative advantages for staying in business.

However, the results do not show the expected results associated with a broad range of experience or qualification. Focusing on the balanced-skill-hypothesis (Lazear 2005) which predominately highlights the importance of a balanced skill set for the expected self-employment income, the results indicate – although statistically not significant on the common level – that founders with a broad set of experience tend to exit earlier into a dependent employment state. Evidence for the balanced-skill-hypothesis is limited to the interaction effect.

Industry and self-employment experience

In particular, relevant industry experience and experience in the service/product provided are found to be substantially important for the self-employment longevity (Brüderl et al. 1992; Wießner 2001; Gimeno et al. 1997). This is also supported here: founders who are prepared for their business due to their previous employment state have a 1.32 (Model I; Model II: 1.30) times longer expected self-employment duration. I also find a 1.5 times longer duration in the competing risk setting for the exit into unemployment.

What is also often discussed in the literature is the importance of previous experience in self-employment for the duration in self-employment (e.g. due to a former period of self-employment or due to a family business). However, contrary to relevant industry experience and experience in the service provided, the results show that prior experience in self-employment accelerate exits by the factor of 1.56. Moreover, founders with a background in a self-employed occupation tend to exit earlier into unemployment again (1.72 times faster). This is consistent with findings by Jørgensen (2005) and Tervo and Haapanen (2005) but contrary to Brüderl et al. (1992) or Taylor (1999). Founders with experience in self-employment may tend to exit earlier to prevent greater business losses or may simply be less successful.

Age, education and motivation

Much attention has been addressed to the age and gender profile of founders and its importance for the self-employment duration. For instance, Holtz-Eakin et al. (1994), Cressy (1996) and Taylor (1999) show that the exit probability increases with age and that the duration in self-employment increases with the age of the founder. Other studies emphasize a u-shaped pattern of the hazard rate along the age axis. The results here support the first theory: the older the founder, the shorter I observe the self-employment duration. Gender does not have a significant effect on the self-employment duration in the general setting and in the competing risk framework.

Consistent with previous findings (e.g. Gimeno et al. 1997; Cooper et al. 1994; Bates 1990; Brüderl et al. 1992), I find that more educated founders (graduation with a college or university diploma) have a longer observation of self-employment if I focus on exits into unemployment. Qualification may be associated with comparative advantages for self-employment. The results also indicate that unemployment duration is significant for persistence in self-employment as well. Model I shows that founders with a short observation of unemployment prior to starting the business have a 1.42 times longer expected self-employment duration than those who have a longer unemployment spell. This is in line with findings by Wießner (2001), Hinz and Jungbauer-Gans (1999) and Cueto and Mato (2006). However, studies that are not focused on start-ups from a position of unemployment find inverse results (Taylor 1999; Johansson 2000). Note that the effect of the unemployment duration decreases for the self-employment duration in Model II which demonstrates that the

motivation dimension is associated with unemployment (Addison et al. 2004; van Praag 2003).

The motivation identified due to a cluster assignment shows that a high motivation (attribute: independence, high expected income and fewer push oriented motives; see Table A1) has a strong correlation with long self-employment observations. Founders who are highly push motivated expect a 1.42 times longer self-employment duration than those who do not. This may highlight the importance of non-pecuniary aspects of the self-employment income (Benz and Frey, 2008) or reflect a higher disposition for effort (Rauch and Frese, 2000). Contrary to the findings here, Block and Sandner (2006) do not find any evidence that motivation affects the self-employment duration or the exit probability. However, findings on this issue are scarce at present.

6 Summary and Conclusion

This study considers self-employment following unemployment as an alternative occupation. However, the results suggest that unemployment is not the only motivation to set up a business. About 50% of the founders are motivated by push and pull factors.

About 83% of the founders are still self-employed two years after setting up the business. Most self-employment observations end in an unemployment observation which is comparable to the results found by Cueto and Mato (2006) for Spain and Andersson and Wandensjö (2007) for Sweden. Taylor (1999) and Johansson (2000) find different results, for Great Britain and Finland respectively, with a focus on founders who were employed prior to starting self-employment. However, consistent with previous findings, I see that exits into an employment state occur earlier than exits into unemployment.

Firm characteristics and the founders' qualification (education and training) seem to be less important for self-employment longevity. Evidence can be found only for a high start-up capital, which reflects that firms with more capital may be better off to bridge learning periods. However, the result that firm characteristics are less important may be associated with the sample population. Businesses started by previously unemployed individuals may simply be smaller.

Comparative advantages for a self-employment occupation are strongly related to experience that is relevant for the new business (e.g. experience with the service or product provided), with a higher position, with work experience as a master craftsman or foreman and with pull motivation. Conversely, comparative disadvantages seem to be associated with prior experience in self-employment.

The competing risk setting shows interesting results concerning a commercial background, broad experience and the interaction of both attributes. A commercial background alone is associated with a comparative advantage for a dependent employ-

ment observation. Broad experience (identified due to a high number of fields of operation) seems to be negatively related to duration – but is statistically insignificant. Combining both attributes, I find a strong positive correlation with the duration of self-employment. Comparable results can be found for experience as a master craftsman or foreman. These are important findings for the hypothesis stated by Lazear (2005) that founders with a balanced skill set are more likely to have comparative advantages for a self-employment state. The results emphasise that it seems to be important to combine both, that is, knowledge in sales/business and a broad set of skills. Thus, it is not only the variety but also the existence of sufficient commercial skills that foster self-employment duration. This may not only improve the understanding of the balance-skill-approach but may also help to improve promotion policies for self-employment.

Finally, limitations may give impulses for further research. First, I observe only relatively few founders in a limited regional area in Germany. Second, it remains unclear if the data set suffers from a selective population – even if the profiles of the founders seem to be fairly comparable with the profiles found in other studies. And third, it is important to note that the results clearly show that previously unemployed founders differ in the way they exit self-employment compared to founders who do not start a business from a position of unemployment.

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Appendix

Table A1
Definition of the variables

exit	equals one if the person declares not to be self-employed in the founded company at the time of the interview
duration	difference between the start-up and the date of quitting self-employment – measured in months
exit to (state following the self-employment)	identifies the state after leaving self-employment. The classification differs between I. wage work (independent employment), II. unemployment, participation in measure, and III. Maternity leave, retirement, other
start-up with employees	equals one if the founder has started the business with employees
amount of start-up capital	indicates the amount of capital invested to set up the business. The questionnaire uses seven categories to capture a variation between “less than 2,500 euro” up to “over 125,000 euros”.
start-up capital > 25,000 euros	equals one if the amount of start-up capital exceeds 25,000 euros
takeover	equals one if the start-up is a takeover
field of occupation	the questionnaire distinguishes five categories to capture the field of occupation of the employment before setting up the business: trade, sales/business/law, technical, social/educational, medical, else
position	the questionnaire asked for the position of the last employment before setting up the business. The classification distinguishes four positions: blue collar or employee with simple duties, qualified worker or employee, master or foreman, middle or higher management
gender (male)	equals one if the founder is a male
age	age of the founders at the time the company is founded
higher education	equals one if the founder left school with a qualification for university admission
university	equals one if the founder holds a university degree
master/foreman	equals one if the founder is experienced (has worked) as a master craftsman or foreman.
management	equals one if the founder declares to be experienced (has worked) in a management position (middle or higher management)
short unemployment	equals one if the founders had been unemployed less than 4 month before setting up the business

experienced in sales/business

equals one if the founder is trained and experienced in a commercial field of activity (apprenticeship in sales/business or law and experience in marketing, sales, purchase, administration)

number of different fields of occupation

counts the number of different fields of occupation. The questionnaire distinguishes: purchase, services, production, trade/installation, marketing/sales, and administration

broad experience

equals one if the founder is experienced in more than 3 (75% percentile) different fields of occupation

broad sales

equals one if the founder has broad experience and is trained or experienced in sales/business

exp with the service/product

equals one if the founder is experienced with the product or the service he provides due to prior employment

prior self-employment

equals one if the founder has been self-employed previously

high pull motivation

equals one if the founder is assigned to be a high pull motivated founder. The assignment strategy uses a hierarchical cluster analysis based on the Mahalanobis distance. The cluster centroids were identified due to a k-means cluster analysis before setting up the hierarchical cluster analysis. Founders who are classified as high pull motivated are less motivated due to unemployment but are highly motivated due to self-fulfilment or potential improvements in income.

Table A2: Descriptive statistics

	entries n = 645				still in operation n = 487	all n = 158	exits wage work n = 50	unemployment n = 77
	mean	Std. Dev,	Min	Max	mean	mean	mean	mean
cohort								
year 1998	0.29	0.452	0	1	0.27	0.34	0.28	0.32
year 1999	0.45	0.498	0	1	0.46	0.44	0.48	0.45
year 2000	0.26	0.440	0	1	0.27	0.23	0.24	0.22
investments (Euro)								
< 5000	0.38	0.486	0	1	0.36	0.45	0.36	0.48
5000 < 25000	0.36	0.481	0	1	0.37	0.32	0.42	0.26
>= 25000	0.26	0.438	0	1	0.27	0.23	0.22	0.26
takeover	0.12	0.326	0	1	0.12	0.13	0.06	0.14
limited liability	0.05	0.211	0	1	0.05	0.04	0.04	0.04
start-up with employees	0.28	0.447	0	1	0.28	0.25	0.18	0.27
field of occupation								
trades	0.32	0.466	0	1	0.34	0.25	0.26	0.26
sales/business	0.22	0.415	0	1	0.20	0.29	0.32	0.25
social/education	0.16	0.371	0	1	0.17	0.13	0.18	0.12
medical	0.04	0.204	0	1	0.04	0.06	0.06	0.08
trades	0.07	0.255	0	1	0.08	0.04	0.02	0.01
position								
blue collar	0.16	0.365	0	1	0.14	0.22	0.08	0.26
qualified / white collar	0.56	0.497	0	1	0.57	0.51	0.54	0.49
leading / management	0.20	0.398	0	1	0.21	0.17	0.26	0.16
male	0.69	0.461	0	1	0.71	0.66	0.70	0.70
age	39.01	8.697	15	62	38.61	40.22	39.72	41.23
higher education	0.35	0.478	0	1	0.38	0.28	0.38	0.19
university	0.26	0.441	0	1	0.29	0.18	0.24	0.17
short unemployment	0.34	0.475	0	1	0.38	0.23	0.24	0.21
exp. in sales/business	0.22	0.411	0	1	0.20	0.27	0.30	0.25
master/foreman	0.07	0.250	0	1	0.08	0.02	0.04	0.01
management	0.13	0.337	0	1	0.12	0.15	0.22	0.14
broad experience	0.12	0.328	0	1	0.13	0.11	0.16	0.10
exp. with the service/product	0.32	0.468	0	1	0.29	0.44	0.40	0.48
prior self-employment	0.20	0.397	0	1	0.22	0.12	0.18	0.08
high pull motivation	0.23	0.423	0	1	0.20	0.35	0.32	0.39

Source: own calculations

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Editorial staff

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Technical completion

Jutta Sebald

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For further inquiries contact the author:

Dirk Oberschachtsiek

Phone +49.911.179 1615

E-mail dirk.oberschachtsiek@iab.de