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Previous Self-Employment**

by

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Preliminary version

1. Introduction

Going bankrupt does not necessarily mean the end of an entrepreneurial career. Recent reforms of the insolvency law in several European countries towards a more debtor-friendly system similar to Chapter 11 of the U.S. bankruptcy code make it easier for bankrupt entrepreneurs to start a new business. According to the new German insolvency law, private persons are freed of the remainder of their debt after a period of six years (“Wohlverhaltensperiode”) during which they are obliged to hand over a large part of their earnings to the creditors. Failed freelancers, craftsmen and sole proprietors who are mostly subject to the insolvency proceedings for private persons (“Verbraucherinsolvenz”) are therefore able to establish a new business unmortgaged by debts just a few years after bankruptcy.

It is claimed that a new entrepreneurial culture has come into being, in which firm failure is no longer stigmatized but regarded as a chance to learn from mistakes and be more successful in a new venture. It has even been hypothesized that the experience of failure is so valuable for leading a company that firms managed by “restarters” outperform businesses headed by entrepreneurs who do not have this experience. However, the issue has hardly been investigated so far. The present paper aims to add to the scarce empirical evidence in this field.

Two different data sets are used, one at the individual level and one at the firm level. The analysis based on the former will investigate the effect of self-employment experience on earnings from self-employment and take into account whether the experience has been acquired during one or several self-employment episodes. Thus it reveals whether having run a business before helps entrepreneurs to be successful in the current one. The data do not allow us to distinguish restarters from other serial entre-

preneurs, however. This is only possible with the data at the firm level, which are used to analyze the impact of the experience of failure on firm performance in particular.

2. Theoretical Background

Generally, three groups of characteristics which determine start-up performance are distinguished: individual characteristics of the entrepreneur, firm characteristics, and environmental characteristics. As to the individual characteristics, economists consider the level of qualification a person has attained as crucial. The most important theory in this context is human capital theory (Mincer 1974; Becker 1975) which was originally applied to explain wage differences. It hypothesizes that investments in skills through formal educational attainment, on-the-job training or professional experience increase the productivity of workers. This is rewarded in the labour market by higher earnings. The theory can also be applied to explain differences in self-employment earnings, hypothesizing that human capital investments increase the productivity of founders, thereby enhancing business performance.

Besides formal education, experience is part of the founder's human capital. According to Reuber and Fischer (1999) there are two ways in which a founder's previous experience impacts firm performance: first, it leads to the "development of experientially-acquired skills or expertise which will lead in turn to more knowledgeable actions and decisions". Second, as founders are inclined to start businesses which are similar (e.g. in terms of industry, geographic area) to organisations with which they are familiar, experience influences the characteristics of the new start-up. These in turn affect performance. Likewise Brüderl et al. (1996) suggest that human capital impacts firm performance indirectly, that is, in terms of altered start-up conditions. In general, human capital probably affects the a priori prospects of success of the start-up. Individuals with a high human capital endowment will find it easier to obtain financial capital, gather information and plan the start-up carefully. Consequently, they are more likely to develop a promising business idea and to create more favourable start-up conditions than individuals with a lower human capital endowment.

Ucbasaran et al. (2003) implicitly differentiate between the influence of a founder's human capital on start-up conditions on the one hand and on his ability to manage a firm on the other hand. They argue that human capital, particularly prior business ownership experience, can have an impact on the ability to identify business opportunities. It might lead to more effective information search behaviour. Moreover, business contacts may help to discover opportunities without actively searching (Westhead

et al. 2005). This should increase the chances of developing a promising business idea. Once an opportunity is identified, human capital is “crucial in accessing and leveraging (the) social, financial, physical and organizational resources” (Ucbasaran et al. 2003, p. 208) which are required to exploit it. Prior business ownership experience can be associated with assets like extended networks, increased expertise or a good reputation with financiers, customers and suppliers. However, it can also be associated with liabilities such as dulled motivation or disturbed relationships with relevant parties, so that the founder’s ability to manage a firm is diminished.

Experience of failure is a special type of business ownership experience and, therefore, could have a specific effect on the success of a firm. Entrepreneurs who have failed are assumed to know the causes that led to failure and might have advantages over novices and other habitual entrepreneurs in avoiding mistakes, recognizing a crisis at an early stage and taking adequate countermeasures. But besides this human capital effect, experience of failure is also associated with selection and signaling effects. Failed entrepreneurs are a selective group out of all entrepreneurs: they have to overcome several additional obstacles (e.g. higher capital restrictions) that previously successful entrepreneurs do not have to negotiate, if they want to re-establish. The additional obstacles are ‘entry barriers’ for failed entrepreneurs. They result in a positive selection. That is, only entrepreneurs who make serious attempts to venture again will withstand the pre-start-up phase successfully. But they might also have unobserved characteristics which caused them to fail and which have a negative influence on the success of the newly-started business as well. Finally, the “stigma” of having gone bankrupt might give a negative signal to potential business partners and make it difficult to obtain credit or establish customer and supplier relations.

3. Literature Review

The impact of previous self-employment experience on self-employment success has been analysed both at the individual level and at the firm level. Measures of success that have been used are individual earnings from self-employment and duration in self-employment at the individual level, as well as firm survival and firm growth at the firm level. Most studies analyse the effects of self-employment experience in general, sometimes distinguishing between experience from current self-employment and experience from previous businesses. Additionally, the impact of industry-specific experience and work experience in a leading position are taken into account. Only very few studies make a distinction as to whether previous self-employment was terminated

voluntarily or involuntarily and investigate the impact of failure in self-employment (i.e. the experience of bankruptcy) on the success of a restart.

3.1 Impact of self-employment experience in general

First the results of the studies using individual level data shall be briefly reviewed. Evans and Leighton (1989) find that both experience in wage employment and self-employment have a positive effect on earnings for self-employed workers. The return on experience in the current business is significantly larger than the return on wage employment experience. The return on self-employment experience from a previous business is much larger again than the return on experience in the current business. The authors control for self-employment selection but are unable to reject the hypothesis that there is no correlation between selection and earnings. Williams (2003) also observes that, for self-employed individuals, returns on self-employment experience are higher than the returns on wage employment experience. When controlling for selection into self-employment, however, he is unable to find any significant effect for any type of work experience. Kay et al. (2004) observe positive returns on self-employment experience in the current business. They do not control for experience from wage employment. As to the experience from previous businesses, they detect a positive effect if there has been just one previous episode of self-employment, but a negative effect if the individual has experienced four or more episodes of self-employment. They conclude that the self-employed workers with experience from previous businesses are a very heterogeneous group.

Using the risk of exit from self-employment as a measure of success in self-employment, Van Praag (2003) finds that neither self-employment experience nor labour experience in general has a significant impact on a compulsory or voluntary exit from self-employment. By contrast, experience in the relevant industry lowers both exit risks.

As to empirical work based on firm level data, an important study investigating the relationship between several human capital indicators and start-up performance was conducted by Brüderl et al. (1996). According to their results, formal education and professional experience increase the probability of survival, but professional experience decreases growth of employment and turnover. The authors ascribe the latter result to the correlation between professional experience, age, and a cautious attitude. The only human capital variable that has a positive effect on all three performance indicators is experience in the sector of the current business. Self-employment experi-

ence does not appear to have an influence on any performance indicator. The same holds for work experience in a leading position. Brüderl et al. (1996) explain this by pointing to selection effects and the heterogeneity of the group of previously self-employed entrepreneurs. In fact, professional experience in self-employment and in a leading position is shown to have a positive effect on seed capital and initial firm size, two factors which enhance the chances of success of a start-up. The authors infer that these types of experience have an indirect positive effect on firm performance. Their results are corroborated by Colombo et al. (2004) who find that human capital specific to entrepreneurship, as well as managerial and entrepreneurial experience and work experience in the same sector, increase initial firm size. Åstebro and Bernhardt (2002) observe that education, general work experience and prior ownership experience have a positive effect on start-up capital.

Bosma et al. (2000) yield partly similar results. They cannot detect any significant influence of self-employment experience on employment or survival. However, self-employment experience has a positive effect on profits. Experience as an employee only increases the probability of survival. Experience in the sector positively influences both survival chances and profits and has the largest impact in this respect. Additionally, Abdesselam et al. (2004) find that the entrepreneur's sector-specific experience is an important feature of surviving firms.

Comparing novice entrepreneurs (entrepreneurs without any prior business ownership experience), serial entrepreneurs (entrepreneurs with prior business ownership experience who have sold/closed their prior business), and portfolio entrepreneurs (entrepreneurs who currently own two or more independent businesses), Westhead and Wright (1998) do not find any significant performance differences with respect to levels of and changes in sales revenues, levels of and changes in profitability, or changes in employment. Westhead et al. (2003) observe significantly higher levels of and changes in sales revenues for serial and portfolio entrepreneurs as compared with novice entrepreneurs. The difference between portfolio entrepreneurs and novices is larger than that between serial entrepreneurs and novices. When it comes to employment growth, only portfolio entrepreneurs significantly outperform novices.

To sum up, it is not clear from the empirical literature whether experience from former self-employment has a direct impact on personal earnings from self-employment or firm performance. Results are also ambiguous as to the relative importance of work experience as an employee and self-employment experience. Results seem to differ according to the performance indicator chosen and the way authors account for selec-

tivity. Experience in the sector, however, seems to be an important success factor that influences most firm performance indicators.

3.2 Impact of experience of failure

There are only two studies that explicitly take ‘experience of failure’ into account. The Boston Consulting Group (BCG) performed an analysis in 2002 delivering striking results. Based on the sample ‘Europe’s 500’¹, BCG illustrated the firms’ turnover growth and job creation, differentiated by the entrepreneurial background of their founders. Companies founded by restarters, that is, founders with experience of failure, excel in achieving faster growth of both turnover and employment. Because of this, BCG claims that learning from failure accelerates growth. Motivated by this opinion, which resulted from a descriptive analysis, Kay et al. (2004) tried to verify the findings econometrically. Their analysis is based on a survey of founders localized in Cologne (‘GrünCol’). Using information on the interviewees’ entrepreneurial careers they found there were neither significant differences in job creation between entrepreneurs with and without previous entrepreneurial experience, nor for the distinction between previously successful and failed ‘rerunners’. It is impossible to draw any conclusions regarding the impact of the experience of failure on firm performance on the basis of this scarce and mixed empirical evidence.

4. Data and Methods

4.1 Analysis at the individual level

For the analysis at the personal level, we use the first 20 waves of the German Socio-economic Panel (GSOEP).² The GSOEP is a longitudinal survey of private households and persons which started in 1984 and included 12,245 persons in the first wave. It provides annual information on various individual and household characteristics. The GSOEP started with sample A (“Residents in the FRG” (Federal Republic of Germany)) and sample B (“Foreigners in the FRG”, the so-called “Gastarbeiter”) in the first wave. Both samples allow compilation of individuals’ work history from 1983

¹ Europe’s 500 is a pan-European listing of high growth, job-creating companies which is provided by GrowthPlus, an association for dynamic entrepreneurs.

² See <http://www.diw.de/english/sop/index.html> for a detailed description of the GSOEP.

onwards on a monthly basis and are used for this empirical analysis. Besides the time spent in wage employment, self-employment and unemployment, the data reveal how many spells an individual has experienced in each of these categories. Thus, it is possible to distinguish between experience from current self-employment and self-employment experience from previous businesses. However, there is no information on whether previous self-employment was terminated voluntarily or involuntarily, so that the impact of failure in self-employment on the returns from current self-employment cannot be isolated from the general impact of former self-employment experience. This distinction can only be made using the data at the firm level. There are two other differences compared to the analysis at the firm level as regards content. First, the analysis at the individual level is not limited to entrepreneurs of start-up firms but contains all self-employed persons independent of the age of their business. Second, as it comprises all self-employed persons, it includes freelancers, craftsmen and sole proprietors. Such small ventures are underrepresented in the firm data set used.

Returns from self-employment are measured by gross monthly individual earnings.³ This measurement is not unproblematic because some of the returns from self-employment can be in the form of accumulated business assets, and are thus not captured using the earnings measure. Still, earnings can be considered a good approximation of success in self-employment because they are closely linked to firm performance. Kay et al. (2004) find that earnings from self-employment are significantly correlated with employment growth and survival of the firm.

The empirical analysis of the returns on self-employment experience is based on the earnings function

$$y_{it} = x_{it}\beta + \alpha_i + \varepsilon_{it}, \quad i = 1, 2, \dots, N \quad t = 1, 2, \dots, T \quad . \quad 1$$

i is an index for the individual, t is an index for the year. y is the logarithm of monthly earnings from self-employment, x is a vector of time-varying regressors, α

³ There are two variables that measure self-employed earnings in the GSOEP. The first one is based on earnings in the last month – assessed from all persons in gainful employment, be it wage-employment or self-employment. Respondents are asked not to include additional payments like holiday money or back-pay but also to include money earned for overtime. They are asked to give both gross and net earnings, i.e. earnings before and after deductions for tax and social security. The second variable is based on gross monthly income from different sources in the preceding year (one of them being self-employed earnings) – again requested from all respondents. Respondents are asked to give the average amount if monthly amounts were not always the same. The second variable should adjust for fluctuations in self-employed earnings. However, it turns out that most respondents give the same answer to both questions with respect to gross monthly self-employed earnings, and estimation results are roughly the same for the two variables. Only the results for the first variable are reported.

is a vector of unobservable, individual, time-constant effects, and ε is the error term reflecting time-varying unobservable factors. Equation 1 is estimated by a random effects model. Most of the regressors do not vary much over time, so a fixed effects approach would lead to imprecise estimates.

y_{it} in equation 1 can only be observed if individual i is self-employed. The estimation may suffer from sample selection bias if there are unobserved factors determining selection into self-employment which are correlated with earnings from self-employment after conditioning on explanatory variables. Therefore, an extension of the two-step selection correction procedure by Heckman (1979) to the panel data context as described in Wooldridge (2002) is used.⁴ In this manner we are able to draw conclusions that apply to the whole active population and not just to the self-employed.

4.2 Analysis at the firm level

For the analysis of restart performance, the ZEW Foundation Panel (see Almus et al. 2000 for details) is used. The panel relies on information provided by Creditreform, the largest German credit rating agency. The data contain not only information about the characteristics of newly founded firms in Germany but also about the firm owners, whose entrepreneurial activities have been observed longitudinally. This combination of firm-specific business failure information and information about the firm owners' entrepreneurial career allows the identification of those persons who reestablish after business failures. The ZEW Foundation Panel currently contains information on more than 4 million German firms founded after 1989.

To show the influence of entrepreneurial experience on firm growth, Birch-Index values (BI) are fitted on a set of independent growth determinants (x) in accordance with equation 2. The index values have been calculated for each firm i covering the period from foundation until the year 2004. Therefore, it is clear that only firms that survived the observation period occur in the data sample.

⁴ Selection of self-employment over paid employment can be described by the probit model

$$s_{it}^* = X_{it}\gamma_t + v_{it} \quad v_{it} | X_{it} \sim \text{Normal}(0,1)$$

$$s_{it} = 1 \text{ if } s_{it}^* > 0, \text{ and } 0 \text{ otherwise.}$$

s_{it} takes value 1 if i is self-employed in period t . The probit model is estimated for each t , and inverse Mills ratios $\hat{\lambda}_{it}$ are calculated for all i and t . Then equation 1 is estimated by OLS using the Mills ratios as additional regressors: $y_{it} = x_{it}\beta + \gamma_1\hat{\lambda}_{it} + \gamma_2d2_t\hat{\lambda}_{it} + \dots + \gamma_TdT_t\hat{\lambda}_{it} + \alpha_i + \varepsilon_{it}$, where $d2_t \dots dT_t$ are time dummies.

$$BI_i = x_i\beta + \alpha_i + \varepsilon_i, \quad i = 1, 2, \dots, N. \quad 2$$

The Birch-Index is a performance measure developed by David Birch (1987). He created an unbiased measure of growth by the multiplicative combination of absolute growth with percentage growth. The indicator can be said to be ‘unbiased’ due to the fact that percentage growth typically declines with firm size, whereas for absolute growth the reverse holds. The computation is originally designed for growth comparison for observation periods of equal lengths. A firm’s index value is therefore calculated by

$$BI_{t+1} = |E_{t+1} - E_t| \times \frac{(E_{t+1} - E_t)}{E_t}$$

A performance comparison of growth developments that are related to different periods thus requires a modification of the computation so that the index values become comparable. In order to normalize the outcome values both absolute growth and percent growth have to be divided by the length of the individual observation period. The resulting index value calculation for a single firm is consequently as follows:

$$BI = \left(\frac{|E_{T_N} - E_{T_0}|}{T_N - T_0} \right) \times \left(\frac{E_{T_N}}{E_{T_0}} \right)^{\frac{1}{(T_N - T_0)}} - 1$$

Unfortunately, not all observations provide the necessary information for calculating the index. Due to these missing BI-values in the sample, this analysis also applies the two-step selection correction procedure by Heckman (1979). Here, the first step selection probit model controls for the availability of the performance measure in the sample. Afterwards, the resulting inverse Mills’ ratio is introduced in the second step growth equation.

Our particular interest is to analyze the effect of entrepreneurial experience – especially the experience of failure – on firm performance. By definition, only habitual entrepreneurs can have entrepreneurial experience. Novices are self-employed for the first time and do not have such experience. Therefore, our first step is to investigate the firm performance by comparing novice and habitual entrepreneurs using the former as the underlying base category in our first sample. For reasons related to data handling, all habitual entrepreneurs are included with the second firm of their entrepreneurial career. Accordingly, to identify experience of failure it is necessary to take a look at the firm each of them ran previously. In case participation in this firm no longer exists, the time of exit becomes relevant. If there is no official evidence of in-

solvency that applies to this past time period, that is, no opening request or further legal action, the exit is assumed to have been voluntary. Otherwise, it can be assumed to have been forced by insolvency, meaning that the entrepreneur has experience of failure. In summary, besides novices, the investigation based on the first sample comprises two types of habitual entrepreneurs: previously 'successful' entrepreneurs, and entrepreneurs with experience of failure. In the regression analysis, both an indicator summarizing the two types of habitual entrepreneurship (representing self-employment experience in general) and an indicator of experience of failure (representing a particular kind of self-employment experience) are included. The second step of the analysis is based on a sample of habitual entrepreneurs only. In addition to the indicators of entrepreneurial experience, several exogenous variables commonplace in entrepreneurship research are included. The analysis additionally includes information on the previous firm.

5. Empirical Results

5.1 Analysis at the individual level

Table 1 gives a brief description of the work experience of the self-employed using a cross-section of the active population in 2003. Note that there is an age bias in the sample because only samples A and B of the GSOEP, which started in 1984, are used.⁵ About 12% of the active population in this sample are self-employed. Most of them (58%) are still in their first self-employment spell, but a considerable proportion have already experienced two (20%) or more (22%) spells of self-employment. 82% have experience of wage employment, but only 8% have worked as an executive in the wage sector. 38% have previously worked in the sector in which they are currently running their business.

Table 1: Self-Employment and Other Professional Experience Among the Self-Employed

	%
Share of self-employed in active population	11.8
Among the self-employed with	
1 spell of self-employment	57.4
2 spells of self-employment	20.4
3 or more spells of self-employment	22.2
Wage employment experience	82.3
Experience in sector	37.8
Experience as executive	8.3
<i>Number of observations</i>	259

Source: GSOEP 2003, weighted.

Table 2 gives the results of the random effects regression of equation 1 for two different model specifications. Model 1 uses the total number of months spent in self-employment to capture self-employment experience independent of whether the experience stems from current or previous self-employment. The model also includes the number of spells spent in self-employment, in order to test if it matters whether self-employment experience has been gathered in just one business or several businesses. Model 2 uses the number of months already spent in the current spell of self-employment and the number of months spent in previous self-employment spells. It allows us to test whether the impacts of the two types of self-employment experience

⁵ Respondents taking part in the first wave were at least 17 years old in 1984. Their children are interviewed as soon as they reach this age so that their entire employment history can be observed. They are also included into the analysis.

differ from each other. Both models include further work experience indicators (wage employment experience, sector-specific experience, managerial experience in the wage sector), personal characteristics (age, gender, foreign provenance, university degree), and variables related to the current job (company size, required training for the job, industry).

According to the estimation of model 1, earnings from self-employment increase with age (at a decreasing rate) and are lower for females than for males. Foreigners and individuals with a university degree earn more than others. Earnings are not affected by experience from wage employment but increase with experience from self-employment (at a decreasing rate). The number of self-employment spells has a negative impact on earnings. This indicates that for the same total time spent in self-employment, the value of the self-employment experience decreases with the number of businesses in which the experience has been gathered.⁶ Neither experience in the sector nor in a leading position has a significant effect. Earnings seem to increase up to a company size of 200 employees. They are higher if vocational training or a college degree is required for the entrepreneur to do his job.

The random effects regression of model 2 reveals that experience both from current self-employment and from previous businesses positively influences earnings. The coefficients are of about the same magnitude. A more restrictive specification of the model, where no distinction is made between current and previous self-employment experience (i.e. model 1, but without spells in self-employment as regressor), cannot be rejected in a likelihood ratio test. This implies that it is not important whether self-employment experience has been gathered in the current or previous business, but it is rather the total duration in self-employment which matters. The other coefficients in model 2 hardly differ from those in model 1.

Table 2: Random Effects Estimation of Earnings from Self-Employment, GSOEP 1990-2003

	Model 1			Model 2		
	Coef.		SE	Coef.		SE
age	0.0460	***	0.0121	0.0567	***	0.0119
(age) ²	-0.0006	***	0.0001	-0.0007	***	0.0001
female	-0.7357	***	0.0531	-0.7529	***	0.0532
foreign	0.1419	**	0.0629	0.1380	**	0.0633
university degree	0.1742	***	0.0553	0.1614	***	0.0555
months wage employment	0.0003		0.0014	0.0002		0.0014
(months wage employment) ²	1.1e-05		8.8e-06	1.1e-05		8.8e-06
months self-employment	0.0061	***	0.0009	-		-

⁶ The negative impact of the self-employment spells remains even when the months spent in self-employment are excluded from the regression.

(months self-employment) ²	-1.8e-05	***	3.1e-06	-		
spells in self-employment	-0.0288	**	0.0146	-		
months current self-employment	-			0.0037	***	0.0007
(months current self-employment) ²	-			-9.7e-06	***	2.6e-06
months previous self-employment	-			0.0031	***	0.0010
(months previous self-employment) ²	-			1.1e-05		6.4e-06
industry-specific experience	0.0022		0.0303	0.0025		0.0303
managerial experience	0.1184		0.0779	0.1061		0.0782
company size 1-19 employees	0.1280	***	0.0239	0.1326	***	0.0240
company size 20-199 employees	0.1680	**	0.0677	0.1910	***	0.0676
company size 200 and more employees	0.0306		0.0596	0.0343		0.0598
college required for job	0.2156	***	0.0509	0.2143	***	0.0511
vocational training required for job	0.0767	***	0.0278	0.0767	***	0.0279
industry dummies		***			***	
Mills ratios 1990-2003		**			*	
constant	7.7365		0.2674	7.6047		0.2675
number of observations	3242			3242		
number of individuals	772			772		
R ² within	0.034			0.030		
R ² between	0.411			0.402		
R ² overall	0.334			0.326		

significant at 10%; ** significant at 5%; *** significant at 1%; SE=standard error

To sum up, self-employment experience – as opposed to wage employment experience – has a positive effect on earnings in self-employment. It makes no difference whether this experience stems from current or previous self-employment. When the total time spent in self-employment is kept constant, however, the fact of having gathered self-employment experience in more than one business seems to decrease earnings.

5.2 Analysis at the firm level

Some descriptive statistics are shown in Table 3. Comparing novice entrepreneurs and habitual entrepreneurs reveals that novice entrepreneurs are younger and, as a group, have a higher ratio of females to males. They are less academically educated but are more often certified as master craftsmen. Additionally, they start with a smaller number of employees, are more likely to choose legal forms based on unlimited liability, and tend to establish firms by themselves rather than in a team. Furthermore they are slightly less likely to take up opportunities to diversify, measured by ascertaining whether they founded a subsidiary firm during the observation period.

Table 3: Table of Descriptive Statistics

Variables	Novices		Habitual-Entrepreneurs			
	Mean	SD	altogether		with failure experience	
			Mean	SD	Mean	SD
Entrepreneur's gender (males)	0.80		0.89		0.92	
Entrepreneur's age at foundation (years)	38.60	9.82	41.32	9.69	40.83	9.43
Education						
(graduates=1)	0.28		0.36		0.29	
(master craftsmen=1)	0.20		0.12		0.14	
Firm age in 2004 (years)	5.25	1.54	4.83	1.41	4.67	1.40
Start-up size (number of employees)	3.07	4.29	3.76	5.28	3.80	4.73
Legal form (limited liability firms)	0.54		0.72		0.64	
Subsidiary foundation (within 12 months after start)	0.01		0.03		0.02	
Team foundation (yes)	0.30		0.48		0.38	
Admission of additional partners						
Persons	0.04		0.06		0.05	
Corporate bodies	0.08		0.14		0.05	
Unemployment rate in the region	9.76	4.00	10.51	4.63	12.28	5.07
Foundation intensity in the region	47.04	13.02	47.57	13.79	47.14	12.69
Business failure intensity in the region	4.79	1.87	5.32	2.16	6.05	2.29
Region type (metropolitan districts)	0.50		0.54		0.56	
Entrepreneurial industry-specific experience			0.33		0.43	
Length of participation in previous firm (years)			3.22	3.96	2.89	2.75
Period of rest since exit (years)			0.19	0.72	1.29	1.57
Size of previous firm (number of employees)			15.43	136.31	12.60	17.23
Number of observations	47,827		6,398		307	

Source: ZEW Foundation Panel.

Comparing habitual entrepreneurs with and without failure experience on the basis of the characteristics of their entrepreneurial experience, almost all factors are striking. A distinctly over-proportional share of entrepreneurs with experience of failure also has industry-specific experience. Their length of participation in the previous firm is shorter and more time elapses before they try a second time. The latter is not surprising: there is, firstly, a systematic cause: in the case of portfolio habitual entrepreneurs, the time that passes is zero, which lowers the average. Secondly, financial restrictions afflicting failed entrepreneurs might delay their restart.

Table 4 displays the estimation results of the regressions. Model 1 relies on the first sample and comprises novices as well as habitual entrepreneurs. Model 2 is based on the second sample and includes only habitual entrepreneurs.

Novices vs. Habitual Entrepreneurs

When at least one managing firm owner has entrepreneurial experience, this has a positive impact on the firm's employment growth. The experience of failure, however, has no additional effect. The entrepreneur's age as an expression of her/his life experience affects growth negatively. This result contrasts in a certain way with the positive age coefficient yielded by the analysis at the individual level. This contrast, however, can be explained by the difference in the two indicators of entrepreneurial success used. The willingness to reinvest profits into the firm and thereby to accelerate firm growth is higher at a younger age when the firm is still relatively small and there is still much time left for the entrepreneur to benefit from the returns of the investment. With age, he/she is less inclined to take further risks and prefers to consume the profits of the firm, meaning that the earnings from self-employment increase. If the entrepreneur is academically educated this has a positive effect on employment growth. This finding is not valid in case of education as a master craftsman, maybe due to the fact that craft firms are typically born small and stay small.

Firm age (with a maximum of ten years) seems to be irrelevant for firm growth. The positive impact of limited liability is confirmed. Team entrepreneurship improves growth, both when it is in place from the start (team foundation) and when it is introduced in the course of the observation period via the admission of additional partners. The strongest positive growth effect of all variables is recorded for the admission of additional corporate partners, but the effect of the admission of additional persons is only insignificantly smaller as revealed by a Wald-test. 'Diversification', which is measured as the foundation of a subsidiary, may have opposing effects on growth: on the one hand, risk can be avoided by diversification, that is, processes that are fraught

with risk can be sourced out to another firm. But, on the other hand, along with the risk, opportunities are shifted away at the same time. However, neither of the effects seems to predominate.

Table 4: Estimation of Firm Growth caused by Entrepreneurial Experience

Variables	Model 1			Model 2		
	Coef.		SE	Coef.		SE
Habitual-Entrepreneurship						
General experience	0.032	***	0.009			
with failure experience	0.008		0.036	-0.006		0.049
Entrepreneur's gender (male)	0.016	**	0.007	0.031		0.031
Entrepreneur's age (log)	-0.028	**	0.011	-0.089	**	0.043
Education						
(graduates=1)	0.042	***	0.009	-0.014		0.025
(master craftsmen=1)	0.016		0.010	-0.018		0.037
Firm's start-up size						
log(# of employees)	-0.170	***	0.009	-0.224	***	0.031
squared log(# of employees)	0.033	***	0.003	0.037	***	0.011
Firm age (log)	-0.027		0.042	0.017		0.146
Legal form (limited liability firm)	0.124	***	0.006	0.145	***	0.024
Subsidiary foundation (within 12 months after start)	-0.014		0.026	-0.114	**	0.055
Team foundation	0.053	***	0.006	0.092	***	0.022
Admission of additional partners						
Persons	0.099	***	0.014	0.072	*	0.043
Corporate bodies	0.122	***	0.010	0.107	***	0.028
Unemployment rate in the region (log)	0.043	***	0.016	0.007		0.059
Foundation intensity in the region (log)	-0.014		0.020	0.025		0.076
Business failure intensity in the region (log)	-0.023		0.016	-0.033		0.059
Region type (metropolitan district)	0.006		0.007	-0.020		0.024
Entrepreneurial industry-specific experience				0.033		0.021
Length of participation in previous firm (years)				-0.002		0.003
Period of rest since exit (years)				0.003		0.014
Size class of previous firm						
log(# of employees)				0.012		0.022
squared log(# of employees)				0.011	**	0.005
Missing value measures						
(gender=.)	0.018		0.018	0.246	**	0.110
(age=.)	-0.121	***	0.042	-0.361	**	0.168
(education=.)	-0.003		0.007	-0.080	***	0.025
(industry=.)	-0.061		0.127			
(previous firm size=.)				0.053	*	0.027
Mills' ratio	-0.273	***	0.010	-0.346	***	0.037
Constant	0.509	***	0.191	0.567	***	0.671
Observations			54,225			6,398
Wald-test χ^2 on joint significance of						
the regional indicators	13.58	***		1.07		
the industry measures (not reported)	44.90	***		6.07		
the federal states dummies (not reported)	22.17	***		7.78		
the failure year dummies (not reported)	462.76	***		127.52	***	
the model in all	3,243.33	***		506.46	***	

* significant at 10%; ** significant at 5%; *** significant at 1%; SE=standard error

The regional variables are taken at the time of foundation and account for differences between the regions. Unemployment rate is the only one of the four regional variables that is significant, but unfortunately exhibits a questionable sign: the idea that regions hit by high unemployment drive firm growth is thus unfounded. Moreover, the joint significance of the regional variables could not be confirmed. Finally, a significant

selection ‘downward bias’ in the existence of the performance measure is suggested by the Mills’ ratio. Mainly, the negative sign is evidence for index value availability in the case of underperforming firms.

Habitual Entrepreneurs Side by Side

The fit on the basis of the second sample confirms the result of the first estimation: the effect of failure experience is insignificant, i.e. restarts do not exhibit higher growth rates than firms of habitual entrepreneurs without experience of failure. The effects of individual variables measured for the first sample disappear with the exception of the entrepreneur's age. Firm-related indicators' effects stay unchanged and a further effect appears: habitual entrepreneurs' firms seem to be negatively influenced by the foundation of a subsidiary firm. All of the additional indicators referring to the characteristics of the entrepreneurial experience are insignificant, with one exception: the squared term of previous firm size affects growth, that is, the larger the firm, the higher the learning effects that enhance later performance. Neither entrepreneurial intra-industry experience, nor the length of the previous entrepreneurial period nor the period of rest since exit is relevant for growth. The result concerning the length of the previous entrepreneurial period is somewhat contrary to the findings at the personal level, which indicated that the months spent in previous self-employment have a positive effect on earnings. Again the use of different success indicators is probably the reason for the opposed results. The period of rest indicator reveals that there is no depreciation of entrepreneurial experience over time. This is in line with the findings at the personal level, according to which experience from current and former self-employment have equal weight.

6. Summary and conclusion

The object of this paper has been to analyze the influence of self-employment experience on success in self-employment. We divided the analysis into two perspectives and two different measures of success. Firstly, we considered the personal level where we investigated the influence of experience on individual earnings. Secondly, we considered the firm level and examined the effect of self-employment experience of the entrepreneur on the employment growth of the firm. In the second part of the analysis, we also accounted for a special type of entrepreneurial experience, namely experience of failure. The results of both analyses confirm human capital theory: entrepreneurial experience affects success positively. According to the analysis at the personal level, it makes no difference whether experience has been gained in current or previous self-employment. The fact of having run several businesses has no additional positive effect on earnings. On the contrary: controlling for the total time spent in self-

employment, earnings decrease with the number of self-employment spells. According to the analysis at the firm level, previous business ownership experience enhances performance. The effect is independent of whether the previous business has failed.

Our results suggest that there is no reason to stigmatize failed entrepreneurs as bad entrepreneurs. Like all habitual entrepreneurs they benefit from their entrepreneurial experience and are generally more successful than novices. However, the experience of failure has no additional positive effect. The question is what actually causes the success of habitual entrepreneurs and makes up the value of their experience: the fact of having previously run a different business or the fact of having spent more time in self-employment than novices. Combining the results of both types of analyses of this paper leads to the conclusion that it is rather the duration in self-employment which is crucial for entrepreneurial success.

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