The Effect of Motivation on Self-employment Duration in Germany: Necessity versus Opportunity Entrepreneurs*

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Abstract

Using data from the German Socio-Economic Panel Study (GSOEP), we analyze whether necessity and opportunity entrepreneurs differ in terms of self-employment duration. We find that the two types of entrepreneurs differ regarding their duration in self-employment. Once controlled for educational variables however, this effect turns out to be no longer significant. We therefore conclude that the difference observed is no original effect but is due to selection. We then go on to discuss the implications of our finding for entrepreneurship-policy making. Suggestions to improve governmental start-up support programmes are given. Estimations are carried out with discrete time hazard rate models controlling for unobserved heterogeneity.

Keywords: Self-employment, Firm survival, Necessity entrepreneurs, Opportunity entrepreneurs, Hazard rates, GSOEP

JEL classification: J23, J24, M13, C41

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I. Introduction

It is a widely accepted goal of economic policy to increase the number of new businesses. Yet many new businesses do not survive very long. Only about 50% of newly established businesses in Germany survive longer than 5 years (Fritsch et al. 2006). From a policy perspective, it might therefore be interesting to know more about the determinants of survival of newly established businesses. In addition, financial institutions might also be interested to know more about the determinants of business survival. Any potential investor – whether a venture capitalist, a bank or a business angel – needs to calculate the expected return of his investment where business survival obviously is a crucial assumption. Any new information about the determinants might make this calculation more accurate and help to avoid systematic decision biases.

Apart from the general question about the determinants of business survival, this paper aims to provide new insights relating to the impact of motivation on business survival. More concretely, we analyze whether an individual who stepped into self-employment voluntarily (opportunity entrepreneur) remains substantially longer self-employed than an individual who started self-employment for necessity reasons (necessity entrepreneur). To elaborate the determinants of duration in self-employment, we estimated several hazard rate models with different specifications in a stepwise procedure. Employing this mode of analysis, we aim to determine whether any observable differences between the two groups are due to selection. In order to explore the validity of our results further, we compare the characteristics of necessity and opportunity entrepreneurs using univariate statistics and a multivariate probit model.

In line with prior beliefs, we found that opportunity entrepreneurs stay significantly longer in self-employment than necessity entrepreneurs. This effect, however, seems to be more likely due to selection rather than being an original effect. After controlling for whether the venture is started in a profession the entrepreneur has learnt, the hazard of leaving self-employment is not affected by the individual being a necessity entrepreneur anymore. This result opens an interesting debate regarding the economic impact of opportunity versus necessity entrepreneurs. It seems that necessity entrepreneurs are not *per se* less successful and therefore less desirable from an economic perspective as some literature suggests (e.g. Acs et al. 2005, Acs and Varga 2005). To some degree, this finding justifies governmental programmes of start-up support designed exclusively for necessity entrepreneurs. Their efficiency, however, might be further improved by including educational variables into the decision-making process.

.II. Theory: The Effect of Motivation on Self-employment Duration

Since 2001, the Global Entrepreneurship Monitor (GEM) has discussed two rather different types of entrepreneurship, notably necessity and opportunity entrepreneurship (e.g. Reynolds et al. 2002; Sternberg et al. 2006). The differentiation refers to the motivation of entrepreneurs to start their ventures. Opportunity entrepreneurs are viewed as entrepreneurs who start a business in order to pursue an opportunity, whilst necessity entrepreneurship is more requirement-based (e.g. Reynolds et al. 2005). Why should these two groups differ regarding their duration in self-employment? Some arguments are presented below:

Opportunity entrepreneurs start their venture voluntarily. More than necessity entrepreneurs, they have prepared their entry into self-employment on a solid basis. It seems also likely that they start their business in an area of their particular expertise. These factors should lead to a longer survival time of opportunity versus necessity entrepreneurs.

Some empirical studies have shown that entrepreneurship pays off for only a small subgroup of entrepreneurs (e.g. Hamilton 2000). Given their qualification, many entrepreneurs could earn more in a wage job. The fact that they stay nevertheless in self-employment is often interpreted as evi-

dence for non-monetary returns of entrepreneurship such as greater autonomy, broader skill utilization and the possibility to pursue one's own ideas (Benz 2005; Benz and Frey 2003; Hundley 2001). However, almost by definition, this argument should not apply to necessity entrepreneurs. At least in the beginning of their venture, non-monetary returns seem unlikely to be their main driver for motivation. Regarding business survival we argue that non-monetary returns of entrepreneurship impact opportunity entrepreneurs more heavily than necessity entrepreneurs. This might enable them to cope better with problems of the new venture such as an economic downturn or customer dissatisfaction. On the other hand, once these non-monetary returns vanish (e.g. the entrepreneur finds herself being less independent as she originally assumed), they are more apt than necessity entrepreneurs to quit their businesses and look for new opportunities either in wage jobs or as serial entrepreneurs.

Another line of argument is based on selection issues. The basic argument postulates a higher education or a higher entrepreneurial skill set of opportunity versus necessity entrepreneurs. According to this argument, opportunity entrepreneurs should stay significantly longer in self-employment than necessity entrepreneurs. Once controlled for these skills, however, the difference between the two groups should vanish. Yet, due to their rather generalist nature (Lazear 2004; Wagner 2003), entrepreneurial skills are difficult to measure. In this empirical work, we refrain from this generalist aspect and compare the two groups only regarding formal education (variable schooling) and whether they were educated in the profession in which they start their venture (variable educated in this profession).

III. Data, Measures and Econometric Models

We used the data of the German Socio-Economic Panel Study (GSOEP) at the German Institute for Economic Research (DIW), Berlin, to construct an unbalanced panel data set. The GSOEP is a longitudinal household survey conducted annually. Amongst a broad array of detailed information, it reveals the participant's occupational status (e.g. employee or self-employed). In order to construct our estimation sample, we made use of the waves from 1990 to 2003, selecting those persons who were self-employed (in at least one wave) and studying how they stepped into self-employment. Those reporting to have left their previous job in paid employment on their own were classified as opportunity entrepreneurs, whereas those who were either dismissed by their employer or laid off due to a closing down of their workplace were classified as necessity entrepreneurs. We constrained our sample to those cases where the termination of the last job, voluntarily or involuntarily, occurred within two years before moving into self-employment. For serial entrepreneurs, we only considered their first entrepreneurial activity. Individuals working in a business of their family (which could be treated as an indirect mode of self-employment) were excluded completely.

Correspondingly, the way in which we constructed the dependent variable – duration in self-employment – is explained in more detail: survival time is determined as the number of succeeding years the individual received income from self-employment. Any interruption by a minimum of a year is interpreted as an exit from self-employment. Individuals without an indication of the year they entered self-employment (survival time is left censored), were excluded from our sample. Those individuals who survived in the status of self-employment beyond observation time (survival time is right censored) were included in the sample, but marked with a censoring parameter (302 entrepreneurs or 47.26% of all entrepreneurs). Table III describes all variables used in this paper.

In order to compare necessity and opportunity entrepreneurs, we estimated a binary probit model. To study the determinants of the individual duration in self-employment, we estimated several hazard rate models, which is the appropriate method to study durations of any kind (van Praag 2003). As the duration variable is measured in discrete time intervals (years), we specified a discrete time model.

IV. Estimation Results

What do the results of the hazard rate models tell us about the determinants of self-employment duration?

Regarding a difference between necessity and opportunity entrepreneurs, only the first model shows a significant result. Controlling for socio-demographic variables such as e.g. age, nationality and gender as well as time effects, opportunity entrepreneurs survive significantly longer in the status of self-employment than necessity entrepreneurs (model I). However, this effect turns out to be no longer significant, when we controlled for educational variables (model II). An inclusion of financial variables (model III), regional variables (model IV) or industry variables (model V) did not change this result. We therefore conclude that the mere fact whether an entrepreneur started a venture out of a necessity or an opportunity does not have any significant impact on the duration in self-employment. The difference observed in duration (3.5 years for necessity vs. 4.3 years for opportunity entrepreneurs with p=0.011, Table IV) is likely to be due to selection. Or, in other words: two entrepreneurs with the only difference in characteristics being that of being a necessity or opportunity entrepreneur show no difference regarding their duration in self-employment.

V. Policy Implications and Further Research

The German state provides monetary incentives to engage in start-ups. Some of these subsidies are open for every kind of start-up, some only for particular types. The federal employment agency (*Bundesagentur für Arbeit*), for example, hands out subsidies exclusively for entrepreneurs who have been unemployed before, e.g. payments under the so-called "Ich-AG". These programmes seem to be better suited for necessity than for opportunity entrepreneurs. The size of these programmes becomes clear when considering that in 2004 more that half of all German start-ups were supported by the federal employment agency (Niefert and Tchouvakhina 2006). In 2005, about 320,000 start-up entrepreneurs received payments from either "Ich-AG" or "*Überbrückungsgeld*" (Bundesministerium für Wirtschaft und Technologie 2006). Based on our empirical results, two particular policy implications stand out: Firstly, it makes sense to support necessity entrepreneurs. Once controlled for educational variables, their survival chances in self-employment are not worse than those of opportunity entrepreneurs. Secondly, although these programmes do not necessarily follow only economic but also social goals (in the sense that those who receive benefits are no longer unemployed), their economic efficiency can be improved without losing on the social goals. As we have demonstrated above, once a necessity entrepreneur starts a venture in a profession of her expertise, her survival chances increase substantially. It would seem therefore that a promising approach to guide necessity entrepreneurs towards fields within their particular expertise. The inclusion of such criteria in the decision-making process of who receives support by either "*Ich-AG*" or "*Überbrückungsgeld*" in November 2004 was therefore the right decision.

We find notable differences between necessity and opportunity entrepreneurs that should receive further investigation. These groups differ mainly regarding their demographic as well as regional aspects, but not necessarily their economic success. In the GEM-related research, the discussion on necessity and opportunity entrepreneurship often proposes that a high rate of opportunity entrepreneurs is preferable, whereas a high rate of necessity entrepreneurs is less desirable (e.g. Acs et al. 2005; Acs and Varga 2005). The results of our econometric analyses, however, do not lead to such a clear answer. Controlling for education, no significant difference between the two groups regarding self-employment duration is found. Following this counterintuitive result, further research might address the following questions: are necessity and opportunity entrepreneurs really homogenous groups? Are there important sub-groups that should receive closer attention? Do either necessity or opportunity entrepreneurs create more jobs? Do the determinants of success differ between the two groups?

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TABLE I
New Entries into Self-employment per Year: Necessity vs. Opportunity entrepreneurs

Year	**90**	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**00**	**01**	**02**	**03**	**Total**	
Necessity entrepreneurs	6	13	12	15	4	13	11	16	8	13	21	12	14	26	**184**	28.8 %
Opportunity entrepreneurs	20	43	46	44	30	26	29	27	24	21	47	35	38	25	**455**	71.2 %
∑	26	56	58	59	34	39	40	43	32	34	68	47	52	51	**639**	100 %

Note: The GSOEP has increased its sample size since its first survey in 1984. The number of successfully interviewed persons by sample were 13,972 (1990), 13,669 (1991), 13,397 (1992), 13,179 (1993), 13,417 (1994), 13,768 (1995), 13,511 (1996), 13,283 (1997), 14,670 (1998), 14,085 (1999), 24,586 (2000), 22,351 (2001), 23,892 (2002) and 22,592 (2003) (Frick, 2005).

Data source: GSOEP 1990-2003

TABLE II
Necessity vs. Opportunity Entrepreneurs

variable	NE mean (sd)	OE mean (sd)	NE vs. OE p-values
Exit (dummy; 1=yes)	0.492 (0.501)	0.466 (0.499)	0.549
Duration (years)	3.524 (2.970)	4.254 (3.434)	0.011
Working time (hours per week)	44.682 (16.732)	45.937 (17.452)	0.444
Job satisfaction (0 = totally unhappy, 10 = totally happy)	6.827 (2.325)	7.804 (1.931)	0.000
East Germany (dummy; 1= yes)	0.449 (0.499)	0.248 (0.432)	0.000
German (dummy; 1= yes)	0.882 (0.323)	0.867 (0.339)	0.609
Age at time of entry (years)	38.257 (9.495)	35.347 (9.044)	0.000
Male (dummy; 1= yes)	0.677 (0.469)	0.662 (0.474)	0.701
Schooling (years)	12.720 (2.880)	12.720 (2.850)	0.996
Educated in this profession (dummy; 1= yes)	0.348 (0.478)	0.447 (0.498)	0.019
Earnings (€/month)	1780.280 (1298.260)	2256.060 (2094.870)	0.001
Months unemployed before self-employed	7.824 (10.677)	4.454 (11.174)	0.000
Home owner (dummy; 1= yes)	0.439 (0.362)	0.362 (0.481)	0.070
Married (dummy; 1= yes)	0.620 (0.487)	0.587 (0.493)	0.431
Children (dummy; 1= yes)	0.484 (0.501)	0.503 (0.501)	0.656

Note: A p-value of less than 0.05 means that the null-hypothesis of equal means can be rejected at an error level of less than 5 percent; Calculations are in most cases based on first year observations of self-employment; Estimates obtained using STATA.

Data source: GSOEP 1989-2004

TABLE III
Description of variables

Variable	Description
Categorial variables	
Exit	Dummy for individual who left self-employment
Opportunity entrepreneur	Dummy for entrepreneur who quitted her last job on her own
Educated in this profession	Dummy for individual who is self-employed in the profession she has learnt; generated by GSOEP
Male	Dummy for individual who is male
German	Dummy for individual who is German by nationality
Married	Dummy for individual who is married
Children	Dummy for individual who has at least one child under age 16
Home owner	Dummy for individual who owns an apartment or house
East Germany	Dummy for individual who lives in East Germany
Industry dummies	Dummies for agriculture, construction, car sale, wholesale, retailing, hotel and restaurant, transportation, banking and insurance, real estate, databases, consulting, education sector, health sector, culture and sports, other industry and other.
Region dummies	Dummies for Berlin West, Schleswig Holstein, Hamburg, Lower Saxony, Bremen, North Rhine-Westphalia, Hesse, Rhineland-Palatinate, Baden-Wuerttemberg, Bavaria, Berlin East, Mecklenburg-Western Pomerania, Brandenburg, Saxony Anhalt, Thuringia and Saxony.
Year dummies	Dummy for year 1990, 1991 etc. where individual enters self-employment
Duration dummies	Dummies for 1^{st}, 2^{nd}, 3^{rd} etc. year in self-employment
Categorial variables	
Duration	Years a person has been in self-employment
Gross earnings	Monthly gross earnings from self-employment (in €); generated by GSOEP
Working time	Actual working time per week (in hours); generated by GSOEP
Job satisfaction	Job satisfaction on a scale from 1 (totally unhappy) to 10 (totally happy)
Age	Current age of individual in years
Schooling	Years of schooling; generated by GSOEP
Months unemployed before self-employed	Months that individual has been unemployed in her entire working life before entering self-employment.

TABLE IV
Estimated probability of being opportunity entrepreneur
Dependent variable: Opportunity entrepreneur

Variable	Probit estimates
Months unemployed before self-employed	- 0.011 † (0.006)
Age (years)	- 0.014 * (0.007)
Schooling (years)	0.006 (0.023)
East Germany (dummy; 1=yes)	- 0.720 *** (0.132)
German (dummy; 1=yes)	0.112 (0.180)
Male (dummy; 1=yes)	- 0.127 (0.131)
Educated in this profession (dummy; 1=yes)	0.205 † (0.124)
Home owner (dummy; 1=yes)	- 0.173 (0.123)
Married (dummy; 1=yes)	0.022 (0.144)
Children (dummy; 1=yes)	0.108 (0.126)
Industry dummies	16 categories (p = 0.318)
Year dummies	13 categories (p = 0.011)
No. of individuals	639
Wald Chi² (p-value)	92.69 (< 0.001)
McFadden R²	0.129
Log pseudolikelihood	- 334.25

Significance levels: † 0.1 < p < 0.05; * 0.05 < p < 0.01; ** 0.01 < p < 0.001; *** p < 0.001

Notes: Heteroskedasticity-robust standard errors in parentheses; Estimates obtained using STATA

Data source: GSOEP 1989-2004

TABLE Va
Descriptive Statistics

Variables	Mean	Std. Dev.	Min.	Max.	Tolerance level
Opportunity entrepreneur	0.712	0.453	0	1	0.884
Male	0.670	0.471	0	1	0.793
German	0.870	0.336	0	1	0.777
Age	36.285	9.251	18	75	0.727
Married	0.599	0.490	0	1	0.637
Children	0.501	0.500	0	1	0.754
Schooling	12.729	2.867	7	18	0.694
Educated in this profession	0.419	0.494	0	1	0.816
Home owner	0.383	0.487	0	1	0.825
Berlin West	0.028	0.166	0	1	0.304
Schleswig Holstein	0.025	0.156	0	1	0.332
Hamburg	0.022	0.147	0	1	0.351
Lower Saxony	0.067	0.251	0	1	0.160
North Rhine Westphalia	0.178	0.383	0	1	0.076
Hesse	0.074	0.261	0	1	0.150
Rhineland and Saarland	0.056	0.231	0	1	0.183
Baden Wurttemberg	0.124	0.329	0	1	0.100
Bavaria	0.105	0.307	0	1	0.113
Berlin East	0.033	0.178	0	1	0.271
Mecklenburg-Western Pomerania	0.036	0.186	0	1	0.257
Brandenburg	0.047	0.212	0	1	0.215
Saxony Anhalt	0.050	0.218	0	1	0.202
Thuringia	0.061	0.240	0	1	0.174
Saxony	0.081	0.274	0	1	0.140
Agriculture	0.022	0.147	0	1	0.822
Construction	0.124	0.329	0	1	0.485
Car Sale	0.014	0.118	0	1	0.858
Wholesale	0.016	0.124	0	1	0.850
Retail	0.124	0.329	0	1	0.532
Transportation	0.061	0.240	0	1	0.649
Hotel and Restaurant	0.055	0.228	0	1	0.667
Banking and Insurance	0.050	0.218	0	1	0.716
Real Estate	0.011	0.104	0	1	0.902
Consulting	0.088	0.283	0	1	0.574
Databases	0.030	0.170	0	1	0.753
Education	0.025	0.156	0	1	0.797
Health	0.069	0.253	0	1	0.597
Culture and Sports	0.014	0.118	0	1	0.823
Other Industry Sectors	0.116	0.320	0	1	0.539
Other Sectors	0.061	0.240	0	1	0.671

N: 639
Data source: GSOEP 1989-2004

TABLE Vb
Correlations

Variables	Opportunity entrepreneur	Male	German	Age	Married	Children	Schooling	Educated in this profession	Home owner
Opportunity entrepreneur	1.000								
Male	- 0.013	1.000							
German	- 0.020	- 0.054	1.000						
Age	- 0.135 ***	- 0.045	0.080 *	1.000					
Married	- 0.033	- 0.024	- 0.050	0.348 ***	1.000				
Children	0.029	0.018	- 0.079 *	- 0.042	0.397 ***	1.000			
Schooling	- 0.002	- 0.093 **	0.238 ***	0.213 ***	0.024	- 0.061	1.000		
Educated in this profession	0.085 *	0.064	0.093 **	0.144 ***	0.080 *	- 0.027	0.251 ***	1.000	
Home owner	- 0.067 †	- 0.049	0.152 ***	0.214 ***	0.218 ***	0.111 ***	0.087 *	0.113	1.000

Significance levels: † $0.05 < p < 0.1$; * $0.01 < p < 0.05$; ** $0.001 < p < 0.01$; *** $p < 0.001$
N: 639

Data source: GSOEP 1989-2004

Table VI
Random Effects Hazard Rate Regression Results

Variables	Model I		Model II		Model III		Model IV		Model V	
Motivation at the start										
Opportunity entrepreneur	- 0.241 †	(0.144)	- 0.195	(0.145)	- 0.211	(0.145)	- 0.208	(0.152)	- 0.113	(0.160)
Socio-demographic variables										
Male	- 0.471 ***	(0.134)	- 0.493 ***	(0.136)	- 0.500 ***	(0.136)	- 0.497 ***	(0.139)	- 0.514 ***	(0.160)
German	- 0.396 *	(0.187)	- 0.239	(0.193)	- 0.164	(0.197)	- 0.155	(0.208)	- 0.009	(0.220)
Married	0.158	(0.160)	0.151	(0.161)	0.192	(0.161)	0.141	(0.164)	0.169	(0.172)
Children	0.061	(0.148)	0.029	(0.149)	0.040	(0.148)	0.088	(0.151)	0.091	(0.159)
Age	- 0.206 ***	(0.046)	- 0.174 ***	(0.048)	- 0.171 ***	(0.048)	- 0.179 ***	(0.049)	- 0.136 **	(0.051)
Age²	0.0021 ***	(0.0006)	0.0021 ***	(0.0006)	0.0021 ***	(0.0006)	0.0022 ***	(0.0006)	0.0016 *	(0.0006)
Education variables										
Schooling			- 0.052 **	(0.026)	- 0.054 *	(0.026)	- 0.050 †	(0.027)	- 0.014	(0.030)
Job learned			- 0.404 *	(0.137)	- 0.391 **	(0.137)	- 0.270 **	(0.139)	- 0.307 *	(0.148)
Financial variable										
Home owner					- 0.273 †	(0.143)	- 0.270 †	(0.147)	- 0.314 *	(0.153)
Region dummies							15 categories (p = 0.881)		15 categories (p = 0.681)	
Industry dummies									16 categories (p < 0.001)	
Time dummies	14 categories (p = 0.048)		14 categories (p = 0.089)		14 categories (p = 0.101)		14 categories (p = 0.161)		14 categories (p = 0.107)	
Duration dummies	14 categories		14 categories		14 categories		14 categories		14 categories	
N obs.	2,614		2,614		2,614		2,614		2,614	
N individuals	639		639		639		639		639	
Minus log likelihood	851.85		851.85		850.02		845.54		806.04	
Rho	< 0.001		< 0.001		< 0.001		< 0.001		< 0.001	
LL-ratio test of rho=0	1.00		1.00		1.00		1.00		1.00	

Significance levels: † 0.05 < p < 0.1; * 0.01 < p < 0.05; ** 0.001 < p < 0.01; *** p < 0.001

Notes: Standard errors in parentheses; Some individuals were excluded due to missing values; Estimates obtained using STATA's xtlogit command.

Data source: GSOEP 1989-2004