Once Bitten, Twice Shy?

The Performance of Entrepreneurial Restarts

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Non-Technical Summary

New firm formation is the driving force behind structural changes in the economy. In particular, the creation of new jobs is an important macroeconomic issue which is related with entrepreneurial activities. It has often been shown that new firms make substantial contributions to the labor market. Firm growth is closely connected with this job-providing function. In studies that deal with the topic of growth, firm characteristics such as size and age are the most frequently considered performance factors. But these characteristics are not set in stone; rather they are outcomes of management decisions. Managers – in small businesses usually the entrepreneurs themselves – play the dominant role in a firm's appearance and its development. So their entrepreneurial ability is the key factor behind the firm's success. To some basic degree their managerial ability is surely given by nature. However, it also depends to a large extent on training. The experience that an entrepreneur gathers while working as a manager can be seen as a kind of training. Thus, entrepreneurial experience should be relevant for firm performance.

The purpose of this paper is to test four hypotheses. The first hypothesis is related to the effect of general entrepreneurial experience on firm growth derived from both *human capital* and *insider/outsider-theory* (*H1*). The next two hypotheses are linked with the effects of specific entrepreneurial experience namely business failure experience. Applying the theory of *behaviorism* and the *principal/agent-theory* suggests that experience of failure should have a negative effect on firm performance (*H2a*). On the other hand, both the general validity of the *human capital theory* and *selection mechanisms* suggests positive effects (*H2b*). Lastly, the third hypothesis is based on time effects and proposes that the effects of experience disappear with firm age (*H3*).

To show the influence of entrepreneurial experience on firm growth the employment growth rate as the dependent variable is fitted to a set of independent growth determinants. In order to control for firm survival the Heckman selection correction is applied. Additionally, a semi-parametric specification is used to relax presumptions of the parametric model.

The results of the analyses partly confirm human capital theory: entrepreneurial experience has a positive impact on firm performance – provided it is not failure experience. That is, previous experience of business ownership enhances firm performance. But this effect is outweighed if the previous firm has failed, leading to an overall negative effect. Other experience and indicators of higher human capital such as within-industry experience or academic education confirm the hypothesis again. Effects of initial experience vanish in the medium term.

The results suggest that failed entrepreneurs do not benefit from their general entrepreneurial experience and are – in terms of employment growth – generally less successful than other experienced and novice entrepreneurs. Previously failed entrepreneurs are intimidated, which leads to a lowered firm performance. That is, if restart firms survive they contribute (as single firms) less to employment creation than other young firms.

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Abstract

The aim of this paper is to analyze the effect of entrepreneurial experience on firm growth. According to the human capital theory, individuals who have higher 'human capital' are more successful than others. Entrepreneurial experience is a kind of human capital and, therefore, should affect firm performance positively. In reality, however, not all types of experience indicate enhanced knowledge alone. Bad experience, here the experience of failure, might equally be a signal for entrepreneurial weakness and, thus, an argument for exercising restraint in possible further business ventures. The ambiguous effects of this failure experience on firm success necessitate an in-depth analysis of the issue. Therefore, this paper contains an empirical comparison of firms involving experienced entrepreneurs and novice firms. The analysis shows that entrepreneurial experience affects firm growth positively. Accounting for failure experience separately reveals a negative effect. Interpreting this finding in combination with other control measures indicates that failed entrepreneurs indeed behave more cautiously regarding firm growth.

Introduction

New firm formation is the driving force behind structural changes in the economy. In particular, the creation of new jobs is an important macroeconomic issue which is related with entrepreneurial activities. It has often been shown that new firms make substantial contributions to the labor market (see Fritsch, 1992 for an overview). Firm growth is closely connected with this job-providing function. In studies that deal with the topic of growth, firm characteristics such as size and age are the most frequently considered performance factors (e.g. Evans [1987], Hall [1987], Cabral [1995] or Hymer and Pashigian [1962]). But these characteristics are not set in stone; rather they are outcomes of management decisions. Managers – in small businesses usually the entrepreneurs themselves – play the dominant role in a firm's appearance and its development. So their entrepreneurial ability is the key factor behind the firm's success. To some basic degree their managerial ability is surely given by nature. However, it also depends to a large extent on training. The experience that an entrepreneur gathers while working as a manager can be seen as a kind of training. Thus, entrepreneurial experience should be relevant for firm performance.

The purpose of this paper is to test four hypotheses. The first hypothesis is related to the effect of general entrepreneurial experience on firm growth derived from both *human capital* and *insider/outsider-theory* (*H1*). The next two hypotheses are linked with the effects of specific entrepreneurial experience namely business failure experience. Applying the theory of *behaviorism* and the *principal/agent-theory* suggests that experience of failure should have a negative effect on firm performance (*H2a*). On the other hand, both the general validity of the *human capital theory* and *selection mechanisms* suggests positive effects (*H2b*). Lastly, the third hypothesis is based on time effects and proposes that the effects of experience disappear with firm age (*H3*).

While the influence of general entrepreneurial experience on the growth of firms has often been discussed, the effect of experience of failure has not. Only very few studies have done so explicitly (e.g. BCG [2002] or Kay et al. [2004]). In order to broaden the empirical work on the effects of failure experience, it is thus useful to examine how such experience affects firm growth.

Until now the literature on firm performance that includes information about entrepreneurs has mainly been based on analyzing survey data collected from one single member of the management (e.g. Brüderl et al. [1996], Bosma et al. [2000], Kay et al. [2004], Westhead and Wright [1998b] or Westhead and Wright [1998a]). This study uses the ZEW Foundation Panel to test the hypotheses, making it possible to analyze firm growth using information on the entire management team. This avoids neglecting information about potential additional team members which is usually hidden in most survey designs.

The analysis herein focuses on companies that start out as "midget" firms, i.e. with less than ten employees. This ensures that firms are introduced in which one single entrepreneur has the most influence, since these firms usually have a limited number of owners.

In order to get reliable estimates the analysis has to address the issue of a potential survivor bias caused by the drop-out of observations during the period under consideration. The bias is taken into account by applying the selection correction procedure developed by Heckman [1979].

The remainder of the paper is structured as follows. Section 1 contains a brief discussion of the theoretical foundation on which the hypotheses are based. Section 2 contains a review of the literature on the topic to date and Section 3 introduces data and methodology. Descriptive statistics and the estimation results are presented and analyzed in Section 4 before Section 5 closes the paper with some summarizing conclusions.

1   Theoretical Background and Hypotheses

Managerial ability is one of the key factors behind firm performance. In assessing this ability, 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 [1985]) which was originally applied to explain wage differences. It hypothesizes that investments in skills through formal education, on-the-job training or professional experience increase the productivity of workers, which is rewarded in the labor market by higher earnings. The theory can also be applied to explain differences in earnings from self-employment, if we hypothesize that human capital investments increase founders' productivity, thereby enhancing business performance. As mentioned above, 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: Firstly, it leads to the "development of experientially-acquired skills or expertise which will lead in turn to more knowledgeable actions and decisions". Secondly, as founders are inclined to start businesses which are similar (e.g. in terms of industry, geographic area) to organizations with which they are familiar, their experience influences the characteristics of the businesses they start up. These, in turn, affect performance.

Similarly, Brüderl et al. [1996] suggest that human capital impacts firm performance indirectly through start-up conditions. Human capital probably affects the start-up's a priori prospects of success. 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 favorable start-up conditions than individuals with a lower human capital endowment. Once a business opportunity is developed or identified, human capital is "crucial in accessing and leveraging [the] social, financial, physical and organizational resources" required to exploit it (Ucbasaran et al. [2003]).

Positive effects of entrepreneurial experience can also be derived from the *insider/outsider-theory*. Experienced entrepreneurs may already have business contacts that help them to discover opportunities without actively searching (Westhead et al. [2005]). The result would be more effective information search behavior. Prior experience of business ownership can therefore be associated with assets like extended networks, increased expertise and a good reputation with financiers, customers and suppliers.

Summarizing, the first hypothesis can be put forward as follows:

H1: Due to human capital effects and insider advantages, entrepreneurial experience positively affects firm performance.

Failure experience is a special type of business ownership experience. Therefore, it might also have a specific effect on the success of a firm. All in all, only few studies on firm performance take this type of experience into account. There appear only to be two analyses that consider 'experience of failure' explicitly (BCG [2002] and Kay et al. [2004]). Several theories provide a theoretical foundation for the effects of failure experience.

Behaviorism (e.g. Day [1971]), for example, would suggest that entrepreneurs who have 'burned their fingers' with a failed business will be more risk averse in future. Due to a changed attitude to growth they will probably behave more cautiously lowering expected performance.

Similarly, thinking in terms of the *principal/agent-theory* (e.g. Holmström [1979] or Holmström and Costa [1986]) the 'stigma' of having gone bankrupt might be harmful for firm success. Principals, that is, for example, different stakeholders, like loan officers or suppliers, are faced with the problems of hidden information and intention. They try to compensate for their lack of information by referring to the entrepreneur's history. Failure sends a negative signal to them, making it difficult for the would-be founder in question to obtain credit or establish customer and supplier relations. Indeed, there is evidence that the normal credit market is barred for failed entrepreneurs, who therefore rely more heavily on alternative sources of funding, e.g. "family, friends and fools" (Kay et al. [2004]). "In Europe, young firms tend to have strategies that are not very aggressive" (Landier [2003], p. 24). In such an environment the "stigma of failure plays the role of a discipline device" reducing moral hazard and preventing entrepreneurs from taking risk excessively. Indeed, this mechanism helps creditors to assess the reliability of debtors; but on the other hand it also suppresses business chances if risk taking is simply necessary. The risk-taking attitude of creditors is only slowly improving in Germany, and stigmatization of failed entrepreneurs is still widespread among them. This stigmatization worsens founding conditions which in turn negatively affects firm performance (Geroski et al. [2003]). Additionally, most firms in the sample filed for bankruptcy under the old insolvency rules. Therefore, their entrepreneurs cannot file for debt relief and it is likely that they are subject to the "near-lifelong possibility of debt enforcement of 30 years" (Schwehr [2003], p. 15) by their previous creditors. If the creditors assert their repayment claims it would mean a drain of liquid assets and, thus, a growth restriction for these firms.

On the other hand, there is also a *selection mechanism* that suggests that experience of failure can have a positive effect on the success of the newly-started business. Entrepreneurs who experience failure but then start a new business are a selective group out of all entrepreneurs, since most business failures are a one-way street: for several reasons, a business failure very frequently brings entrepreneurial careers to an end. This might be due to the fact that failed entrepreneurs have to overcome several obstacles (e.g. higher capital restrictions, see above) that previously successful entrepreneurs do not face if they want to re-establish. The additional obstacles are 'entry barriers' for failed entrepreneurs. Only entrepreneurs who undertake serious attempts to venture again will withstand the pre-start-up phase successfully. Entrepreneurs who

are observable, therefore, are a positive sample of all entrepreneurs who failed previously. Others may have tried to establish anew, but had the opportunity to do so.

From these two conflicting arguments, competing hypotheses can be formulated as follows:

H2a: Experience of failure causes risk-aversion and worse starting conditions resulting in a lower performance compared to other experienced entrepreneurs.

H2b: Experience of failure is a kind of entrepreneurial experience and previously failed entrepreneurs who are observable are a positive selection. These factors lead to an above average performance of their firms.

Finally, one could argue that there must be a time effect. With every year in entrepreneurship novices gather experience. This reduces the (potential) advantage that entrepreneurs already experienced from former businesses have over them with regard to the current business. The advantage of experience should thus be especially noticeable in the early start-up phase, i.e. in the first five years and vanish as the firm gets older.

H3: The impact of initial entrepreneurial experience on firm growth disappears at later growth stages.

2   Related Literature

The findings of Wagner [1999] or Stam et al. [2006] indicate that the decision of ex-entrepreneurs to go back into business depends on a large extent on insider knowledge. They are more prone to start anew if they get the chance to reestablish within already known industries. Furthermore, they often follow 'role models', i.e. follow other entrepreneurs they know, often also family and friends, as examples. Thus, renascent entrepreneurs profit from former contacts.

Colombo et al. [2004] find that start-up size is higher if entrepreneurs have entrepreneurial experience or experience, e.g. managerial or work experience, in the same sector. Taylor [1999] confirms that self-employment experience has positive effects on survival, and 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 similar results, relating to the three types of experience. They find that self-employment experience has a positive effect on profits. Experience as an employee increases the probability that the newly-founded business will survive. Experience in the sector positively influences both survival chances and profits. Additionally, Abdesselam et al. [2004] find that the entrepreneur's sector-specific experience is an important feature of surviving firms.

Previous literature gives evidence that experienced entrepreneurs outperform their rivals – except in terms of employment growth: Brüderl et al. [1996], Bosma et al. [2000], Westhead and Wright [1998b] and Kay et al. [2004], can't find any significant performance differences between experienced and novice entrepreneurs with respect to changes in employment.

The Boston Consulting Group (BCG [2002]) performed an analysis based on a sample of Europe's 500 fastest growing companies. BCG illustrated the firms' turnover growth and job creation, differentiated according to the entrepreneurial background of their founders.

Companies founded by entrepreneurs with experience of failure excel in achieving faster growth of both turnover and employment. Because of this, BCG claim that learning from failure accelerates growth. Kay et al. [2004] try to verify the findings econometrically. Their analysis is based on a survey of founders localized in Cologne. They hypothesize that entrepreneurs who have experience of failure might outperform others, mainly due to the human capital effect. However, they cannot confirm their hypothesis.

Brüderl et al. [1996] find that experience in the sector of the current business has a positive effect on growth. They explain the positive effect of entrepreneurial experience within the relevant industry in terms of specific insider/outsider effects. As an insider the entrepreneur knows about the minimum efficient scale in the relevant industry and will look to increase employment more rapidly. Besides, she/he can use already established customer and supplier relations, thus avoiding initial search costs and enabling the business to increase the operating rate.

The characteristic which is maybe most often associated with human capital is education. Its positive effect on firm success (i.e. profits and survival) is confirmed by several studies (e.g. Storey [1982] or Bosma et al. [2000]) but its impact on employment growth is ambiguous. Schutjens and Wever [2000] reject the claim that education levels have any effect on employment growth as do Bosma et al. [2000]. On the other hand, Nerlinger [1996] shows that firms whose entrepreneurs are technically or managerially educated perform better than others.

3   Data and Methodology

Database

For the firm growth analysis, this study makes use of the ZEW Foundation Panel (see Almus et al. [2000] for details). The panel relies on information provided by Creditreform, the largest German credit rating agency. The unit of registration is the company itself rather than any subsidiaries, i.e. this investigation is based on original foundation events ignoring affiliated foundations. Freelancers are also registered if they show a necessary minimum of business activity. But in all, freelancers are underrepresented in the data (Harhoff and Steil [1997]). They account for roughly 7 percent of the observations.

The data contains not only general information about newly founded firms in Germany but also details about individuals whose entrepreneurial activities have been observed longitudinally. The information about firm-owners' entrepreneurial careers allows for the identification of those persons who have established two or more companies. Due to the belief that the influence of single entrepreneurs is strongest in smaller enterprises the analysis concentrates on firms of midget class according to EUROSTAT's official classification. That is, only firms with initially less than 10 employees are under consideration.

The complete set of covariates is not available for all of the firms identified. In order to preserve a maximum number of observations the approach advocated by Cohen and Cohen [1983] is applied to variables with a large number of missing values. In this approach, separate dummy variables were generated taking on the value *one*, if the relevant variable shows missing
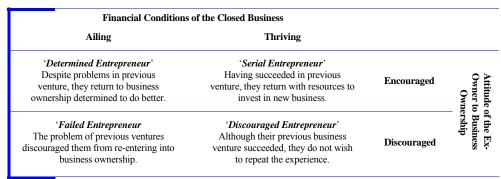
values. The missing values themselves were then coded as *zero*. The data preparation results in a sample of about 220.000 firms founded since 1995.

Definitional Issues

My particular interest is to analyze the effect of entrepreneurial experience on firm performance. Novices are self-employed for the first time and do not have entrepreneurial experience by definition. Experienced entrepreneurs can be differentiated into entrepreneurs founding a new firm alongside an existing one (so called 'portfolio entrepreneurs') and entrepreneurs who abandon a business prior to reestablishing (so called 'restarters'). For the latter group of entrepreneurs it is important to have a look at how and why they abandon their first business.

As illustrated in Table 1, Stokes and Blackburn [2001] suggest categorizing entrepreneurs who have closed a business once into classes. Depending on the financial conditions of the business closure on the one hand and the attitude of the respective entrepreneurs to business ownership on the other, they find four types of entrepreneurs. Hence, there is the '*determined entrepreneur*', the '*serial entrepreneur*', the '*failed entrepreneur*' and the '*discouraged entrepreneur*'.

Table 1: Closure Experience and Entrepreneur Types

Financial Conditions of the Closed Business			
Ailing	**Thriving**		
'*Determined Entrepreneur*' Despite problems in previous venture, they return to business ownership determined to do better.	'*Serial Entrepreneur*' Having succeeded in previous venture, they return with resources to invest in new business.	**Encouraged**	Attitude of the Ex-Owner to Business Ownership
'*Failed Entrepreneur*' The problem of previous ventures discouraged them from re-entering into business ownership.	'*Discouraged Entrepreneur*' Although their previous business venture succeeded, they do not wish to repeat the experience.	**Discouraged**	

Source: Following Stokes and Blackburn [2001], p.29; own illustration.

According to this classification, previously failed restarters would fall into the category of 'determined entrepreneurs'. However, Everett and Watson emphasize that in the previous literature "generally, the definition of failure used has, to a large extent, depended on the nature of the data available" (Everett and Watson [1998], p. 374). Since the ZEW Foundation Panel contains exact status information with regard to bankruptcy proceedings, 'bankruptcy' is used as the main event that constitutes firm closure. These bankruptcy events are mainly firm bankruptcies. But, due to the record of micro firms and freelancers personal bankruptcies are taken into account partly, too. Using bankruptcies, rather than including all firms which closed after running into difficulties, I am able to focus exactly on the firms that failed. The definition of 'determined entrepreneurs' is thus interpreted in a very narrow sense.

In summary, a determined entrepreneur in the narrow sense is considered as someone who suffers bankruptcy – regardless of whether she/he was a member of the founding team or merely joined an existing firm – and who launches a new business at some time after it. When the term 'restarters' is used in the following, such entrepreneurs are meant. The firm with which the restarter failed needs to be the first establishment in the restarter's entrepreneurial career.

This is because otherwise she/he would no longer be a pure restarter, but rather a serial entrepreneur and thus predisposed differently. In accordance with our definition of restarters, 'restart firms' are defined as companies in which at least one restart entrepreneur participates. Furthermore, firms in which at least one entrepreneur who has entrepreneurial experience but is not a restarter participates are called 'follow-up firms'. In order to analyze the effect of failure experience correctly I consider only the performance of the firm following directly after the failed firm. Altogether, more than 1,200 restart firms are available from the database according to the above criteria. These are included in the analysis.

To assess firm performance I use employment growth which is a common measure of growth. It is very appropriate as a growth indicator as it is closely related with the value added that is generated by the firm. The applied overall relative employment growth rate r_i is measured as

$$r_i = \frac{E_T}{E_0} - 1$$

where E_0 is the number of employees at the start of the observation period and E_T at the end.

In order to test the third hypothesis the growth rates are calculated for two different time periods. Period 1 comprises firm growth within a maximum of five years from foundation on, i.e. E_0 is the initial start-up size counting in the entrepreneur(s) Period 2 covers the growth from the firm's fifth year until ten years after foundation (i.e. E_0 for period 2 is the employee stock when the firm is aged five). In both cases the considered period ends if a relevant entrepreneur leaves the firm.[1]

Variables

Firm performance depends on entrepreneur characteristics, firm characteristics and characteristics of the region in which the firm was founded. The values of most variables are for the times when the firms were founded. Data on the entrepreneur is introduced because the basic research question relies on it. With information about the entrepreneur's experience and human capital endowment it is possible to test the human-capital-related hypothesis. Firm information can be used, for example, to control for the role played by any debt burden remaining from failure (by including firm's initial credit reliability) as well as for industry-specific behavior. Last but not least, some regional conditions are considered relevant. Accounting for agglomeration effects like advanced spillovers or the concentration of highly educated individuals in urban areas is as important as including regional economic founding conditions which have long-lasting effects on a firm's growth and survival (Geroski et al. [2003]).

In the regression analysis on the determinants of employment growth, both an indicator of general entrepreneurial experience and an indicator of experience of failure as a particular kind of experience are included. Both indicators are introduced at the firm-level, that is, they are set to *one* if at least one entrepreneur who fits the respective definition is involved in the particular firm. The existence of entrepreneurial experience is a necessary but not sufficient condition for the indication of failure experience. Thus, the failure indicator is an interaction variable between the existence of entrepreneurial experience and the existence of failure experience. Intra-industry entrepreneurial experience is included in a similar way.

Econometric Specification

To show the influence of entrepreneurial experience on firm growth the employment growth rate as the dependent variable is fitted to a set of independent growth determinants. However, only firms that survive provide the necessary information for preparing the growth measure. This generates a 'survivor-bias' which distorts the sample. The probability of survival is determined by various indicators in a way similar to that in which the actual firm growth depends on several characteristics. Econometrically this dependency can be modeled as[2]

$$y_1 = x_1\beta_1 + u_1$$

$$y_2 = 1[x\delta_2 + v_2 > 0]$$

assuming that y_1 is observed only when $y_2 = 1$. In order to correct the selection bias Heckman (1979) suggested regressing y_{i1} on x_{i1}, $\lambda(x_i,\delta_2)$. A consistent estimator of the unknown δ_2 can be obtained from the first-stage Probit regression resulting in estimated inverse Mills ratios $\hat{\lambda}_{i2} \equiv \lambda(x_i\hat{\delta}_2) \equiv \phi(x_i\hat{\delta}_2)/\Phi(x_i\hat{\delta}_2)$. Finally, y_{i1} can be fitted on x_{i1}, $\hat{\lambda}_{i2}$, $i = 1, 2,…, N_1$.

The Heckman selection correction is modeled parametrically and assumes joint normality of the error terms (u_1, v_3). The violation of this assumption results in biased estimates. For that reason it is prudent to relax the assumption by also applying a semi-parametric model. The semi-parametric estimate is characterized by the fact that it allows the joint distribution of the error terms (u_1, v_3) to have an unknown form. Following Newey et al. [1990] it is possible to estimate a series approximation to attain a selection correction instead of using the inverse Mills ratio. Doing so gives

$$\hat{\lambda}_i(z_i\hat{\delta}_3) \cong \sum_{j=1}^{J} \eta_j p_j(z_i\hat{\delta}_3)$$

where η_j are unknown coefficients and p_j are known "basis" functions. A way to avoid multi-collinearity is to set up p_j as polynomials (Newey, 1988). Here, the applied functional form of p_j results in the following specification of the selection correction term

$$\hat{\lambda}_i(z_i\hat{\delta}_3) \cong \sum_{j=1}^{J} \eta_j[2 \times \Phi(z_i\hat{\delta}_3) - 1]^j$$

Newey noticed that the setting of the "smoothing" parameter J depends on the particular sample. An approach to work out J is to estimate several test regressions increasing J incrementally. Comparing each regression's goodness of fit, one can look for the best specification and therefore the value of J which is most appropriate.

In order to obtain robust estimates, bootstrapped standard errors are computed for both specifications, i.e. for the Heckman as well as the 2SLS model. The standard error correction is based on two hundred bootstrap iterations for each specification.

Summarizing, four regressions with two different basic specifications are estimated. That is, for both consideration periods, i.e. from zero to a maximum of five years and from five to a maximum of ten years, both the standard Heckman selection specification and the 2SLS model using a semi-parametric specification of the selection correction term are applied. The base category in all the specifications is the group of novice entrepreneurs.

4 Empirical Results

Descriptive Statistics

Some descriptive statistics are shown in Table 2. Regarding employment growth in period 1, follow-up firms show higher growth rates than other firms; in period two the growth rates do not differ significantly. In contrast to multivariate analyses, bivariate comparisons do not include control variables. Therefore these results might also be attributable to other effects like underlying growth periods of average different length. The median values of zero indicate that the distribution of the growth rates is extremely skewed. That is because most of the firms considered do not grow or at least do not change their employment stock much.

As already mentioned, it is necessary to account for firm survival to get undistorted results. In the first five years after foundation roughly 19 percent of novices' firms exit the market. This is less than in the case of follow-up and restart firms, where 23 and 28 percent of the firms respectively were closed. On reaching the age of five up to ten years after foundation a further 18 percent of the novices' firms are shut down compared to an additional 10 percent of follow-up and 12 percent of restart firms.

Within industry entrepreneurial experience of course only applies to follow-up and restart firms. The share of those who have within industry experience is with 4 percentage points slightly but significantly higher in the group of restart firms. That is, restarters remain true to their previous industry more often than previously 'successful' entrepreneurs.

Compared to both other groups the share of firms with university-educated entrepreneurs is more than 6 percent higher in the group of follow-up firms. That is, graduate entrepreneurs seem to be more prone to reestablish than others. Contrarily, the share of firms in which master craftsmen – as a measure for vocational education – are involved is almost a third lower. 'Master craftsman' is a German-specific title. It can be attained by completing a dual apprenticeship which is separated into schooling and professional training, gathering some working experience in the respective sector afterwards, and passing a concluding examination. Given these preconditions, the diploma can be seen as a measure that captures professional within industry experience as well as technical skills and knowledge.

Novice firms that are considered when running the analysis for the first period have existed for an average of three years. This is slightly more than follow-up firms. Restart firms are half a year younger on average. This means that the higher employment growth rate of follow-up firms cannot depend exclusively on a time effect. In all, firms that fall into the second period are seven years old on average.

Creditreform's assessment of the credit reliability differs significantly between the three firm categories. The share of firms for which Creditreform recommend "care is advisable" is only slightly higher for follow-up firms compared to novices but round about 20 percentage points larger in the group of restart firms. That is, two fifths of the restart firms are assessed as being somewhat precarious in this manner. After five years the assessment is even worse. Then care is advisable for roundabout 50 percent of novice and follow-up firms and three quarters of the restart businesses.

Table 2: Descriptive Statistics

Variables	Unit	Novice Firms		Follow-Up Firms ex RSF		Restart Firms (RSF)		Significance Level[i]
		Mean	Median	Mean	Median	Mean	Median	
Employment Growth[ii]								
Period 1	Percentage Points	82.2	-	111.2	-	77.1	-	1a, 3b
Period 2		10.6	-	9.0	-	14.0	-	-
Survival Rate								
Period 1	Percent	80.9	-	77.1	-	71.5	-	1a, 2a, 3a
Period 2		92.0	-	89.5	-	88.2	-	1a, 2a
Within Industry Experience	Percent	-	-	24.6	-	28.1	-	2a, 3a
Education								
Formal (graduates)	Percent	30.5	-	37.0	-	30.7	-	1a, 2a, 3a
Vocational (master craftsmen)		15.4	-	10.1	-	12.9	-	1a, 2a, 3a
Firm Age								
Period 1	Years	3.0	3.0	2.8	3.0	2.4	2.0	1a, 2a, 3a
Period 2		7.1	7.0	7.0	7.0	7.0	7.0	1a, 2a
Credit Reliability[iii]: "care is advisable"								
At Start-Up	Percent	22.0	-	24.3	-	41.2	-	1a, 2a, 3a
After Five Years		47.0	-	52.7	-	74.5	-	1a, 2a, 3a
Team Foundation	Percent	21.3	-	34.8	-	31.3	-	1a, 2a, 3a
Start-Up Size	# of Employees	2.1	1.0	2.3	2.0	2.4	2.0	1a, 2a, 3b
Size at Firms' Fifth Year	# of Employees	3.9	2.0	5.0	2.7	3.8	2.0	1a, 3c
Limited Liability Legal Form	Percent	37.5	-	53.9	-	50.7	-	1a, 2a, 3b
Industry Structure								
Technology-Intensive Manufacturing	Percent	1,5	-	1,8	-	1,3	-	1a, 3c
Remaining Manufacturing		5,1	-	5,1	-	6,0	-	3b
Tech.- and Knowledge-Based Services		12,6	-	14,3	-	12,9	-	1a
Remaining Company-Related Services		6,1	-	7,8	-	6,9	-	1a, 3c
Consumer Services		21,2	-	23,8	-	14,5	-	
Construction		15,1	-	11,3	-	27,2	-	1a, 2a, 3a
Trade Services		29,9	-	26,8	-	23,8	-	1a, 2a, 3b
Holdings		0,8	-	2,4	-	1,0	-	1a, 3a
Region Type (metropolitan districts)	Percent	52,0	-	55,2	-	54,1	-	1a, 2c
National GDP Growth Rate (annual basis)	Percentage Points	1,52	1,5	1,43	1,4	1,11	1,2	1a, 2a, 3a

[i]   Significance levels on performing a t-test on mean differences between novice firms and follow-up firms ex RSF (1), between novice firms and restart firms (2) and between follow-up firms ex RSF and restart firms (3).
        Significance levels: a = 99 percent, b = 95 percent and c = 90 percent.
[ii]   Period 1: up to five years after foundation; period 2: from firm age of five to ten years at most.
[iii]   Assessment Provided by Creditreform.

Source: ZEW Foundation Panel.

The share of follow-up firms and restart firms that are founded by entrepreneurial teams is higher than that of novice firms. More than 30 percent of the follow-up and restart firms are multi-owned compared to little more than a fifth of the novices. That is, novice entrepreneurs tend to establish firms only by themselves rather than in a team.

50 percent of the novice entrepreneurs employ one employee at start-up, i.e. they employ only themselves. Against it, half of the follow-up entrepreneurs provide a workplace for somebody else additionally: they employ initially 2 persons when they found a firm.

Besides, the share of novice firms that choose legal forms with unlimited liability is about 15 percentage points lower compared to the others. This may largely be due to the learning process the experienced entrepreneurs have undergone. However, the higher share of team foundations may also play a role.

The main differences in industry structure that emerge from the comparison of the three groups can be seen in consumer services, construction, and trade services. Restarts occur to a distinctly smaller degree in consumer services. Only 15 percent of the reestablishments are affiliated to consumer services while a fifth of novice and follow-up firms take place there. The share of novice firms affiliated to construction is 4 percentage points higher in share than that of experienced firms, and trade services are over-represented to a similar extent. 27 percent of restart firms are registered in construction.[3] Construction firms are consistently under suspicion of using bankruptcy as a means to get rid of warrantee claims. Due to this, the high share

nurtures distrust and the belief that such firms may deliberately sail too close to the wind. Yet there is no evidence for such behavior (Metzger [2006]). The sector distribution just shows a greater presence of restarter firms in one important 'small trade'-industry (construction) compared to another (consumer services).

With regard to location there is only a slight significant difference. Follow-up firms are slightly more often located in agglomerations than novices, but in all thee groups more than 50 percent of the firms site in metropolitan districts rather than in rural areas.

The growth rate of the national GDP is taken for the year in which each firm was founded, to control for the economic conditions at start-up. On average, the years in which restarter firms are founded seem to be economically less favorable than the years of other firms' start-up. This might indicate that restarters found out of necessity, while other entrepreneurs base their decision on perceived opportunity.

Estimation Results

Table 3 displays the estimation results of the growth equations and their preceding selection equations. The first three estimates, i.e. Models A, B and their underlying selection equation, provide results concerning the analysis for period 1 firms (i.e. young firms). The Models C, D and the second selection equation analyze firm growth in period 2 (i.e. middle-aged firms).

Effects on the Growth of Young Firms

Comparing the results of the Models A and B, i.e. of the parametric specification, with those of the semi-parametric approach reveals no essential changes in the significance of the coefficients. However, the scale of some coefficients differs clearly in amplitude. A Hausman-test can be used to check whether these differences are systematic. The χ^2 test statistic of 178.38 is far beyond the critical value meaning that H_0 and, thus, unsystematic differences in coefficients are rejected. This indicates that the assumption of joint normality of the error terms presumed in the parametric Heckman model is not given leading to biased estimates. Consequently, the results of Model B are more reliable and are interpreted in the following.

The results suggest that general entrepreneurial experience has a positive significant effect on employment growth. That means that at least one managing firm owner having entrepreneurial experience increases the firm's employment growth. This result confirms hypothesis *H1* but contradicts the findings of related studies.

Furthermore, entrepreneurial experience affects firm growth if the experience is in the form of business failure. Employment growth decreases if at least one entrepreneur is a restarter according to the definition above. That is, firms in which entrepreneurs with bankruptcy experience are involved perform worse than other follow-up firms. Since restarters are a subgroup of all experienced entrepreneurs the coefficients of both experience indicators have to be added to get the effective impact of failure experience. The absolute effect of failure experience is larger in scale than the impact of general entrepreneurial experience. So, not only do restart firms perform less well than other experienced firms but their growth is even lower than that of novice firms. Owing to this, hypothesis *H2a* is confirmed and hypothesis *H2b* has

Table 3: Estimations on Firm Growth

Dependent Variable: Employment Growth	Model A Heckman		Model B Semi-Parametric 2SLS		Selection Equation (Model A/B)		Model C Heckman		Model D Semi-Parametric 2SLS		Selection Equation (Model C/D)	
Main Explanatory Variables	Coef.	Robust SE[i]	Coef.	Robust SE[i]	Coef.	Robust SE[i]	Coef.	Robust SE[i]	Coef.	Robust SE[i]	Coef.	Robust SE[i]
Entrepreneurial Experience												
General Experience	0.085 *	(0.051)	0.139 ***	(0.051)	-0.153 ***	(0.011)	-0.022	(0.017)	-0.021	(0.017)	-0.235 ***	(0.037)
Failure Experience	-0.218 **	(0.094)	-0.161 *	(0.097)	-0.147 ***	(0.039)	0.065	(0.068)	0.065	(0.061)	-0.057 **	(0.154)
Within-Industry Experience	0.261 ***	(0.090)	0.260 ***	(0.091)	-0.031	(0.021)	0.004	(0.023)	0.004	(0.024)	-0.002	(0.068)
Education												
Formal (graduates)	0.167 ***	(0.046)	0.098 **	(0.046)	0.179 ***	(0.013)	0.020	(0.014)	0.020	(0.012)	0.203 ***	(0.033)
Vocational (master craftsmen)	0.077	(0.055)	-0.032	(0.056)	0.281 ***	(0.016)	0.007	(0.013)	0.007	(0.014)	0.213 ***	(0.038)
Control Variables												
Firm Age resp. Growth Period (years)	0.342 ***	(0.016)	0.224 ***	(0.020)	0.342 ***	(0.002)	0.119 ***	(0.012)	0.119 ***	(0.011)	0.699 ***	(0.012)
Assessment of Credit Reliability[ii] "care is advisable"	-0.172 ***	(0.035)	-0.155 ***	(0.034)	-0.176 ***	(0.009)	-0.006	(0.008)	-0.006	(0.008)	-0.405 ***	(0.020)
Team Foundation	0.103 ***	(0.026)	0.128 ***	(0.027)	-0.066 ***	(0.008)	0.030 ***	(0.010)	0.030 ***	(0.009)	-0.110 ***	(0.024)
Firms Size (# of employees)	-0.300 ***	(0.006)	-0.287 ***	(0.006)	-0.051 ***	(0.002)	-0.031 ***	(0.002)	-0.031 ***	(0.002)	0.004	(0.005)
Limited Liability Legal Form	0.871 ***	(0.032)	0.950 ***	(0.035)	-0.184 ***	(0.009)	0.056 ***	(0.010)	0.056 ***	(0.009)	-0.173 ***	(0.021)
Region Type (metropolitan district)	0.050 **	(0.025)	0.073 ***	(0.025)	-0.048 ***	(0.009)	-0.005	(0.008)	-0.005	(0.008)	-0.077 ***	(0.023)
National GDP Growth Rate (annual basis)	1.496	(1.554)	0.618	(1.600)	3.470 ***	(0.357)	0.887	(0.650)	0.886	(0.621)	3.791 ***	(1.061)
Selection Instruments												
Assessment of Payment Behavior[ii]												
"term of payment kept"					0.310 ***	(0.009)					0.190 ***	(0.027)
"term of payment only slightly exceeded"					0.196 ***	(0.015)					0.034 **	(0.036)
Situation as Regards Orders (good)[ii]					-0.009	(0.029)					-0.004 **	(0.063)
Selection Correction Terms[iii]												
Inverse Mills Ratio	-0.146 *	(0.051)					0.067 ***	(0.186)				
Polynomial of 1st degree			-0.610 ***	(0.057)					-0.055 *	(0.028)		
Polynomial of 2nd degree			1.465 ***	(0.109)								
Constant	0.304	(0.215)	0.364 **	(0.183)	-0.092 *	(0.051)	0.079	(0.085)	0.135	(0.094)	5.909 ***	(0.186)

Test on Joint Significance of	Wald-Test χ^2 (df)	Wald-Test F(df)	Wald-Test χ^2 (df)	Wald-Test χ^2 (df)	Wald-Test F(df)	Wald-Test χ^2 (df)
Industry Dummies (not reported)	390.80 ***	59.31 ***	477.79 ***	24.23 ***	3.46 ***	19.78 ***
Federal State Dummies (not reported)	178.78 ***	9.43 ***	3,457.43 ***	45.36 ***	3.03 ***	385.16 ***
Founding Year Dummies (not reported)	173.66 ***	21.50 ***	14,932.09 ***	32.80	8.64 ***	4,285.08 ***
Missing-Value Dummies (not reported)	4.35 *	4.24 ***	3,191.25 ***	2.85	1.43	29.06 ***

Number of Observations	219,898 (censored: 43,158; uncensored: 176,740)			51,798 (censored: 4,234; uncensored: 47,564)		

Test Statistics/Goodness of Fit of the Models	Wald-Test χ^2 (df)	F-Test (df)	Adjusted-R^2	Log Likelihood	Pseudo-R^2	Wald-Test χ^2 (df)	F-Test (df)	Adjusted-R^2	Log Likelihood	Pseudo-R^2
	32,125.06	121.68	0.0311	-86,382.65	0.2067	48,863.90	26.82	0.0218	-10,617.64	0.2757

Significance levels: * significant at 10%; ** significant at 5%; *** significant at 1%.
[i] Bootstrapped standard errors (B = 200); [ii] Assessment provided by Creditreform; [iii] Best fit achieved including selection correction polynomials of 1st and 2nd resp. only 1st degree.

to be rejected. The described negative consequences of failure dominate. Since information on the firms' initial credit reliability is included as a control variable potential effects of different starting conditions like the access to financial means are negated. The measured effect thus falls back to the behavior of the restarter her-/himself. Thus we can conclude that restarters actually do behave more cautiously and so they are more restrained regarding growth. But it must be said that the finding may be biased by unobservable effects that lead to less favorable results for firms found to be restart firms. Since the restarters are separated by the presence of official evidence of bankruptcy, there might be, for example, a selection effect prior to the bankruptcy: entrepreneurs who look forward and are better able to identify developments that could signalize the beginning of the end could opt out of the firm earlier than less clever team members. While the latter are counted among entrepreneurs with experience of failure, the former are grouped with those without experience of failure even though they actually gained some.

Within-industry experience affects employment growth significant positively. Its coefficient is the largest of all experience indicators. Therewith, experienced entrepreneurs – including restarters – who reestablish in the same industry again outperform other entrepreneurs.

Regarding education I found ambiguous results. While the human capital theory works for formal education – graduate entrepreneurs seem to out-perform other founders, confirming *H1* this time – vocational education is insignificant and thus of no importance for employment growth. As explained above, having a master craftsmen diploma is used as measure of vocational experience. Besides its educational element it can also be seen as a specific investment into entrepreneurship: the crafts sector has been highly regulated, that is, the diploma was a necessary condition for establishing. But maybe this non-effect is inherent because craft firms are typically born small and stay small.

The estimated regressions have been specified in such a way that potential selection distortions are taken into account. The high significance of the selection correction terms indicates that selection biases exist and that correction was obviously necessary.

Effects on the Growth of Middle-Aged Firms

Applying a Hausman-test on the Models C and D delivers a χ^2 test statistic of 0.38. Unsystematic differences in coefficients are, thus, not rejected. That is, the assumption of joint normality of the error terms holds this time and the parametric specification passes the test. Since the results of Model C and D not differ statistically both models are similarly reliable.

The latter columns of Table 3 display the estimation results based on period 2. The coefficients of the human capital variables have ceased to be significant. Only several control variables remain significant. These include, for example, the basis variables from which the growth rate was computed, like the length of the considered growth period, or the employment stock from which the growth process started at five years. This result confirms hypothesis *H3* which claims that effects of the initial human capital vanish in the medium-term. Effects of initial experience are perhaps offset by learning effects, i.e. the impact of experience gathered by routine work.

5   Conclusions

The object of this paper has been to analyze the influence of entrepreneurial experience on firm performance. To achieve this, firms' employment growth is considered. A main aim is to account for a special type of entrepreneurial experience, namely experience of failure. Each estimate applied confirms that general entrepreneurial experience has a positive effect on firm growth, whereas failure experience turns out to have a negative impact in the regressions. The results of the analyses partly confirm human capital theory: entrepreneurial experience has a positive impact on firm performance – provided it is not failure experience. That is, previous experience of business ownership enhances firm performance. But this effect is outweighed if the previous firm has failed, leading to an overall negative effect. Other experience and indicators of higher human capital such as within-industry experience or academic education confirm the hypothesis again. Effects of initial experience vanish in the medium term.

The results suggest that failed entrepreneurs do not benefit from their general entrepreneurial experience and are – in terms of employment growth – generally less successful than other experienced and novice entrepreneurs. Previously failed entrepreneurs are intimidated, which leads to a lowered firm performance. That is, if restart firms survive they contribute (as single firms) less to employment creation than other young firms.

The applied set of variables is, of course, expandable. Effects on growth might arise, for example, from the entrepreneur's social capital, from the specificity of her/his skills or from a good match between her/his human capital and the business model applied. Furthermore, a very important control measure would be the entrepreneur's intention to grow (Barkham [1994]). Many entrepreneurs have no growth ambitions (Davidsson [1989]). They just want to earn a sufficient income (Brüderl and Preisendörfer [1998]) or neglect growth due to non-economic reasons; concern about employee well-being is to be cited here, because "growth will deteriorate the work atmosphere" (Wiklund et al. [2003]). The motivation to start a new business is also an important factor regarding firm success (van Praag [2003]), that should be taken into account by future econometric studies of small firm performance (Glancey [1998]). However, due to the lack of suitable data I have to make do with the given specification. Likewise, for this reason I cannot analyze voluntary firm exits which are economically forced. If an entrepreneur closes her/his firm or leaves it because it is no longer economically viable but avoids bankruptcy, this would, in principle, also have to count as a business failure.[4]

The paper cannot give a clear answer as to why failed entrepreneurs underperform: are they discriminated against due to stigmatization? Evidently not: The negative effect still remains after accounting for creditworthiness. Do they prefer to proceed cautiously at first? Or are they simply worse than the others? These questions afford scope for further research.

References

Abdesselam, R., J. Bonnet and N. Le Pape (2004), 'An Explanation of the Life Span of new French Firms', *Small Business Economics* **23**, 237-254.

Almus, M., D. Engel and S. Prantl (2000), *The „Mannheim Foundation Panels" of the Centre of European Economic Research*, ZEW Dokumentation No. 00-02, Mannheim.

Åstebro, T. and I. Bernhardt (2002), 'The Winner´s Curse of Human Capital', *Small Business Economics* **24** (1), 63-78.

Barkham, R.J. (1994), 'Entrepreneurial Characteristics and the Size of the New Firm: A Model and a Econometric Test', *Small Business Economics* **6**, 117-125.

BCG (2002), *Setting the Phoenix Free - A Report on Entrepreneurial Restarters*, The Boston Consulting Group, Munich.

Becker, G.S. (1985), 'Human Capital, Effort, and the Sexual Division of Labor', *Journal of Labor Economics* **3** (1), 33-58.

Bosma, N., M.C. Van Praag and G. De Wit (2000), *Determinants of Successful Entrepreneurship*, Zoetermeer.

Brüderl, J. and P. Preisendörfer (1998), *Fast Growing Businesses - Empirical Evidence from a German Study*, Universität Mannheim, Universität Rostock, Mannheim, Rostock.

Brüderl, J., P. Preisendörfer and R. Ziegler (1996), *Unternehmensfluktuation: Der Erfolg neu gegründeter Betriebe. Eine empirische Studie zu den Chancen und Risiken von Unternehmensgründungen*, Berlin.

Cabral, L. (1995), 'Sunk Costs, Firm Size and Firm Growth', *The Journal of Industrial Economics* **43** (2), 161-172.

Cohen, J. and P. Cohen, (1983), *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences* 2, Hillsdale

Colombo, M.G., M. Delmastro and L. Grilli (2004), 'Entrepreneurs´ Human Capital and the Start-up Size of New Technology-Based Firms', *International Journal of Industrial Organization* **22**, 1183-1211.

Davidsson, P. (1989), 'Entrepreneurship- and after? A Study of Growth Willingness in Small Firms', *Journal of Business Venturing* **4**, 211-226.

Day, R.H. (1971), 'Rational Choice and Economic Behavior', *Theory and Decision* **1** (3), 229-251.

Evans, D.S. (1987), 'The Relationship Between Firm Growth, Size, and Age: Estimates for 100 Manufacturing Industries', *The Journal of Industrial Economics* **35** (4), 567-581.

Everett, J. and J. Watson (1998), 'Small Business Failure and External Risk Factors', *Small Business Economics* **11**, 371-390.

Geroski, P.A., J. Mata and P. Portugal (2003), *Founding Conditions and the Survival of New Firms,* No. 1-03, Lisboa.

Glancey, K. (1998), 'Determinants of Growth and Profitability in Small Entrepreneurial Firms', *International Journal of Entrepreneurial Behaviour & Research* **4** (1), 18-27.

Hall, B.H. (1987), 'The Relationship between Firm Size and Firm Growth in the U.S. Manufacturing Sector', *Journal of Industrial Economics* **35** (4), 583-606.

Harhoff, D. and F. Steil (1997) 'Die ZEW-Gründungspanels - Konzeptionelle Überlegungen und Analysepotential' in: Harhoff, D. (ed.) *Unternehmensgründungen - Empirische Analysen für die alten und neuen Bundesländer*, Baden-Baden, pp. 11-28.

Heckman, J.J. (1979), 'Sample Selection Bias as a Specification Error', *Econometrica* **47**, 153-161.

Holmström, B. (1979), 'Moral Hazard and Observability', *Bell Journal of Economics* **10** (1), 74-91.

Holmström, B. and J.R.I. Costa (1986), 'Managerial Incentives and Capital Management', *The Quarterly Journal of Economics* **101** (4), 835-860.

Hymer, S. and P. Pashigian (1962), 'Firm Size and Rate of Growth', *The Journal of Political Economy* **70** (6), 556-569.

Kay, R., P. Kranzusch, O. Suprinovic and A. Werner (2004), *Restart - Eine zweite Chance für gescheiterte Unternehmer?*, Institut für Mittelstandsforschung Bonn, Bonn.

Landier, A. (2003), *Start-up Financing: From Banks to Venture Capital.*

Metzger, G. (2006), *Afterlife – Who Takes Heart for Restart?,* ZEW Discussion Paper No. 06-038, Mannheim.

Mincer, J. (1974), *Schooling, Experience, and Earnings*, National Bureau of Economic Research, New York.

Nerlinger, E.A. (1996), *Firm Formation in High-tech Industries: Empirical Results for Germany,* ZEW Discussion Paper No. 96-07, Mannheim.

Newey, W.K., J.L. Powell and J.R. Walker (1990), 'Semiparametric Estimation of Selection Models: Some Empirical Results'*, American Economic Review* **80** (2), 324-328.

Reuber, A.R. and E. Fischer (1999),   'Understanding The Consequences of Founders' Experience'*, Journal of Small Business Management* **37** (2), 30-45.

Schutjens, V.A.J.M. and E. Wever (2000),   'Determinants of New Firm Success'*, Regional Science* **79**, 135-159.

Schwehr, B. (2003), 'Corporate Rehabilitation Proceedings in the United States and Germany'*, INSOL International Insolvency Review* **12**, 11-35.

Stam, E., D.B. Audretsch and J. Meijaard (2006), *Renascent Entrepreneurship,* Discussion Papers on Entrepreneurship, Growth, and Public Policy No. 0606, Jena.

Stokes, D. and R. Blackburn (2001), *Opening up Business Closures: a Study of Businesses that Close and Owners' Exit Routes*, Kingston University, Kingston Hill.

Storey, D., (1982), *Entrepreneurship and the New Firm*, Portsmouth: Greenwood Publishing Group.

Taylor, M.P. (1999), 'Survival of the Fittest? An Analysis of Self-employment Duration in Britain'*, The Economic Journal* **109** (454), C140-C155.

Ucbasaran, D., M. Wright and P. Westhead (2003), 'A Longitudinal of Habitual Entrepreneurs: Starters and Acquirers'*, Entrpreuneurship & Regional Development* **15**, 207-228.

van Praag, C.M. (2003), 'Business Survival and Success of Young Small Business Owners '*, Small Business Economics* **21**, 1-17.

Wagner, J. (1999), 'The Life History of Cohorts of Exits from German Manufacturing'*, Small Business Economics* **13**, 71-79.

Westhead, P., D. Ucbasaran, M. Wright and M. Binks (2005), 'Novice, Serial and Portfolio Entrepreneur Behaviour and Contributions'*, Small Business Economics* **25**, 109-132.

Westhead, P. and M. Wright (1998a), 'Novice, Portfolio, and Serial Founders in Rural and Urban Areas'*, Entrepreneurship Theory and Practice* **22** (4), 63-100.

Westhead, P. and M. Wright (1998b), 'Novice, Portfolio, and Serial Founders: Are they Different?' *Journal of Business Venturing* **13** (3), 173.

Wiklund, J., P. Davidsson and F. Delmar (2003), 'What Do They Think and Feel about Growth? An Expectancy-Value Approach to Small Business Managers' Attitudes Toward Growth'*, Entrepreneurship Theory and Practice*, 247-270.

Wooldridge, J.M., (2002), *Econometric Analysis of Cross Section and Panel Data* Cambridge: MIT Press.

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[1]   The exit of an entrepreneur is relevant whenever it affects the 'experience stock'. That is, if the restarter under observation exits or the experienced entrepreneur drops out, the observation ends.

[2]   See Wooldridge [2002]. Assumptions: (a) (x, y_2) are always observed, y_1 is observed when $y_2 = 1$; (b) (u_1, v_2) is independent of x with zero mean; (c) $v_2 \sim$ Normal(0,1); and (d) $E(u_1|v_2) = \gamma_1 v_2$ (Wooldridge [2002], p.562).

[3]   Based on the same data base Metzger [2006] found prima facie a different industry structure. However, deviations are due to different analysis levels. His study considered entrepreneurs rather than working at the firm level.

[4]   Nevertheless, I controlled for effects coming from voluntary firm closures and drop outs of entrepreneurs without knowing anything about what triggers them. Both kinds of experience (voluntary closure and drop out) have no significant effect on the following firm's performance.