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On the Role of Entrepreneurial Experience for Start-up Financing

An Empirical Investigation for Germany

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Non-technical summary

Founders often have big problems with firm financing issues. Financing problems may arise for many reasons. Information asymmetry and uncertainty are important, but so are such things as ignorance. Experienced entrepreneurs should have more knowledge about financing issues and should be more likely to know who to turn to for help and advice. Thus, they have advantages over novice entrepreneurs when it comes to financing, which should be reflected in differences regarding financing issues. Additionally, the analysis accounts for the kind of experience the entrepreneurs have. It is important whether entrepreneurs have previously been successful or failed, because business failure may trigger other effects than success.

The analysis is based on data from the KfW Start-up Monitor. The KfW Start-up Monitor is a representative annual survey of the German population over 14 years of age. The relevant survey was conducted from August to November 2003, collecting information on 40,155 individuals. 1,125 individuals answered in the affirmative when asked if they had become self-employed during the last twelve months, regardless of whether it be on a regular or "sideline" basis. The analysis compares novice and experienced entrepreneurs, where entrepreneurial experience means that they are either portfolio entrepreneurs, i.e. still participating in their previous firm, or are restarters, i.e. they abandoned a previous business.

With regard to the extent of the demand for financing, there is only an indication of reduced demand in the case of restarters venturing after a business failure, i.e. bankruptcy. However, experience has some effect on the probability of utilizing different financing sources and the relative extent to which each is used. Portfolio-entrepreneurs are more likely to use means from family and friends and do so for a greater share of their financing needs, too. Moreover, they use their own funds as often as other entrepreneurs, but these make up a smaller share of the total amount financed. Restarters who sold or transferred a previous business are more likely to use bank loans and they also use them for a higher share of their total financing needs. Restarters who closed/liquidated a previous business utilize means from family and friends more often than others, yet they do not differ in the share used.

Restarters with failure experience do not differ in their utilization of financing sources, either in terms of probability or extent. Nevertheless, they are more likely to be faced with financing difficulties. This indicates that failure experience puts pressure on the entrepreneurs concerned, who then have to make more effort to raise capital. But if they get over the hurdle they show a similar financing pattern to other entrepreneurs.

On the role of entrepreneurial experience for start-up financing

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Abstract: Entrepreneurs are often faced with problems regarding start-up financing. But compared to novice entrepreneurs, experienced entrepreneurs should have both more knowledge and better contacts, which should potentially reduce the occurrence of problems and affect finance composition. However, experience of business failure might result in additional effects. This analysis therefore investigates the effects of experience on several aspects of start-up financing. It is based on data from the KfW Start-up Monitor, a representative annual survey of the German population. The results show that experience affects several financing issues. Yet the impacts depend on the kind of experience. With regard to previously failed entrepreneurs, who are of particular interest, the findings indicate that they cut back their financing demand and are more likely faced with problems satisfying this demand. However, previously failed entrepreneurs do not significantly differ in the sources they use to finance their businesses.

Keywords: Entrepreneurial experience; restart; start-up financing
JEL Classification: G32; L26; M13

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Motivation of the analysis

Developed economies often actively pursue support policies that target small and medium sized enterprises (SMEs). Such measures aim to alleviate or correct misallocation arising through imperfect financial markets (Scholtens 1999; Walker 1989; Winker 1999). Typical reasons for market failure in the financial market are information asymmetry and uncertainty, particularly concerning new and young firms. These enterprises lack the track record needed to build confidence.

Analysis based on data from the KfW Start-up Monitor shows that 37 percent of nascent entrepreneurs consider problems in capital acquisition as severe, i.e. appraise the importance of this item as being at least as strong (Engel et al. 2004 or Lehnert and Reents 2004). As such, it is fair to say that financing is an essential problem that has to be solved prior to start-up. Accordingly, the denial of requests for financing is one of the most important reasons why nascent entrepreneurs abandon potential ventures: 20 percent of them mention this as a reason for aborting (Engel et al. 2004).

Financing problems may arise for many reasons. Information asymmetry and uncertainty are important, but so are such things as unexpected administrative demands and costs, ignorance of financing options such as support programs or ignorance about contact persons.[1] Experienced entrepreneurs should have more knowledge about these things and should be more likely to know who to turn to for help and advice. Thus, they have advantages over novice entrepreneurs when it comes to financing, which should be reflected in differences regarding financing issues.

However, the analysis needs to account for the kind of experience the entrepreneurs have. That is, it is important whether entrepreneurs have previously been successful or failed. This is because business failure may trigger a reduction of the availability of financial means, e.g. by the worsening the entrepreneur's creditworthiness or reducing others' confidence in him or her. The hypotheses focused on in this article are based on these considerations. The effect of entrepreneurial experience on the occurrence of financing problems is analyzed, as is its impact on the utilization of different sources of financing.

Derivation of hypotheses

From the theoretical point of view, the question of how to choose sources of financing is quite clear. A theoretical model by De Meza and Southey (1996) suggests that entrepreneurs first try to use their own funds, informal capital and secured loans to capitalize their firms. Only if these means are not available any more will they fall back on unsecured loans, which are more costly. Own funds and informal capital are indeed the most important sources of funding for start-up entrepreneurs (Berger and Udell 1998; Scholtens 1999; Walker 1989). The rationale for this can be found at the capital market (Myers and Majluf 1984). Real capital markets are imperfect due to information asymmetries. The correction of asymmetries causes costs which vary dependent on the type of financing. The result of this is the existence of "pecking orders"

for financing alternatives, with internal financing preferred to external financing, for example. In the case of young firms in particular, the information asymmetries are considerable. Thus, they would choose financing options that do not necessitate correction (such as their own funds) or where the correction costs are low (as in the case of informal capital, e.g. provided by family and friends).

Therefore if entrepreneurs do not use bank loans, it may be due to their preferences not to use this finance source. However, not using such capital might also be traced back to restrictions in capital supply caused by information asymmetries (Stiglitz and Weiss 1981). Evidence for this phenomenon can be found in the form of refused loan applications, or refusal to grant the full amount requested. Such capital restrictions are mentioned in several studies. Holtz-Eakin et al. (1994), for example, analyzed the behavior of individuals in the US who unexpectedly received a sum of capital (which was an inheritance in their study). They found that the unexpected capital inflow increased the probability of becoming an entrepreneur. This, they conclude, indicates an undercapitalization of latent entrepreneurs which prevents them from starting a business.

Evans and Jovanovic (1989) estimate the scale of capital restrictions. They found a capital limit of 1.5 times the volume of an entrepreneur's own funds (*hypothesis 2*). Capital restrictions for small and medium sized firms are also found in the German case, with lower limits for younger firms than for older ones (Audretsch and Elston 1997; Winker 1999). Egeln et al. (1997) state: "a shortage of financial resources constitutes a severe restriction on potential founders and a difficult problem for fledgling firms" (Egeln et al. 1997, p. 145).

Actually, there is no dispute about the existence of capital restrictions and the fact that they concern some firms more than others. However, information on how many firms are really affected is scarce. Levenson and Willard (2000) estimated this number. They found a share of roughly 6 percent of SMEs in the US which are faced with capital restrictions. 2 percentage points represented creditworthy firms whose loan application had been refused. 4 percentage points were actually unreliable firms deterred from applying for credit by their own negative appraisal of their prospects (*hypothesis 4*). Levenson und Willard suggest, however, that only creditworthy firms that were refuse credit should be counted as being restricted. Thus, the problem of capital restriction for SMEs is not as big as first thought. One of their regression results nevertheless indicates a handicap for start-ups: firms in which founders still hold an interest – a condition which is quite normal for start-ups – are faced with a significantly higher probability of a loan application refusal.

However, bank loans have become a more important source of start-up finance in the last few decades, which may be put down to improved monitoring and screening methods (Hamilton and Fox 1998). A further cause may be the improved ability of founders to provide collateral (Cowling and Westhead 1996). Hulburt and Scherr (2003) find that young US firms use secured loans more often than incumbent firms do. This might be supply-side induced, since banks are prone to rely on secured short-

term loans at the lower end of their lending margin, where defaults are more likely (Cowling and Westhead 1996). Considering the findings of Tamari (1980), this condition might actually restrict the supply of capital for young firms. His analysis of several studies shows that young firms actually have less demand for short-term bank debt; they rather need long-term loans (Scherr and Hulburt 2001). Firms can bridge short periods by means of alternative instruments like supplier credits. Indeed, supplier credits are of great importance for start-ups (Peterson and Shulman 1987). In general, the supply of bank credit seems not to be the chief problem for SMEs, as the analysis of Binks and Ennew (1997) suggests. They show that bank fees, interest rates and collateral are the real causes of conflict between firms and their banks.

From the studies mentioned above, we can see that many investigations concern general aspects of SME financing without considering the characteristics of the firms. But such characteristics may be important, as shown by Cressy (1996). With regard to the capital restrictions of SMEs he does not agree with Evans and Jovanovic (1989) that firms' own funds determine the available finance. He rather suggests that the entrepreneur's human capital is essential for accessing financial means. Based on his analysis with enterprise data from UK he states: "firms self-selected for funds on the basis of their proprietor's human capital with better businesses more likely to borrow" (Cressy 1996, p. 1266). This actually means that entrepreneurs with high human capital are able to help themselves to get adequate finance (*hypothesis 1*). Human capital can be built up by formal education, on-the-job training or professional experience (Becker 1985; Mincer 1974). Entrepreneurial experience is thus part of human capital and should enable entrepreneurs to make superior decisions. Due to the importance of an entrepreneur's human capital provision she or he is either a key capability or a constraint on re-source acquisition (Brown and Kirchhoff 1997).

Advantages for experienced entrepreneurs in the acquisition of financial means are also seen by Åstebro and Bernhardt (2003) – even if they observed the opposite of what Cressy (1996) recorded. They found a reduced utilization of bank loans by entrepreneurs with higher human capital. In contrast to Cressy, who does not want to speculate if this observation is supply or demand-side driven, they suggest the latter. It would be unrealistic to presume that banks are more likely to deny access to capital in the case of individuals with a higher human capital endowment. On the other hand, this is where the criticism made by Hughes (1997) comes in. He criticizes banks for focusing too much on the firm's current state, rather than on characteristics of the entrepreneurs and on growth perspectives when they assess credit approval. This is also suggested by Cassar (2004). He did not find any relation between entrepreneurial human capital and finance structure. Education and professional training neither affect the debt ratio of start-ups nor the utilization of different financing alternatives like external financing, long-term debt or bank loans.

Experienced entrepreneurs are more likely to have network contacts than novice entrepreneurs, who still need to establish them. "Networking allows entrepreneurs to enlarge their knowledge of opportunities, to gain access to critical resources, and to

deal with business obstacles" (Ucbasaran et al. 2001, p.62). This is a further reason why experienced entrepreneurs should differ in the sources of financing they use. Nevertheless, the positive network effect can turn negative since networks allow information to spread rapidly, be it good or bad. Circulation of bad information, for example after a business failure, might thus impede capital acquisition. However, even without this effect, previously failed entrepreneurs are more likely to have problems raising funds. Business failure may result in the loss of all commercial and private financial means or collaterals, reducing financial leeway of entrepreneurs very directly. But failure might also cause indirect restrictions, for example creditors are more wary of lending because they are more sensitive to risk or because new debts would be subordinated to existing obligations from previous commitments. A number of subjective reasons also accompany these objective reasons and account for possible problems. Failed entrepreneurs can often fall victim to their self-esteem, fostering doubts about their own abilities. This might force them into migrating toward bootstrap financing methods, avoiding traditional funding sources (Carter and Van Auken 2005) (*hypothesis 4, addition*).[2]

The literature survey shows that only a small number of authors who consider SME financing include the aspect of entrepreneurial experience. This analysis therefore aims at a widely neglected issue in firm financing. On the basis of the above summarized empirical work, it is possible to derive five hypotheses for testing in the analytical part of the article:

> ***Hypothesis 1:*** Start-ups established by previously successful entrepreneurs are less likely to be faced with financing problems than other start-ups.
>
> ***Hypothesis 2:*** Start-ups established by previously failed entrepreneurs are more likely to be faced with financing problems than other start-ups.
>
> ***Hypothesis 3:*** Start-ups established by previously failed entrepreneurs are less often based on the founder's own funds than other start-ups.
>
> ***Hypothesis 4:*** Start-ups established by previously failed entrepreneurs are less often based on bank loans than other start-ups.
>
> ***Hypothesis 5:*** Start-ups established by previously failed entrepreneurs are more often based on informal capital from family and friends, than other start-ups.

Applied data

The analysis is based on data from the KfW Start-up Monitor. The KfW Start-up Monitor is a representative annual survey of the German population over 14 years of age. The relevant survey was conducted from August to November 2003, collecting information on 40,155 individuals. 1,125 individuals answered in the affirmative when asked if they had become self-employed during the last twelve months, regardless of whether it be on a regular or "sideline" basis. These individuals are the starting sample for the analysis.

Table 1 displays some characteristics of the individuals, separated into novice and experienced entrepreneurs. Differences between them are only described in detail in the following if a test on mean differences rejects equality. Roughly a quarter of the individuals have entrepreneurial experience. Entrepreneurial experience means that they are either portfolio entrepreneurs, i.e. still participating in their previous firm, or are restarters, i.e. they abandoned a previous business. The composition of the group is as follows: 18 percent of the experienced entrepreneurs are portfolio entrepreneurs, a further 24 percent are restarters who sold or transferred their business, 50 percent are restarters who closed or liquidated their firms, and lastly, 8 percent are restarters who went bankrupt. The latter thus account for a relatively small share of 1.5 percent of all entrepreneurs. 23 percent of the entrepreneurs have multiple entrepreneurial experiences, i.e. have established more than once previously.

65 percent of the experienced entrepreneurs are male which is an 8 percentage point higher share than in the group of novice entrepreneurs. 91 percent of all entrepreneurs are German. Half of the novice entrepreneurs are younger than 37 years of age. Thus, this cohort is younger than the experienced cohort, where half of the entrepreneurs are 42 years or older. 30 percent of the experienced entrepreneurs and a quarter of the novice entrepreneurs are graduates, i.e. have an academic degree and hence have completed a course of university education. 18 percent of the experienced entrepreneurs are involved in their venture in an entrepreneurial team, as are 24 percent of the novice entrepreneurs. This indicates that novice entrepreneurs and experienced entrepreneurs weigh up the pro and cons[3] of entrepreneurial teams differently.

The start-up size does not differ significantly between the groups of novice and experienced entrepreneurs. Both have an average of 2 employees (1.3 in full-time and 0.8 in part-time). Real firm foundations, i.e. setting up combinations of production factors for the first time – which is different from a derivative start-up, are implemented by 79 percent of the experienced entrepreneurs. In contrast, novice entrepreneurs only do so in 70 percent of cases. Another alternative comes in the form of take-overs, which account for 9 percent of all start-up cases. The quota of shareholdings acquisitions, i.e. firm participation via a purchase of shares, differs significantly again. This start-up option is used by 22 percent of the novice entrepreneurs and by 13 percent of the experienced entrepreneurs.

Entering entrepreneurship through a sideline start-up is an often-used opportunity. Only 37 percent of the novice entrepreneurs and 53 percent of the experienced entrepreneurs regard a new venture as regular employment. 56 percent of the entrepreneurs venture in liberal professions. A third of the experienced entrepreneurs have been unemployed prior to the start-up, while the figure for novice entrepreneurs is slightly lower, at 28 percent.

Roughly three quarters of the start-up entrepreneurs have a need for financial means. Thus, a quarter of them stated that they did not require financial means for implementing the start-up. Since the question aimed directly at the capital which was necessary to realize the venture, regardless of whether it be own or outside capital, this

result seems strange at the first glance. However, a possible explanation is that it indicates that these entrepreneurs must have had access to free infrastructure and resources when they ventured. This is the case if they, for example, made investments in kind or at least had the right to use facilities or resources. The latter situation is most conceivable in the case of sideline start-ups, as the founders often have the opportunity to run their business from at home. Indeed, 80 percent of the entrepreneurs with no financing demand are sideline entrepreneurs, which supports this thesis. Nevertheless, the average financing demand is 23,000 Euro. However, this figure is forced up by some big budget cases, as the median of only 6,000 Euro shows.

Table 1: Descriptive statistics

Characteristics	Altogether		Novice entrepreneurs		Experienced entrepreneurs		Confidence level [b]
Portfolio-start-up	3,5		-		18,4		
Restart after sale/transfer	4,6		-		23,7		
Restart after closure/liquidation	9,7		-		50,2		
Restart after bankruptcy	1,5		-		7,7		
Multiple entrepreneurial experiences	4,5		-		23,2		
Gender (male)	59,1		57,1		64,9		**
Nationality (German)	90,8		91,0		90,5		
Age of the entrepreneur (median)	39,2	(38)	38,0	(37)	44,2	(42)	***
Graduate	25,8		24,9		29,9		*
Team start-up	22,3		23,7		17,5		**
Start-up size							
Number of full time employees (median)	1,3	(0)	1,4	(0)	0,8	(0)	
Number of part time employees (median)	0,8	(0)	0,8	(0)	0,8	(0)	
Start-up type							
Real start-up	71,3		69,3		78,6		***
Take-over	9,0		9,0		8,2		
Acquisition of shareholdings	19,7		21,7		13,3		***
Start-up for regular employment	40,8		37,3		53,4		***
Start-up in liberal profession	55,9		55,8		57,1		
Start-up out of unemployment	28,8		27,9		33,7		**
Financing							
Financing demand existed	74,0		73,1		77,8		
Extent of financing demand (Median)	22656,3	(6000)	22878,7	(6000)	19950,8	(5500)	
Financing problems occurred	21,8		20,5		27,9		***
Financing sources (multiple statements possible)							
Own funds	83,6		84,8		78,2		*
Bank loans	22,2		21,2		25,7		
Funding from family and friends	20,7		17,9		31,7		***

[a] Missing values are not imputed. The number of observations might differ thus from those shown in Table 2, Table 3, or Table 4.
[b] Significance of F-tests on the equality of means between novice entrepreneurs and experienced entrepreneurs.
Confidence levels: $p < 0.01$ = "***", $p < 0.05$ = "**" and $p < 0.1$ = "*".

Quelle: KfW Start-up Monitor.

Many of the entrepreneurs had problems satisfying their demand for financing. 21 percent of the novice entrepreneurs and 28 percent of the experienced entrepreneurs were faced with such difficulties. There are three main sources which entrepreneurs tapped to meet their financing demand: their own funds, bank loans, and money from family and friends. Own funds are the most important for entrepreneurs, since they come into play for 85 percent of the novice entrepreneurs and 78 percent of the experi-

enced entrepreneurs. 22 percent of the entrepreneurs use additionally financial means from banks. Family and friends also often contribute to start-ups. 18 percent of the novice entrepreneurs and almost a third of the experienced entrepreneurs utilize this source of capital.

Testing the hypotheses

Definitions and indicators

The analysis in this article is focused on the effects of entrepreneurial experience on start-up financing, with five aspects being considered in detail. The first item is whether or not a demand for financing existed. Financing demand in this case is taken to comprise both own funds and outside finance. Secondly, it is of interest to what extent entrepreneurs needed financing and if they had problems meeting that need, which is the third item. Lastly, the composition of the financing sources tapped is worthy of attention. The answers to two central questions can provide further information on this point: items four and five are therefore how likely and to what extent particular sources are used. It is important to distinguish between those two approaches. For example, it is possible that banks may not select with regard to the relative frequency of transactions they make with different type of entrepreneurs, but may be prone to finance a higher share of a business' capital if the entrepreneur was previously successful.

As mentioned, not only entrepreneurial experience itself is considered when analyzing the effects on start-up financing but also different kinds of this experience. This is because previous success results in a different type of learning than previous failure, as the outcome of previous events determines the mode in which experience is transformed into knowledge (Politis 2005). While it is more likely that success stabilizes routines, failure may disrupt them, triggering modes of higher-order learning (Cope 2005). In order to distinguish between success and failure it is necessary to define both of them. As the reasons for firm closure can be many and diverse and information about the true reasons is not available, one has to rely on obvious facts for classification. Such an obvious characteristic is the situation in which the previous business is, i.e. does it still exist or how was it closed. There are four situations which can be identified in the data. In the first, the business still exists and the entrepreneur still participates in it. In the second situation, the business still exists but the entrepreneur sold or transferred it. The third possibility is that the firm has been liquidated or closed by the entrepreneur. The final situation is that of the entrepreneur having gone bankrupt with the business. This classification is suitable to approximately distinguish between success and failure. If either of the first two situations applies, we can assume positive experience. The third situation is ambiguous and could be connected either with success or with failure. However, bankruptcy is a characteristic which is very closely related to business failure and is thus an appropriate failure indicator.

The KfW Start-up Monitor applies a very wide definition of what is regarded as a start-up. The definition is independent from any register entries and relies on the self-assessment of the persons questioned. Due to the inclusion of sideline entrepreneurs

and entrepreneurs affiliated to liberal professions, the definition actually more or less takes "self-employment" and "start-up" to be similar, which is not necessarily the case. Actually, one might understand self-employed persons as being more closely related to individuals who earning their own living than entrepreneurs. But this is a matter of opinion.

Beside the indicators accounting for entrepreneurial experience the data contains a large amount of additional information. There are firm-related measures standing for industry (NACE 2-digit-level), start-up type (real start-up, take-over, and shareholdings acquisition), or firm-size (number of employees in full- and part-time) as well as information related to the entrepreneur like age, gender, education (graduate), or employment status prior to the start-up.

The question which opens the finance topic in the survey concerns the extent of financing demand for the start-up. The question can be applied to select entrepreneurs of interest, since only entrepreneurs who had a demand for financing were asked for further information on their finances. Through this selection the data is biased, which must be taken account of in the analyses. The selection can be modeled as follows:

$$y_1 = x_1\beta_1 + u_1 \text{ and}$$

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

where information on finance matters (y_1) is only observable if there was financing demand ($y_2 = 1$).[4]

Regressing y_1 on x_1 without taking the selection into account would result in inconsistent estimators. Contrarily, regressing y_{i1} on x_{i1}, $\lambda(x_i\delta_2)$ would enable consistent estimators (Heckman 1979), but, unfortunately, δ_2 is unknown. Using regression results from the selection equation, however, makes it possible to obtain $\hat{\delta}_2$ which is an estimation for δ_2. On the basis of this estimated value it is possible to compute the inverse Mills Ratio $\hat{\lambda}_{i2} \equiv \lambda(x_i\hat{\delta}_2) \equiv \phi(x_i\hat{\delta}_2)/\Phi(x_i\hat{\delta}_2)$ which is a correction term. After all, regressing y_{i1} on x_{i1}, $\hat{\lambda}_{i2}$ results in consistent estimators.

The type of regression apart from the selection equation differs depending on the type of question to be answered. The extent of financing demand is given as a continuous variable and is thus to be estimated using an ordinary-least-squares regression (OLS). Contrarily, the information about the occurrence of problems covering the financing demand is recorded discretely, more precisely in a dichotomous manner. It is therefore to be estimated with a probit model. With regard to the utilization of the financing sources it has to be taken into account that the decision about whether to utilize a particular source or not, and to what extent to use it, depends on all the alternative options. The decision process therefore contains multiple decisions which are decided simultaneously rather than sequentially. The decision, for example, to request means from a financial source which is lower down in the pecking order depends on whether the full financing demand can be covered by using preferred sources. A similar logic applies to the extent of utilization. Such interdependencies have to be taken into ac-

count when analyzing the data. This can be done by applying a seemingly-unrelated-regressions model (SUR) (Zellner 1962). A SUR model is a system of simultaneously estimated regression equations

$$y_1 = x_1\beta_1 + u_1$$
$$y_2 = x_2\beta_2 + u_2$$
$$\vdots$$
$$y_G = x_G\beta_G + u_G .$$

Each regression equation in the system has its own coefficient vector β_g, so the equations seem to be unrelated to each other. But the relation is given because the freedom of the model allows correlations among the residuals. That is, the unconditioned variance matrix $\Omega \equiv E(u_i u_i')$ is entirely unrestricted. A SUR-model is originally a system of OLS regressions. That is, if the endogenous variables are not continuous but rather dichotomous the model has to be adjusted. Then, a multivariate probit-model[5] is applicable, which is a system of probit regressions allowing similarly correlations among the residuals. The multivariate probit model is applied to analyze the probability of utilizing particular financing sources while the SUR-model is applied to analyze the extent in which these sources are tapped.

Estimation results

The results from the estimation of the selection equation are displayed in the first columns of Table 2. Four measures have a significant effect on the probability of having financing demand. Start-up entrepreneurs who sold or transferred their previous business, men, and start-ups in regular employment are more likely to have financing demand than other entrepreneurs. Contrarily, financing demand is less likely if start-up is implemented through financial participation than by real start-up or take-over.

In the middle columns of Table 2 the results on the extent of financing demand are displayed. In order to attain direct impacts of the indicators' effects on the financing demand the demand is introduced in logs into the regression. Then the estimated coefficients can be interpreted as rates of change. Of all the experience measures, only the business failure indicator shows a significant effect. Compared to the financing demand of the reference group of entrepreneurs – founders without entrepreneurial experience or academic education whose venture is a real start-up – the demand decreases by 80 percent in case of previously bankrupt restarters.

The financing demand of graduate start-up entrepreneurs is 29 percent higher than that of reference entrepreneurs. Besides, the start-up size is important. Every additional worker employed at the time of foundation increases the financing demand by roughly 6 to 7 percent. Take-overs are the most capital intensive. The financing demand rises by 84 percent in case of take-overs compared to real start-ups. Contrarily, financing demand decreases by 37 percent if entrepreneurs venture in a liberal profession.

As already mentioned, the issue of business financing is a problem for many entrepreneurs. But the risk of being confronted with financing problems actually depends on

the single entrepreneurs and their characteristics, as the next analysis will show. There are fours factors that affect the risk significantly. These are displayed in the last columns of Table 2. There is the extent of financing demand, the existence of failure experience, the age of the entrepreneurs, and their working status prior to the start-up. Following these findings, hypothesis 1 must be rejected. Previous entrepreneurial success does not reduce the occurrence of financing problems. Contrarily, hypothesis 2 is not rejected. Entrepreneurs with failure experience are more likely to be faced with financing problems than other entrepreneurs. Their risk is 37 percent higher.[6] Furthermore, financing problems occur more often in cases when the financing demand exceeding 10,000 Euro. Young entrepreneurs and entrepreneurs who were unemployed prior to start-up are faced with above average risk, too.

Table 2: Regressions on start-up financing

Determinants	Probit		OLS-regression		Probit	
	Financing demand exists		Extent of the financing demand log(Euro)		Financing problems occurred	
Extent of financing demand (ref.: less than 3,000 Euro)						
more than 3,000 Euro to 10,000 Euro and less	-	-	-	-	0.175	(0.153)
more than 10,000 Euro to 40,000 Euro and less	-	-	-	-	0.380**	(0.175)
more than 40,000 Euro to 80,000 Euro and less	-	-	-	-	0.796***	(0.239)
more than 80,000 Euro	-	-	-	-	0.772***	(0.235)
Portfolio-start-up	0.392	(0.301)	-0.468	(0.312)	0.282	(0.319)
Restart after sale/transfer	0.591**	(0.295)	-0.227	(0.287)	0.037	(0.295)
Restart after closure/liquidation	-0.145	(0.175)	-0.076	(0.208)	0.279	(0.212)
Restart after bankruptcy	0.971	(0.598)	-0.824*	(0.441)	1.128***	(0.424)
Multiple entrepreneurial experiences	-0.413	(0.256)	0.382	(0.311)	-0.120	(0.320)
Gender (male)	0.268**	(0.104)	-	-	0.117	(0.150)
Nationality (German)	0.085	(0.193)	-0.088	(0.215)	-0.167	(0.207)
Age of the entrepreneur	-0.002	(0.004)	-	-	-0.011**	(0.005)
Graduate	0.159	(0.115)	0.263*	(0.136)	-0.007	(0.143)
Team start-up	0.174	(0.130)	-	-	0.002	(0.151)
Start-up size						
Number of full time employees (median)	0.000	(0.007)	0.058***	(0.016)	-	-
Number of part time employees (median)	0.011	(0.024)	0.066**	(0.025)	-	-
Start-up type (ref.: real start-up)						
Take-over	-0.090	(0.204)	0.836***	(0.221)	-	-
Acquisition of shareholdings	-0.410***	(0.137)	-0.141	(0.210)	-	-
Start-up for regular employment	0.480***	(0.117)	-	-	0.214	(0.184)
Start-up in liberal profession	-0.052	(0.101)	-0.367***	(0.124)	-0.081	(0.126)
Start-up out of unemployment	-0.022	(0.119)	-	-	0.481***	(0.130)
Inverse Mills Ratio	-	-	-2.504***	(0.499)	0.532	(0.641)
Constant	0.427	(0.298)	10.405***	(0.333)	-0.928*	(0.507)
Joint significance of the						
Industry indicators [b]	4.73		3.76***		8.63	
Regional indicators [b]	3.90		0.20		4.62	
Missing value indicators [c]	44.57***		2.02*		1.10	
Number of observations	908		613		666	
LR-Test χ^2 (F-Test)	131.99***		(5.94***)		71.77***	
(Pseudo-)R^2	(0.127)		0.179		(0.102)	

[a] Confidence levels: p < 0.01 = "***", p < 0.05 = "**" and p < 0.1 = "*". Standard errors in parentheses.
[b] Not separately reported.
[c] Not separately reported. For each variable showing missing values a separate dummy variable is introduced accounting for these missing values while recoding the missing values (Cohen and Cohen 1983).

The analysis for which the results are displayed in Table 3 focuses on the probability of utilizing particular financing sources. Beside the three main financing sources, namely own funds, bank loans, and money from family and friends, there is a fourth category, which is the aggregate of the remaining sources like equity or venture capital and public support etc.

Table 3: Multivariate probit-model on the likelihood of utilizing financing sources

Dependent variable: utilization of financing sources	**Own funds**		**Bank loans**		**Means from family and friends**		**Other means**	
Extent of financing demand (ref.: less than 3,000 Euro)								
3,000 Euro to 10,000 Euro	-0.084	(0.201)	0.558***	(0.214)	0.451**	(0.183)	-0.113	(0.207)
10,000 Euro to 40,000 Euro	-0.650***	(0.218)	1.111***	(0.231)	0.231	(0.222)	0.432*	(0.224)
40,000 Euro to 80,000 Euro	-0.189	(0.296)	1.210***	(0.284)	0.244	(0.286)	0.740***	(0.281)
more than 80,000 Euro	-0.822***	(0.280)	2.063***	(0.296)	0.428	(0.291)	1.159***	(0.289)
Portfolio-start-up	-0.473	(0.342)	0.163	(0.383)	1.160***	(0.325)	-4.150	(71.593)
Restart after sale/transfer	-0.167	(0.320)	0.546*	(0.303)	0.261	(0.325)	-0.509	(0.325)
Restart after closure/liquidation	0.083	(0.288)	-0.387	(0.303)	0.390*	(0.235)	-0.873***	(0.317)
Restart after bankruptcy	0.096	(0.685)	0.431	(0.603)	0.655	(0.576)	0.057	(0.583)
Multiple entrepreneurial experiences	0.115	(0.399)	0.210	(0.411)	0.146	(0.378)	0.565	(0.435)
Nationality (German)	0.597**	(0.232)	-0.309	(0.239)	-0.781***	(0.221)	0.264	(0.271)
Age of the entrepreneur	0.007	(0.007)	-0.010	(0.007)	-0.024***	(0.007)	0.000	(0.007)
Graduate	0.130	(0.173)	-0.372**	(0.181)	0.178	(0.160)	-0.048	(0.177)
Start-up for regular employment	0.302	(0.214)	0.016	(0.212)	0.065	(0.202)	0.541**	(0.218)
Start-up in liberal profession	0.112	(0.157)	-0.040	(0.158)	-0.079	(0.153)	-0.071	(0.164)
Start-up out of unemployment	-0.421**	(0.171)	-0.036	(0.172)	0.523***	(0.164)	0.923***	(0.169)
Inverse Mills Ratio	0.133	(0.599)	-0.143	(0.637)	0.734	(0.528)	0.018	(0.653)
Constant	0.487	(0.502)	-0.635	(0.513)	-0.138	(0.466)	-1.875***	(0.544)
Joint significance of the	χ^2-Test		χ^2-Test		χ^2-Test		χ^2-Test	
Industry indicators [b]	10.56*		8.54*		4.09		2.00	
Regional indicators [b]	2.17		3.04		3.91		1.22	
Missing value indicators [c]	1.94		2.67*		0.52		2.52	
Correlations of the cross equation error terms [c]	Rho_{21}	Rho_{31}	Rho_{41}		Rho_{32}	Rho_{42}	Rho_{43}	
	-0.597***	-0.182**	-0.428***		-0.000	0.029	0.105	
Number of observations	487							
Wald-Test χ^2	177.04***							

[a] Confidence levels: $p < 0.01$ = "***", $p < 0.05$ = "**" and $p < 0.1$ = "*". Standard errors in parentheses.
[b] Not separately reported.
[c] Estimated values of the cross equation error terms in the variance-covariance-matrix.

Contrary to expectations there are no significant effects of any entrepreneurial experience measure on the utilization of own funds. Hypothesis 3 is therefore rejected. There are only four measures that show significant effects on the choice of sources of funding. The financing demand is important since the probability that an entrepreneur will utilizing his or her own funds decreases when the financing demand exceeds 10,000 Euro. This is not true if the financing demand is between 40,000 Euro and 80,000 Euro. In this case, there is no significant effect. However, it is not clear why. Furthermore, entrepreneurs who are German are significantly more likely to use their own funds, while those who were unemployed prior to the start-up are less likely to do so.

When it comes to the utilization of bank loans as a source of financing, the number of indicators showing significant effects is again low. Only one experience indicator shows a significant effect. Restarters who have sold or transferred their firms are more likely to use bank loans than others. That is, hypothesis 3, which postulated a negative expectation about the utilization of bank loans by failed entrepreneurs, is rejected. In addition, significantly increased probabilities are found if the financing demand is in one of the categories above 3,000 Euro. Contrarily, graduate entrepreneurs are less likely to utilize bank loans. This supports the idea that graduates do not need to rely on bank loans because they are more autonomous in choosing their financing sources (Åstebro and Bernhardt 2003).

Portfolio entrepreneurs and entrepreneurs who closed or liquidated a firm prior to starting a new business are more likely than others to utilize means from family and friends. Again, there is no evidence that previously failed entrepreneurs differ from others, so hypothesis 5 is rejected. In other words, they are not more likely to use such informal capital. Furthermore, family and friends are important if the financing demand is between 3,000 and 10,000 Euro. This is a range which covers amounts large enough to have a good chance of being higher than the entrepreneur's unappropriated private savings; at the same time, however, the amounts required are probably not high enough to necessitate utilizing formal capital. Foreign entrepreneurs are more likely to use means from family and friends than their German counterparts. The same is true of entrepreneurs who start a business out of unemployment. But this source of informal capital loses importance the older entrepreneurs get. This effect might be the result of built-up savings or persistence effects like being loyal to one's regular bank.

Beside the three main financing sources there is the aggregate of the remaining sources. It is a tripartite aggregate containing equity- or venture capital, means from several public start-up support measures, and means from particular start-up aid for the unemployed. Again, only one experience measure shows significant effects. Restarters who closed or liquidated a firm prior to start-up are less likely to use other means than the main sources. Contrarily, there is some indication that other means are important when the financing demand exceeds 10,000 Euro. This is true of both start-ups from regular employment and start-ups out of unemployment. Splitting up the aggregate was not possible due to the low number of cases for the each of the single forms of financing. Nevertheless, it is possible to conduct bivariate tests between the single measures and the indicators showing significant effects on the use of forms of funding that constitute of the aggregate. In this way an indication is obtained as to which source of the aggregate could be the reason for the significant effect. Most of the tests hint at a special importance of public support for start-ups. That is, all but two of the significant effects obtained are attributable to this source. The impacts of both financing demand below 80,000 Euro and start-up out of unemployment are unrelated to public support for start-ups. However, the latter is strongly related to start-up aid for the unemployed.

Table 4 displays the estimation results of the SUR-model which is applied to analyze the extent to which the different financing sources are used. The table does not

contain separate columns for the aggregate of other sources, as this was not possible for technical reasons. Applying the SUR-model requires the omission of a reference source. The findings show that reference start-up entrepreneurs – who are again founders without entrepreneurial experience and academic education venturing with a real start-up – fund their start-up using on average 62 percent own funds, 16 percent bank loans, 21 percent means from family and friends and nearly 2 percent of other means.

Table 4: Seemingly-unrelated-regressions-model on the extent of financing source utilization

Dependent variable: **Share of each financing source in percentage points**	**Own funds**		**Bank loans**		**Means from family and friends**	
Extent of financing demand (ref.: less than 3,000 Euro)						
3,000 Euro to 10,000 Euro	-9.034**	(4.174)	7.641**	(3.070)	4.300	(2.638)
10,000 Euro to 40,000 Euro	-23.227***	(4.930)	18.324***	(3.626)	1.800	(3.116)
40,000 Euro to 80,000 Euro	-26.415***	(6.571)	19.636***	(4.833)	-1.586	(4.153)
more than 80,000 Euro	-45.686***	(6.839)	29.400***	(5.030)	0.357	(4.322)
Portfolio-start-up	-24.292***	(8.671)	8.493	(6.378)	28.724***	(5.480)
Restart after sale/transfer	-4.757	(7.661)	9.438*	(5.635)	1.381	(4.841)
Restart after closure/liquidation	7.024	(5.789)	-1.999	(4.258)	4.444	(3.659)
Restart after bankruptcy	-17.825	(14.184)	12.803	(10.433)	10.455	(8.964)
Multiple entrepreneurial experiences	-2.238	(9.190)	1.648	(6.759)	0.847	(5.807)
Nationality (German)	15.467***	(5.797)	-5.978	(4.264)	-15.590***	(3.664)
Age of the entrepreneur	0.303**	(0.149)	-0.200*	(0.110)	-0.159*	(0.094)
Graduate	3.499	(3.750)	-3.983	(2.758)	1.514	(2.370)
Start-up for regular employment	-3.300	(4.645)	-0.318	(3.417)	-2.924	(2.936)
Start-up in liberal profession	3.722	(3.524)	-0.653	(2.592)	-1.108	(2.227)
Start-up out of unemployment	-15.826***	(3.891)	-0.535	(2.862)	10.125***	(2.459)
Inverse Mills Ratio	-9.875	(12.824)	3.870	(9.433)	8.188	(8.104)
Constant	61.738***	(11.318)	15.936*	(8.325)	20.561***	(7.152)
Joint significance of the						
Industry indicators [b]	9.32*		7.17		3.56	
Regional indicators [b]	5.24		2.97		4.72	
Missing value indicators [c]	0.11		1.39		0.40	
Number of observations	487		487		487	
χ^2-Test	141.72***		88.89***		92.72***	

[a] Confidence levels: $p < 0.01$ = "***", $p < 0.05$ = "**" and $p < 0.1$ = "*". Standard errors in parentheses.
[b] Not separately reported.
[c] The correlations between the error terms of the OLS-regressions are $Rho_{21} = -0.525$, $Rho_{31} = -0.461$ and $Rho_{32} = -0.155$. A Breusch-Pagan-Test $\chi^2 = 249.34$ rejects the hypothesis the correlations are jointly zero.

As seen with regard to the probability analysis, the extent analysis, too, shows that experience only has limited effects. Portfolio-entrepreneurs are not less likely to utilize their own funds, but the share of their own funds they utilized to start a business was 24 percentage points lower than that of other entrepreneurs. Conversely, they use 29 percentage points more means from family and friends. Furthermore, the share of bank loans used is increased by 9 percentage points in the case of restarters who closed or liquidated a business prior to start-up.

There are several other effects regarding the utilization of financing sources. The extent of financing demand is important. The higher it is the lower the share of own funds but the higher the share of bank loans. Compared to foreign entrepreneurs, Germans use less of their own funds and less means from family and friends. The age of

entrepreneurs is relevant as the share of own funds increases the older they get. Conversely, age has a negative effect on both the share of bank loans as well as the share of means from family and friends. Lastly, if the start-up took place out of unemployment, the share of own funds is decreased but there is an increased share of means from family and friends.

Discussion of the findings

Surveys show that the issue of financing is central in the mind of start-up entrepreneurs. Theoretically, effects arising from learning and networking suggest that experienced entrepreneurs should be less worried about start-up financing than other entrepreneurs.[7] On the other hand, experience of failure might have negative effects. The analysis herein is focused on the effects of entrepreneurial experience on several aspects of start-up financing, in order to shed light on this question. The main points analyzed were the impact of experience on the occurrence of financing problems and the utilization of particular financing sources.

The findings suggest that entrepreneurial experience is important with regard to start-up financing issues. Yet the effects depend on the kind of experience, i.e. on the way the entrepreneurial experience was gained. Referred to the extent of the demand for financing, there is only an indication of reduced demand in the case of restarters venturing after a business failure, i.e. bankruptcy. This might be caused by different factors. There might be an endogenous effect arising from behavior adjustments like the reduction of risk orientation (McCarthy 2000; Wiseman and Bromiley 1996) which would result in a rejection of responsibilities for high budgets. But external restrictions, too, might cause a decreased financing demand. If, for example, real financing demand exceeds the credit limit it has to be downsized. This result partly confirms the findings of Kay et al. (2004) who showed that the start-up capital of restarters is significantly lower than that of novice and portfolio entrepreneurs.

Another constituent of human capital, alongside experience, is education. It, too, has effects on financing issues. Graduate entrepreneurs have a higher demand for financing. This might be due to better knowledge about new technologies compared to other entrepreneurs. Knowing about such technologies might result in a desire to own them, which would push up financing demand.

Experience has some effect on the probability of utilizing different financing sources and the extent to which each is used. Portfolio-entrepreneurs are more likely to use means from family and friends and do so for a greater share of their financing needs. Moreover, they use own funds as often as other entrepreneurs but do so to a smaller share. This suggests that the capital lockup in the existing firm opens a funding gap, a large part of which is then closed by informal capital, although the entrepreneurs retain a certain minimum ownership share. Restarters who sold or transferred a previous business are more likely to use bank loans and they also use them for a higher share of their total financing needs. This indicates that banks are less worried about putting capital at their disposal than would be the case for other entrepreneurs. Re-

starters who closed/liquidated a previous business utilize means from family and friends more often than most other entrepreneurs, yet they do not differ in the share used. This suggests that, similarly to portfolio-entrepreneurs, they must rely more often on informal capital but that they cannot get more money from private lenders than others.

Restarters with failure experience do not differ in their utilization of financing sources, either in terms of probability or extent. Nevertheless, they are more likely to be faced with financing difficulties, which is also indicated by the findings of Kay et al. (2004).It seems thus that failure experience puts pressure on the entrepreneurs concerned, who then have to make more effort to raise capital. But if they get over the hurdle they show a similar financing pattern to other entrepreneurs.

Policy implications

In Germany one often hears of "stigmatization" when the subject of failed entrepreneurs is debated (e.g. Vierbuchen 2005). It is said that in Germany failed entrepreneurs would be branded because of their business failure, with the result that it is difficult for them to find their feet again, economically and socially (Koark 2005). On the basis of such beliefs there are calls for "a culture of the second chance" or for "an end to stigmatization".[8] There have even been calls for support measures specifically for failed entrepreneurs (Europäische Kommission 2002). With the reservation that individual cases exist where stigmatization has indeed taken place, there is no indication that the situation in Germany is any worse. Indeed, although failed entrepreneurs are more likely to have financing difficulties, there are other reasons behind this than stigmatization. For example, an individual's credit rating might be poor because of old debts. Additionally, "lenders would be loath to lend to once-failed business owners who want to start new businesses, because owners have little incentive to work hard if additional earnings mainly benefit their old creditors" (Fan and White 2003, p. 564). Besides, stigmatization as indicated by obstacles like "personal rejection in one's milieu" or "rejection through business partners" are not mentioned more often by failed entrepreneurs than by others (Kay et al. 2007). However, the fear of failure is above average in Germany compared to other countries (e.g. Sternberg et al. 2006), thus it is often used as proof for this hypothesis as well. But this above-average fear of failure is more a matter of risk awareness than of stigmatization. This is indicated by survey results: when asked for reasons for abandoning a start-up project, would-be entrepreneurs mention extensive financial risk more often than fear of dropping in social status (Engel et al. 2004 or Lehnert and Reents 2004).[9]

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Notes

[1] Source: KfW Start-up Monitor, own evaluation.

[2] Bootstrap financing methods are basically all resource-protecting measures. They can be classified into four groups: delaying payments (e.g. payment to suppliers, tax payments, or leasing), minimizing accounts receivable (e.g. by factoring), minimizing investments (e.g. buying used equipment or hiring temporaries), private-owner financing (e.g. employing relatives at low wages, running the business from home or using private credit cards), and sharing resources with other businesses (e.g. employees, equipment, or office space) (Carter and Van Auken 2005).

[3] Lechler and Gemünden 2003 summarize the pros and cons of entrepreneurial teams. Teams have socio-psychological and capacitive advantages as well as capability and knowledge advantages. On the other hand, they are faced to a higher extent with the risk of ineffective communication, complex and time-intensive decision processes, or dysfunctions like group losses (loss of motivation by free riding, laziness, or valuation angst, loss of coordination, or loss of the own opinion), bullying, or risk shifts.

[4] Assumptions: (a) (x, y_2) are always observed; (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).

[5] The applied multivariate Probit-Model is estimated with „mvprobit“ using the software package STATA. The command is based on Cappellari and Jenkins 2003.

[6] The marginal effect of failure experience is 0,3743. This means that the risk of financing problems increases by 37 percent compared to novice entrepreneurs in case of bankruptcy prior to the restart.

[7] One can argue that learning and networking effects depend on the length of time which has passed since abandoning a firm. This is true – but not relevant in practice. Separate estimations introducing the experience indicators interacted with the time passed reveal only significant results with regard to the financing problems analysis. It shows that the negative basic effect of failure experience remains but decreases as more time passes since abandoning the firm.

[8] The German Minister of Justice, Brigitte Zypries, spoke at an event organized by the Industrie- und Handelskammer Berlin and by the Bund der Selbstständigen: the stigma of failure is a serious problem. In order to overcome it we need a culture of the second chance (Zypries 2006).

[9] Indeed, one has to take into consideration the fact that the fear of dropping in social status is not a perfect indicator for the fear of failure.