

Discussion Paper No. 10-026

**Business Closure and Financial Loss:  
Who Foots the Bill?  
Evidence from German  
Small Business Closures**

Georg Metzger

**ZEW**

Zentrum für Europäische  
Wirtschaftsforschung GmbH

Centre for European  
Economic Research

Discussion Paper No. 10-026

**Business Closure and Financial Loss:  
Who Foots the Bill?  
Evidence from German  
Small Business Closures**

Georg Metzger

Download this ZEW Discussion Paper from our ftp server:

<ftp://ftp.zew.de/pub/zew-docs/dp/dp10026.pdf>

Die Discussion Papers dienen einer möglichst schnellen Verbreitung von neueren Forschungsarbeiten des ZEW. Die Beiträge liegen in alleiniger Verantwortung der Autoren und stellen nicht notwendigerweise die Meinung des ZEW dar.

---

Discussion Papers are intended to make results of ZEW research promptly available to other economists in order to encourage discussion and suggestions for revisions. The authors are solely responsible for the contents which do not necessarily represent the opinion of the ZEW.

## **Non-technical summary**

Many new firms do not survive the first years in business. Even though, the financial risk for the parties that have a financial stake in the business (i.e. owners, lending institutions and other creditors, such as suppliers) is misleadingly exaggerated by the high closure rates among start-ups: not all start-ups cease operations with a financial loss, nor does closure – in the event of loss –necessarily entail financial pain for every party.

Closures happen, for example, because owners pursue opportunities for alternative earnings, such as salaried employment, alternative self-employment or retirement. Yet the decision to pursue alternatives is influenced by costs considerations: low opportunity or high switching costs should increase the probability of a business owner staying in a current business – possibly longer than advisable, which would predict a higher likelihood of financial loss at closure. In contrast to voluntary closures, the link between closure due to bankruptcy or other financial problems with financial loss is obvious. As a consequence, business closure because of bankruptcy should basically be more likely to produce losses than voluntary closure.

Owing to their different relationships to a business, creditors are subject to varying probabilities of incurring financial loss. These probabilities depend, for example, in part on informational asymmetries, as not all creditors are privy to the same information about the business and the measures used by these creditors to treat their information deficit. Theoretical arguments suggest that also the reasons for closure affect the financial risk. The central purpose of this paper is thus to test how different reasons for business closure determine who suffers financial loss at closure.

Using data from the ZEW Entrepreneurship Study (a unique dataset on business closures in Germany), we determined that closures that take place based on expectations about a business' future development or because the owner takes a different earning opportunity are less likely to entail losses for creditors. Conversely, closures because of financial problems are correlated with a higher loss probability for involved parties. The findings in this paper have important implications for both entrepreneurs and creditors. They suggest that creditors should help debtors to assess business prospects in order to limit their own loss risk. Such assistance, of course, is also in the interest of entrepreneurs themselves – particularly those who would seek to pursue a new business venture. When an entrepreneur leads a lending institution to suffer losses, the likelihood that he will be able to obtain a new loan for a fresh start drops significantly.

## Das Wichtigste in Kürze

Viele neue Unternehmen überstehen die ersten Jahre nach ihrer Gründung nicht. Die hohe Schließungsrate überzeichnet jedoch das Risiko für alle am Unternehmen finanziell Beteiligten (wie Unternehmer, Kreditgeber und Lieferanten), da weder jede Unternehmensschließung mit finanziellen Verlusten einhergeht, noch Verluste alle Beteiligten gleichermaßen treffen würden.

Unternehmen werden geschlossen, beispielsweise, weil Unternehmer andere Einkommensalternativen verfolgen wie eine abhängige Beschäftigung, eine neue Selbstständigkeit oder den Ruhestand. Die Überlegung, eine andere Einkommensalternative zu verfolgen, ist von Kostenüberlegungen beeinflusst: geringe Opportunitäts- oder hohe Wechselkosten erhöhen dabei die Wahrscheinlichkeit, dass Unternehmer ihre gegenwärtige Selbstständigkeit weiterführen – möglicherweise länger als dies ratsam ist, was die Wahrscheinlichkeit erhöhen würde, dass eine Schließung mit finanziellen Verlusten einhergeht. Im Gegensatz zur Gruppe freiwilliger Unternehmensschließungen, ist ein Zusammenhang zwischen Schließungen, die auf Insolvenz oder andere finanzielle Probleme zurückzuführen sind, und der Wahrscheinlichkeit finanzieller Verluste bei Schließung offensichtlich. Schließungen durch Insolvenz oder aufgrund anderer finanzieller Probleme dürften daher grundsätzlich die Wahrscheinlichkeit finanzieller Verluste erhöhen.

Aufgrund unterschiedlicher Beziehungen zu einem Unternehmen sind Gläubiger unterschiedlichen Risiken ausgesetzt, einen finanziellen Verlust bei Unternehmensschließung zu erleiden. Diese Risiken hängen beispielsweise von bestehenden Informationsasymmetrien ab oder davon, welche Maßnahmen die Gläubiger unternehmen, um Informationsdefiziten zu begegnen. Theoretische Überlegungen deuten darauf hin, dass das Risiko finanzieller Verluste auch mit den Gründen für die Schließung zusammenhängt. Die zentrale Forschungsfrage in diesem Papier lautet daher zu untersuchen, wie sich die Gründe für eine Unternehmensschließung darauf auswirken, wer finanzielle Verluste bei einer Unternehmensschließung erleidet.

Die Analysen auf Basis der ZEW Gründerstudie zeigen, dass Unternehmensschließungen aufgrund einer unzureichenden erwarteten Unternehmensentwicklung oder weil Unternehmer eine andere Einkommensalternative verfolgen wollten mit einem verringerten Risiko finanzieller Verluste für Gläubiger einhergehen. Demgegenüber sind Schließungen aufgrund finanzieller Probleme für alle Beteiligte mit einem erhöhten Risiko für Verluste verbunden.

# **Business closure and financial loss: Who foots the bill?**

## **Evidence from German small business closures**

Georg Metzger

Centre for European Economic Research (ZEW), Mannheim

P.O. Box 103443

68034 Mannheim, Germany

Phone: +49 621 1235-185, E-mail: [metzger@zew.de](mailto:metzger@zew.de)

[www.zew.de](http://www.zew.de)

### **Abstract**

This paper explores how different reasons for business closure impact the probability that financial loss will be suffered by creditors. Using German small business data, the study finds that business closure due to financial problems is strongly correlated with a likelihood of financial loss. By contrast, closures that take place based on expectations about a business' future development or because the owner takes a different earning opportunity are less likely to entail losses for creditors. The findings suggest that creditors are better off when entrepreneurs have a clear picture of their own abilities and shortcomings, and don't suffer from all-too-frequent over-optimism. Consequently, creditors stand to gain from helping clients to assess financial prospects.

### **Keywords**

Bankruptcy; business closure; financial loss.

### **JEL-Classification**

G33; L26; M13.

## **Introduction**

Nearly 40% of business ventures in Germany (Brüderl et al. 1992, Harhoff et al. 1998, Wagner 1999) and about 60% of new firms in the US (Nucci 1999) and Portugal (Mata et al. 1995) shut down within the first five years of their establishment. This high failure rate, in conjunction with imperfect and asymmetric information problems (Berger and Udell 1998), has led new businesses to be widely financed by insiders, i.e. owners, family or friends while banks are cautious about lending money for business ventures. This caution has called forth two responses: public-sector banks try to make funding available through special lending programs for entrepreneurs. Meanwhile, small firms try themselves to overcome credit constraints by using alternative financing sources such as trade credits (Danielson and Scott 2004).

The high closure rates among start-ups, however, actually exaggerates the financial risk to parties that have a financial stake in the business (i.e. owners, lending institutions and other creditors, such as suppliers): not all start-ups cease operations with a financial loss (Everett and Watson 1998), nor does closure – in the event of loss – necessarily entail financial loss for every party. Theoretical arguments suggest that the reasons for closure affect this financial risk. The central purpose of this paper is thus to test how different reasons for business closure determine who suffers financial loss at closure. Aside from financial problems, frequent reasons for closure are that the business no longer met the owner's objectives (Stokes and Blackburn 2001) or that the owner transitioned to salaried employment (Taylor 1999).

Using data from a unique dataset on business closures in Germany, we determined – after controlling for business characteristics – that closures that take place based on expectations about a business' future development or because the owner takes a different earning opportunity are less likely to entail losses for creditors. Conversely, businesses that cease operations because of financial problems are correlated with a higher probability of loss for involved parties.

## **Financial loss at business closure: theory and empirics**

The number of businesses that cease operations due to bankruptcy or with financial loss for creditors is lower than the number of business closures with loss for the owners (Watson and Everett 1993). However, Dennis and Fernald (2001) find that former business owners are more likely to end up with a net gain than loss when closing a business. This conclusion is based on a survey of businesses that were closed, sold, transferred or became inactive. For businesses which are closed, the odds of gain or loss for the entrepreneur are nearly equal. Hamilton (2000) has shown that entrepreneurs have lower initial earnings, experience lower earnings' growth and are less likely to have

health insurance compared to salaried workers. In short, these studies all find that entrepreneurs face significant financial risks.

Given this high risk, Xu and Ruef (2004) conclude that many individuals start their own business based on non-pecuniary motives. Indeed, Westhead and Wright (1998) show that non-pecuniary factors, such as the need for independence or the need for approval, play a major role. Entrepreneurs who want to achieve non-pecuniary benefits are likely to take lower financial risks when compared with entrepreneurs who try to achieve high profitability (Xu and Ruef 2004). This would indicate that businesses whose owners seek non-pecuniary goals are subject to a lower risk of financial loss. At a first glance, this is supported by Headd (2003), who suggests that owners who start a business for lifestyle reasons (i.e. non-pecuniary motives) have less at stake and can more readily close their business down compared to businesses that are launched with ambitious growth strategies. However, Headd (2003) does argue that entrepreneurs pursuing non-pecuniary goals may be more likely to hold onto the business until it completely fails. Nevertheless, he also suggests that many owners – regardless of the reasons for their business venture – have a planned exit strategy, i.e. to sell the business or cease operations before losses or excessive debts pile up.

An exit strategy is nothing more than a “Plan B” for action as soon as particular circumstances occur. Owing to its predictability, closures that are planned may be less likely to entail financial loss than businesses that are closed for other reasons. Of course, this does not mean that planned closings are never accompanied by financial problems or loss. The probability of loss at closure associated with planned exits may be a function of costs. We can expect the entrepreneur decides to terminate the business based on the same information as the decision to venture relied on: the expected future net returns from self-employment (Evans and Jovanovic 1989). If the predicted utility of alternative employment, minus the cost inherent in switching, exceeds the predicted utility of remaining in the entrepreneurial venture – including the psychic income from entrepreneurship – entrepreneurs will close their business (Gimeno et al. 1997). This means that low opportunity or high switching costs increase the probability of staying in a business – possibly longer than advisable which, as a consequence, predict a higher likelihood of financial loss at closure. A high psychic income – influenced, for example, by the individual's preference for the occupation, or personal satisfaction (Evans and Leighton 1989) as argued by Headd (2003) – implies similar consequences.

Closures often occur because owners take opportunities which guarantee alternative earnings; a transition to salaried employment (e.g. Taylor 1999), alternative self-employment or retirement indicates that there were high opportunity costs in staying in the business. Such reasons are thus less likely to be associated with financial loss at closure. However, older individuals may have less time to recoup the costs associated with

switching jobs (Gimeno et al. 1997), which let switching costs appear relatively higher for them. Because of the start-up costs for a new firm, switching costs may also be high for entrepreneurs who close a business in order to start a new one. Because entrepreneurs who are faced with high switching costs may be more likely to hold onto the business longer than advisable, reasons like retirement or restarting are probably associated with an increased likelihood of financial loss at closure. With regard to entrepreneurs who are near retirement age, Frank (1988) argues that they are likely to work less hard, having “nothing left to prove.” This may cause slack management why closure due to retirement may be associated with an increased probability of financial loss. However, entrepreneurs who have realized that their strategy is not viable or who foresee the market exit due to retirement may also actively prepare for the closure. If entrepreneurs reduce capacity in the years prior to closure, then, there will be less at stake why such closures may be less likely to entail financial loss. Either actively prepared or due to slack management where businesses perform poorly and lose employees there may be the “shadow of death sneaking around the corner” (Almus 2004)

In contrast to voluntary closures without economic pressure, the link between closures due to bankruptcy or other financial problems and financial loss is obvious. According to the German Federal Statistical Office, businesses that filed for bankruptcy in 1993–1999 left behind 15 to 20 billion euros in outstanding debts per year. Our own calculations based on available rates from insolvency proceedings in 2004–2007 suggest that young businesses up to the age of eight years are responsible for more than one-third of these outstanding debts, and that businesses up to three years of age are accountable for one-half of this third. This means that each business up to eight years of age filing for bankruptcy has outstanding debts of 330 to 470 thousand euros on average. By contrast, bankrupt businesses up to three years of age have outstanding debts of 410 to 570 thousand euros on average. However, these average values are biased by a few ventures with heavy losses. While more than 40% of all young businesses filing for bankruptcy have outstanding debts between 50 to 250 thousand euros, between 25% and 33% have outstanding debts of only 5 to 50 thousand euros. By definition insolvencies are caused by serious financial problems. Consequently, business closures by bankruptcy are more likely to be associated with high financial loss when compared with voluntary closures.

Owing to their different relationships to a business, creditors are subject to varying probabilities of incurring financial loss. These probabilities depend, for example, in part on informational asymmetries, as not all creditors are privy to the same information about the business and the measures used by these creditors to treat their information deficit. Owners may be well informed about the firm’s condition, but they might not share this information with creditors. However, some creditors are more informed than others:

thanks to audit rights, lending banks seem to have an advantage over other creditors. Yet trade creditors such as suppliers have information with greater relevance for a firm's current situation if they offer contractual payment terms with credit options: late payments instead of taking cash discounts can be an indication that a buyer is faced with liquidity problems (Smith 1987). Owners who start their business as a limited liability corporation are partly protected from financial risks. For this reason, lending banks often require collateral and personal guarantees from owners as a condition for loan approval. Trade creditors cannot achieve this level of protection but usually secure their claims by conditional sales. However, because buyers put goods into use, process them, or simply unwrap and store them, the repossession of the delivered goods is often not worth it.

## **Data and methodology**

### *Data*

This article examines the relationships between reasons for business closure and the likelihood of financial loss upon closure using a unique dataset in Germany called the ZEW Entrepreneurship Study. In the study, a telephone survey of German businesses established in 1990–1993 was conducted between March 1999 and March 2000 (see Almus 2004 for details). Data were collected on businesses that were currently active and those which had been closed. The owners of defunct businesses were queried on the reasons for closure, whether financial loss had occurred and which of the parties with a financial stake in the business (i.e. owners, lending institutions<sup>1</sup> and other creditors, such as suppliers) had suffered a loss, among other things. Of a total 3,000 businesses, 835 had been closed. Financial loss arose in 539 of these closures: 509 closures entailed financial losses for owners, 181 closures entailed financial losses for lending institutions and 255 closures entailed financial loss for other creditors such as suppliers.

### *Variables*

We used a trivariate probit model to analyze the determinants of who suffers financial loss at closure. This model estimates three probit regressions, one per party considered, allowing correlations among the residuals of the single regressions. Such a multivariate probit model is necessary because financial loss can be incurred by the different parties simultaneously and possibly be interrelated. The dependent variables of the particular probit regressions were coded as "1" if business closure entails financial loss for the respective party; "0" otherwise.

---

<sup>1</sup> Lending institutions include banks and public institutions, the latter being in most cases publicly owned development banks. In the 1990s the most important development bank for start-ups in Germany was *Deutsche Ausgleichsbank*, which was merged with *Kreditanstalt für Wiederaufbau* to form *KfW Mittelstandsbank* in 2003.

The independent variables were divided into two groups: (1) reasons for closure, and (2) business characteristics. Eight different reasons for closure relying on self-reporting by the entrepreneurs were defined (allowing for multiple answers): excessive debts; liquidity problems; the business was recognized as unrewarding in the long term; move into salaried employment; fresh start with a different business; differences within the entrepreneurial team; move into retirement; and private or other reasons. We distinguished between liquidity problems and excessive debts in order to account for varying financial problems: excessive debts are usually the outcome of long- or medium-term mismanagement, and are thus long-lasting and serious in nature; liquidity problems, on the other hand, often occur at relatively short notice – for example, due to a loss of receivables.

We also developed a bankruptcy indicator to more accurately assess the nature of financial problems. As opposed to reasons for closure, this indicator relied on official data concerning insolvency proceedings. In Germany, businesses could only file for bankruptcy if their financial problems prevent the payment of debts as they fall due (insolvency/*Zahlungsunfähigkeit*) and/or where it can be established that the value of assets is less than liabilities (over-indebtedness/*Überschuldung*). With regard to German law, one must bear in mind that corporations have an obligation to file for bankruptcy if good cause exists. This means that some unincorporated businesses may delay filing for bankruptcy until their financial problems become much worse than incorporated businesses who file early due to legal obligations. However, one can assume that if cause for bankruptcy is given, but business owners or directors do not file, then creditors will eventually force involuntary bankruptcy proceedings. Control variables on regional firm location, industry affiliation and closure year were also included in the regressions.

Table 1 provides variable definitions and summary statistics. On average, a “typical” firm in the sample was started as a portfolio company by a self-financing entrepreneurial team with a total capital of 63 thousand euros (median: 25 thousand euros) and unlimited liability. It ceased operation voluntarily – i.e. didn’t go into bankruptcy – after 4 years while employing nearly 13 employees (median: 4 employees). 64% of the sample closed with a loss, whereby 60% entailed financial loss for the owners, 21% for lending institutions and 30% for other creditors. Firms closing with a financial loss typically started as a limited company, had liquidity problems, went bankrupt and were larger than closures without loss. Businesses which led to a financial loss particularly for creditors were the largest in average size.

**Table 1: Descriptive statistics: mean of determinants**

Variable	Definition	All samples (N = 845)	Financial loss for ...		
			... owners (N = 510)	... lending institutions (N = 182)	... other creditors (N = 254)
<i>Reasons for closure<sup>a,b</sup></i>					
<i>DEBTS</i>	Excessive debts (0/1)	0.23	0.33	0.47	0.43
<i>LIQUIDITY</i>	Liquidity problems (0/1)	0.44	0.61	0.70	0.74
<i>UNREWARD</i>	Business was recognized as unrewarding in the long term (0/1)	0.38	0.38	0.25	0.27
<i>DISPUTE</i>	Disputes within the entrepreneurial team (0/1, this variable has to be interpreted as an interaction term with the <i>TEAM</i> indicator)	0.13	0.15	0.12	0.12
<i>EMPLOY</i>	Entrepreneurs moved into salaried employment (0/1)	0.05	0.06	0.05	0.06
<i>RESTART</i>	Entrepreneurs started a different business (0/1)	0.10	0.10	0.05	0.07
<i>RETIRE</i>	Entrepreneur went into retirement (0/1)	0.04	0.02	0.02	0.02
<i>PRIVOTH</i>	Private or other reasons (0/1)	0.32	0.25	0.27	0.23
<i>BNKRPT</i>	Business went bankrupt (0/1)	0.42	0.52	0.68	0.73
<i>Business characteristics</i>					
<i>PORT</i>	Business was portfolio firm, i.e. entrepreneur owned other firm(s) (0/1)	0.52	0.55	0.50	0.57
<i>CAPITAL</i>	Amount of total start-up capital (in '000 €)	62.59	70.98	85.03	82.89
<i>SELFFIN</i>	Start-up capital was fully self-financed (0/1)	0.68	0.67	0.54	0.62
<i>CAPM</i>	Information on capital is not available (0/1)	0.35	0.31	0.37	0.30
<i>TEAM</i>	Entrepreneur team (0/1)	0.74	0.79	0.78	0.80
<i>LIMITED</i>	Limited liability company (0/1)	0.48	0.53	0.54	0.64
<i>SIZE</i>	# of employees at firm closure	12.59	13.11	19.08	18.04
<i>SIZEM</i>	<i>SIZE</i> is not available (0/1)	0.08	0.06	0.08	0.07
<i>AGE</i>	Age of the closed firm (in years)	4.38	4.38	4.57	4.42
<i>AGEM</i>	<i>AGE</i> is not available (0/1)	0.01	0.01	0.01	0.02

<sup>a</sup> Multiple responses possible. <sup>b</sup> Apart from *BNKRPT*, which is based on public official information, all closure reasons rely on the self-reporting of the interviewees.

With regard to the reported financial risks for parties who have a financial stake in the business, similar results are found by Brüderl et al. (1992). In their study, 53% of founders who went out of business ended up with personal financial loss and 14% of all closings entailed financial loss for others. Similar findings are also presented by Dennis and Fernald (2001), who show that entrepreneurs who close their business are faced with nearly equal odds of having made a gain or loss.

Irrespective of the occurrence of financial loss, economic problems are the most crucial factor in business closure. Excessive debts played a role in almost a quarter of the surveyed closures, while 44% reported liquidity issues (meaning this latter problem was nearly twice as common). However, the share of companies with excessive debts or liquidity problems is with 33% and 61% unsurprisingly much higher among those companies which closed with a loss. The realization by the owners that the business was unrewarding in the long term was relevant in 38% of cases. A further reason for closure was dispute within the entrepreneurial team – a problem which accounted for 13% of all clo-

tures. Not all businesses had an entrepreneurial team, however: among those that did, this reason accounted for approximately 18% of closures. With regard to all closures, the pursuit of career change was also a less essential reason. About 5% of the closures occurred because entrepreneurs moved to salaried employment; 10% started a different business. Owners finishing their entrepreneurial career by retiring accounted for 4% of cases. Finally, the termination of operations related to unspecified private or other reasons was attributable to 32% of closures.

The 5% share of owners moving into alternative employment found here is evidently smaller than that reported by Taylor (1999), where nearly a third of all owners who started a business in the 1990s left self-employment because they started a job. This higher share may reflect the fact that Taylor (1999) considers the duration of self-employment spells rather than the condition of firms as we do. If owners withdraw from a business it doesn't necessarily mean the end of the business.

## Results

Table 2 shows the correlations among the reasons for closure. Given dichotomous indicators, the variables have moderate correlations, ranging from -0.31 to 0.39. Since multiple responses were possible one might be concerned about multicollinearity among them. This holds true particularly with regard to variables associated with financial problems since they are often closely related to one other. For example, businesses having excessive debts are likely to be faced with liquidity problems. Excessive debts as well as liquidity problems are, in addition, legal causes for the filing of bankruptcy. Indeed, the strongest positive correlations exist between bankruptcy and liquidity problems ( $r = 0.39$ ), liquidity problems and excessive debts ( $r = 0.33$ ) as well as excessive debts and bankruptcy ( $r = 0.22$ ). The strongest negative correlations are found between private or other reasons and liquidity problems ( $r = -0.31$ ) as well as that the business was recognized unrewarding ( $r = -0.25$ ). All other correlations are weaker. To ensure that multicollinearity doesn't affect the regression results, multicollinearity diagnoses were applied to all regression analyses.<sup>2</sup>

---

<sup>2</sup> Both the variance inflation factor (VIF) and the condition number of the correlation matrix are multicollinearity diagnosis measures. An examination of the VIF with regard to reasons for closure included in the estimation suggests that there was no incidence of multicollinearity. Individual figures range from 1.02 to 1.40, which is well below critical values (see Hair et al. 1998). The condition number computed from the correlation matrix without a constant is 1.92 with regard to the reasons for closure and 11.68 when all independent variables are included.

**Table 2: Correlations among reasons for closure**

	1	2	3	4	5	6	7	8	9
1 <i>DEBTS</i>	1.00								
2 <i>LIQUIDITY</i>	0.33***	1.00							
3 <i>UNREWARD</i>	-0.05	-0.10***	1.00						
4 <i>DISPUTE</i>	0.06*	0.03	-0.08**	1.00					
5 <i>EMPLOY</i>	0.00	0.03	0.06*	-0.06*	1.00				
6 <i>RESTART</i>	-0.02	-0.04	0.04	0.11***	0.11***	1.00			
7 <i>RETIRE</i>	-0.09**	-0.09***	-0.11***	-0.06*	0.00	-0.03	1.00		
8 <i>PRIVOTH</i>	-0.14***	-0.31***	-0.25***	-0.09***	-0.02	-0.08**	0.00	1.00	
9 <i>BNKRPT</i>	0.22***	0.39***	-0.17***	-0.05	-0.02	-0.08**	-0.03	-0.13***	1.00

\*\*\*, \*\*, and \* denote statistical significance level of 1%, 5% and 10%.

Table 3 shows the trivariate probit model that examines the determinants of who suffers financial loss at closure. The probability that a closure entails financial loss for owners is reported in column (1), to lending institutions in column (2), and to other creditors in column (3). Examination of the cross equation error terms, reported in the lower part of the table, which all are highly significant positive, suggests that the risk of financial loss at closure is positively correlated among the parties who have a financial stake in the business. The risk correlation is highest between the creditor groups. This means that if lending institutions incur financial loss it is likely that other creditors incur a loss, too. The high significance of the cross equation error terms confirms the appropriateness of using a trivariate probit model afterwards. All probit estimates include dummy variables representing regional firm location, industry affiliation and closure year.

The likelihood that a closure entails financial loss for owners increases if businesses are closed due to financial distress. Excessive debts increase the loss risk by 24% and liquidity problems by about 31%. Bankruptcy is related with a loss risk of 12%. The latter effect can be considered as a minimum risk level since most bankrupt firms have excessive debts and/or liquidity problems. Conversely, if a business was closed because the owner retired, the risk of financial loss decreases by 23%. Other reasons for closure (business was recognized as unrewarding in the long term; differences within the entrepreneur team; move into wage employment; restart with a different business; private or other reasons) are unrelated to the likelihood of a financial loss for owners. Model 1 also shows that the probability of financial loss is positively associated with the amount of total start-up capital and entrepreneurial teams.

**Table 3: Determinants of financial loss at business closure**

	(1) Loss for owners		(2) Loss for banks or public institutions		(3) Loss for other creditors	
	Marg. Eff. <sup>a</sup>	Std. Err.	Marg. Eff. <sup>a</sup>	Std. Err.	Marg. Eff. <sup>a</sup>	Std. Err.
<i>Circumstances of closure<sup>b,c</sup></i>						
<i>DEBTS</i>	0.235 ***	0.041	0.171 ***	0.037	0.200 ***	0.042
<i>LIQUIDITY</i>	0.306 ***	0.040	0.127 ***	0.031	0.203 ***	0.037
<i>UNREWARD</i>	0.048	0.043	-0.077 ***	0.029	-0.072 **	0.036
<i>DISPUTE</i>	0.050	0.056	-0.021	0.038	-0.045	0.045
<i>EMPLOY</i>	0.036	0.083	0.039	0.068	0.146	0.091
<i>RESTART</i>	0.067	0.060	-0.071 *	0.040	-0.074	0.052
<i>RETIRE</i>	-0.231 **	0.109	-0.072	0.056	-0.159 ***	0.058
<i>PRIVOTH</i>	-0.007	0.045	0.017	0.032	-0.009	0.039
<i>BNKRPT</i>	0.117 ***	0.045	0.169 ***	0.034	0.236 ***	0.039
<i>Business characteristics</i>						
<i>PORT</i>	0.022	0.041	-0.049 *	0.029	0.015	0.035
<i>CAPITAL</i> , log	0.043 ***	0.014	0.009	0.009	0.001	0.011
<i>SELFFIN</i>	0.059	0.053	-0.079 **	0.036	-0.052	0.045
<i>CAPM</i>	0.094	0.072	-0.002	0.052	-0.066	0.060
<i>TEAM</i>	0.113 **	0.051	0.040	0.033	0.009	0.044
<i>LIMITED</i>	-0.077	0.048	-0.061 *	0.034	0.020	0.041
<i>SIZE</i> , log	-0.013	0.019	0.012	0.013	0.035 **	0.016
<i>SIZEM</i>	-0.149 *	0.081	0.030	0.062	0.061	0.076
<i>AGE</i>	-0.018	0.016	-0.022 *	0.012	-0.031 **	0.015
<i>AGEM</i>	0.207	0.155	-0.106	0.066	0.044	0.198
<i>Control variables<sup>d</sup></i>						
	Yes		Yes		Yes	
Correlations of the cross equation error terms	Rho <sub>21</sub>		Rho <sub>31</sub>		Rho <sub>32</sub>	
	0.51 ***		0.57 ***		0.72 ***	
LR test chi <sup>2</sup> <sup>e</sup>	195.81 ***					
# of observations	847					
Wald test chi <sup>2</sup> ( <i>df</i> )	195.56 (34)					
Log pseudolikelihood	-1,062.86					

The likelihood modeled by trivariate probit<sup>3</sup> is FL = 1 for each party considered respectively. \*\*\*, \*\*, and \* denote statistical significance level of 1%, 5% and 10%.

<sup>a</sup> The marginal effects for continuous variables are calculated at the sample means. <sup>b</sup> No reference category because multiple responses possible. <sup>c</sup> Apart from BNKRPT, which is based on public official information, all closure reasons rely on the self-reporting of the interviewees. <sup>d</sup> Not reported here, but available on request from the author, are the results of the control variables. <sup>e</sup> LR test chi<sup>2</sup> of rho21 = rho31 = rho32 = 0.

Model 2 estimates the probability that a closure entails financial loss on lending institutions. Again, the results show financial loss is more likely if businesses were closed due to financial distress. Excessive debts and liquidity problems are associated with an 17% and 13% higher loss risk, respectively, while bankruptcy increases the risk of financial loss by 17%. The effects accompanying liquidity problems and bankruptcy are significantly different to those found for owners. In contrast to Model 1, retirement is unrelated

<sup>3</sup> The trivariate probit regression is estimated with STATA using the user-written command "cmp" introduced in 2007 by David Roodman, <http://ideas.repec.org/c/boc/bocode/s456882.html>. Cmp is a Stata module to implement a conditional (recursive) mixed process estimator. For estimation problems like a trivariate probit, cmp uses maximum simulated likelihood (MSL). Here, the MSL is based on 10,000 draws of pseudo-random standard uniform variates and should thus be consistent.

to financial loss. Businesses that were closed because the entrepreneur recognized the business was unrewarding in the long term or, though only weakly significant, because they started a different business are less likely to result in financial loss for lending institutions. The loss risk is lowered by 8% and 7%, respectively. Other reasons for closure (differences within the entrepreneurial team; move into wage employment; private or other reasons) are unrelated to financial loss for lending institutions. Moreover, Model 2 shows that financial loss is less likely for businesses fully self-financed by the owner and, though only weakly significant, for portfolio firms and limited companies. Whether the start-up capital was fully self-financed by the owner tells us if banks were initially involved in financing the business. The associated indicator thus controls for the possibility that banks suffer loss. However, the involvement of banks in a business can change from start-up to closure.

The probability that a closure entails financial loss for other creditors also increases with financial distress. The increased risk of financial loss associated with excessive debts and liquidity problems is 20% either, while bankruptcy raises this risk by 24%. By contrast, reasons such as recognizing the business as unrewarding in the long term (-7%) and retirement (-16%) Other reasons for closure (differences within the entrepreneurial team; move into wage employment; restart with a different business; private or other reasons) are unrelated to financial loss for lending institutions. Model 3 also shows that the likelihood of financial loss is positively associated with the number of employees at closure.

The analysis shows that businesses which closed with financial problems are more likely associated with loss to the parties who had a financial stake in the business than others. However, there are differences with regard to the kind of financial distress considered. The risk of incurring financial loss at closure due to excessive debts is roughly similar for the three parties considered, while liquidity problems are less likely to entail loss for lending institutions than others. Excessive debts are indicative of far-reaching financial distress which may well exhaust the resources of both the business and owner. Liquidity problems are different, however. They can occur quickly, with little warning. For this reason, the owners of companies closed due to liquidity problems are more likely to have remaining financial resources at closure which can be used to service the claims of creditors such as banks, who generally are secured best and have thus first priority in a liquidation. Other creditors, such as suppliers, may try to satisfy their claims by repossessing goods if they have a retention of title, or by obtaining an executory title against the business or its owner. However, shipped goods often have a lower value and the amounts outstanding can be so low that such measures may not be worth the trouble.

Compared to voluntary business closure, bankruptcy is naturally associated with a higher risk of loss. However, owners are less likely to incur financial loss than creditors.

This can be explained by the bankruptcy proceeding itself, which protects debtors against the direct access of creditors. In the case of voluntary closure, secured creditors can directly dispose over the companies' or owners' assets, thus protecting themselves against loss. There is also no rush for a secured creditor to lay claim to assets, since its execution right against a debtor remains in force either (in case of limited liability) as long as the legal entity exists or (in case of unlimited liability) for thirty years (i.e. somewhere in the range of the debtor's remaining life expectancy).<sup>4</sup> The opening of a bankruptcy proceeding, however, prevents creditors from directly laying claim to the debtor's estate. Instead, creditors have to register their claims, and if they fail to do so, they forfeit their right to recovery as soon as the bankruptcy proceeding ends. Thus, compared to voluntary closure, bankruptcy makes it more likely that creditors will come away empty-handed. A further reason for the higher risk of loss is that the costs of a bankruptcy proceeding are privileged against other claims, thereby reducing the bankruptcy estate and the settlement received by creditors. In light of the foregoing, it is clear that creditors have little interest in seeing their debtors file for bankruptcy.

Aside from results obtained by looking at the causes of financial distress, another interesting finding is that businesses which were closed because they were recognized as unrewarding in the long term are less likely to entail financial loss for creditors (both lending institutions and other creditors). This confirms the well-known exhortation of what an entrepreneur should do based on their experience: learn about his or her own abilities and shortcomings (Jovanovic 1982), and refrain from pursuing the venture if the expected future net returns from self-employment are negative (Gimeno et al. 1997). Furthermore, businesses which closed because the owner wanted to start a different business are associated with a lower risk of financial loss for creditors. An explanation for this finding may be that owners who want to pursue a fresh start are dependent on good relations with creditors since these creditors may be important for financing the new business. This argument is supported by the fact that entrepreneurs have a much lower likelihood of starting a new business if they previously caused lending institutions to incur a loss (Metzger 2008). Entrepreneurs pursuing a fresh start who avoid sticking creditors with the bill for their previous venture act not only in the interest of creditors but also in their own interest. A lower risk of financial loss is also associated with business closures that take place due to retirement. Here it would seem that entrepreneurs planning for retirement have ample opportunity to wind down their business without producing losses.

---

<sup>4</sup> This holds for the German Bankruptcy Act (*Konkursordnung*) and Collective Enforcement Act (*Gesamtvollstreckungsordnung*) which governed bankruptcies in West and East Germany until 1999. In 1999 the German Insolvency Act (*Insolvenzordnung*) was enacted. With it, the possibility of debt release (*Restschuldbefreiung*) after a period of continuing good behavior was introduced.

Some of the effects found in the analysis do not confirm the effects initially predicted by the cost considerations. Closures by retiring entrepreneurs are not associated with a higher risk of loss. By contrast, closures due to a move into paid employment make financial loss for other creditors more likely. These findings show that the influence of the psychic income from entrepreneurship may be more important than expected: entrepreneurs pursuing a fresh start may be interested in creating good conditions for a new business; retiring entrepreneurs may be interested in bringing a life's work to a good end; or, entrepreneurs consider self-employment as a transitory state between periods of salaried employment (Taylor 1999), in which simply earning a living prior is the key aim – regardless of a potentially negative bottom line.

## **Conclusions**

Do all new businesses survive? The answer, of course, is "No." Are business closures synonymous with financial disaster? The answer here is also generally "No," although this does not mean that financial losses are rare. In this paper we conducted an empirical analysis of German small business data to test how different reasons for business closure affect who suffers financial loss. It was found that businesses closures due to financial problems are strongly correlated with a risk of financial loss for all parties considered. However, in case of bankruptcy, creditors are faced with a higher risk of financial loss than owners. By contrast, closures that take place based on expectations about a business' future development or because the owner takes a different earning opportunity are less likely to entail losses for creditors.

These findings have important implications for both creditors and entrepreneurs. Often entrepreneurs hold onto a business until it completely fails through bankruptcy. Entrepreneurs ability to judge and forecast "suffers" from their overconfidence (Hogarth and Makridakis 1981). For obvious reasons, creditors have little interest in seeing the bankruptcy of their debtors. Creditors thus stand to gain from undertaking interventions designed to help clients to diminish overconfidence. Lending banks – which have a good insight into the books of their debtors – should, for example, discuss latent business problems as early as possible with creditors rather than waiting until their collateral is at risk. An early intervention can not only avoid bankruptcy but may put entrepreneurs in a position to make perceived business prospects more congruent with the business development being likely. Due to the risk advantage associated with closures based on the entrepreneurs' recognition that the business is unrewarding in the long term, this is an advisable course of action for creditors. Entrepreneurs, as well, stand to gain from learning how to better appraise the health of their business, not only to prevent incurring losses themselves, but also – and more particularly – if they hope to pursue a new business venture. Research shows that when an entrepreneur has caused lending institutions to suffer a financial loss, he has a much worse chance of a fresh start (Metzger 2008).

## References

- Almus, M. 2004. The Shadow of Death – An Empirical Analysis of the Pre-Exit Performance of New German Firms. *Small Business Economics* 23(3): 189-201.
- Berger, A.N. and G.F. Udell. 1998. The Economics of Small Business Finance: The Roles of Private Equity and Debt Markets in the Financial Growth Cycle. *Journal of Banking & Finance* 22(6-8): 613-673.
- Brüderl, J., P. Preisendörfer and R. Ziegler. 1992. Survival Chances Of Newly Founded Business Organizations. *American Sociological Review* 57: 227-242.
- Danielson, M.G. and J.A. Scott. 2004. Bank Loan Availability and Trade Credit Demand. *The Financial Review* 39(4): 579--600.
- Dennis, W.J. and L.W. Fernald. 2001. The Chances of Financial Success (and Loss) from Small Business Ownership. *Entrepreneurship Theory and Practice* 26(1): 75-83.
- Evans, D.S. and B. Jovanovic. 1989. An Estimated Model of Entrepreneurial Choice Under Liquidity Constraints. *Journal of Political Economy* 97(4): 808-827.
- Evans, D.S. and L.S. Leighton. 1989. Some Empirical Aspects of Entrepreneurship. *The American Economic Review* 79(3): 519-535.
- Everett, J. and J. Watson. 1998. Small Business Failure and External Risk Factors. *Small Business Economics* 11: 371-390.
- Frank, M.Z. 1988. An Intertemporal Model of Industrial Exit. *The Quarterly Journal of Economics* 103(2): 333-44.
- Gimeno, J., T.B. Folta, A.C. Cooper and C.Y. Woo. 1997. Survival of the Fittest? Entrepreneurial Human Capital and the Persistence of Underperforming Firms. *Administrative Science Quarterly* 42: 750-783.
- Hair, J.F., R.E. Anderson, R.L. Tatham and W.C. Black. 1998. *Multivariate Data Analysis with Readings* 5. Prentice Hall (Englewood Cliffs, NJ).
- Hamilton, B.H. 2000. Does Entrepreneurship Pay? An Empirical Analysis of the Returns to Self-Employment. *Journal of Political Economy* 108(3): 604-631.
- Harhoff, D., K. Stahl and M. Woywode. 1998. Legal Form, Growth and Exit of West German Firms - Empirical Results for Manufacturing, Construction, Trade and Service Industries. *The Journal of Industrial Economics* 46(4): 453-488.
- Headd, B. 2003. Redefining Business Success: Distinguishing between Closure and Failure. *Small Business Economics* 21: 51-61.
- Hogarth, R.M. and S. Makridakis. 1981. Forecasting and Planning: An Evaluation. *Management Science* 27(2): 115-138.
- Jovanovic, B. 1982. Selection and the Evolution of Industry. *Econometrica* 50(3): 649-670.
- Mata, J., P. Portugal and P. Guimaraes. 1995. The Survival of New Plants: Start-up Conditions and Post-entry Evolution. *International Journal of Industrial Organization* 13: 459-481.
- Metzger, G. 2008. Firm Closure, Financial Losses, and the Consequences for an Entrepreneurial Restart. ZEW Discussion Paper No. 08-094. Mannheim.
- Nucci, A. 1999. The Demography of Business Closings. *Small Business Economics* 12(1): 25-29.
- Smith, J.K. 1987. Trade Credit and Information Asymmetry. *The Journal of Finance* 42(4): 863-872.
- Stokes, D. and R. Blackburn. 2001. *Opening up Business Closures: a Study of Businesses that Close and Owners' Exit Routes*. Kingston University. Kingston Hill.
- Taylor, M.P. 1999. Survival of the Fittest? An Analysis of Self-employment Duration in Britain. *The Economic Journal* 109(454): C140-C155.
- Wagner, J. 1999. The Life History of Cohorts of Exits from German Manufacturing. *Small Business Economics* 13: 71-79.
- Watson, J. and J. Everett. 1993. Defining Small Business Failure. *International Small Business Journal* 11(3): 35-48.
- Westhead, P. and M. Wright. 1998. Novice, Portfolio, and Serial Founders in Rural and Urban Areas. *Entrepreneurship: Theory & Practice* 22(4): 63-100.
- Xu, H. and M. Ruef. 2004. The Myth of the Risk-Tolerant Entrepreneur. *Strategic Organization* 2(4): 331-355.