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The determinants of the costs of financial distress in SMEs

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Kevin Keasey

Leeds University Business School, UK

Julio Pindado

Universidad de Salamanca, Spain; Leeds University Business School, UK

Luis Rodrigues

CEFAGE-UE – Universidade de Évora, Portugal

Abstract

We propose a theoretical model that argues that the expected financial distress costs in small- and medium-sized enterprises (SMEs) result from the interaction of the financial distress likelihood and the magnitude of the consequences borne whenever financial failure occurs. The empirical evidence from five European countries, where the insolvency laws are representative of prevailing institutional traditions, supports this model. We reveal that the ex ante financial distress costs suffered by a firm depend not only on the likelihood of financial distress but also on the variables that influence the amount of time and costs incurred during the insolvency process. Specifically, financial costs are lower where the capacity to use tangible assets as collateral and short-term debt is greater; they are higher the greater the use of long-term secured debt. Additionally, the effect of these variables is moderated by a firm's ownership and by the nature of the insolvency law in operation. The timely management of these variables can avoid the high costs involved in an involuntary exit.

Keywords

collateral, debt, financial distress costs, likelihood of financial distress, small and medium enterprise

Introduction

There has been a recent increase in empirical studies exploring the determinants of firm exit (see Wennberg and DeTienne, 2014 for an overview). From a theoretical perspective, DeTienne (2010)

Corresponding author:

Kevin Keasey, Leeds University Business School, Leeds LS2 9JT, UK.
Email: kk@lubs.leeds.ac.uk

demonstrates the importance of exit not only for the entrepreneur but also for the welfare of society. Research has also explored the influence of owner characteristics upon entrepreneurial firm exit (DeTienne, 2010; Wennberg et al., 2010) and differing types of company exit. So, for instance, Balcaen et al. (2012) examine three types of exit demonstrating that following economic distress, 41% of companies exit through bankruptcy, 44% are voluntarily liquidated and 14% are acquired, merged or split. However, in making the exit decision, the costs of financial distress should, if possible, be analysed; knowledge of such costs would allow the exit decision to be taken at a more appropriate moment, regardless of whether or not it is a voluntary exit. Therefore, it is critical to analyse the financial elements which shape the process of moving towards, or avoiding, financial failure.¹

In this study, we concentrate on financial distress with the presumption that it is the principal reason informing bankruptcy, which, according to Balcaen et al. (2012), is the least efficient exit strategy. It is demonstrated that the probability of a voluntary exit, compared to bankruptcy, increases with higher levels of cash, lower leverage and in the absence of secured debt. Consequently, both the firm's asset composition and its liability structure will impact upon the probability of a successful voluntary restructuring.

Given the above, the objective of this study is to analyse the main variables that can intensify or attenuate the loss in firm value merely as a consequence of increasing the likelihood of financial distress. The fact that these *ex ante* costs are often indirect and unobservable makes it difficult to disentangle the main factors that impact upon expected financial distress costs. Our objective is achieved by empirically testing a model that captures the joint determination of the expected financial distress costs by, first, the financial distress likelihood (FDL) and, second, the consequences of running a firm in financial distress. The theoretical model is tested on a sample of 18,580 European firms during the pre-crisis period from 1999 to 2006, using a panel data methodology; specifically, we use the generalised method of moments estimator.

The results obtained from the estimation of our model provide empirical support for hypotheses relating to the determinants of expected financial distress costs. We show that the capacity to use tangible assets as collateral and the use of short-term debt reduce expected financial distress costs, while the use of long-term debt increases expected financial distress costs. In addition, the effect of these factors is shown to be moderated by firm ownership and by national insolvency laws. Specifically, ownership concentration reduces the positive relationship between long-term debt and expected financial distress costs and increases the negative relationship between small- and medium-sized enterprise (SME) short-term debt and the expected costs of financial distress. In respect to insolvency law, our results reveal that the degree of debtor protection extends the duration of the insolvency process and the expected financial distress cost. Accordingly, our results provide additional support for the need to develop non-bank financial solutions for funding SMEs, as noted by Wright and Stigliani (2013).

The remainder of the article is organised as follows. Section 'Financial distress costs: likelihood and consequences' describes the model of expected financial distress costs; section 'Data and estimation methodology' describes the data set and the econometric methodology. Section 'Results' presents the empirical results and the final section offers conclusions.

Financial distress costs: likelihood and consequences

This section explains how the FDL and the total value lost by a firm as a consequence of running in financial distress (this is proxied by the *ex post* financial distress costs (ExpFDC) suffered by an insolvent firm) can be used to derive a model that allows the study of the main determinants of the *ex ante* financial distress costs (ExaFDC).² Given the complexity of the issue, we represent an

overall picture of our approach which proposes a general framework for the analysis of the expected costs of financial distress in SMEs (see Figure 1).

Specifically, we propose a model that proves that both the FDL and ExpFDC are the relevant determinants of the expected financial distress costs. These two theoretical concepts, as explained below, are based on a review of financial literature that identifies the main observable financial variables. As a result, we are able to estimate the expected costs of financial distress as the product of the likelihood of entering in a period of financial distress times the cost of its outcome. Therefore, our proposal can be captured by an equation that in the left-hand side captures an empirical measure of expected financial distress costs as a proportion of forgone sales relative to industry and the length of distress; in the right-hand side, we enter the FDL times the ExpFDC.

ExaFDC

Following Altman (1984), we consider that ex ante costs of financial distress are mainly indirect and unobservable. Consequently, we can estimate the expected rate of value decay due to financial distress cost (φ), as a proportion of forgone sales relative to industry. In this vein, we also follow Opler and Titman (1994) and propose that φ can be computed as the growth rate of the sales ($GRS_{industry}$) of the industry minus the growth rate of the firm's sales (GRS_{it}). This way of measuring financial distress costs is appropriate when applied to SMEs, since, as Hamilton (2012) shows, smaller firms are more likely – and more continuously – to experience growth than larger firms.

$$\varphi = (GRS_{industry} - GRS_{it}) \quad (1)$$

In addition, the measure of ExaFDC in equation (1) captures the notion that agents formulate expectations not only about costs of financial distress but also regarding the time the firm will suffer its effects, τ . As a result, taking into account that we can measure the expected value loss during financial distress (ExaFDC) as a discount factor in continuous time, this can be expressed by the following equation:

$$ExaFDC = \left(e^{\varphi} \right)^{\tau} = \left(e^{\varphi \cdot \tau} \right) \quad (2)$$

The financial distress likelihood

The costs of financial distress increase with the likelihood of such distress; this likelihood is a primary cause of these costs. The estimation of this likelihood remains under-theorised; it is usual to adopt an empirical approach, such as Altman's (1968) Z-Score model to explore this issue. However, recent tests of the robustness of this classic methodology over the passage of time and noting differing country and institutional contexts (Grice and Ingram, 2001) show that it does not provide a consistent classification power of financially distressed firms, particularly in the case of countries. More recently, Pindado et al. (2008) estimate the likelihood of financial distress by using a panel data methodology and obtain a more stable model of the FDL in terms of the magnitude, sign and significance of the coefficients when applied to different countries. We use the variables considered by these authors, to estimate the probability of financial distress. This model can be

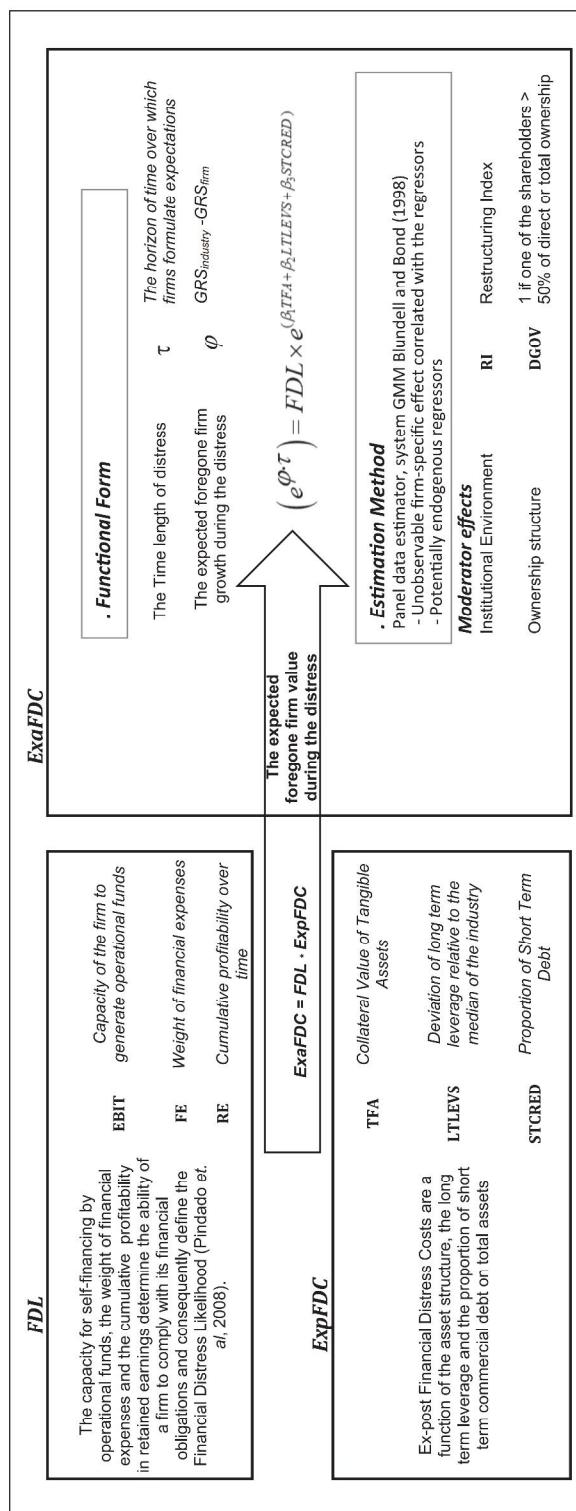


Figure 1. Model of expected financial distress costs.
FDL: financial distress likelihood; ExpFDC: ex post financial distress costs; RI: Restructuring Index.

advantageously applied to SMEs because it is parsimonious and does excludes financial market variables that are unavailable to SMEs. Thus, the following functional form is adopted to compute an ex ante FDL.

$$\log\left(\frac{\text{Prob(Insolvency)}}{\text{Prob(noInsolvency)}}\right) = \beta_0 + \beta_1(\text{EBIT}_{it} / \text{TA}_{i-1}) + \beta_2(\text{FE}_{it} / \text{TA}_{i-1}) + \beta_3(\text{RE}_{it-1} / \text{TA}_{it-1}) + \varepsilon_{it} \quad (3)$$

Equation 3 allows the FDL to be estimated via three main variables. The first ratio (earnings before interest and tax divided by totals assets of the prior period) can be interpreted as the capacity of the firm to generate operational funds from its assets, independently of any tax or leverage factors. It is also the main driver of liquidity conditioning the capacity of the firm to extend credit or renegotiate payments. The second ratio portrays the impact of the weight of financial expenses on the FDL, and similar to other variables in the model, it is scaled by total assets. When this ratio increases, the probability of a firm being unable to comply with its financial obligations is expected to increase. Finally, the ratio of retained earnings represents the cumulative profitability over time and highlights the usefulness of past profitability in predicting future results and the capacity for self-financing.

As a result of applying the Pindado et al. (2008) model described above, we obtain a variable called the financial distress likelihood (FDL_{it}) that captures the probability of a company becoming financially distressed. The FDL variable arises from the above proposed logistic regression model, and therefore, it ranges from 0 to 1, which is in accordance with the expected values for probability. In this case, it is trivial that the FDL will positively impact on the ExaFDC.

The determinants of ExpFDC

Once the FDL has been estimated, the second stage is to estimate the costs of operating a firm in distress. The total value loss of a firm's assets during financial distress, measured at the end of the period of financial crisis, is the ExpFDC. The model tested in this article considers the main determinants of the ExpFDC to be the capacity to use assets as collateral to gain access to credit, the proportion of long-term secured debt as an incentive of this type of creditor to realise value (e.g. by a premature liquidation) and the use of short-term debt to reduce information asymmetry.

The collateral value of tangible assets. Tangible fixed assets are generally used as collateral, particularly during times of financial distress (Steijvers et al., 2010). Psillaki and Daskalakis (2009) provide evidence of the relevance of the proportion of this type of asset as a main determinant of the capital structure of European SMEs. This fact also applies to other institutional settings, such as in China (see Newman et al., 2012). Additionally, Pindado et al. (2006) show that the impact of the asset structure on capital structure remains when a firm faces financial distress. Furthermore, the new evidence presented in this article focuses on manufacturing companies, where the majority of assets, which can be used as collateral in financial contracts, are tangible fixed assets. Thus, the proportion of tangible fixed assets in the total of all assets is a measure of the capacity to provide collateral and, consequently, obtain (re)financing to restructure the business. In addition, a higher proportion of tangible assets makes a firm less informationally opaque and, thereby, increases the chances of restructuring and, consequently, reduces financial distress costs. Overall, we define the

tangible fixed assets variable (TFA_{it}) as the amount of tangible fixed assets over total assets. According to the above-mentioned theory, there should be a negative relationship between tangible fixed assets and expected financial distress costs.

Long-term leverage. Models of financial distress costs traditionally consider leverage as their main explanatory variable and assume a positive relationship between leverage and financial distress costs (Andrade and Kaplan, 1998; Opler and Titman, 1994). Berger and Udell (1998) show that the longer the term of financing, the greater the opportunity for the borrower to alter the risk profile and/or suffer financial distress. This study measures a firm's long-term debt controlling for industry effects. The traditional low level of long-term secured debt in SMEs (López-Gracia and Sánchez-Andújar, 2007) implies that a proper consideration of this variable requires taking into account the firm's industry, such as the median of the firm's industry. Moreover, the greater the degree of prevailing technology within the industry sector, the greater the need for investment financing and thereby, the firm's potential leverage.

Given that in European countries, the majority of long-term creditors are banks, and taking into account the finding by Ryan et al. (2014), who show that bank market power is associated with lower levels of SME investment, we argue that banks have a greater incentive to constrain, or simply cut, this type of credit – even liquidating the firm as the least risky way to recover investment. In this vein, Franks and Sussman (2005) find that the first response of banks, and other type of secured creditors, to distress is to rescue the firm. However, such creditors take a rigorous bargaining stance, being particularly harsh with closely held firms where high levels of asymmetric information prevail. Accordingly, a high level of long-term debt substantially increases the financial distress costs suffered by a firm. Therefore, if we define long-term leverage ($LTLEVS_{it}$) as a percentage of long-term debt over total assets minus the industry median, following Opler and Titman (1994), we can expect a positive relationship between long-term leverage and ExpFDC.

The proportion of short-term debt. A high degree of informational asymmetry makes the creditworthiness of SMEs particularly costly to assess and is associated with, among other things, high monitoring costs (Berger and Udell, 1998; Petersen and Rajan, 1997). Shorter credit maturities play a unique role in small business lending by serving to mitigate the problems associated with borrower risk and asymmetric information that are typical in SMEs. Thus, short-term debt constitutes a rather large portion of the financing of SMEs in most European countries (see, for instance, Garcia-Teruel and Martinez-Solano, 2007, for the Spanish case).

Molina and Preve (2012) show that when the weight of short-term debt is a substantial proportion of overall financing, it increases the incentive of suppliers to extend credit to compensate for the lack of other, or better, financing solutions to financially distressed firms. Thus, the impact of financial distress may be reduced by the availability of trade credit during periods of financial distress. Biais and Gollier (1997) provide additional evidence that suppliers grant more trade credit during financial distress and this type of funding allows the costs of financial distress to be reduced.

Wilner (2000) and Cunat (2007) also link the use of trade credit to the degree of supplier incentives to help their customers reduce financial distress costs and escape insolvency; in bankruptcy, they are in a difficult bargaining position in the face of other secure creditors. In fact, trade partners can successfully replace financial institutions in financing a firm in financial distress because they reduce monitoring costs by collecting information in the normal course of business.

In this article, we define short-term debt ($STCRED_{it}$) as the amount of short-term financing that the firm obtains from short-term loans and suppliers as a percentage of total assets. The relationship between the proportion of financing by short-term debt and ExpFDC is expected to be

negative because the incentive for suppliers to extend credit to aid financially distressed firms and thus the availability of trade credit reduces the impact of financial distress.

The model of expected financial distress costs

Our starting point is that ex ante (expected) financial distress costs (ExaFDC) result from the interaction of the FDL and the magnitude of the consequences borne by an insolvent firm, known as ex post financial distress costs (ExpFDC), that is,

$$\text{ExaFDC} = \text{FDL} \times \text{ExpFDC} \quad (4)$$

One of the main innovations of this research is the measurement of financial distress cost as a discount factor in continuous time. As explained, ExpFDC is estimated as a discount by a function of the asset structure, the deviation of long-term leverage relative to the median of the respective industry and the proportion of short-term debt on total assets. Consequently,

$$\text{ExaFDC} = \text{FDL} \times e^{(\beta_1 \text{TFA} + \beta_2 \text{LTLEVS} + \beta_3 \text{STCRED})} \quad (5)$$

Thus, combining the value of ExaFDC in equation (1) and equation (5), we obtain the following equation:

$$(e^{\varphi \cdot \tau}) = \text{FDL} \times e^{(\beta_1 \text{TFA} + \beta_2 \text{LTLEVS} + \beta_3 \text{STCRED})} \quad (6)$$

Given that estimating a linear model is advantageous from an econometric viewpoint, taking the log transformation of both sides after changing τ to the right-hand side of the equation, we obtain the following equivalent linear model which will allow us to estimate the coefficients α_i of our Base model of financial distress costs:

$$\varphi = \frac{1}{\tau} \ln \text{FDL} + \frac{\beta_1}{\tau} \text{TFA} + \frac{\beta_2}{\tau} \text{LTLEVS} + \frac{\beta_3}{\tau} \text{STCRED} \quad (7)$$

where

$$\alpha_1 = \frac{1}{\tau}; \quad \alpha_2 = \frac{\beta_1}{\tau}; \quad \alpha_3 = \frac{\beta_2}{\tau}; \quad \alpha_4 = \frac{\beta_3}{\tau}$$

With this linear specification, we can estimate the value of τ , the expected duration of the consequences of a firm's financial crisis by making $\tau = 1/\alpha_1$. This period is mainly influenced by the orientation of insolvency laws, in particular, its pro-creditor or pro-debtor bias. This institutional attribute can thus moderate the effect of the realisation of value in financial distress. In the same

way, in European SMEs there is a prevalence of high ownership concentration (Dewaelheyns and Van Hulle, 2006) and this moderates the different incentives and power between debt providers and shareholders as compared to firms with dispersed ownership. Consequently, the degree of ownership concentration can moderate the effect that the type of debt has on the financial distress costs. But before we address both moderating effects in the following subsection, let us write the base specification econometric model to be estimated:

$$\varphi_{it} = \alpha_1 \ln FDL_{it} + \alpha_2 TFA_{it} + \alpha_3 LTLEVS_{it} + \alpha_4 STCRED_{it} + \varepsilon_{it} \quad (8)$$

All the variables are scaled by total assets in order to reduce possible heteroskedasticity problems. In this model, the disturbance term, ε_{it} , has the following components: $\varepsilon_{it} = \eta_i + c_{it} + d_t + v_{it}$, where v_{it} is the random disturbance, and d_t is a yearly dummy variable, which reflects the impact of macroeconomic variables. Additionally, c_{it} is a country dummy variable that controls for the effect of country-specific economy-wide conditions that can also have a large impact on the evolution of financial distress cost for SMEs (see, for instance, Cressy and Olofsson, 1997). Finally, η_i is the firm individual effect; in this study, this variable captures those individual-specific effects that are time constant and impact the financial distress costs suffered by each company.

The moderating effect of the type of ownership

It is still not established in the literature which form of SME ownership structure is the most appropriate in promoting suitable decision making and limiting opportunistic behaviour over a firm's life cycle (Filatotchev and Wright, 2005). Although there is empirical evidence about how ownership impacts on debt ratio (e.g. Miguel et al., 2005, and more recently, Chen et al., 2013), there appears to be no literature on the moderating role of ownership on the relationship between debt and expected financial distress costs. However, the finance literature analyses the impact of ownership on debt maturity (e.g. Arslan and Karan, 2006), suggesting there could be a moderating effect of ownership on the above-mentioned relationship.

As Garcia-Teruel and Martinez-Solano (2010) show, both long-term debt (mainly bank) and short-term debt (mainly trade related) are substitutable to a certain extent. We expect that this substitutability might be influenced by the type of ownership, particularly during financial distress. An independent management team, within a less concentrated ownership structure, may have a more objective reaction to financial distress and may help avoid the opportunism of controlling shareholders (Poletti-Hughes and Ozkan, 2014). Thus, firms with less concentrated ownership have more chances to restructure during financial distress, and in short, ownership structure is likely to have a moderating effect on the relation between the expected costs of financial distress and the financial structure of the business.

To test the moderating effect of ownership, we use a dummy variable, DGOV, that takes a value of 1 for firms with a more diversified ownership structure, and 0 otherwise. This dummy variable enters the model interacting with long-term leverage and short-term debt variables and, consequently, the following adjusted ownership model applies:

$$\begin{aligned} \varphi_{it} = & \alpha_1 \ln FDL_{it} + \alpha_2 TFA_{it} + (\alpha_3 + \lambda_1 DGOV_i) LTLEVS_{it} + \\ & (\alpha_4 + \lambda_2 DGOV_i) STCRED_{it} + \varepsilon_{it} \end{aligned} \quad (9)$$

The ownership dummy qualifies each firm according to its degree of independence with regard to its shareholders, depending on the Independence Indicator defined in the next section.

The moderating effect of insolvency laws

The nature of the insolvency law under which a firm operates is also likely to moderate the relationship between distress costs and financial structure. The pro-debtor nature of the European insolvency laws aims to reduce the stigma of failure (which is recognised in the literature, see, i.e. Wennberg, et al., 2010), encouraging reorganisation as a means of favouring the opportunity for a new start. The pro-debtor arguments are embodied in the European BEST Project (European Commission, 2003), which endorses a more supportive environment for entrepreneurship.

The economic justification of ‘debtor-friendly’ insolvency laws is their orientation to stimulate the reorganisation of financially distressed companies even if they deviate from contractual pay-off priorities. A drawback of this trend is that the insolvency process is allowed to take a longer time until a definitive resolution is achieved, which can result in a higher loss of value in the case of a final liquidation. In contrast, pro-creditor insolvency laws, such as in the United Kingdom, often include the right for secured creditors to ask firms to be declared insolvent (Cook et al., 2012) and to restructure or liquidate swiftly.

Finally, in Continental Europe, the financial system is bank-based, and whenever the insolvency law is more creditor-friendly, the banks potentially have a lot of power vis-a-vis a firm in financial distress. In contrast, the United Kingdom has a pro-creditor bankruptcy law that potentially encourages opportunistic behaviour by the lender. Consequently, the estimation of equation (9) for each country will provide evidence about the role played by insolvency laws. Specifically, according to our theory, we expect that the expected time until the resolution of financial distress tends to be longer in pro-debtor countries than in pro-creditor ones.

Data and estimation methodology

Data

Sample of European firms. Using the European Union (EU) Commission definition of an SME,³ this study provides empirical evidence concerning the determinants of the expected costs of financial distress for a sample (taken from the AMADEUS database) of European SME manufacturing firms⁴ for the period 1999–2006. The choice of Germany, France, Italy, Sweden and United Kingdom was based on their prominence in the economy of the EU and because their insolvency laws are representative of the institutional traditions identified in the literature. We set up the final year in our sample as 2006 to avoid the effect of the global financial turmoil commencing in 2007 that led to the financial crisis of 2008 (Trichet, 2010). It is necessary to control for this crisis period when studying financial distress, as recessionary pressures severely constrain access to external finance (Cowling et al., 2012).

Table 1 shows the number of firms from each country and it is important to note that these countries are those that have more observations in the European country studies (see, for instance, Canton et al., 2013).

For each country, SMEs were selected that had data available for at least 6 consecutive years. This requirement is a necessary condition because 4 consecutive years are required in order to compute the second-order serial correlation test derived by Arellano and Bond (1991); 1 year was lost in the construction of some of the flow variables (such as the growth rate of the firm’s sales) and yet another was lost because we have to estimate the model in first differences. As the aim of

Table 1. Structure of the sample by country.

Country	Firms
France	4072
Germany	1151
Italy	6369
Sweden	3133
United Kingdom	3855
Total	18,580

Data were extracted for companies for which the information is available for at least 6 consecutive years between 1999 and 2006. The number of observations is calculated after removing the first year of data, which is only used to compute some variables.

Table 2. Summary statistics of the total sample.

Variable	Mean	Standard deviation	Minimum	Maximum
ExaFDC	-0.037	0.229	-3.119	0.702
LnFDL	-1.823	1.214	-8.195	-0.096
TFA	0.296	0.187	0	0.902
LTLEVS	-0.007	0.070	-0.982	0.291
STCRED	0.348	0.223	0	1.764

The variables included are ExaFDC, the expected value of financial distress costs; LnFDL, the natural logarithm of financial distress likelihood; TFA, the ratio of total tangible assets by total assets; LTLEVS: long-term leverage divided total assets minus the median of this ratio for the industry; STCRED is the ratio of current liabilities by total assets.

this article is to analyse the determinants of the financial distress costs, considering a 6-year period allows us to work with firms that at least have been economically active for a time period long enough to disentangle the true financial distress costs from other costs, linked to the first years of activity.

Additionally, to control for survival bias, we constructed an unbalanced panel that is able to capture the frequent short life cycle of SMEs. As a result, the final sample comprises 18,580 companies and 163,556 observations. The descriptive statistics of the model's variables are reported in Table 2. On average, European SMEs have low levels of tangible assets and long-term leverage, while the short-term leverage is quite high. We should highlight the high proportion of short-term liabilities which seems to be a common characteristic among SMEs (see the Organisation for Economic Co-operation and Development (OECD), 2006; La Rocca et al., 2010). This fact is motivated by the high transaction costs and strong information asymmetries linked to long-term debt (Antoniou et al., 2006), which led to some firms in this sample not having any long-term debt.

Classification of observations according to financial distress. To split the sample into 'normal' and financially distressed firms, a definition of financial distress must be based on financial criteria, noting, however, there is not a commonly accepted definition of financial distress. The legal criterion of bankruptcy is not adequate for this research because it is too dependent on the country and the period of observation.

Our definition of financial distress reflects the main purpose of this study – namely, untangling the determinants of the expected costs of financial distress which are suffered by all SME

Table 3. Classification of the sample by financially distressed status.

Firms	Percentage of observations
Normal	74.4
Financial distressed	25.6
Total	100.0

An SME is classified as financially distressed if the following conditions are simultaneously held: 2 consecutive years of $\text{EBITDA} < \text{financial expenses}$, $(\text{net worth}/\text{total debt}) < 1$ and net worth falls between the two periods. A firm is also considered as financially distressed in the year that immediately follows these events.

companies even if they never file for bankruptcy. Consequently, we consider a firm as insolvent when it does not cover its financial obligations. This definition is coherent with an ex ante approach and classifies a company as financially distressed given the following conditions. First, whenever a firm is not capable of generating enough funds from operational activities (earnings before interest, taxes, depreciation, and amortisation (EBITDA)) to meet its financial expenses for at least 2 consecutive years (Asquith et al., 1994; Whitaker, 1999). Nevertheless, this disequilibrium of flows should go hand in hand with a deterioration of financial structure to be distinguished from the seasonality of financial flows. Thus, second, the financial structure of a firm is defined as deteriorating if its solvency ratio (net worth/total debt) and net worth fall between two periods. A firm will also be considered as financially distressed in the year that immediately follows these events. This is because although a firm begins to comply with its financial obligations, potential creditors do not immediately assess it as sound after a period of financial distress.

The likelihood of financial distress is estimated from samples in which the percentage of financially distressed firms is representative of the population of European manufacturing firms, in line with the seminal studies by Ohlson (1980) and Zmijewski (1984). During the sample period, the European manufacturing industry continued to pass through a severe restructuring, and consequently, there will be a significant proportion of distressed manufacturing firms. Consequently, applying our definition of financial distress to companies that belong to the European manufacturing industry allows the construction of a binary dependent variable, which takes a value of 1 for a significant number of financially distressed companies, and 0 otherwise. Table 3 shows that approximately 25% of the firms are classified as financially distressed during the observation period, which is in line with Ohlson (1980) and Zmijewski (1984). Using paired samples is more usual in financial distress prediction since the seminal article of Altman (1968) but produces results more prone to survivorship bias. In contrast, using an unbalanced panel of SMEs allows the building of a binary variable more robust to this type of bias.

Classification of the observations according to the insolvency laws. To study the moderator effect of institutional structures, we have selected the most relevant characteristics of the insolvency law, in terms of their pro-creditor or pro-debtor bias.

It is important to note that during the observation period, more new debtor-friendly frameworks have been proposed to deal with insolvency in order to promote entrepreneurship, as Cook et al. (2012) document for the UK case. In order to quantify the characteristics of insolvency laws across countries a value of 1 is given when the characteristics in a particular country are pro-debtor and 0 otherwise. A Restructuring Index (RI) was built as the sum of all characteristics that protect the debtor favouring its restructuring (see in Table 4). Accordingly, a country is defined as pro-creditor when the RI is lower than the mean and pro-debtor otherwise.

Table 4. Classification of the countries according to the Restructuring Index (RI).

	France	Germany	Italy	Sweden	United Kingdom
Responsibility of the management/administration for preparing the restructuring plan	0	0	1	1	0
Automatic stay of actions of creditors	0	1	0	0	0
Deviations in the priority of claims	1	0	1	0	0
Lenders providing money/financing after bankruptcy are given statutory priority (i.e. debtor in possession financing)	1	1	1	1	0
Debt recovery remedies available where the creditor has no security	1	0	1	1	0
Advantages of triggering a formal bankruptcy procedure	3	2	4	3	0
Classification in pro-debtor or pro-creditor	Debtor	Creditor	Debtor	Debtor	Creditor

RI equals 1 if the firm belongs to a country with an RI higher than the mean, and 0 otherwise. We estimate this measure from the study of insolvency laws by PriceWaterhouseCoopers (2005). Countries with a high RI are the so-called debtor-friendly because they are orientated to reorganising the existing company, and deviating from contractual pay-off priorities.

Table 5. Percentage of dummy variables.

Dummy variable	Number of firms	Percentages of total
DGOV _t	9215	49.6%
RI _t	7246	39.0%

DGOV denotes a governance dummy which takes the value of 1 for firms with a less concentrated ownership. A firm is considered to have a diversified ownership if none of the identified shareholders reaches 50% of direct ownership. Countries are also classified according to Restructuring Index (RI). A country that promotes pro-creditor insolvency laws has an RI lower than the mean.

As a result, France, Italy and Sweden were classified as pro-debtor, and Germany and the United Kingdom as pro-creditor.

The classification of observations according to the ownership variable. We define a dummy variable DGOV that takes the value of 1 when none of the recorded shareholders has more than 50% of direct or total ownership as reported in the AMADEUS database by the Independence Indicator. We assume that these SMEs have an ownership structure that makes it possible for the management to be independent from and avoid the opportunism and the extraction of private benefits by its major shareholders (Bastos and Pindado, 2013). The distribution of the DGOV dummy variable can be observed in Table 5.

Estimation methodology

All the specified models were estimated using panel data methodology, namely, the system Generalized Method of Moments derived by Blundell and Bond (1998). Two major issues were considered in making this choice. First, given that the units of analysis are firms, panel data allow us to control for unobservable firm-specific characteristics that are correlated with the regressors. This point is crucial in our study as the costs of financial distress, as already explained, are related

to firm unobserved specificity. Thus, we take into account some factors that can influence a firm's expected financial distress cost that make each firm different, such as market reputation. We modelled this heterogeneity as an individual effect, which captures the unobservable heterogeneity. As a result, an individual effect should be included in our model, which is differenced-off in the estimation by the Generalized Method of Moments.

The second issue we can deal with by using this panel data methodology is the endogeneity, which arises since there are potentially endogenous regressors because of cross-causality between the financial distress costs variable and the explanatory variables of the model. Endogeneity requires the use of an instrumental variables estimation method. Blundell and Bond (1998) derive the asymptotically efficient instrumental variables estimator, well known as system Generalized Methods of Moments, under the stationarity assumption. In this scenario, we use the lags (t_1 , t_2 and t_3) of the explanatory variables as valid instruments for the equations in first differences and only the contemporary value of the increment of the variables in the level equations.

Results

In this section, we summarise the main results obtained by estimating our model for the entire sample of five EU countries. We then comment on the findings for each country individually, which provides us with a robustness check of the overall results.

As can be seen in Table 6, all the coefficients are statistically significant and of the expected sign. Additionally, the m_2 test guarantees that there is no second-order serial correlation. We also performed a Wald test of the joint significance of the time dummies which is always positive, providing evidence that we need to control for the macroeconomic events that tend to influence all firms.

Results of the models estimated for the total sample

The first row of Table 6 reports the effect of time to resolution, τ , which is obtained as $\tau = 1/\alpha_1$. This coefficient portrays the influence of the different insolvency laws in the expected duration of financial distress and, as expected, it reveals a consistent positive relation with expected financial distress costs.

Results obtained for the basic model. The empirical evidence obtained for our basic model corroborates our initial conclusions, regardless of not taking into account the moderator effect of ownership concentration. As shown in column 1 of Table 6, the positive coefficient of the FDL variable supports our theory that the probability of financial distress, as measured by our FDL variable, is one of the main explanatory variables of ExaFDC. Additionally, we find empirical evidence supporting the negative relationship between tangible fixed assets and expected financial distress costs, since the coefficient ($\beta_1/\tau = -0.143$) obtained for TFA_{it} is negative and significant. This means that having tangible assets places the firm in a better position to create liquidity and/or provide access to thin credit markets. This result is explained by the fact that tangible fixed assets are used as collateral to gain access to credit and minimise financial constraints.

We also find a positive sign for the coefficient of long-term leverage adjusted for industry, LTLEVS_{it} ($\beta_2/\tau = 1.666$). This result is a consequence of the banks' behaviour when a company faces financial distress. Specifically, banks, as secure creditors, have incentives to take the initiative to place the company into bankruptcy calling for a premature liquidation. Regarding short-term debt, the negative sign of the coefficient of STCRED_{it} ($\beta_3/\tau = -0.444$) provides empirical evidence confirming that SMEs seek relief from financial pressure with short-term debt during

Table 6. Results of the basic and ownership adjusted model.

Model No. of firms	Basic model 18580	Ownership adj. model 18580	France 4072	Germany 1151	Italy 6369	Sweden 3133	United Kingdom 3855
τ	10.6	13.3	8.7	14.2	29.5	10.9	2.9
LnFDL_{it}	0.0944 (0.000)	0.0751 (0.000)	0.115 (0.000)	0.0702 (0.000)	0.0339 (0.000)	0.0921 (0.000)	0.348 (0.000)
TFA_{it}	-0.143 (0.000)	-0.049 (0.000)	0.112 (0.215)	0.0311 (0.250)	-0.038 (0.000)	-0.0697 (0.345)	-0.46 (0.000)
LTLEVS_{it}	0.166 (0.000)	0.407 (0.001)	0.504 (0.764)	0.126 (0.092)	10.13 (0.000)	7.388 (0.000)	4.925 (0.000)
STCRED_{it}	-0.444 (0.000)	-0.842 (0.000)	-0.753 (0.000)	-0.629 (0.000)	-0.239 (0.024)	-0.806 (0.000)	-0.606 (0.000)
DGOVLEV_{it}	- -	-0.592 (0.001)	-0.266 (0.948)	-0.107 (0.365)	-14.74 (0.291)	-5.492 (0.085)	-2.325 (0.045)
DGOVSTCR_{it}	- -	1.222 (0.000)	0.0765 (0.573)	0.823 (0.001)	0.13 (0.264)	0.0236 (0.915)	0.0792 (0.73)
z_1	597.31	283.90	257.28	18.74	165.29	89.25	78.61
z_2	204.83	254.59	75.31	10.87	56.14	47.16	59.44
t_1	-	9.71	0.27	5.74	24.44	7.36	3.48
t_2	-	11.11	-5.84	1.62	-12.71	-5.54	-2.43
m_1	0	0	0	0	0	0	0
m_2	0.066	0.105	0.412	0.371	0.884	0.002	0.853
m_3	0.558	0.765	0.717	0.464	0.168	0.68	0.882
Hansen	1558 (59)	2373 (130)	158.6 (72)	259 (128)	925 (125)	377.6 (99)	378.3 (118)

The regressions are performed by using the panel described in Tables 1–3. The variables included are ExaFDC, the value of financial distress costs; LnFDL, the natural logarithm of financial distress likelihood; the TFA ratio of total tangible assets by total assets; LTLEVS, the deviation of the ratio of long-term leverage by total assets from the median of this ratio for the industry; STCRED is the ratio of current liabilities by total assets. DGOVLEV is the interaction variable between the long-term leverage ratio and the dummy variable DGOV that takes the value of 1 when none of the recorded shareholders has more than 50% of direct or total ownership. DGOVSTCR is the interaction of the same DGOV dummy variable and the STCRED ratio. The rest of the information needed to read this table is as follows: (i) levels of significance of reported coefficients in parentheses; (ii) z_1 is a Wald test of the joint significance of the reported coefficients, asymptotically distributed as χ^2 under the null of no relationship; (iii) z_2 is a Wald test of the joint significance of the time dummy variables, asymptotically distributed as χ^2 under the null of no relationship; (iv) t_1 is the t-statistic for the linear restriction test under the null hypothesis $H_0 = a_3 + \gamma_1$; (v) t_2 is the t-statistic for the linear restriction test under the null hypothesis $H_0 = a_4 + \gamma_2$; (vi) m_i is a serial correlation test of order i using residuals in first differences, asymptotically distributed as $N(0, 1)$ under the null of no serial correlation; (vii) Hansen is a test of the overidentifying restrictions, asymptotically distributed as χ^2 under the null of no relation between the instruments and the error term, number of instruments in parentheses.

financial insolvency, and in this way they can reduce financial distress costs. The negative sign of this variable provides new evidence that short-term lenders and suppliers are privileged sources of SME financing, especially during times of financial crisis. This can be explained by trade credit acting as a credit channel (Nilsen, 2002), where financially distressed SMEs obtain financing, since short-term borrowers and suppliers provide credit to maintain these clients. Simultaneously, trade creditors are avoiding unfavourable bargaining conditions, because these unsecured creditors have more incentives to delay insolvency, benefiting with the recovery of their counterpart. In fact, even if a buyer defaults, the seller is likely to be in a better position to reclaim value from

repossession of these goods than a financial institution. A major disadvantage of a greater reliance on this type of credit for SMEs is that, if it is reduced, the firm does not have any kind of formal agreement to address contingencies.

Results obtained for the ownership adjusted model. The results for the ownership adjusted model (see equation (2)) are displayed in column 2 of Table 6. As can be seen, the results for the variables discussed above are the same in terms of sign and significance; hence these results are a good robustness check for the previous model.

The result for the interaction of ownership concentration and long-term debt (DGOVLEV) is negative. This confirms that the positive relationship between long-term debt and expected financial distress costs is reduced in SMEs with a less concentrated ownership. Consequently, the coefficient of this effect tends to be smaller for this type of firms, which indicates that bank credit plays a more important role in the permanent financing of SMEs that have a more dispersed ownership: dispersed ownership is likely to enable more professionalised monitoring and, thereby, reduce informational opacity and, as a result, financial distress costs.

Finally, the negative relationship between SMEs' short-term debt and the expected costs of financial distress is lessened for firms with a lower concentration of ownership, since the interaction term (DGOVSTCR) is positive. This shows that the broader reputational networks of more closely held firms are likely to prove beneficial during times of financial distress, enabling refinancing along the supply chain via the relationships built across many years.

Results obtained about the role play for the insolvency law. The main theoretical contribution of the article is proposing a unified framework of analysis. This theoretical framework leads to the development of an empirical model that shows that both FDL and ExpFDC are important determinants of the expected cost of financial distress in five major economies in Europe during 1999–2006. The results obtained for samples for individual countries are reported in the last five columns of Table 6. The main conclusion we extract from the analysis of these columns is that most parameters previously estimated for the total sample (see column 1, Table 6) tend to remain significant and with the same sign.

Moreover, the results obtained from our cross-country comparison provide additional evidence about the role played by insolvency law. In short, the results displayed for the variable τ in Table 6 show that the expected time until the resolution of financial distress tends to be higher in pro-debtor countries. Specifically, the sign of the time effect, τ , is positive, revealing a consistent positive relation between a variable that reflects the time to resolution of a situation of financial distress and the expected financial distress costs for each country taken individually. In general, the consequences of deteriorating performance are expected to be suffered during a shorter time period in countries with more creditor-orientated insolvency laws. This is consistent with the fact that the United Kingdom's insolvency law tends to produce a quicker resolution of insolvencies but which results in a larger number of bankruptcies. In fact, firms belonging to a country that is 'creditor-friendly', as in the United Kingdom, tend to favour a hasty liquidation of debtor assets in order to pay off creditors to respect the priority of claims. This type of law allows secure privileged creditors to be opportunistic and choose liquidation in order to avoid the risk of debt value loss during financial distress. If secured creditors (such as banks) in countries with pro-creditor insolvency laws are allowed to adopt opportunistic behaviour in face of liquidation, its consequences on total value loss will be higher as compared to countries which promote restructuring through pro-debtor laws.

Even though there is empirical evidence that the United Kingdom's secure creditors have incentives to prematurely liquidate firms that are economically viable, we cannot conclude whether this type of code is more efficient ex ante or ex post. We can only conclude that this type of insolvency

law provides incentives to secured creditors that are opposite to a prolonged financial restructuring of a firm. Alternatively, the Italian insolvency law is an example of a pro-debtor law, and the duration of the legal procedures in this country lead debtors to postpone bankruptcy for a longer period and, consequently, favours restructuring.

Furthermore, the consistency of the sign and degree significance of the short-term debt variable reveal a tendency to increase short-term debt in firms under financial distress. In fact, in countries with pro-debtor insolvency laws, non-secured creditors are often confronted with a low probability of recovering their credits in the case of financial distress. Consequently, short-term unsecured creditors can find themselves obliged to lend assistance to their clients in order to prevent finding themselves in a difficult bargaining position. This takes place especially in closely held firms and in countries where creditors (which have a low probability of recovering their credits in the case of financial distress because their claims) are particularly unprotected by insolvency laws.

The results confirm that SMEs seek short-term trade credit during financial distress. In addition, the evolution of this type of debt corresponds to voluntary credit granting. This provides empirical evidence that suppliers have both *ex ante* (screening) and *ex post* (bonding) commitments with customers. The evidence, therefore, supports that both long-term (mainly bank) and short-term (mainly trade-related) debt are substitutable to a certain extent during financial distress. This is in agreement with Garcia-Teruel and Martinez-Solano (2010), who found that a substitution effect is present in European SMEs between supplier-provided credit and other sources of financing. If firms have alternative sources of finance, they are less likely to resort to vendor financing; such financial behaviour is more likely to occur in countries where claims are relatively unprotected by insolvency laws.

Conclusion

In this article, we focus on the determinants of expected financial distress costs in SMEs, in that they could be relevant in informing the exit decision, even before the company files for bankruptcy. We show that the expected costs of financial distress, which are mainly indirect and unobservable, can be estimated by an innovative model, with a specification that allows for a proper interaction between the likelihood of financial distress and its costs when it occurs. This model is based on the product of the FDL times the magnitude of the financial distress costs borne by a firm, if insolvency occurs. The amount of ExpFDC is inversely related with the capacity to use tangible assets as collateral to gain access to credit and to the use of short-term debt as a means of reducing information asymmetry. Conversely, ExpFDC are directly related to the amount of long-term secured debt relative to the median of the firm's industry. The effect of these factors is moderated by a firm's ownership and by insolvency law.

This research also offers an explanation for the apparent resilience of SMEs to financial distress. For example, in a financial distress scenario suppliers, which are unsecured creditors, can find themselves obliged to lend assistance to their clients in order to prevent finding themselves in a difficult bargaining position. A long commercial relationship, embodied in the vested interests of a family core of shareholders in closely held firms, can help to keep funds flowing during financial distress using informal but efficient mechanisms (see Ng and Keasey, 2011).

Thus, trade payables can effectively act as a credit channel with effective screening contracts for dealing with information asymmetry and obtaining information about buyer default risk. This helps explain why trade credit frequently becomes an alternative source of (re)financing and reduces the costs of financial distress of insolvent SMEs. The opposite sign between the short-term debt and the long-term debt variables indicates that granting short-term credit is voluntary and that they are substitutable to a certain extent. A higher degree of asymmetric information in SMEs

explains the role of this type of credit during financial distress. Insolvency law influences the bargaining position of different stakeholders and emerges as a major determinant of the time taken to the ultimate resolution of financial distress.

In summary, the expected financial distress costs suffered by a firm are determined not only by the likelihood of financial distress but also by the variables that influence the amount of time and costs incurred by a firm while in financial distress. These include their capacity to use tangible assets as collateral to gain access to credit, the incentives of secured long-term creditors to realise value, the capacity to mobilise short-term credit, particularly trade credit, to substitute other forms of financing that are no longer available and the ownership structure that can reduce informational asymmetry.

Finally, we reach the conclusion that financial distress opens a process of bargaining, not only with the credit institutions but also with the firm's other stakeholders (e.g. suppliers) for more favourable exchange relationships. This bargaining process could explain how entrepreneurs persist with underperforming firms as complementary evidence to the extrinsic motivations suggested by DeTienne et al. (2008). Given that the features of the bargaining process are strongly dependent on the legal system of each country, our analysis also provides practical implications for policymakers seeking to support entrepreneurship by passing laws that facilitate a business exit for the entrepreneur.

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Notes

1. In this study, the expressions financial distress and financial failure are used as synonyms because they both stress a continuous difficulty in being able to face liabilities as they became due, the source of a costly process which can be overcome by restructuring and do not imply bankruptcy.
2. Due to the notation used throughout the article, ex ante financial distress costs (ExaFDC) replace the term 'expected financial distress costs' where it eases understanding. The two terms are to be seen as equivalent.
3. The European Commission considers small firms as those that have between 10 and 50 employees, and a sales volume and total assets between 2 and 10 million euros. Medium firms are those that have between 50 and 249 employees and 10 to 50 million euros of turnover, and from 10 to 43 million euros of total assets. For firms that cannot be classified, in a first stage, in one of the categories, the rule of thumb is to classify residual firms solely on the number of employees.
4. Specifically, we use the Statistical Classification of Economic Activities in the European Community (NACE Rev. 1) classification codes ranging from 15 to 37.

References

- Altman E (1968) Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *Journal of Finance* 23: 589–609.
- Altman E (1984) A further empirical investigation of the bankruptcy cost question. *Journal of Finance* 39: 1067–1089.

- Andrade G and Kaplan S (1998) How costly is financial, (not economic) financial distress – Evidence from highly leveraged transactions that became distressed. *Journal of Finance* 53: 1443–1493.
- Antoniou A, Guney Y and Paudyal K (2006) The determinants of debt maturity structure: Evidence from France, Germany and the UK. *European Financial Management* 12(2): 161–194.
- Arellano M and Bond S (1991) Some tests of specification for panel data: Monte-Carlo evidence and an application to employment equations. *Review of Economic Studies* 58: 277–297.
- Arslan O and Karan MB (2006) Ownership and control structure as determinants of corporate debt maturity: A panel study of an emerging market. *Corporate Governance: An International Review* 14(4): 312–324.
- Asquith P, Gertner R and Scharfstein D (1994) Anatomy of financial distress: An examination of junk-bond issuers. *Quarterly Journal of Economics* 109: 625–658.
- Balcaen S, Manigart S, Buyze J, et al. (2012) Firm exit after distress: Differentiating between bankruptcy, voluntary liquidation and M&A. *Small Business Economics* 39(4): 949–975.
- Bastos R and Pindado J (2013) Trade credit during a financial crisis: A panel data analysis. *Journal of Business Research* 66(5): 614–620.
- Berger A and Udell G (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.
- Biais B and Gollier C (1997) Trade credit and credit rationing. *Review of Financial Studies* 10(4): 903–937.
- Blundell R and Bond S (1998) Initial conditions and moments restrictions in dynamic panel data models. *Journal of Econometrics* 87: 115–143.
- Canton E, Grilo I, Monteagudo J, et al. (2013) Perceived credit constraints in the European Union. *Small Business Economics* 41(3): 701–715.
- Chen L, Ma Y, Malatesta P, et al. (2013) Corporate ownership structure and the choice between bank debt and public debt. *Journal of Financial Economics* 109(2): 517–534.
- Cook G, Pandit N and Milman D (2012) A resource-based analysis of bankruptcy law, SMEs and corporate recovery. *International Small Business Journal* 30(3): 275–293.
- Cowling M, Liu W and Ledger A (2012) Small business financing in the UK before and during the current financial crisis. *International Small Business Journal* 30(7): 778–800.
- Cressy R and Olofsson C (1997) Financial conditions for SMEs in Sweden: Survey and research agenda. *Small Business Economics* 9(2): 179–194.
- Cunat V (2007) Trade credit: Suppliers as debt collectors and insurance providers. *Review of Financial Studies* 20(2): 491–527.
- DeTienne D (2010) Entrepreneurial exit as a critical component of the entrepreneurial process: Theoretical development. *Journal of Business Venturing* 25(2): 203–215.
- DeTienne D, Shepherd D and De Castro J (2008) The fallacy of ‘only the strong survive’: The effects of extrinsic motivation on the persistence decisions for under-performing firms. *Journal of Business Venturing* 23(5): 528–546.
- Dewaelheyns N and Van Hulle C (2006) Corporate failure prediction modelling: Distorted by business groups’ internal capital markets? *Journal of Business Finance & Accounting* 33(5–6): 909–931.
- European Commission (2003) Best project on restructuring, bankruptcy and a fresh start. Final Report of the Expert Group, September. Brussels: European Commission.
- Filatotchev I and Wright M (2005) Corporate governance life cycle. In: Keasey K, Filatotchev I and Wright M (eds) *The Life Cycle of Corporate Governance*. Northampton, MA: Edward Elgar Publishing, pp. 1–9.
- Franks J and Sussman O (2005) Financial distress and bank restructuring of small to medium size UK companies. *Review of Finance* 9(1): 65–96.
- Garcia-Teruel P and Martinez-Solano P (2007) Short-term debt in Spanish SMEs. *International Small Business Journal* 25(6): 579–602.
- Garcia-Teruel P and Martinez-Solano P (2010) Determinants of trade credit: A comparative study of European SMEs. *International Small Business Journal* 28(3): 215–233.
- Grice J and Ingram R (2001) Tests of the generalizability of Altman’s bankruptcy prediction model. *Journal of Business Research* 54(1): 53–61.
- Hamilton RT (2012) How firms grow and the influence of size and age. *International Small Business Journal* 30(6): 611–621.

- La Rocca M, La Rocca T and Cariola A (2010) The influence of local institutional differences on the capital structure of SMEs: Evidence from Italy. *International Small Business Journal* 28(3): 234–257.
- López-Gracia J and Sánchez-Andújar S (2007) Financial structure of the family business: Evidence from a group of small Spanish firms. *Family Business Review* 20: 269–287.
- Miguel A, Pindado J and de la Torre C (2005) How do entrenchment and expropriation phenomena affect control mechanisms? *Corporate Governance: An International Review* 13(4): 505–516.
- Molina CA and Preve LA (2012) An empirical analysis of the effect of financial distress on trade credit. *Financial Management* 41(1): 187–205.
- Newman A, Gunessie S and Hilton B (2012) Applicability of financial theories of capital structure to the Chinese cultural context: A study of privately owned SMEs. *International Small Business Journal* 30(1): 65–83.
- Ng W and Keasey K (2011) Growing beyond smallness: How do small, closely controlled firms survive? *International Small Business Journal* 28(6): 620–630.
- Nilsen J (2002) Trade credit and the bank lending channel. *Journal of Money, Credit, and Banking* 34(1): 226–253.
- Ohlson J (1980) Financial ratios and the probabilistic prediction of bankruptcy. *Journal of Accounting Research* 18: 109–131.
- Opler T and Titman S (1994) Financial distress and corporate performance. *Journal of Finance* 49: 1015–1040.
- Organisation for Economic Co-operation and Development (OECD) (2006) *The SME Financing Gap (Volume 1): Theory and Evidence*. Paris: OECD Publishing.
- Petersen M and Rajan R (1997) Trade credit: Theories and evidence. *Review of Financial Studies* 10(3): 661–691.
- Pindado J, Rodrigues L and Torre C (2006) How does financial distress affect small firms' financial structure? *Small Business Economics* 26(4): 377–391.
- Pindado J, Rodrigues L and Torre C (2008) Estimating financial distress likelihood. *Journal of Business Research* 61(9): 995–1003.
- Poletti-Hughes J and Ozkan A (2014) Ultimate controllers, ownership and the probability of insolvency in financially distressed firms. *Managerial and Decision Economics* 35: 36–50.
- PriceWaterhouse&Coopers (2005) *The European Restructuring and Insolvency Guide 2005/2006*. London: Globe White Page Ltd.
- Psillaki M and Daskalakis N (2009) Are the determinants of capital structure country or firm specific? *Small Business Economics* 33(3): 319–333.
- Ryan RM, O'Toole CM and McCann F (2014) Does bank market power affect SME financing constraints? *Journal of Banking & Finance*. Available at: <http://dx.doi.org/10.1016/j.jbankfin.2013.12.024> (accessed 9 April 2014).
- Steijvers T, Voordeckers W and Van Hoof K (2010) Collateral, relationship lending and family firms. *Small Business Economics* 34(3): 243–259.
- Trichet JC (2010) State of the union: The financial crisis and the ECB's response between 2007 and 2009. *Journal of Common Market Studies* 48: 7–19.
- Wennberg K and DeTienne D (2014) What do we really mean when we talk about 'exit'? A critical review of research on entrepreneurial exit. *International Small Business Journal* 32(1): 4–16.
- Wennberg K, Wiklund J and DeTienne D (2010) Reconceptualizing entrepreneurial exit: Divergent exit routes and their drivers. *Journal of Business Venturing* 25(4): 361–375.
- Whitaker R (1999) The early stages of financial distress. *Journal of Economics and Finance* 23: 123–133.
- Wilner B (2000) The exploitation of relationships in financial distress: The case of trade credit. *Journal of Finance* 55(1): 153–178.
- Wright M and Stigliani I (2013) Entrepreneurship and growth. *International Small Business Journal* 31(1): 3–22.
- Zmijewski M (1984) Methodological issues related to the estimation of financial distress prediction models. *Journal of Accounting Research* 22: 59–86.

Author biographies

Kevin Keasey is Professor of Accounting and Finance, and Head of Department at the University of Leeds.

Julio Pindado is Professor of Accounting and Finance at Universidad de Salamanca (Spain) and Professorial Research Fellow at Leeds University Business School (University of Leeds, UK). He is also the Director of the Family Business Centre, Director of the Multidisciplinary Institute of Enterprise and Director of the MBA on Family Business at the Universidad de Salamanca, (Spain). Professor Pindado has published academic peer-reviewed articles on corporate finance, corporate governance, and family business in several top journals.

Luis Rodrigues is Professor Coordenador of Finance at the Escola Superior de Tecnologia e Gestão do IPV and Researcher at CEFAGE-UE. Its main area of research is the study of the costs and prediction of financial distress, using recent advances on panel data methodology.