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How does Financial Distress Affect Small Firms' Financial Structure?

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ABSTRACT. This paper provides new evidence on the financial structure of small firms by emphasizing the role played by financial distress. We specify a model of debt adjustments that allows us to investigate the specific nature of the adjustment process towards target debt levels in small firms, which is then extended to account for the effect of financial distress on financial structure decisions. Our models were estimated by the Generalized Method of Moments on a data panel of small Portuguese firms during a period of recession, in which a substantial proportion of the companies analyzed faced a financial distress situation. We find that small firms do adjust their debt ratios towards target levels, the speed of adjustment being faster in the shorter term. Our results also indicate that there are major differences in the determinants of long-term and short-term debt, highlighting the role played by debt maturity in explaining a firm's financial structure. Finally, random behavior is observed in financially distressed firms, who seem to be disoriented when making their financial structure decisions.

KEY WORDS: Financial distress, financial structure, adjustment model, panel data

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1. Introduction

After decades of great efforts in corporate finance research to identify the determinants of a firm's capital structure, it certainly continues to be a puzzle. In fact, this strand of literature has given rise to new questions, such as the role played by debt maturity in explaining a firm's financial structure (see e.g. Barclay and Smith, 1995; Barclay et al., 2003; Ozkan, 2000, 2002; Stohs and Mauer, 1996). This line of research highlights the fact that long-term debt is not the only important concern when firms make their financial decisions, but that short-term debt should also be considered. Furthermore, this view is especially important when studying small firms, in that they face greater difficulties in gaining access to long-term debt markets, and hence most of their external funds come from short-term loans. Particularly, banks prefer to lend short-term rather than long-term debt in order to avoid taking risks when financing small firms. Since payments are habitually made through bank accounts, bank lenders are the first to know when a firm faces a financial distress situation, and they can simply not renew the short-term debt when it matures.

The effect of financial distress on financial structure decisions is another conflicting point. According to the static trade-off theory, both the advantages of debt (tax shields) as well as its disadvantages (insolvency costs) have been traditionally considered in the capital structure literature. This trade-off between the benefits and costs of debt focuses on ex-ante insolvency costs, whose negative effect on leverage has been theoretically justified (see, for instance, Barnea et al., 1981) as well as empirically documented (see, for instance, Miguel and Pindado, 2001).

However, a crucial question remains unanswered: What happens once a firm faces an insolvency situation? Do financially distressed firms behave in accordance with financial theory?

Given the state of knowledge, this paper contributes to capital structure literature in four ways. First, we expand on previous empirical research by focusing on the small business sector and the specific nature of their adjustment process towards target debt ratios. Second, we analyze various measures of debt jointly, i.e. long-term, short-term and total debt. Particularly, we are concerned with differentiating the determinants of long-term and short-term debt, since many of the factors that have been pointed out by financial structure theories may have different implications for the different terms of debt financing. Third, we design a classification scheme that allows us to identify a subset of financially distressed firms for which different behaviour is expected concerning financial structure choices. Finally, we contribute to previous literature on capital structure in the small business sector, by focusing on the determinants of financial structures of small Portuguese firms. Our evidence is thus of interest, since, as shown by Hall et al. (2004), there are variations in the effects of the determinants of capital structure across countries.

To address these issues, we develop a partial adjustment model in which a firm's target debt level is endogenously determined by the factors affecting its financial structure; that is, non-debt tax shields, insolvency costs, asset structure, growth, and internally generated funds. We first investigate whether the choices made regarding long-term and short-term debt are driven by different forces or whether they share common determinants. We next extend the general adjustment model in order to learn whether financially distressed firms exhibit particularities in their financial structure decisions.

This analysis focuses on the Portuguese economy between 1990 and 1997, which allows us to investigate how insolvency influences financial structure decisions. According to the information published in the Portuguese Official Gazette and reported by the COFACEMOPE Data Base, 2,541 Portuguese companies filed for bankruptcy from 1992 to 1997, whereas around seven thousand companies faced financial distress. Additionally, our study is based on three of the main Portuguese manufacturing industries that are quite homogeneous in terms of production and their business cycle; i.e., the textile, clothing and footwear industries. These sectors not only comprise a high representation of small firms, but they were also especially affected by international price competition for their products during the analyzed period of recession in the Portuguese economy.

The proposed adjustment models have been estimated on a data panel of these three small business sectors by the generalized method of moments (GMM). In this way, we control for the unobservable heterogeneity that arises when the individuals analyzed are firms, and we solve endogeneity problems by using instruments. Our results indicate that small firms do adjust their levels of short-term and long-term debt towards target ratios, and that the speed of adjustment is significantly faster in the short term. Moreover, we find that the determinants of long-term debt ratios are essentially different from those of short-term capital. On the one hand, small firms adjust their long-term debt by searching for a trade-off between tax benefits and insolvency costs. Additionally, collateralisable assets are essential for small firms to gain access to long-term funds. On the other hand, short-term loans constitute the primary source of funds to finance small firms' growth, establishing a substitution pattern with internally generated funds. Finally, financially distressed firms seem to have lost their way when making financial structure choices, probably because of the numerous obstacles they face when adjusting their debt ratios towards the desired levels under pressure from their lenders. In fact, there seems to be random behaviour in financially distressed firms, which is corroborated by the fact that none of the major factors which normally determine financial structure choices seem to be important when a firm faces a financial distress situation.

The paper is organized as follows. The next section presents the various specifications of our model of debt adjustments and discusses the selection of variables which, according to the perspectives provided by capital structure theories, are expected to influence financial structure choices in small firms. Section 3 describes the data set and the estimation method. The results are discussed in Section 4, and the last section concludes the paper.

2. Models and theory

This study develops several partial adjustment models that explain financial structure choices in small firms. Following previous research that focuses on the determinants of small firms' long-term and short-term debt ratios (see, for instance, Chittenden et al., 1996; Hall et al., 2004; Michaelas et al., 1999; van der Wijst and Thurik, 1993) we are mainly interested in analyzing the structure of debt maturity in order to learn whether long-term and short-term debt levels are a consequence of different firm-specific characteristics. In this way, three variants of the model of debt adjustments are specified: long-term, short-term and total debt models.[1] Additionally, an extended version of the general adjustment model is presented, which allows us to study the specific pattern of adjustment of financially distressed firms.

The structure of the model of debt adjustments is as follows. Transaction costs have traditionally symbolized a key element in the still unanswered question as to the existence of optimum financial structures. Within this context, transaction costs are the reason as to why firms do not automatically adjust their debt levels to changes in target ratios, but instead follow a partial adjustment behavior that can be represented by the following model:

$$D_{it} - D_{it-1} = \alpha(D^*_{it} - D_{it-1}) \quad 0 < \alpha < 1 \qquad (1)$$

where D_{it} and D_{it-1} denote a firm's debt levels in the current and previous period, respectively, and D^*_{it} is the firm's target debt. Transaction costs are inversely proxied by the coefficient α. Specifically, α captures a firm's speed of adjustment towards its target debt, which is inversely proportional to the magnitude of the transaction costs it bears; that is, the higher the values of α, the lesser the transaction costs and, consequently, the faster the adjustment towards target debt levels. Given the greater flexibility and the lower transaction costs that characterize short-term debt, a higher speed of adjustment is expected as compared to that of long-term debt. On the other hand, as pointed out by Gilson (1997), financially distressed firms find it difficult and costly to adjust their debt levels because of, among other obstacles, the very high transaction costs they bear. Accordingly, their speed of adjustment to target debt ratios may be slower, or even null, as compared to that of non-distressed firms.

To obtain the current debt level, we solve Equation (1) for D_{it}:

$$D_{it} = \alpha D^*_{it} + (1 - \alpha)D_{it-1} \qquad (2)$$

Unlike most previous models of debt adjustments, in which the optimum debt level is externally determined either in terms of historical data or through an adjustment process with lags of more than one year (e.g., Jalilvand and Harris, 1984; Shyam-Sunder and Myers, 1999), we follow Gilson (1997) and introduce a firm's target debt into our model as a linear function of the main determinants of its capital structure. Following prior studies focused on the financial structure of small firms (see, for instance, Chittenden et al., 1996; Hall and Hutchinson, 1993; Hall et al., 2004; van der Wijst and Thurik, 1993; Michaelas et al., 1999), non-debt tax shields, financial insolvency costs, asset structure, growth, and cash flow are expected to be the key factors affecting the capital structure choice of our sample firms. In addition, size has also been entered into the equation as a control variable. Consequently:

$$D^*_{it} = \beta_1 + \beta_2\left(\frac{\text{NDTS}}{\text{TA}}\right)_{it} + \beta_3\text{FIC}_{it} + \beta_4\left(\frac{\text{COLLAS}}{\text{TA}}\right)_{it} + \beta_5\text{GROWTH}_{it} + \beta_6\left(\frac{\text{CF}}{\text{TA}}\right)_{it} + \beta_7\text{SIZE}_{it} + \varepsilon_{it} \qquad (3)$$

Finally, incorporating (3) into (2) we obtain our partial adjustment model:

$$D_{it} = \alpha\beta_1 + (1-\alpha)D_{i,t-1} + \alpha\beta_2\left(\frac{\text{NDTS}}{\text{TA}}\right)_{it} + \alpha\beta_3\text{FIC}_{it} + \alpha\beta_4\left(\frac{\text{COLLAS}}{\text{TA}}\right)_{it} + \alpha\beta_5\text{GROWTH}_{it} + \alpha\beta_6\left(\frac{\text{CF}}{\text{TA}}\right)_{it} + \alpha\beta_7\text{SIZE}_{it} + \varepsilon_{it} \qquad (4)$$

where the dependent variable, D_{it}, is the debt ratio. Since our main interest is to investigate the determinants of debt maturity choices, we propose three different measures of the dependent variable: the ratio of long-term debt to long-term debt plus equity (LTD_{it}), the ratio of short-term debt to short-term debt plus equity (STD_{it}), and the ratio of total debt to total debt plus equity (TD_{it}).[2] $NDTS_{it}$, FIC_{it}, $COLLAS_{it}$, $GROWTH_{it}$, and CF_{it} denote non-debt tax shields, financial insolvency costs, collateralisable assets, growth, and cash flow, respectively. Non-debt tax shields, collateralisable assets and cash flow are scaled by total assets, TA_{it}. We also control for firm size, $SIZE_{it}$, as measured by the logarithm of total assets.[3]

Besides investigating the potential differences among the determinants of the two types of debt financing, we are concerned with the potential particularities of financially distressed firms regarding financial structure choices. To address this issue, we have designed a classification scheme that allows us to distinguish between financially distressed and non-financially distressed firms. Specifically, we have defined a sample selection dummy variable (FDD_{it}), which equals zero for those firms that have failed to face their financial obligations, for the first period in which it occurs and for all the subsequent periods, and one for the remaining periods and firms.[4] We then interact this dummy with all the explanatory variables in Equation (4), in order to learn whether their effect on a firm's financial structure is different depending on the two categories identified, and obtain the following extended model:

$$\begin{aligned} D_{it} = {} & \alpha\beta_1 + [(1-\alpha) + (1-\alpha')FDD_{it}]D_{i,t-1} \\ & + (\alpha\beta_2 + \beta_2' FDD_{it})\left(\frac{NDTS}{TA}\right)_{it} \\ & + (\alpha\beta_3 + \beta_3' FDD_{it})FIC_{it} \\ & + (\alpha\beta_4 + \beta_4' FDD_{it})\left(\frac{COLLAS}{TA}\right)_{it} \\ & + (\alpha\beta_5 + \beta_5' FDD_{it})GROWTH_{it} \\ & + (\alpha\beta_6 + \beta_6' FDD_{it})\left(\frac{CF}{TA}\right)_{it} \\ & + (\alpha\beta_7 + \beta_7' FDD_{it})SIZE_{it} + \varepsilon_{it} \qquad (5) \end{aligned}$$

Thus in Equation (5), $(1-\alpha)$ and $[(1-\alpha)+(1-\alpha')]$ capture the effect of the debt ratio in the previous period on the current debt ratio for financially distressed (i.e., when FDD_{it} takes value zero) and non-financially distressed firms (i.e., when FDD_{it} takes value one), respectively. And the salve applies to the coefficients of the rest of the explanatory variables. If necessary[5] when FDD_{it} equals one, the statistical significance of the coefficient must be checked by performing a linear restriction test. For the lag of the debt ratio, the null hypotheses of no significance is H_0: $[(1-\alpha) + (1-\alpha')] = 0$.

Now we will briefly discuss the selection of the firm-specific characteristics which, according to financial theory, are expected to influence financial structure choices in small firms. When a different effect of a certain variable on long-term and short-term debt is documented by financial theory, these differences will be commented on.

Consistent with the static trade-off theory, tax aspects and financial insolvency costs have been traditionally linked to capital structure decisions. Specifically, it has been argued (see McConnell and Pettit, 1984; Pettit and Singer, 1985) that since small firms are less profitable, they are expected to use tax shields less, and they are comparably more prone to bankruptcy. As usual in empirical research (references for small firms are: Michaelas et al., 1999; van der Wijst and Thurik, 1993), the tax effect enters our analysis via the non-debt tax shields variable. Deangelo and Masulis (1980) argue that non-debt tax shields act as a disincentive to use debt, since they may reduce the tax benefits from interest payments. Therefore, large non-debt tax shields may lead firms to be less leveraged, and a negative relationship between this variable and debt is expected. However, when a firm faces a financial distress situation the advantage of non-debt tax shields is likely to disappear, since firms are no longer worried about taxes. Therefore, the above-mentioned relation could be weaker or even insignificant. Following Titman and Wessels (1988), non-debt tax shields are measured as earnings before taxes minus the ratio of taxes paid to the tax rate.

On the other hand, financial theory establishes that the higher the debt ratio, the greater the financial insolvency costs born by the firm. This variable is thus expected to negatively influence debt, since firms tend to rebalance their financial structure when insolvency costs are high in order to avoid bankruptcy. Additionally, we expect this negative relation to be especially important in small firms because of the higher insolvency costs they bear (McConnell and Pettit, 1984; Pettit and Singer, 1985). Moreover, firms become more worried about the negative consequences of the costs involved when facing a financial distress situation, and the proposed effect may be larger and more significant. To capture the effect of insolvency costs on small firms' financial structure choices, we focus on ex-ante financial insolvency costs, which are calculated as the product of the probability of insolvency and ex-post insolvency costs. The former is measured following the procedure described in Appendix A. The latter are proxied by fixed assets plus inventories over total assets.[6]

Collateralisable assets are closely related to the financial structure of small firms as well (see, for instance, Chittenden et al., 1996; Hall et al., 2004; van der Wijst and Thurik, 1993). Particularly, lenders usually demand more security from small firms, i.e. a higher liquidation value, to grant them long-term funds. We have thus included the ratio of fixed to total assets as a measure of collateral in the long-term debt model. Moreover, Myers (1977) points out that the maturity of a firm's debt has to be matched with the maturity of its assets in order to mitigate the agency costs of debt. Consistently, and taking into account the differences in the measurement of collateralisable assets depending on the different debt terms, we have measured short-term collateral as the proportion of total assets represented by inventories and accounts receivable. Although not frequently considered in the literature, these current assets represent a financially and commercially important part of small firms' total assets (van der Wijst and Thurik, 1993), which may be accepted by lenders as collateral for short-term loans. A positive relationship between a firm's current assets and its short-term debt is thus expected. Finally, the average of the long-term and short-term collateral variables is entered into the total debt model, for which a positive coefficient is also expected. In contrast, one should expect to find no relationship between collateralisable assets and debt in financially distressed firms, since, as Gilson (1997) points out, these firms may find it quite costly to get their debt levels down by selling assets.

The rate of growth has been often considered to influence financial structure choices in small firms (Chittenden et al., 1996; Hall et al., 2004; Hall and Hutchinson, 1993; Michaelas et al., 1999). On the one hand, since a firm's growth increases the necessity of funds, it is likely to positively affect leverage. On the other hand, according to the agency theory, highly leveraged firms are encouraged to reject positive net present value (NPV) projects whenever their NPV is lower than the amount of debt issued (Myers, 1977). Therefore, one would expect growing firms to be less leveraged. However, the described underinvestment problem could be mitigated by shortening debt maturity. As Myers (1977) points out, short-term debt matures before an investment opportunity is undertaken and, consequently, it does not induce suboptimal investment decisions. Hence a positive relationship between short-term debt and growth is expected. The effect of a firm's growth on its debt level is likely to disappear when bankruptcy is near, since financially distressed firms are no longer concerned with undertaking new investment opportunities but with solving their difficulties without having to abandon investments in place. To test these hypotheses, we propose the three following measures of growth to be included in the long-term, short-term and total debt models, respectively: the growth of fixed assets, the growth of current assets (inventories plus accounts receivable), and the average rate of growth of fixed and current assets.

The importance of internally generated funds for capital structure decisions, emphasized by Myers (1984) and Myers and Majluf (1984), has been tested in the small business sector by van der Wijst and Thurik (1993), Hall and Hutchinson (1993), Chittenden et al. (1996), Michaelas et al. (1999) and Hall et al. (2004). According to the pecking order theory, firms establish the following preference among financing alternatives: internal finance in the first place, debt issues when internal funds are exhausted, and new equity as the last option. The explanation of this preference pattern lies in the asymmetrical distribution of information between prospective outside investors and current shareholders; a situation that can be avoided if enough cash flow is available to undertake all positive NPV projects over an extended period. Consequently, the pecking order theory predicts that a firm's internal funds will be negatively related to its long-term debt, especially in small firms, for which the costs of equity are prohibitive. Given the nature and origin of internally generated funds, one would expect any measure of them to be distorted by the irregularities that arise in the cash inflows and outflows of financially distressed firms, such as their not paying for what they buy and, probably, not collecting for what they sell. Therefore, no accurate prediction can be made as to the relationship between internal funds and debt financing in firms that face a distress situation. To test these hypotheses, we follow Miguel and Pindado (2001), and use a firm's cash flow to proxy for internal funds. As measured by earnings before interests and taxes plus depreciation expenses plus provisions, the cash flow variable is the most accurate proxy for retained funds, since it captures a firm's earnings plus all non-cash deductions from earnings.

Finally, size is usually considered to influence financial structure choices in small firms. Although previous research on the small business sector seems to agree that size is important when explaining capital structure (see, for instance, Chittenden et al., 1996; Hall et al., 2004; Michaelas et al., 1999; van der Wijst and Thurik, 1993) there is not consensus on the expected relationship between this variable and debt. However, this lack of consensus is not a problem in our study in that we use size as a control variable.

3. Data and methodology

The data used in this research were obtained from the Central Balance-Sheet Office of the Banco de Portugal. This database is built from publicly available accounting data (balance sheet and profit and loss account) on small firms of three of the main Portuguese manufacturing industries: the textile, clothing and footwear industries. Since we are mainly interested in the effect of a firm's financial condition on its financial structure, we follow Beaver (1966), and financial distress is defined as 'the situation of a firm which can no longer meet its financial obligations, when these become due'.[7] This information was supplied by the Central Risk Office of the Banco de Portugal.

Following Lopez-Gracia and Aybar-Arias (2000), all the companies with sales above $16 million were dropped. Additionally, the econometric methodology applied in this paper requires data for at least six consecutive years (a necessary condition in order to test for second-order serial correlation, see Arellano and Bond, 1991), hence all the companies that do not fulfill this requirement were also dropped. After applying these criteria, we constructed an unbalanced panel data of 402 small firms with six to eight years of data between 1990 and 1997.[8] Unbalanced panels allow the number of observations to vary across companies, thus representing additional information for our model. This way we can use the largest number of observations and reduce the possible survival bias that arises when the observations in the initial cross-section are independently distributed and subsequent entries and exits in the panel occur randomly. Although we have 2,767 observations, the models have been estimated for only 2,365 of them because we lost one year of data in the construction of some variables (see Appendix A). The structure of the panel by number of annual observations per company is given in Table I. This table displays 402 companies and 2,365 observations, of which 527 match our criteria of financial distress. Table II shows the companies and number of observations in the full sample as well as the number of observations in the financially distressed subsample allocated to the three analyzed sectors. Summary statistics (mean, standard deviation, minimum and maximum) of the variables used in the estimation are provided in Table III.

The estimation method has been selected in order to avoid unobservable heterogeneity and endogeneity. Unlike cross-sectional analyses, panel data allow us to control for unobservable heterogeneity through an individual effect, η_i, and to eliminate the risk of obtaining biased results

TABLE I
Structure of the panel

Number of annual observations per company	Full sample		Financially distressed subsample
	Number of companies	Number of observations	Number of observations
7	89	623	93
6	177	1,062	263
5	136	680	171
Total	402	2,365	527

because of this heterogeneity (Moulton, 1986, 1987). We also included the variable d_t to measure the temporal effect with the corresponding dummy variables so that we could control the effect of macroeconomic variables on debt ratios. Consequently, Models (4) and (5) were transformed into

$$D_{\text{it}} = \alpha\beta_1 + (1-\alpha)D_{i,t-1} + \alpha\beta_2\left(\frac{\text{NDTS}}{TA}\right)_{\text{it}} + \alpha\beta_3\text{FIC}_{\text{it}} + \alpha\beta_4\left(\frac{\text{COLLAS}}{\text{TA}}\right)_{\text{it}} + \alpha\beta_5\text{GROWTH}_{\text{it}} + \alpha\beta_6\left(\frac{\text{CF}}{\text{TA}}\right)_{\text{it}} + \beta_7\text{SIZE}_{\text{it}} + d_t + \eta_i + v_{\text{it}} \quad (6)$$

$$D_{\text{it}} = \alpha\beta_1 + [(1-\alpha) + (1-\alpha')\text{FDD}_{\text{it}}]D_{i,t-1} + \left(\alpha\beta_2 + \beta_2'\text{FDD}_{\text{it}}\right)\left(\frac{\text{NDTS}}{\text{TA}}\right)_{\text{it}} + \left(\alpha\beta_3 + \beta_3'\text{FDD}_{\text{it}}\right)\text{FIC}_{\text{it}} + \left(\alpha\beta_4 + \beta_4'\text{FDD}_{\text{it}}\right)\left(\frac{\text{COLLAS}}{\text{TA}}\right)_{\text{it}} + \left(\alpha\beta_5 + \beta_5'\text{FDD}_{\text{it}}\right)\text{GROWTH}_{it} + \left(\alpha\beta_6 + \beta_6'\text{FDD}_{\text{it}}\right)\left(\frac{\text{CF}}{\text{TA}}\right)_{\text{it}} + \left(\alpha\beta_7 + \beta_7'\text{FDD}_{\text{it}}\right)\text{SIZE}_{\text{it}} + d_t + \eta_i + v_{it} \quad (7)$$

Finally, we took first differences of the variables in order to eliminate the individual effect specified in the models, and we then estimated the models thus obtained. We have estimated our models by using the generalized method of moments (GMM), which, unlike within-groups or generalized least squares estimators, accounts for endogeneity by using instruments.[9, 10]

To check that there is not a problem of correlation between the variables in our models, we have calculated the Spearman correlations in Table IV. Note that correlation coefficients between variables that enter into the same regression are moderate and do not violate the assumption of independence between explanatory variables. Additionally, we use the m_2 statistic, which tests for lack of second-order serial correlation in the first-difference residuals, in order to check for potential misspecification of the models. As shown in Tables V and VI, this hypothesis of second-order serial correlation is always rejected for all our models. On the other hand, the first-order serial correlation in the differenced residuals (see m_1) is not an econometric problem, since it is a consequence of the model transformed in first differences. Furthermore, Sargan's statistic of over-identifying restrictions rejects the existence

TABLE II
Sample distribution by sector classification

Sector	Full sample		Financially distressed subsample
	Number of companies	Number of observations	Number of observations
Textile	165	918	284
Clothing	132	737	129
Footwear	105	710	114
Total	402	2,365	527

TABLE III
Summary statistic

	Mean	Standard deviation	Minimum	Maximum
LTD_{it}	0.17865	0.23467	0.0000	0.88047
STD_{it}	0.54635	0.20343	0.02144	0.89982
TD_{it}	0.54830	0.20130	0.02144	0.89982
$(NDTS/TA)_{it}$	0.01350	0.03266	0.0000	0.38481
FIC_{it}	0.15407	0.11092	0.00581	0.84194
$(COLLAS/AT)_{it}^{a}$	0.51635	0.17191	0.10128	0.89888
$(COLLAS/AT)_{it}^{b}$	0.55885	0.19812	0.00567	0.98688
$(COLLAS/AT)_{it}^{c}$	0.53760	0.07276	0.16788	0.76554
$GROWTH_{it}^{a}$	0.17761	0.95633	−0.82442	33.680
$GROWTH_{it}^{b}$	0.12478	0.36205	−0.81034	7.0163
$GROWTH_{it}^{c}$	0.15120	0.52348	−0.61050	17.512
CF_{it}	0.09379	0.08205	−0.29626	0.65503
$SIZE_{it}$	12.1522	1.3263	7.2363	15.265

[a]Summary statistics of the variable computed for the long-term debt model.
[b]Summary statistics of the variable computed for the short-term debt model.
[c]Summary statistics of the variable computed for the total debt model.

of correlation between the instruments and the error term in all models. Finally, Tables V and VI provide two Wald tests, z_1, and z_2, of the joint significance of the reported coefficients and of the time dummies, respectively.

4. Results and discussion

Table V presents the estimation results of the general model in (6), and Table VI provides the results of the extended version in (7), which is used to examine the effect of financial distress on small firms' financial structure. The first and second columns of both tables report the long-term and short-term estimates, respectively, while the last column reports those of total debt. Additionally, Table VII summarizes the expected signs of the coefficients of the explanatory variables according to the expectations formulated in Section 2, as well as the signs

TABLE IV
Spearman correlations

	1	2	3	4	5	6	7	8	9
1. LTD_{it}	1.0000								
2. STD_{it}	0.0544	1.0000							
3.TD_{it}	0.3471	0.8497	1.0000						
4.$NDTS_{it}$	−0.0596	0.0490	−0.0805	1.0000					
5. FIC_{it}	0.1824	0.1073	0.1562	−0.1241	1.0000				
6. $(COLLAS/AT)_{it}^{a}$	0.0942	−0.3453	−0.3316	−0.0556	0.2008	1.0000			
7. $(COLLAS/AT)_{it}^{b}$	−0.0439	0.2971	0.2944	−0.0310	0.0127	0.7107	1.0000		
8. $(COLLAS/AT)_{it}^{c}$	0.0113	−0.0152	−0.0244	−0.1252	0.2345	0.1908	0.4915	1.0000	
9. $GROWTH_{it}^{a}$	0.0724	0.2221	0.1884	0.0839	−0.1403	0.0157	−0.0775	−0.1377	1.0000
10. $GROWTH_{it}^{b}$	0.0512	0.2040	0.1716	0.0684	−0.1302	0.1550	0.0621	−0.0994	0.0618
11. $GROWTH_{it}^{c}$	0.0738	0.2711	0.2297	0.0939	−0.1829	−0.1233	−0.0020	−0.1749	0.5201
12. CF_{it}	−0.1595	−0.0670	−0.2546	0.3982	−0.1454	0.2619	0.2770	−0.0469	0.1772
13. $SIZE_{it}$	0.1967	−0.1987	−0.1905	−0.0425	0.2426	0.2151	−0.1224	0.1031	−0.0036

[a]Spearman correlations of the variable computed for the long-term debt model.
[b]Spearman correlations of the variable computed for the short-term debt model.
[c]Spearman correlations of the variable computed for the total debt model.

TABLE V
Estimation of the general model

Dependent variable/explanatory variable	LTD_{it}	STD_{it}	TD_{it}
Constant	−0.00478 (0.01139)	−0.01594** (0.00702)	−0.02393* (0.00576)
$D_{i,t-1}$	0.50299* (0.04258)	0.36045* (0.05777)	0.38432* (0.03342)
$(NDTS/TA)_{it}$	−0.68007* (0.14721)	−0.023997 (0.24802)	−0.49947* (0.13202)
FIC_{it}	−0.21533* (0.08676)	0.10285 (0.09030)	0.18616* (0.05222)
$(COLLAS/TA)_{it}$	0.25307** (0.11945)	0.02138 (0.07638)	−0.00572 (0.09616)
$GROWTH_{it}$	0.03426 (0.02495)	0.03861** (0.01937)	0.06917* (0.001895)
CF_{it}	0.10332 (0.07357)	0.23981** (0.11104)	−0.55430* (0.06042)
$SIZE_{it}$	0.00067 (0.03111)	0.11935* (0.03811)	0.10778* (0.02237)
z_1	483.3464 (7)	54.3290 (7)	312.1662 (7)
z_2	18.5231 (6)	20.2501 (6)	36.8115 (6)
m_1	−6.540	−5.663	−6.089
m_2	−0.530	−0.899	−0.149
Sargan	87.1022 (93)	95.6933 (83)	109.6770 (98)

The dependent variable is the debt ratio, i.e. long-term (LTD_{it}), short-term (STD_{it}) and total (TD_{it}) debt ratios; $D_{i,t-1}$ stands for the lagged debt ratios; $NDTS_{it}$ are non-debt tax shields; FIC_{it} denotes ex-ante insolvency costs; $COLLAS_{it}$ are collateralisable assets; $GROWTH_{it}$ denotes rate of growth; CF_{it} stands for cash flow; and $SIZE_{it}$ is the logarithm of the firms' total assets, The regressions are performed by using the panel described in Table I. Further information needed to read this table follows. (i) Heteroskedasticity consistent asymptotic standard error in parentheses. (ii) *, ** indicate significance at 1% and 5%, respectively. (iii) 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, z_2 is a Wald test of the joint significance of the time dummies, degrees of freedom in parentheses. (iv) 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. (v) Sargan is a test of the over-identifying restrictions, asymptotically distributed as χ^2 under the null, degrees of freedom in parentheses.

obtained from the GMM estimation of the models.

4.1. *General models of financial structure*

As shown in Table V, transaction costs affect financial structure choices in small firms. The estimated coefficients on the lagged debt variables indicate that firms borrow to adjust their current debt levels to target ratios, and that transaction costs are responsible for any delay in this adjustment. Furthermore, as expected, the speed of adjustment towards long-term debt targets ($\alpha = 1 - 0.50299 = 0.49701$) is slower than that of short-term target ratios ($\alpha = 1 - 0.36046 = 0.63954$).

As expected, a negative relationship between non-debt tax shields and long-term debt, as well as between the latter and financial insolvency costs, is found. These results suggest that firms rebalance their financial structure by searching for a target level that is jointly determined by the existence of tax effects and insolvency costs. However, these hypotheses concerning tax and insolvency costs effects are not supported by the short-term debt model. That is, owners of small businesses do not appear to consider the trade-off between tax advantages and financial insolvency costs in their shorter term decisions. In fact, the lack of significance of both variables in the short-term borrowing was reasonably expected, since trade-off theories only hold if an extensive period is considered.

Collateralisable assets also play a role in determining the level of long-term debt in small firms. Consistent with van der Wijst and Thurik (1993), Chittenden et al. (1996), Michaelas et al. (1999) and Hall et al. (2004), we find a positive coefficient for the ratio of fixed to total assets. As a result, small firms offer their fixed assets as collateral for long-term debt finance. However, they do not need to issue short-term debt secured by current assets because, in this case, informational asymmetries and agency costs are not so significant and, consequently, lenders are not so unwilling to lend short-term funds to small firms.[11] Regarding the growth variable, our results are totally consistent with those of Hall et al. (2004) for the Portuguese case, revealing a positive coefficient in the short-term

TABLE VI
Estimation of the extended model

Dependent variable/explanatory variable	LTD_{it}	STD_{it}
Constant	0.00937 (0.01441)	−0.01845** (0.00825)
$D_{i,t-1}$	0.11564 (0.12152)	0.04008 (0.14471)
$FDD_{it}D_{i,t-1}$	0.40385* (0.15510)	0.34233**(0.15041)
$(NDTS/TA)_{it}$	1.04055 (0.88329)	−1.19846 (10.05287)
$FDD_{it}(NDTS/TA)_{it}$	−1.77894** (0.86462)	1.93224 (10.16254)
FIC_{it}	−0.06227 (0.12869)	−0.15797 (0.14473)
$FDD_{it}FIC_{it}$	−0.34677** (0.15778)	0.26156 (0.20488)
$(COLLAS/TA)_{it}$	−0.10876 (0.26835)	0.32750 (0.24953)
$FDD_{it}(COLLAS/TA)_{it}$	0.18675 (0.23480)	−0.25690 (0.23565)
$GROWTH_{it}$	−0.03741 (0.07118)	0.00304 (0.03680)
$FDD_{it}GROWTH_{it}$	0.05343(0.06472)	0.03446 (0.03911)
CF_{it}	−0.31917 (0.37920)	0.38440 (0.42837)
FDD_{it} CF_{it}	0.43001 (0.35509)	−0.74451** (0.31322)
$SIZE_{it}$	−0.02125 (0.03656)	0.14079* (0.05409)
$FDD_{it}SIZE_{it}$	0.00411 (0.00873)	−0.01081 (0.01484)
z_1	307.258 (14)	53.5734 (14)
z_2	18.5658 (6)	17.4560 (6)
m_1	−6.314	−4.899
m_2	−0.850	−0.904
Sargan	72.6885 (82)	83.4386 (71)

The dependent variable is the debt ratio, i.e. long-term (LTD_{it}) and short-term (STD_{it}) debt ratios; $D_{i,t-1}$ stands for the lagged debt ratios; FDD_{it} is a dummy variable that takes value one if the firm is financially distressed, and zero otherwise. $NDTS_{it}$ are non-debt tax shields; FIC_{it} denotes ex-ante insolvency costs; $COLLAS_{it}$ are collateralisable assets; $GROWTH_{it}$ denotes rate of growth; CF_{it} stands for cash flow; and $SIZE_{it}$ is the logarithm of the firms' total assets. The regressions are performed by using the panel described in Table I. Further information needed to read this table follows. (i) Heteroskedasticity consistent asymptotic standard error in parentheses. (ii) *, ** indicate significance at 1% and 5%, respectively. (iii) 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; z_2 is a Wald test of the joint significance of the time dummies; degrees of freedom in parentheses. (v) 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. (vi) Sargan is a test of the over-identifying restrictions, asymptotically distributed as χ^2 under the null, degrees of freedom in parentheses.

TABLE VII
Expected and obtained signs

Dependent variable/explanatory variable	LTD_{it} Expected signs	Obtained signs	STD_{it} Expected sign	Obtained signs
Panel A: General predictions and results				
$NDTS_{it}$	−	−	−	Non-significant
FIC_{it}	−	−	−	Non-significant
$(COLLA\ S/AT)_{it}$	+	+	+	Non-significant
$GROWTH_{it}$	−	Non-significant	+	+
CF_{it}	−	Non-significant	?	+
$SIZE_{it}$	?	Non-significant	?	+
Panel B: Predictions and results for financially-distressed firms				
$NDTS_{it}$	Non-significant	Non-significant	Non-significant	Non-significant
FIC_{it}	−	Non-significant	−	Non-significant
$(COLLA\ S/AT)_{it}$	Non-significant	Non-significant	Non-significant	Non-significant
$GROWTH_{it}$	Non-significant	Non-significant	Non-significant	Non-significant
CF_{it}	?	Non-significant	?	Non-significant
$SIZE_{it}$	?	Non-significant	?	+

model, but not significantly different from zero in the long-term model. Accordingly, we find that growing firms renounce long-term debt in favor of short-term loans when financing new investments in order to mitigate the underinvestment problem highlighted by Myers (1977).

Consistent with Chittenden et al. (1996), cash flow is not related to long-term debt but to short-term debt. The implication here is that small firms always substitute internal funds for their primary source of external funds; that is, short-tern borrowing.[12] In other words, any variation in cash flow, *ceteris paribus*, will be offset by changes in the level of short-term debt. This result is also explained by the lower transaction costs that firms bear when adjusting their levels of short-term debt towards their target ratios.[13]

Firms' size entered our models as a control variable. Its positive and significant coefficient in the short-term model corroborates that small firms will primarily finance their growth with short-term rather than long-term debt.

Finally, the results of the total debt model, displayed in the third column of Table V, indicate that this model is unsuitable for analyzing capital structure, since total debt distorts the effect of some of the explanatory variables on long-term and short-term debt. These results, which are in agreement with van de Wijst and Thurik (1993) and Chittenden et al. (1996), reveal that the maturity structure of debt must be analyzed, rather than focusing on its overall level. Note that the results of the total debt model show a mixture of the determinants of long-term and short-term debt ratios. However, our results for total debt, as well as those of van de Wijst and Thurik (1993) and Chittenden et al. (1996), are closer to the results of the short-term model than to those of the long-term model, probably as a consequence of the larger proportion of short-term debt in small firms' total debt.

In short, our results show significant differences in the determinants of long-term and short-term debt ratios in small firms. As discussed above, the explanatory variables considered in our models significantly influence the maturity structure of debt, and their effect on its total level is not reliable. Therefore, it does not make sense to analyze total debt levels; hence following the strategy in Hall et al. (2004), we will focus on long-term and short-term debt ratios in the remainder of our empirical analysis.

4.2. *The effect of financial distress*

Interestingly, we find significant differences in financial structure choices between distressed and non-distressed firms. As shown in the first and second columns of Table VI, there is no adjustment towards target debt levels in distressed firms. That is, the coefficients of the lagged variables for this category of firms, $(1 - \alpha)$, are not significantly different from zero in both the long-term and the short-term models. The implications are that financial structure decisions of financially distressed firms depend neither on debt levels of the previous period nor on target debt ratios. In other words, distressed firms seem to be disoriented and their behaviour appears to be random in their financial structure choices. In contrast, current debt levels in non-distressed firms continue to be the consequence of a partial adjustment towards target debt ratios. Moreover, corroborating the results of the general models, there is a faster adjustment to short-term target ratios ($\alpha' = 1 - 0.34233 = 0.65767$), since $(1 - \alpha)$ is not statistically significant) as compared to that of long-term debt targets ($\alpha' = 1 - 0.40385 = 0.59615$, since $(1 - \alpha)$ is not statistically significant).

The random behaviour of distressed firms is confirmed by the estimated coefficients of the remaining explanatory variables. On the one hand, the results in the first column of Table VI indicate that long-term debt in non-distressed firms is still negatively affected by non-debt tax shields ($\alpha\beta_2 + \beta_2' = -1.77894, \alpha\beta_2$ not significantly different from zero) and insolvency costs ($\alpha\beta_3 + \beta_3' = -0.34677, \alpha\beta_3$ not significantly different from zero).[14] However, none of these variables are statistically significant in explaining long-term debt levels of financially distressed firms. As expected, tax aspects no longer concern distressed firms and, surprisingly, nor do financial insolvency costs. The explanation for the lack of significance of these costs may be that, once the distressed situation becomes apparent, ex-ante insolvency costs cease to be a deterrent to the use of debt finance. Additionally, high leverage in small distressed firms is chronic, because of their difficulties in paying off leverage, and thus the negative effect of insolvency costs is removed. Also as expected, the level of fixed to total assets has no effect on long-term debt, which suggests that small distressed firms do not pay off their debt through asset sales. Consistent with Gilson (1997), our results indicate that financially distressed firms find it quite costly to sell assets, and they must either persuade their creditors to write off their claims, or sell new securities to lower their leverage.

On the other hand, similar results are obtained regarding short-term debt, since none of the variables that presented explanatory power in the general model are statistically significant for financially distressed firms. As shown in the second column of Table VI, short-term borrowing in non-distressed firms is still negatively affected by the level of cash flow ($\alpha\beta_6 + \beta'_6 = -0.74451, \alpha\beta_6$ not significantly different from zero),[15] while it is not affected by cash flow in distressed firms. The explanation for this lack of significance is that insolvent firms no longer pay for what they buy nor is it likely that they collect for what they sell. Under this premise, the amount of earnings before interests and taxes plus depreciation expenses and provisions does not reflect the real situation of a firm's cash inflows and outflows and, consequently, the cash flow variable does not capture internally generated funds.

Overall, we find that financial distress processes make it extremely difficult to explain the way in which firms adjust their leverage ratios towards their target levels. In fact, these firms seem to be disoriented and do not follow any pattern of debt policy, probably because they find numerous obstacles when adjusting their debt ratios and, more importantly, they can not appropriately react to their situation, given the pressure exerted on them by their lenders. Additionally, this random behaviour is supported by the remaining determinants of a firm's financial structure, since none of the explanatory variables considered in our models are accounted for in the decision-making process of financially distressed firms. Our evidence is thus consistent with Fazzari et al. (2000), who argue that when a firm faces a financial distress situation it loses its capacity to make financial decisions. A related interpretation can also be found in Allayannis and Mozumdar (2004), who reconcile the conflicting evidence in Fazzari et al. (1988, 2000) and Kaplan and Zingales (1997, 2000), by showing that excluding financially distressed firms from the analysis in Kaplan and Zingales (1997) leads to the same results as in Fazzari et al. (1988). That is, financial distress seems to be the cause of distortion in the financial behaviour of a firm.

5. Conclusions

In this paper, we investigate the financial structure of small firms by emphasizing the role played by financial distress. As a result, this paper provides additional evidence to previous research on the small business sector. We specified a model of debt adjustments, in which a firm's target debt level is endogenously determined by the main determinants of its financial structure. This model is then extended in order to examine the particularities of financially distressed firms when making their financial structure choices. These models have been estimated on a data panel of a sample of small Portuguese firms from 1990 to 1999 by the generalized method of moments. The sample and period under analysis allow us to appropriately account for the role played by insolvency in the decision-making process of small firms. In fact, the Portuguese economy experienced a period of recession between 1992 and 1997, during which the industries analyzed (textile, clothing and footwear industries) were especially affected by financial distress.

Two central conclusions are reached from the empirical analysis carried out in this study. First, there are major differences in the determinants of long-term and short-term debt ratios in small firms. This evidence underlines the analysis of the maturity structure of debt, since it makes no sense to focus on its total level. Specifically, the choice of long-term debt is strongly conditioned by the search for a trade-off between tax benefits and ex-ante insolvency costs, as well as by the liquidation value of the firm's fixed assets. On the other hand, short-term borrowing in small firms is positively affected by growth, and negatively associated with cash flow.

Second, there are also major differences between distressed and non-distressed firms. Particularly, small distressed firms seem to be totally disoriented when making their financial structure decisions, In fact, these firms do not follow any pattern of debt adjustment policy, probably because they lack the capacity to react to the financial distress situation. Consistent with this random behaviour, none of the determining factors accounted for in our analysis explain financial structure choices of financially distressed firms.

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Appendix A

Long-term debt ratio: $\text{LTD}_{\text{it}} = \frac{\text{BVLTD}_{\text{it}}}{\text{BVLTD}_{\text{it}}+\text{BVE}_{\text{it}}}$ where BVLTD_{it} and BVE_{it} are the book values of the long-term debt and equity, respectively.

Short-term debt ratio: $\text{STD}_{\text{it}} = \frac{\text{BVSTD}_{\text{it}}}{\text{BVSTD}_{\text{it}}+\text{BVE}_{\text{it}}}$ where BVSTD_{it} is the book value of the short-term debt.

Total debt ratio: $\text{TD}_{\text{it}} = \frac{\text{BVTD}_{\text{it}}}{\text{BVTD}_{\text{it}}+\text{BVE}_{\text{it}}}$ where BVTD_{it} is the book value of the total debt.

Non-debt tax shields: $\text{NDTS}_{\text{it}} = \text{EBIT}_{\text{it}} - \text{IP}_{\text{it}} - (T_{\text{it}}/t)$ where EBIT_{it} stands for the earnings before interest and taxes, IP_{it} the interest payable, T_{it} the taxes paid, and t the tax rate.

Ex-ante financial insolvency costs: $\text{FIC}_{\text{it}} = PI_{\text{it}} \frac{(\text{FA}_{\text{it}}+\text{BI}_{\text{it}})}{\text{TA}_{\text{it}}}$ where FA_{it}, BI_{it} and TA_{it} are the book values of the tangible fixed assets, inventories and total assets, respectively; and PI_{it} is the probability of financial insolvency.

To proxy the probability of insolvency, we follow the methodology developed by Pindado, Rodrigues and de la Torre (2004). This approach is based on Cleary (1999), who adapts Altman (1968), using a new methodology characterized by the use of stock variables at the beginning of the period and flow variables at the end of the period as explanatory variables. These variables are normalized by the replacement value of total assets at the beginning of the period, instead of the book value used by Cleary (1999). Like Pindado and Rodrigues (2004), the resultant model is more parsimonious than previous models that use discriminant or logistic analysis to obtain the probability of financial insolvency, PI_{it}. Specifically, the model proposed for proxying the probability of financial insolvency is as follows:

$$\begin{aligned}\text{Prob}(Y > 0) = \beta_0 &+ \beta_1 \text{EBIT}_{\text{it}}/\text{TA}_{\text{it}-1} \\ &+ \beta_2 \text{FE}_{\text{it}}/\text{TA}_{\text{it}-1} \\ &+ \beta_3 \text{CP}_{\text{it}-1}/TA_{\text{it}-1} + d_t + \eta_i + u_{\text{it}}\end{aligned}$$

The dependent variable is a binary variable that takes value one for financially distressed companies, and zero otherwise. Like Wruck (1990), Asquith et al. (1994), Andrade and Kaplan (1998) and Whitaker (1999), a firm is classified as financially distressed whenever their Earnings Before Interests, Taxes, and Amortizations are lower than their financial expenses. The explanatory variables included in the model are Earnings Before Interests and Taxes (EBIT_{it}), Financial Expenses (FE_{it}), and Cumulative Profitability (CP_{it}); all of them scaled by the book value of total assets at the beginning of the period ($\text{TA}_{\text{it}-1}$).

The econometric methodology used to estimate this model can be summarized as follows. Once the econometric specification of the model has been developed according to the financial theory, it is estimated by using panel data methodology (i.e., a panel data model with a discrete dependent variable) to check the robustness of the model by eliminating the unobservable heterogeneity. Next, the robust model is estimated in cross-section to incorporate the individual heterogeneity into the probability of financial insolvency provided by the logit model. Note that the values obtained for the probability of insolvency range from 0 to 1, thus it is a suitable index to proxy the probability of insolvency that stakeholders assign to each firm ex-ante.

Collateralisable assets: $\text{COLLAS}_{\text{it}}$ is computed as follows: $\text{FA}_{\text{it}}/\text{TA}_{\text{it}}$ in the long-term debt model, $(\text{BI}_{\text{it}}+\text{AR}_{\text{it}})/\text{TA}_{\text{it}}$ in the short-term debt model, and the average of the two in the total debt model, where AR_{it} stands for the book value of accounts receivable in *t*.

Growth rate: $\text{GROWTH}_{\text{it}}$ is computed as follows: $\frac{(\text{FA/TA})_{\text{it}}-(\text{FA/TA})_{i,t-1}}{(\text{FA/TA})_{i,t-1}}$ in the long-term debt model, $\frac{(\text{BI+AR/TA})_{\text{it}}-(\text{BI+AR/TA})_{i,t-1}}{(\text{BI+AR/TA})_{i,t-1}}$ in the short-term debt model, and the average of the two in the total debt model.

Cash flow: $\text{CF}_{\text{it}} = \text{EBIT}_{\text{it}} + D_{\text{it}} + P_{\text{it}}$ where D_{it} stands for the book depreciation expense corresponding to year *t*, and P_{it} are the different provisions reported in the profit and loss account.

Size: $\text{SIZE}_{\text{it}} = log(\text{TA}_{it})$

Notes

1 In a recent paper, Barclay et al. (2003) underline the joint determination of a firm's leverage and debt maturity according to its individual characteristics.

[2] All these variables are measured in book values and not in market values, since all the companies in our sample are small non-quoted firms.
[3] The subscript i refers to the company and t refers to the time period.
[4] The explanation of this classification scheme is that lenders consider a firm as financially distressed from the very first symptom of non-compliance with its financial obligations, and it is very hard for the firm to amend this impression even though, in subsequent periods, the firm recovers.
[5] A linear restriction test must be performed only in those cases in which both coefficients, for instance $(1 - \alpha)$ and $(1 - \alpha')$, are significant.
[6] Given the type of activity of the companies in our sample (textile, clothing and footwear industries), the costs that they would incur in case of financial distress, i.e. ex-post insolvency costs, are accurately captured by their fixed assets and inventories.
[7] In fact, this definition may be considered a simple and efficient way to asses the solvency deterioration of small firms (see Pindado and Rodrigues, 2004).
[8] As discussed in the introduction, not only the industries, but also the period used in this research is of special interest for the analysis of financial distress processes in the Portuguese economy.
[9] Since our model is in first differences, values of the right-hand side variables lagged two periods are valid instruments, as proposed by Anderson and Hsiao (1982). However, the efficiency of the estimation can be significantly improved by using all the orthogonality conditions that exist between lagged values of the right-hand side variables and the first differences of the error term. We thus follow this estimation strategy, proposed by Arellano and Bond (1991), which consists of using all the right-hand side variables lagged twice or more as instruments in order to improve efficiency.
[10] The estimation was carried out using DPD98 for GAUSS written by Arellano and Bond (1998).
[11] Particularly, as discussed in the introduction, banks are encouraged to offer short-term loans rather than long-term capital to small firms.
[12] Because of its easier availability, short-term debt is the most important source of external finance in small firms.
[13] It is worth pointing out that the motivation behind the pecking order theory is basically the existence of asymmetric information, which is not the most relevant problem either for small firms or in the short-term.
[14] The coefficient of collateralisable assets is no longer significant in the extended long-term model. A possible explanation is that this variable was the least significant in the general model, and the inclusion of the interactive terms has reduced even more its explanatory power in the extended model.
[15] As was true of collateral in the long-term model, growth is no longer significant in the extended short-term model, probably because it was the least significant explanatory variable in the general version.

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