Financing of SMEs: Do They Match Their Assets and Liabilities?

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Keywords: Capital Structure, SME, Financial Institutions
JEL classification codes: G21, G32

26 November 2010

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Abstract
For small and medium enterprises (SMEs), the various types of debt are not identical. There are specific costs and benefits associated with each funding source. Using a sample of Portuguese SMEs over the years 1990-2000, we show that the asset and liability side of the balance sheet are interrelated because the type of financing obtained depends upon the type of asset being financed. That is, SMEs often specifically match their assets and liabilities. There is no single weighted average cost of capital (WACC) for all projects, and in many instances the WACC will vary by asset or project. Finally, we argue that debt should be broadly defined to include all sources of funds other than equity.

The literature on capital structure has implicitly assumed that the choice between debt and equity depends solely upon firm characteristics, or the firm's demand for debt.[1] More realistically, Faulkender and Petersen (2005, p. 46) have recently shown that a firm's actual debt-equity structure depends "not only on the determinants of its preferred leverage (the demand side) but also the variables that measure the constraints on a firm's ability to increase its leverage (the supply side)." The realization that the supply of debt is not infinitely elastic at the correct price and that firms face capital constraints applies to most small and medium enterprises (SMEs). However, for these firms not all types of debt are identical and the source of funding could potentially vary on a project-by-project basis. Depending on the size of the project, its riskiness, and its time horizon, various sources of debt financing may be available at different costs, with each conveying its own particular set of costs and benefits to a firm. As a result, firms may choose a different mix of funding sources for each asset being financed—leading to a situation where firms match specific assets with a specific mix of liabilities.

This paper focuses on the relationship between company assets and type of debt used to finance each asset. We argue that institutions providing financing have different comparative advantages in solving asymmetric information problems and restructuring firms in financial distress. These different advantages give rise to two empirical observations: (1) different types of loans and/or institutions finance different types of assets, and (2) a single external source or type of funding is rarely sufficient to fund most projects. These considerations give rise to a mixture of financing in terms of sources and maturity—leading to a structure that is potentially different for each type of asset financed. We empirically test our theory of asset and liability matching using a unique sample of 1416 Portuguese SMEs over

[1]For example, Rajan and Zingales (1995) and Booth et al (2001) focus on the demand side of capital structure for large listed firms. Similarly, Cassar and Holmes (2003)], Michaelas and Chittenden (1999), and Daskalakis and Psillaki (2008) examine the demand for debt versus equity for SMEs.

the years 1990-2000. Our data categorizes the liabilities on the balance sheet by three sources of external funding [Other firms (Trade credits), Banks, and Other institutions (leasing, etc) and miscellaneous providers of finance], as well as by maturity [short versus long-term debt].

This paper extends the traditional theory of asymmetric information and financial distress to explain and test the financing of SMEs with respect to source and maturity of financing arrangements. It shows that the asset and liability side of the balance sheet are interrelated for many SMEs because the type of financing obtained depends upon the type of asset being purchased. We provide evidence that "other sources" are as important as banks and trade credits in financing of SMEs. Finally, our paper has implications for how capital structure is measured and how the Weighted Average Cost of Capital (WACC) is calculated. Briefly, all types of debt should be included in the "capital structure" decision and empirical studies should use broad measures of debt when calculating WACC. In some instances, one might use a separate WACC for each individual asset.

These empirical predictions have commonality with older theories advocating matching of cash flows as a mean of reducing risk. Whereas the older theories focused on risk, the theory presented in this paper draws on asymmetric information and costs of restructuring and financial distress. Under the static trade-off theory, an additional Euro or dollar of investment is financed by setting the marginal costs of each funding source equal. However, when matching assets and liabilities, constraints may prevent firms from reaching this equilibrium. Under the pecking order theory, firms exhaust the cheapest funding source first, then the second lowest cost source, and so forth, *regardless of the underlying assets being financed*. Under a theory of asset and liability matching, firms do not follow a general pecking order theory across all assets, although their behaviour could be consistent with having a specific pecking order among available financing sources for each individual project or asset.

The remainder of the paper is organized as follows: Section 1 discusses the theory of financing SMEs, Section 2 describes the data, Section 3 contains the empirical analysis, and Section 4 concludes the study.

1. Theories of financing and sources of funds

In a world of frictionless capital markets with no asymmetric information or agency costs, even small firms can fund all of their positive NPV projects. However, the presence of asymmetric information implies that outside lenders know less about the quality of the firm's projects than the firm. This problem has encouraged the development of specialized or differentiated financial markets and institutions[2].

Different institutions specialize in extending credit to various firms and in this context banks have some clear advantages in solving the asymmetric information problem for small firms[3]. Banks are involved in the payment function and often know cash inflows before the firms do [Mester, Nakamura and Renault (2001)][4]. These advantages are less for large firms since more information is public and they often have more than one banking relationship. Since bond financing is less costly than bank loans, large firms are more likely to borrow from financial markets than from financial institutions [Faulkender and Petersen (2006)]. Financial institutions also have advantages in solving moral hazard problems (ex-post contractual problems). By offering both short-term lines of credit and long term loans, banks can withdraw funds and/or renegotiate the conditions and interest rates if the firm engage in "moral hazard" actions (risk shifting etc.). Creditors in financial markets, on the other hand, have to rely on covenants negotiated ex-ante since it is nearly impossible to renegotiate the

[2] See, for example, Leland and Pyle (1977)], Diamond (1984), Ramakrishnan and Thakor (1984) , Fama (1985), Haubrich (1989), and Diamond (1991).
[3]The asymmetric information problem is discussed by Carey, Post and Sharpe (1998), Fama (1985), and James (1987).
[4] The importance of such relationships between lenders and borrowers has been documented by Hoshi, Kashyap and Scharfstein (1990a, 1990b), Petersen and Rajan (1994, 1995) and Berger and Udell (1998).

terms of corporate bonds ex-post. To the extent that banks are successful ex-post monitors and reduce the moral hazard problems, then bank debt becomes the preferred source of external capital.

Different institutions have comparative advantages in resolving financial distress, including the restructuring of firms [Rajan (1992), Bolton and Scharfstein (1996), and Bolton and Freixas (2000)]. The advantage of banks is that they are informed through their monitoring function, allowing for efficient renegotiation that avoids costly liquidation. Good quality firms with volatile earnings value the option of renegotiation higher than firms with smoother earnings and lower likelihood for negotiation. Thus, smaller firms generally prefer bank debt. Leasing companies (often subsidiaries of banks) are a particular efficient way of minimizing the costs of financial distress. If the firm misses payments, the asset still belongs to the leasing company and it can be repossessed.

Although most of the capital structure literature focuses on one homogeneous source of debt and the general debt-equity trade-off, articles such as Bolton and Freixas (2000) examine the choice between bonds, bank loans, and equity. Berger and Udell (1998) have shown that different capital structures are optimal during different stages in the growth cycle of a firm. Taking this argument one step further, we argue that different capital structures are optimal for funding different assets, even at a given point in time. Some funding sources are better than others for financing certain assets and each financing source may have its own collateral (which for some assets may only be the future earnings of the firm).

[Insert Table 1 here]

[Insert Table 2 here]

1.1 Sources of funds for Portuguese SMEs

As shown in Table 1, the owners of the Portuguese firms in our sample provide nearly half (46-49%) of their firm's required capital as equity[5]. Banks provide 16-20% of SME funds, and as shown in Table 2, about half of the bank loans are long-term and half are short-term. Trade credits from suppliers constitute from 10% to 14% of SME funds, while other institutions (including leasing and factoring) account for 14 -16% of funds. The remaining 6% to 8% of funding for Portuguese SMEs comes from provisions and accrued expenses. Provisions probably can be added to internal equity, while accrued expenses are short-term liabilities recognized this year for expenses that will occur next year (e.g., vacation subsidies, social expenses, and rent). Accrued expenses could be funded using any source.

Tables 1 and 2 show average liabilities for common size balance sheets across all Portuguese SMEs, but each firm obtains its own financing from a variety of sources of debt. For almost all firms, the debt-equity trade-off involves non-homogeneous debt because the various sources have different advantages for funding different assets. While Johnson (1997) has shown that various firm characteristics representing monitoring and information costs, financial distress costs, and borrowers incentives affects the debt source preferences, we argue that the investment decision can be linked directly with the preferred source of debt.

1.1.1 Internal equity

Owners of SMEs often work in the company and internal equity can be easily generated by drawing less salary and/or keeping dividend payments down. The first role of equity for SMEs is the same as for larger companies--reducing the probability of default. For SMEs equity also has an important role in solving the asymmetric information problem. Since owners usually work in the company, they send a strong signal if they are willing to forego

[5] The details of the sample are discussed in Section 2 below.

investment in other assets [diversification as argued by Leland and Pyle (1977)] to invest in the company. Thus, internal equity should be the primary funding source for assets with the most asymmetric information--intangible assets. In descending order of importance, internal equity would then be used for tangible assets and then for working capital.

1.1.2 Trade credits

Trade credits represent financial services provided by other firms in competition with financial intermediaries. In a simple trade credit contract, the firm gets a discount if it pays within e.g. 30 days, and a penalty for late payments. Thus, the firm has the option of cheap financing if it pays on time and expensive financing if it delays payment. The literature, in general, identifies two motives for trade credits: a strategic and a financial motive.[6] Strategically, trade credits are a signal that helps solve the asymmetric information problem regarding the firm's products. Trade credits permit the buyer to verify the quantity and quality of a firm's products before submitting payments. Trade credits help establish long-term relationships between suppliers and buyers. The financial motive for trade credits is that firms compete with financial institutions in offering credit to other firms. Petersen and Rajan (1997) argue that suppliers have a closer relationship with the producing firm than the bank and a more likely to know about a firm's business conditions. The use of early payment discounts also provides the supplier with an indication of credit worthiness.

The supplier may have advantages over financial institutions in collecting payments. If the supplier has a local monopoly for the goods, then the ability to withhold future deliveries is a powerful incentive for the firm to pay. In case of default, the supplier can take back the goods and resell them easier than a financial intermediary reclaiming the same goods. Due to supplier's general knowledge of the firm and the industry, the level of asymmetric

[6] For a more general and broader discussion of trade credits see Smith (1987) and Petersen and Rajan (1997).

information is relatively low between the providers of trade credits and the borrowers and it is an efficient source of funding for current assets, such as inventories. However, the firm can overdraw these credits, which as discussed below, can become expensive.

1.1.3 Expensive trade credits and other loans

The firm can delay payment on their trade credits. However, this is expensive since it involves giving up the discount and perhaps incurs penalty payments. Use of expensive trade credits affects reputation and it may reduce access to future trade credits. Overdrawn trade credits also send a signal to the bank which may increase the costs of bank financing. In general, firms shout avoid expensive trade credits and treat them as a financing source of "last resort".

1.1.4 Bank loans

Banks have information about the general financial health of the firm whereas providers of trade credit have specific information about the conditions in the industry and the general competitive position of the firm. Banks collects the information through due diligence and through the transactions accounts of the firm. Although providers of trade credits have an advantage over banks in assessing the value of the collateral they have themselves delivered, banks have an advantage in selling general collateral such as buildings, machinery etc. Banks therefore prefer to issue loans using tangible assets as collateral. Due to asymmetric information, small firms and high growth firms may have to provide considerable internal equity to convince the bank to extend loans for some tangible assets. Overall, however, banks are likely to be a major provider of capital for the purchase of tangible assets for SMEs.

Short-term bank loans serve different purposes. The first is the simple provision of liquidity, e.g. to bridge seasonality in payments. The second is financing accounts receivable,

translated as debtors on Portuguese balance sheets. Banks have a comparative advantage in evaluating the creditworthiness of the debtors, because for a large bank several of the debtors may be bank customers. Finally, short-term bank loans can be issued in conjunction with long term bank loans to finance tangible assets. This provides the bank with an easy option to stop unprofitable projects. Thus, short term bank loans may be used for a variety of purposes—short-term liquidity, to finance debtors, financing tangible assets, and tangible assets.

1.1.5 Other non-current liabilities (leasing)

The balance sheets of Portuguese SMEs (Table 2) contain two items for miscellaneous long- term debt labelled "Long-Term Debt Other" and "Other Non-Current Liabilities". "Long-term Debt Other" may contain car or equipment loans which are more expensive than bank loans. "Other Non-Current Liabilities" contains, among other items, leasing contracts and factoring. Leasing is an efficient way of resolving financial distress because the lessor can simply retrieve the asset when payments are missed. "Other Non-Current Liabilities" are expected to primarily finance Tangible Assets.

1.1.6 Other short-term debt

Just as with long-term debt, there are also two items, "Others" and "Other Current Liabilities" under short-term liabilities. Factoring, or the sale of receivables for immediate funds is included in "Other Current Liabilities", but little information about the content of these two accounts is provided on the financial statements.

[Insert Table 3 here]

1.2 Uses of funds by Portuguese (industrial) SMEs

The uses of funds are shown in Table 3. On average, tangible assets comprise about 40% of total assets, intangible assets represent 2%, and investments account for about 10% of total assets. About 50% of firm assets are current assets—primarily consisting of debtors (about 25%) and inventories (about 15%). Cash is about 3%-4% of total assets, while stocks or liquidity and prepaid expenses comprise the remaining 2% of total assets.

To reiterate the discussion above, intangible assets are associated with asymmetric information and are expected to be funded primarily by internal equity and secondarily by bank loans. Tangible assets have less asymmetric information and they are better collateral than intangible assets. Since the use of some internal equity conveys an important signal, some internal equity will be necessary to finance tangible assets. Provided that sufficient internal equity is provided, the primary funding sources for most tangible assets will be long-term debt combined with some short-term bank loans to solve the moral hazard problem. Leasing, which is included in "Other non-current Liabilities" is a secondary avenue for financing tangible assets.

Investments include holdings of real estate, stocks, bonds and investments in subsidiaries. Thus these are long-term investments with various degrees of asymmetric information and collateral value. Internal equity and long-term bank debt are probably the primary sources for this type of financing.

Liquid assets, which include cash and cash equivalents and stocks (liquidity), have very little asymmetric information and are expected to be funded primarily short-term and perhaps long-term bank loans.

The data on inventories does not distinguish between own produced goods and goods purchased from other suppliers. Since trade credits are quite efficient, they would be expected to be used to finance goods and serviced purchased from other firms. For own produced

goods, there is an asymmetric information problem likely requiring some combination of internal equity and short-term bank loans.

For debtors, or accounts receivable, banks have comparative advantages in assessing credit and short-term bank loans would be expected to be the primary financing source. However, some internal equity might be necessary if there is considerable uncertainty about payments being made. If the firm uses factoring, then Other Short Term Debt could become a major source of financing. To the extent that the preferred sources are insufficient for financing, firms will overdraw their trade credits.

In the discussion above, each asset is hypothesized to have its own primary and secondary sources of funding and different assets have different capital structures. In the pecking order theory [Myers and Majluf (1984)], firms add up external funding needs and then choose the cheapest funding source first, regardless of the use of the funds. They exhaust this source and move this one, and then to the next one, etc. Our theory does not preclude pecking order financing, but if it is followed, there may be a separate pecking order for the financing of each type of asset. The other popular theory about capital structure is the static trade-off theory whereby the cost of financing is determined by expected bankruptcy costs and agency problems. In this theory, firms choose financing so that the marginal cost of each source is equal. At equilibrium, a firm is indifferent between borrowing a new Euro of funds from any of the financing sources. As with the pecking order theory, this theory could be consistent with our model if each type of asset has its own static trade-off representing the relative costs from bankruptcy, asymmetric information and agency problems.

2. Data

[Insert Table 4 here]

The primary data source for this study is the Bank of Portugal Statistical Departments database. This database contains balance sheet and income statement data on 1,811 non-listed

firms with 11,359 non-continuous firm year observations. Several selection criteria were imposed for inclusion in the sample: Only manufacturing firms for the period 1990-2000 with more than 100 employees for at least one year are included. This restriction minimizes the number of cases where the personal wealth of the owner or the owner's family is used to guarantee loans of the firm. Firms with negative net worth and less than three continuous data years are not included in the sample. Firms with observations lying at each tail of the distribution are deleted from the sample. Specifically, a firm is deleted if it has observations in either tail (0.5%) of the distribution. The final sample consists of 1416 firms and 7546 firm year observations. From Table 4, 271 firms have data for the entire sample and about 200 firms have data for one or two years only.[7] Around 100 firms have consecutive data for 4 to 9 years. Thus, the dataset is overweighting firms with only a few years of observations and firms with data for the entire period.

[Insert Table 5 here]

From Table 5 the number of observations is well distributed among the years with between 700 and 800 observations for each year. An examination of the Bank of Portugal Statistical Departments database indicates that our sample is fairly representative of the structure of the Portuguese economy. Looking at the distribution of observations across industries, "Textiles and clothes" includes about a third of the total observations, whereas "Heavy industry" and "Wood and paper paste" each only contain about 15% of total observations.

[7] Note that only 10 years of data are used in Tables 4 and 5 and throughout the rest of the paper. Since the models involve changes in assets and liabilities, data for the first year (1990) can only be used as an input to construct changes in the next year (1991).

2.1 Common size balance sheets

The common size balance sheet in Tables 2 and 3 indicate that Portuguese firms have close to 50% equity, which is similar to levels reported by Berger and Udell (1998) for SMEs in the US. In contrast, Rajan and Zingales (1995) report that large listed firms in the G7 countries have equity percentages ranging from 28% in Germany to 42% in the UK.

The amount of current liabilities for Portuguese SMEs ranges from 33% to 40% of assets. For G7 countries, it ranges from 23% for Canada to 43% for France. The composition of current liabilities is dominated by bank loans (between 8% and 13%) and trade credits (between 8% and 14%), while other liabilities represent about 10% of total assets. Banks provide 9% to 13% of common-size long term debt and overall banks or financial institutions account for 20 to 25% of SME financing in terms of loans. This is virtually identical to Berger and Udell (1998) who found that banks account for 25% of US small business financing. Trade credits of 10% to 14% of funding are only slightly smaller than the 15% number reported by Berger and Udell (1998) for the US. Overall, it appears that SME's in Portugal are financed much like SMEs in the US, but different from large listed firms in the G7.

2.2 Estimating trade credits

Table 1 indicates that Trade Credits are one of the main funding sources for Portuguese SMEs. A standard textbook trade-credit contract is typically quoted as 2-10 net 30. The contract has a discount rate of 2% if the customer pays the bill within 10 days. Otherwise, the full amount is due in 30 days. The contracts in Portugal are simpler than standard contracts. A quote of 2 net 30, for example, means the customer receives the full 2% discount if the bill is paid within 30 days.[8] The customer forgoes the discount and often pays a penalty rate if

[8] Evidence from a "non-scientific" phone survey to randomly selected firms in each industry.

payments are not made by the due date.[9] At some point beyond the due date, the firm extending credit may start legal proceedings to collect the debt. According to Eurofactor (2006), the average payment period for Portugal was 53 days in 2003 [equivalent to the UK, based on Poutziouris, Michaelas and Soufani 2005)], and the average late payment was 45 days beyond the due date.[10] Since 88% of the companies in Portugal start the debt recovery process after, on average 42 days, it appears that the threat of starting debt recovery process encourages rather quick payment on late accounts.

In theory, the definitions of cheap and expensive trade credits are straight forward, if the number of credit days is larger than specified in the contract, then the trade credits are expensive. If payments are made on time, they are classified as cheap trade credits. The balance sheet does not provide information about the cost of trade credits or the terms of the contracts. However, we may be able to distinguish between cheap and expensive trade credits by estimating three numbers: the current "age" of Trade Credits on the balance sheet, the terms (number Trade Credit contracts in the industry), and the standard deviation of the number of credits days for in each industry . This process is shown in detail in the appendix. First, the number of credit days for firms in our sample is shown in Figure 1. It is calculated as the

[Insert Figure 1 here]

value of trade credits divided by the cost of goods sold divided by 365. The distribution of credit days is right-skewed, as shown in Figure 1. Thus, as a point estimate of the number of credit days in the Trade Credit contract for each industry, we use the most common number of credit days for that industry (mode). Finally, since there are random fluctuations in the

[9] Eurofactor (2006) reports that 22% of Portuguese companies imposed late payment charges in 2005 and that 93% of these companies actually collected late payment penalties.
[10] It is not possible to obtain survey evidence for the sample period 1990-2000, thus we have to rely on later periods for "validation" of the method used.

numbers reported, we need to calculate the standard deviation of the number of credit days. The left-side semi-variance is used to calculate the variance of the distribution of credit days for a given industry. If the "age" of the Trade Credits reported on the balance sheet is greater than estimated contract terms, or credit days plus an amount added to account for uncertainty in reporting, then the Trade Credits on the balance sheet are classified as Expensive. Otherwise, trade credits are classified as Cheap and the distinction between Expensive and Cheap trade credits may be summarized as follows:

[11]:

$$if\ \ actual\ credit\ days > contract\ credit\ days + 1.96\sigma \ \Rightarrow Expensive\ trade\ credit$$
$$if\ \ actual\ credit\ days < contract\ credit\ days + 1.96\sigma \ \Rightarrow Cheap\ trade\ credit.$$

[Insert Table 6 here]

Table 6 indicates that there is a large variation in the use of expensive trade credits across industries. In the Machinery and equipment industry only 8% of the firms make use of expensive credits; whereas for Food and Drink and Heavy Machinery about 47% of the firms make use of expensive credits. A survey by Howorth and Reber (2003) indicates that 57% of SMEs in the UK occasionally pay their creditors late, while Ng, Smith and Smith (1999) report that 30% of US firms do not claim the trade credit discount. Thus, it appears that our estimates for Portugal are below those for the UK, but generally in line with survey evidence about the prevalence of cheap versus expensive trade credits.

3. Empirical evidence

When a firm needs an additional Euro of financing, it will approach different institutions depending on the use of the funds. As previously discussed, the primary sources of funds are given by internal funds (equity), cheap and expensive trade credits, long and short-term bank

[11] Details about these calculations are presented in the appendix.

loans, other non-current credits, and other long-term credits. The annual change in each source of funds is determined by funding requirements on the asset side of the balance sheet for intangible assets, tangible assets, investments, and changes in working capital (liquid assets + debtors +inventories). The economic intuition behind the system is that the firm generates the projects requiring financing and then approaches the financial institutions for funding. Causation is from the projects/assets to financing. Based on this notion, we set-up a system of equations where the change in assets requiring funding are the dependent or right-hand side variables. The changes in the various types of liabilities are the left-hand side, or independent variables of this simultaneous system of equations.

$$\Delta EQ_{it} = \alpha^{Eq} + \beta_1^{Eq}\Delta Inv_{it} + \beta_2^{Eq}\Delta Intan_{it} + \beta_3^{Eq}\Delta Tan_{it} + \beta_4^{Eq}\Delta Liquid_{it} + \beta_5^{Eq}\Delta Debtors_{it} + \beta_6^{Eq}\Delta Inven_{it} + \varepsilon_{it}$$

$$\Delta CTC_{it} = \alpha^{Eq} + \beta_1^{Eq}\Delta Inv_{it} + \beta_2^{Eq}\Delta Intan_{it} + \beta_3^{Eq}\Delta Tan_{it} + \beta_4^{Eq}\Delta Liquid_{it} + \beta_5^{Eq}\Delta Debtors_{it} + \beta_6^{Eq}\Delta Inven_{it} + \varepsilon_{it}$$

$$\Delta STB_{it} = \alpha^{STB} + \beta_1^{STB}\Delta Inv_{it} + \beta_2^{STB}\Delta Intan_{it} + \beta_3^{STB}\Delta Tan_{it} + \beta_4^{STB}\Delta Liquid_{it} + \beta_5^{STB}\Delta Debtors_{it} + \beta_6^{STB}\Delta Inven_{it} + \varepsilon_{it}$$

$$\Delta OST_{it} = \alpha^{OST} + \beta_1^{OST}\Delta Inv_{it} + \beta_2^{OST}\Delta Intan_{it} + \beta_3^{OST}\Delta Tan_{it} + \beta_4^{OST}\Delta Liquid_{it} + \beta_5^{OST}\Delta Debtors_{it} + \beta_6^{OST}\Delta Inven_{it} + \varepsilon_{it}$$

$$\Delta ETC_{it} = \alpha^{ETC} + \beta_1^{ETC}\Delta Inv_{it} + \beta_2^{ETC}\Delta Intan_{it} + \beta_3^{ETC}\Delta Tan_{it} + \beta_4^{ETC}\Delta Liquid_{it} + \beta_5^{ETC}\Delta Debtors_{it} + \beta_6^{ETC}\Delta Inven_{it} + \varepsilon_{it}$$

$$\Delta LTB_{it} = \alpha^{LTB} + \beta_1^{LTB}\Delta Inv_{it} + \beta_2^{LTB}\Delta Intan_{it} + \beta_3^{LTB}\Delta Tan_{it} + \beta_4^{LTB}\Delta Liquid_{it} + \beta_5^{LTB}\Delta Debtors_{it} + \beta_6^{LTB}\Delta Inven_{it} + \varepsilon_{it}$$

$$\Delta ONC_{it} = \alpha^{ONC} + \beta_1^{ONC}\Delta Inv_{it} + \beta_2^{ONC}\Delta Intan_{it} + \beta_3^{ONC}\Delta Tan_{it} + \beta_4^{ONC}\Delta Liquid_{it} + \beta_5^{ONC}\Delta Debtors_{it} + \beta_6^{ONC}\Delta Inven_{it} + \varepsilon_{it}$$

$$\Delta LDO_{it} = \alpha^{LDO} + \beta_1^{LDO}\Delta Inv_{it} + \beta_2^{LDO}\Delta Intan_{it} + \beta_3^{LDO}\Delta Tan_{it} + \beta_4^{LDO}\Delta Liquid_{it} + \beta_5^{LDO}\Delta Debtors_{it} + \beta_6^{LDO}\Delta Inven_{it} + \varepsilon_{it}$$

The notation for the changes in annual funding from each of the sources is EQ = internal equity, CTC = cheap trade credits, LTB = long term bank loans, ONC = other non-current liabilities, STB = short term bank loans, OST = other short-term loans, LDO = long-term debt other, and ETC = expensive trade credits. The right-hand side variables are changes in Inv= investments in long-term financial assets, Intan = intangible assets, Tan = tangible assets, Liquid = cash and liquid investments, and Inv = inventories. This system is estimated using seemingly unrelated regression with the equation for prepaid expenses and provisions left out.

[Insert Table 7 here]

3.1 Tests for independence

The first question examined is whether the asset side of the balance sheet is independent of the liability side. Independence can be viewed in two different ways. First, if the financing of an asset is independent of the type of asset in question, then an increase in any asset (e.g. tangible assets) should have the same impact on a funding source (e.g. long-term bank debt) as an increase in another asset (e.g. intangible assets). The hypothesis becomes a test of the following linear restrictions applied to each individual equation, or source of funds, such that:

$$\beta_1^j = \beta_2^j = .. = \beta_8^j \text{ where j = EQ, CTC, LTB, ONC, STB, OST, LDO and ETC.}$$

From Table 7 it is clear that this restriction is rejected for each type of debt.

The other way of looking at independence is by using the static-trade-off model. At equilibrium, if the model holds, the marginal costs of 1 Euro of debt should be equal for each type of debt. At the margin, an investment of 1Euro in say tangible assets should be financed by an equal amount from each source of funds. For the system of equations, the static trade-off model is a test of the cross equation restrictions on each type of asset as follows:

$$\beta_i^{EQ} = \beta_i^{CTC} = ... = \beta_i^{ETC} \text{ where i =1,..,6}$$

Again, from Table 7, these restrictions are rejected for each type of asset (as well as jointly across all the assets). Thus, both independence and the static-trade-off theory are rejected for the sample at hand.

The second question to examine is the more fundamental question of what constitutes debt in the capital structure decision. The main issue is whether short term debt is part of the capital structure decision or if it is only part of working capital. Reflecting the lack of guidance from the theoretical literature on capital structure, some researchers only include long-term debt in the capital structure, some include a portion of short-term debt, and others consider all forms of short-term and long-term debt as debt in the capital structure. Thus, the

broadest measure of the debt ratio would be total liabilities divided by total liabilities plus net worth.[12]

Under a narrow interpretation of debt, cheap trade credits, short-term bank loans, other short debt, and expensive trade credits should only finance working capital. This restriction is given by:

$$\beta_1^{CTC} = \beta_2^{CTC} = \beta_3^{CTC} = \beta_1^{STB} = \beta_2^{STB} = \beta_3^{STB} = \beta_1^{OST} = \beta_2^{OST} = \beta_3^{OST} = \beta_1^{ETC} = \beta_2^{ETC} = \beta_3^{ETC} = 0$$

and the restriction that long-term bank loans and other long-term debt should only finance intangible and tangible assets is given by:

$$\beta_4^{LTB} = \beta_5^{LTB} = \beta_6^{LTB} = \beta_4^{ONC} = \beta_5^{ONC} = \beta_6^{ONC} = \beta_4^{LDO} = \beta_5^{LDO} = \beta_6^{LDO} = 0$$

From Table 7, both of these restrictions are strongly rejected. Thus, all types of debt are part of the capital structure decision and empirical studies should adopt broad debt measures containing all types of debt (short-term, long-term, trade credits, etc).

[Insert Table 8 here]

3.2 Funding for individual assets

Based on the theory of asymmetric information and financial distress in section 1, we developed a set of predictions of how and additional Euro of an individual assets would be financed.

- *Intangible assets* have a large amount of asymmetric information and no collateral value and should be financed primarily financed by internal equity. From Table 8, a one Euro investment in intangible assets will increase internal equity by 0.7188. Coefficients for other funding sources are quite small and only marginally significant (at the 10% level) from other sources.

[12] For example Rajan and Zingales [1995] and Booth, Aivazian, Demirguc-Kunt and Maksimovic [2001].

- *Tangible Assets* have some asymmetric information. They have a collateral value, but there may be agency and moral hazard problems, so we expect a mixture of internal equity, long-term bank debt, short-term bank loans, other short-term loans, other non-current liabilities (leasing). A one Euro investment in tangible assets is financed by Euro 0.35 in internal equity, Euro 0.17 in long-term bank loans, Euro 0.13 in other non-current liabilities, and Euro 0.13 in short-term bank loans. However, it also appears that firms are somewhat constrained in their financing of tangible assets since Euro 0.1 comes from the most expensive type of financing--expensive trade credits.
- *Investments* in real estate, stocks, bonds, and subsidiaries are made for a variety of motives and the preferred financing source may vary with the type of investment. Predictions for this category are not clear cut. One might expect a variety of financing sources and Table 8 shows that all financing sources except trade credits are used to fund additional investments. The two main financing sources are internal equity (18%) and long-term bank loans (61%).
- *Liquid assets* are financed by primarily internal equity (39%) and short-term other loans (15%). An unexpected result is that 8% of additional liquid assets are financed by expensive trade credits. It is unclear why any firm would use expensive financing for liquid assets. Notice that 19% of the financing is obtained from various long-term financing sources--rejecting the notion that we can separate the financing of working capital from long term sources of debt.
- *Debtors (accounts receivable)* are financed using other non-current liabilities (36%) which may be from long-term factoring contracts, internal equity (17%), and short-term bank loans (11%) as would be expected. Cheap trade credits provide 7% of funding, while expensive trade credits contribute 13%. Thus, it appears that

Portuguese firms may have to extend their own trade credits to finance their own customers.

- *Inventories,* both finished goods and supplies, are financed by 14% from cheap trade credits and 20% from expensive trade credits. The other main funding sources are short-term bank loans (18%) and short-term other loans (23%). Long term financing sources only have a minor role, supporting the standard practice of separating the financing of working capital and long-term assets.

The predictions from section 1 are generally confirmed because each asset appears to have its own capital structure. Thus, different projects should apply different WACC's since the cost of debt is likely to vary depending on the composition of assets in the project.

4. Conclusion

This paper has developed a theory of capital structure for SMEs based on asymmetric information and the costs of financial distress. The theory generally explains SME financing in terms of maturity of debt as well as institutional provider of the debt. The theory has been tested on a unique dataset of 1416 Portuguese SMEs over the period 1990-2000.

The existing literature on capital structure and SMEs has focused primarily upon the choice of debt versus equity and secondarily on the role of banks in financing SMEs. We have shown that other sources, including leasing and factoring, provide nearly as much financing as the traditional banking system. Also, different institutions and financing sources generally fund different assets.

In terms of capital structure research, we have shown that firms finance long term assets using both short-term and long-term debt. Some implications from our study is that all types of debt are part of the capital structure decision, and that empirical studies should use

broad debt measures in calculating the weighted average cost of capital. Finally, the asset and liability sides of the balance sheet have been shown to not be independent of one another. A firm may choose a unique capital structure to fund each asset. Thus, Portuguese SMEs do appear to match their assets and liabilities.

Appendix

First, an estimate of the number of credit days is:

$$\text{Credit days} = \frac{\text{trade credits}}{\text{cost of goods sold} / 365},$$

where trade credits are obtained from the balance sheet at the end of each fiscal year and cost of goods sold is an annual flow measure taken from the income statement. The number of credit days is a point estimate based on the value of trade credits at the end of the fiscal year. This number may, or may not, be a good estimate of the average amount of trade credits throughout the year. If there is seasonality in the purchase of goods and services, then the estimate will be a function of the time of measurement. Consider an extreme example of a toy store that always pays at the due date of say 90 days and stock for the Christmas trade in November. If the fiscal year ends in November, then the amount of trade-credits is very large and the estimate of credit days will be correspondingly large; whereas if the fiscal year ends in February, then the estimate of trade credits will be very small. Even in a sample where all firms pay at the due date, the point estimate will show significant variation due to random or seasonal variation in the amount of trade credits depending on the time of measurement.

The second estimate we need is of the standard contract terms in the industry. We have only a point estimate of the actual credit days at the end of the fiscal year for each company. There are two factors influencing the number of actual credit days. The first is seasonality as discussed above. If the firm pays on time then our point estimate will fluctuate randomly around the number of days specified in the contract (a normal or symmetric distribution). This suggests using the average number of actual credit days for each industry as an estimate of the normal contract for the industry. However, the sample also includes firms that delay payments on the trade credit. The existence of firms with late payments

influences that right hand side of the distribution and makes the distribution look like a log-normal distribution. The mean and median number of days in the sample is influenced by the number of firms in the sample that delay payment and cannot be used as an estimate of the terms of the contract.[13] Instead we assume that most firms choose to pay on time, i.e. at the end of the contract and they claim the discount. We use the most common number of actual credit days as an estimate of the number of credit days written into the contract for a given industry. The problem of seasonality and randomness in the estimate of actual credit days still exists. As shown in the toy store example above, the number of credit days estimated from the balance sheet may exceed the number of days specified in the contract even if the firm pays on time. Thus, the influence of seasonality and randomness needs to be removed to isolate the firms with late trade credit payments. Since the right hand of the distribution is influenced by the number of firms with late payment, it is not possible to use the entire distribution to estimate the variance of the number of actual credit days of firms that pay on time. However, it is possible to use the left hand side of the distribution because late payment firms are not found there.

Thus the semi-variance is estimated using the left hand side and converted to the variance for the distribution by multiplying by 2:

$$\sigma = \sqrt{\frac{2}{T^{-}}\left(\sum_{t}^{T^{-}} Min(0; actual\ \ credit\ \ days\text{-}contract\ days)^2\right)}$$

It is now possible to estimate cheap and expensive trade credit for each firm in the sample:

$$if\ \ actual\ credit\ days > contract\ credit\ days + 1.96\sigma \ \Rightarrow Expensive\ trade\ credit$$
$$if\ \ actual\ credit\ days < contract\ credit\ days + 1.96\sigma \ \Rightarrow Cheap\ trade\ credit$$

[13] If one is willing to assume a log-normal distribution then it is possible to obtain an estimate of the first moment of the distribution from the average. However, here we choose to use a simpler method that does not rely on the properties of the distribuition.

The average number of actual credit days for the entire sample is provided in Figure 1 of the text. The median number of days is 92 and the average is 106. The mean is larger than the median reflecting that the distribution is skewed to the right due to late payments. Eurofactor (2006) reports an average number of credit days of 83 days for 2005, showing that the number of credit days have declined over time. A priori, we would expect most firms to exploit the discount and pay on time. Thus an estimate of the due date can be obtained by looking at the most common number of credit days (the tallest column in the figure). For the entire sample this is between 75 and 85 days. For 2005, Eurofactor (2006) reports an average number of credit days from contracts of 53—so there has been a decrease in actual and contract credit days over time.

[Insert Table 1A here]

The estimate for the contract days for each industry is provided in Table 1A and is based on the most common number rounded to an even number (30, 40, ...).[14] The standard deviation ranges from 13 to 52 days. The cut-off days for cheap credit (i.e., if the number of credit days is larger than this number of days, then the trade credit are defined as being expensive) is estimated by 1.96 times the estimate for the standard deviation plus the estimated value of the contract values (most common value). In table 1A the values ranges from 67 days to 212 days.

An estimate of the amount of cheap trade-credit is then obtained by comparing the actual credit days with the estimated days for the industry. If the actual number of credit days is below the estimated days for the industry, then all of the trade credits are classified as cheap trade credits. If the actual number of days is above the estimated industry norm, then all the trade credits are classified as expensive.

[14] Ng, Smith and Smith [1999] report that the normal contract issued by listed firms (Compustat firms) in the US is 2/10 net 30, that is a 2% discount is received if paid within 10 days otherwise payment has to be made within 30 days.

Table 1
Financing of (industrial) SMEs by provider of finance

	1990	1994	1998	2000
	% of total funds provided by			
Equity	49	46	49	46
Creditors (trade credit)	10	12	12	14
Banks[1]	20	19	16	18
Other institutions and miscellaneous providers of credit[2]	15	16	15	14
Provisions and accrued expenses	6	7	8	8

[1] In Terms of Table 2 below this item is the sum of Long Term Bank loans and Short Term Bank loans.
[2] In Terms of Table 2 below this item is the sum of Long Term Debt Other, Other non-Current Liabilities, Current Liabilities Other and Other Current Liabilities.

Table 2
Average liabilities of sample (industrial) firms as a faction of total assets
The reported values are the fraction of shareholder funds and liabilities expressed as a fraction of total assets. They represent the right-hand side of an average common size balance sheet for the 1416 Portguese SMEs.

	1990	1992	1994	1996	1998	2000
Shareholder's Funds	**0.49**	**0.47**	**0.46**	**0.48**	**0.49**	**0.46**
Capital	0.22	0.21	0.25	0.25	0.24	0.20
Reserves	0.23	0.25	0.19	0.21	0.22	0.21
Net Income of the Year	0.04	0.01	0.02	0.02	0.03	0.05
Provisions	**0.02**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**
Liabilities	**0.49**	**0.52**	**0.53**	**0.51**	**0.50**	**0.53**
Non-Current Liabilities	0.16	0.15	0.14	0.15	0.13	0.13
Long-Term Debt	0.13	0.12	0.09	0.11	0.09	0.10
Bank Loans	0.10	0.10	0.07	0.09	0.08	0.09
Other	0.03	0.02	0.02	0.02	0.01	0.01
Other Non-Current Liabilities	0.03	0.03	0.05	0.04	0.04	0.03
Current Liabilities	0.33	0.37	0.39	0.36	0.37	0.40
Loans	0.10	0.13	0.12	0.08	0.08	0.09
Bank Loans	0.10	0.13	0.10	0.08	0.08	0.09
Others	<0.01	<0.01	<0.01	<0.01	<0.01	<0.00
Creditors	0.10	0.10	0.12	0.12	0.12	0.14
Other Current Liabilities[1]	0.09	0.09	0.09	0.09	0.10	0.10
Accrued Expenses	0.04	0.05	0.06	.07	0.07	0.07

[1]Includes loans from shareholders

Table 3
Average assets for sample (industrial) firms as a faction of total assets

The numbers represent the right-hand side of an average common size balance sheet for the 1416 Portguese SMEs.

	1990	1992	1994	1996	1998	2000
Assets						
Fixed Assets	**0.52**	**0.53**	**0.54**	**0.50**	**0.51**	**0.47**
Intangible Assets	0.01	0.01	0.04	0.04	0.03	0.02
Tangible Assets	0.43	0.42	0.40	0.37	0.39	0.34
Investments	0.08	0.10	0.10	0.09	0.09	0.11
Current Assets	**0.48**	**0.47**	**0.46**	**0.50**	**0.49**	**0.52**
Stocks (Liquidity)	0.02	0.01	0.01	0.02	0.01	0.01
Debtors	0.24	0.24	0.26	0.29	0.26	0.30
Inventories	0.19	0.17	0.15	0.14	0.15	0.16
Cash and cash Equivalents	0.02	0.03	0.03	0.04	0.06	0.04
Prepaid Expenses	0.01	0.02	0.01	0.01	0.01	0.01

Table 4
Number of (industrial) firms with consecutive years of data

The sample is an unbalanced panel since many companies have less than 10 years of data. The table shows the number of firms and the number of years for which they have consecutive annual data.

Consecutive years of data	Number of firms
1	196
2	200
3	149
4	123
5	108
6	100
7	90
8	90
9	89
10	271
Total	1416

Table 5
Number of (industrial) firm year observations across years and industries

	Industry						
Year	Food and drinks	Textiles and clothes	Wood and paper paste	Chemical products	Heavy industry	Machinery and equipment	Total
1991	102	236	56	125	53	127	699
1992	114	278	61	119	49	139	760
1993	107	272	63	121	48	128	739
1994	105	274	59	120	50	133	741
1995	109	274	67	130	51	137	768
1996	108	270	71	130	51	134	764
1997	106	272	70	132	56	128	764
1998	113	282	67	133	63	140	798
1999	111	277	70	133	61	138	790
2000	97	232	59	133	65	137	723
Total	1072	2667	643	1276	547	1341	7546

Table 6
Distribution of expensive trade credits

Industry	Number of firms	Percentage of firms with expensive credit	Expensive credits as percentage of total credit
Food and drinks	818	47.066	63.576
Textiles and clothes	1913	27.757	38.889
Wood and paper paste	481	16.008	19.143
Chemical products	956	33.682	32.869
Heavy machinery	383	47.258	41.446
Machinery production and equipment	954	8.071	5.965

Table 7
Tests of independence

The following model is estimated by Seemingly Unrelated Regressions.

$$\Delta EQ_{it} = \alpha^{Eq} + \beta_1^{Eq}\Delta Inv_{it} + \beta_2^{Eq}\Delta Intan_{it} + \beta_3^{Eq}\Delta Tan_{it} + \beta_4^{Eq}\Delta Liquid_{it} + \beta_5^{Eq}\Delta Debtors_{it} + \beta_6^{Eq}\Delta Inventories_{it} + \varepsilon_{it}$$

$$\Delta CTC_{it} = \alpha^{Eq} + \beta_1^{Eq}\Delta Inv_{it} + \beta_2^{Eq}\Delta Intan_{it} + \beta_3^{Eq}\Delta Tan_{it} + \beta_4^{Eq}\Delta Liquid_{it} + \beta_5^{Eq}\Delta Debtors_{it} + \beta_6^{Eq}\Delta Inventories_{it} + \varepsilon_{it}$$

$$\Delta STB_{it} = \alpha^{STB} + \beta_1^{STB}\Delta Inv_{it} + \beta_2^{STB}\Delta Intan_{it} + \beta_3^{STB}\Delta Tan_{it} + \beta_4^{STB}\Delta Liquid_{it} + \beta_5^{STB}\Delta Debtors_{it} + \beta_6^{STB}\Delta Inventories_{it} + \varepsilon_{it}$$

$$\Delta OST_{it} = \alpha^{OST} + \beta_1^{OST}\Delta Inv_{it} + \beta_2^{OST}\Delta Intan_{it} + \beta_3^{OST}\Delta Tan_{it} + \beta_4^{OST}\Delta Liquid_{it} + \beta_5^{OST}\Delta Debtors_{it} + \beta_6^{OST}\Delta Inventories_{it} + \varepsilon_{it}$$

$$\Delta ETC_{it} = \alpha^{ETC} + \beta_1^{ETC}\Delta Inv_{it} + \beta_2^{ETC}\Delta Intan_{it} + \beta_3^{ETC}\Delta Tan_{it} + \beta_4^{ETC}\Delta Liquid_{it} + \beta_5^{ETC}\Delta Debtors_{it} + \beta_6^{ETC}\Delta Inventories_{it} + \varepsilon_{it}$$

$$\Delta LTB_{it} = \alpha^{LTB} + \beta_1^{LTB}\Delta Inv_{it} + \beta_2^{LTB}\Delta Intan_{it} + \beta_3^{LTB}\Delta Tan_{it} + \beta_4^{LTB}\Delta Liquid_{it} + \beta_5^{LTB}\Delta Debtors_{it} + \beta_6^{LTB}\Delta Inventories_{it} + \varepsilon_{it}$$

$$\Delta ONC_{it} = \alpha^{ONC} + \beta_1^{ONC}\Delta Inv_{it} + \beta_2^{ONC}\Delta Intan_{it} + \beta_3^{ONC}\Delta Tan_{it} + \beta_4^{ONC}\Delta Liquid_{it} + \beta_5^{ONC}\Delta Debtors_{it} + \beta_6^{ONC}\Delta Inventories_{it} + \varepsilon_{it}$$

$$\Delta LDO_{it} = \alpha^{LDO} + \beta_1^{LDO}\Delta Inv_{it} + \beta_2^{LDO}\Delta Intan_{it} + \beta_3^{LDO}\Delta Tan_{it} + \beta_4^{LDO}\Delta Liquid_{it} + \beta_5^{LDO}\Delta Debtors_{it} + \beta_6^{LDO}\Delta Inventories_{it} + \varepsilon_{it}$$

Where EQ: Internal Equity, CTC: cheap trade credits, LTB long term bank loans, ONC "Other Non-current liabilities, STB Short term bank loans, OST other short term bank loans, LDO other long term debt and ETC expensive trade credits. Inv: investments (in long financial assets), Intan: intangible assets, Tan: Tangible Assets, Liquid: investments in liquid assets such as cash. The system is estimated using Seemingly Unrelated Regression (the equation for prepaid expenses is left out). The model contains five industry dummies for which results are not reported.

Hypothesis	Chiquared	Significance level
Cheap trade credits: $\beta_1^{CTC} = \beta_2^{CTC} = \beta_3^{CTC} = .. = \beta_6^{CTC}$	61.056	0.000
Short-bank loans: $\beta_1^{SBL} = \beta_2^{SBL} = \beta_3^{SBL} = .. = \beta_6^{SBL}$	12.370	0.000
Other short term loans: $\beta_1^{OST} = \beta_2^{OST} = \beta_3^{OST} = .. = \beta_6^{OST}$	26.143	0.000
Expensice trade credits: $\beta_1^{ETC} = \beta_2^{ETC} = \beta_3^{ETC} = .. = \beta_6^{ETC}$	16.067	0.000
Long term bank loans: $\beta_1^{LTB} = \beta_2^{LTB} = \beta_3^{LTB} = .. = \beta_6^{LTB}$	395.382	0.000
Other Non-Current-Liabilities: $\beta_1^{ONC} = \beta_2^{ONC} = \beta_3^{ONC} = .. = \beta_6^{ONC}$	154.030	0.000
Long-Term-Debt Other: $\beta_1^{LDO} = \beta_2^{LDO} = \beta_3^{LDO} = .. = \beta_6^{LDO}$	1.690	0.133
Independence of Long asset of short term funds: $\beta_1^{CTC} = \beta_2^{CTC} = \beta_3^{CTC} = \beta_1^{STB} = \beta_2^{STB} = \beta_3^{STB} =$ $\beta_1^{OST} = \beta_2^{OST} = \beta_3^{OST} = \beta_1^{ETC} = \beta_2^{ETC} = \beta_3^{ETC} = 0$	518.594	0.000
Independence of short term assets of long term funds: $\beta_4^{LTB} = \beta_5^{LTB} = \beta_6^{LTB} = \beta_4^{ONC} = \beta_5^{ONC} = \beta_6^{ONC} = \beta_1^{LDO} = \beta_2^{LDO} = \beta_3^{LDO} = 0$	2511.382	0.000

Table 8

Testing for the driving factors in the change of financing sources

The following model is estimated using SUR (to facilitate cross equation tests):

$$\Delta EQ_{it} = \alpha^{Eq} + \beta_1^{Eq}\Delta Inv_{it} + \beta_2^{Eq}\Delta Intan_{it} + \beta_3^{Eq}\Delta Tan_{it} + \beta_4^{Eq}\Delta Liquid_{it} + \beta_5^{Eq}\Delta Debtors_{it} + \beta_6^{Eq}\Delta Inventories_{it} + \varepsilon_{it}$$

$$\Delta CTC_{it} = \alpha^{Eq} + \beta_1^{Eq}\Delta Inv_{it} + \beta_2^{Eq}\Delta Intan_{it} + \beta_3^{Eq}\Delta Tan_{it} + \beta_4^{Eq}\Delta Liquid_{it} + \beta_5^{Eq}\Delta Debtors_{it} + \beta_6^{Eq}\Delta Inventories_{it} + \varepsilon_{it}$$

$$\Delta STB_{it} = \alpha^{STB} + \beta_1^{STB}\Delta Inv_{it} + \beta_2^{STB}\Delta Intan_{it} + \beta_3^{STB}\Delta Tan_{it} + \beta_4^{STB}\Delta Liquid_{it} + \beta_5^{STB}\Delta Debtors_{it} + \beta_6^{STB}\Delta Inventories_{it} + \varepsilon_{it}$$

$$\Delta OST_{it} = \alpha^{OST} + \beta_1^{OST}\Delta Inv_{it} + \beta_2^{OST}\Delta Intan_{it} + \beta_3^{OST}\Delta Tan_{it} + \beta_4^{OST}\Delta Liquid_{it} + \beta_5^{OST}\Delta Debtors_{it} + \beta_6^{OST}\Delta Inventories_{it} + \varepsilon_{it}$$

$$\Delta ETC_{it} = \alpha^{ETC} + \beta_1^{ETC}\Delta Inv_{it} + \beta_2^{ETC}\Delta Intan_{it} + \beta_3^{ETC}\Delta Tan_{it} + \beta_4^{ETC}\Delta Liquid_{it} + \beta_5^{ETC}\Delta Debtors_{it} + \beta_6^{ETC}\Delta Inventories_{it} + \varepsilon_{it}$$

$$\Delta LTB_{it} = \alpha^{LTB} + \beta_1^{LTB}\Delta Inv_{it} + \beta_2^{LTB}\Delta Intan_{it} + \beta_3^{LTB}\Delta Tan_{it} + \beta_4^{LTB}\Delta Liquid_{it} + \beta_5^{LTB}\Delta Debtors_{it} + \beta_6^{LTB}\Delta Inventories_{it} + \varepsilon_{it}$$

$$\Delta ONC_{it} = \alpha^{ONC} + \beta_1^{ONC}\Delta Inv_{it} + \beta_2^{ONC}\Delta Intan_{it} + \beta_3^{ONC}\Delta Tan_{it} + \beta_4^{ONC}\Delta Liquid_{it} + \beta_5^{ONC}\Delta Debtors_{it} + \beta_6^{ONC}\Delta Inventories_{it} + \varepsilon_{it}$$

$$\Delta LDO_{it} = \alpha^{LDO} + \beta_1^{LDO}\Delta Inv_{it} + \beta_2^{LDO}\Delta Intan_{it} + \beta_3^{LDO}\Delta Tan_{it} + \beta_4^{LDO}\Delta Liquid_{it} + \beta_5^{LDO}\Delta Debtors_{it} + \beta_6^{LDO}\Delta Inventories_{it} + \varepsilon_{it}$$

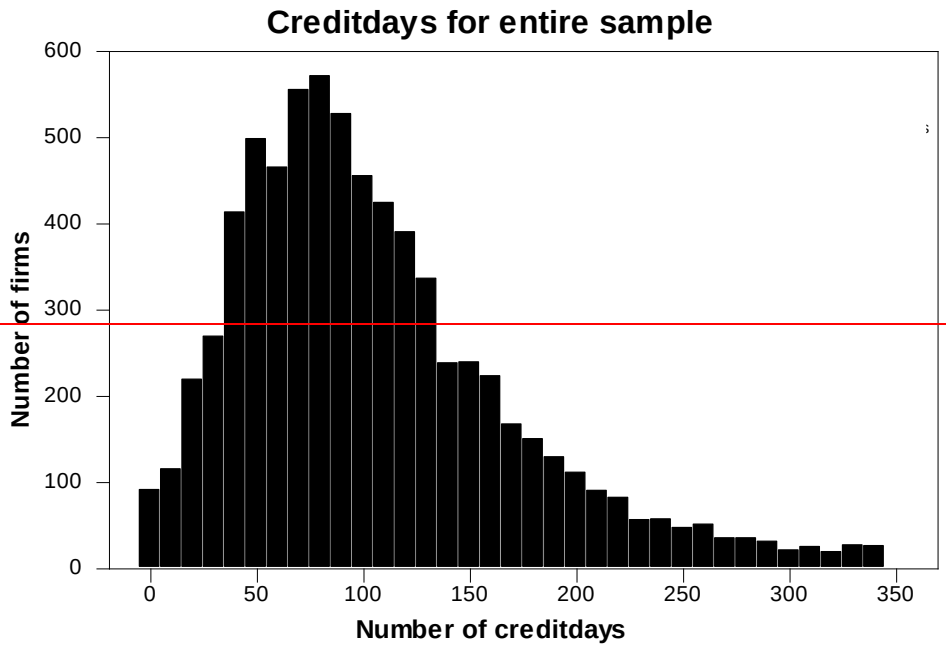
Where EQ: Internal Equity, CTC: cheap trade credits, LTB long term bank loans, ONC "Other Non-current liabilities, STB Short term bank loans, OST other short term bank loans, LDO other long term debt and ETC expensive trade credits. Inv: investments (in long financial assets), Intan: intangible assets, Tan: Tangible Assets, Liquid: investments in liquid assets such as cash. The system is estimated using seemingly unrelated regressions with the equation for prepaid expenses omitted. The model contains five industry dummies for which results are not reported. Approximate R-squared statistics are obtained by estimating each equation individually using ordinary least squares regression.

	Changes in							
Variables	Internal Equity	Cheap trade credit	Short bank loan	Short other loans	Expen-sive trade credits	Long term bank loan	Other Non-current liabili-ties	Long term loans other
Constant	0.0105	-0.0008	0.0047	0.0001	-0.0002	-0.0033	-0.0116	-0.0017
	(4.08)	(-0.32)	(1.83)	(0.05)	(-0.06)	(-1.38)	(-4.23)	(-2.59)
Intangible	0.7188	0.0133	0.0070	0.0257	0.0764	0.0642	0.0340	0.0157
assets	(20.20)	(0.37)	(0.20)	(0.71)	(1.72)	(1.92)	(0.89)	(1.74)
Tangible	0.3496	0.0154	0.1275	0.0667	0.1002	0.1687	0.1282	0.0055
assets	(32.39)	(1.40)	(11.92)	(6.09)	(7.45)	(16.64)	(11.12)	(2.01)
Investments	0.1833	0.0150	0.0654	0.0410	0.0121	0.6126	0.0617	0.0088
	(14.71)	(1.18)	(5.30)	(3.24)	(0.78)	(52.32)	(4.63)	(2.79)
Liquid assets	0.3879	0.0652	0.0604	0.1513	0.0806	0.0537	0.1363	0.0037
	(24.38)	(4.02)	(3.83)	(9.38)	(4.07)	(3.59)	(8.01)	(0.92)
Debtors	0.1729	0.0689	0.1095	0.0883	0.1346	0.0335	0.3638	0.0010
	(23.96)	(9.36)	(15.32)	(12.07)	(14.98)	(4.95)	(47.18)	(0.53)
Inventories	0.1061	0.1404	0.1774	0.2333	0.2025	0.0519	0.0335	-0.0003
	(7.56)	(9.81)	(12.76)	(16.40)	(11.58)	(3.93)	(2.24)	(-0.10)
"R-Squared"	0.2714	0.0265	0.0731	0.0671	0.0556	0.2880	0.2413	0.0032

Table 1A
Summary of evidence for estimating Credit Days

Industry	Sample data		Estimate of number of credit days in a standard contract	Estimate of standard deviation of credit days	Cut-off number of credit days defining cheap and expensive credit
	Median number of days	Most common number of days			
Food and drinks	60	35-45	40	13.6098	66.6752
Textiles and clothes	86	66-75	70	28.5422	125.9427
Wood and paper paste	95	85-95	90	34.5357	157.69
Chemical products	116	85-95	90	28.8522	146.5503
Heavy machinery	108	75-85	80	18.6593	116.5722
Machinery production and equipment	106	105-115	110	52.1976	212.3073

Figure 1


Creditdays for entire sample
Number of firms
600
500
400
300
200
100
0
0
50
100
150
200
250
300
350
Number of creditdays

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