Financing Decisions of Portuguese Micro-enterprises

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Abstract

This paper seeks to analyze the sources of finance and capital structure of a sample of 131 small firms in Portugal, in the districts of Vila Real, Bragança, Guarda and Castelo Branco, for the period 2005 to 2009. The firms were randomly selected, and the data were collected from the accounting documents prepared for fiscal purpose. Due to the firms' different capital structures, we divided the research sample in three sub-samples as a function of negative, near zero and positive working capital. The importance of funding sources was measured by the dependent variable of medium-long term sources, while capital structure was assessed through the dependent variables of permanent capital/total assets, non-current liabilities/total assets. The independent variables considered were firm growth, non-current asset ageing and return on equity. For data processing, we used a multi-variate linear regression, taking the mean values of each variable in the period 2005 to 2009.

We found that the medium-long term growth of the firms is financed by sources of finance with the same maturity, concluding that firms follow the principle of minimum financial balance. The negative relationship between medium-long term sources and return on equity, allows us to conclude that firms follow the Pecking Order Theory. Non-current asset ageing has a positive relationship with the ratio of capital structure, meaning that older firms tend to have a higher level of permanent capital. Additionally, these results allow us to conclude that, although developed primarily for large enterprises, capital structure theories are also applicable to the micro firms analyzed.

Key-words: Micro-enterprises, Financing Sources, Capital Structure, Asset Structure.

1. Introduction

In Portugal, similarly to many other countries, such as Germany, Spain, Greece, Italy and Belgium, Small and Medium-sized Enterprises (SME) represent the majority of the Portuguese, and represent the greatest proportion of employment.

An important question, in capital structure theory, relates to understanding if firms' financing decisions are motivated by their own characteristics or if on the contrary, they are the result of the institutional environment in which they operate (Daskalakis & Psillaki, 2009).

The main objective of this study is to determine the sources of finance for the firms in our sample, taking into account their particularities, namely the financing sources used to fund their assets, and their capital structure.

The current study has the following structure, afford the current Section: Section 2 presents a brief review of the capital structure theories. Section 3 presents the methodology followed throughout the empirical study. Section 4 presents the results. Section 5 analyzes the results obtained in the empirical part. Section 6 presents the main conclusions of the study and some suggestions for future research.

2. Literature Review

Various studies state that Small and Medium-sized Enterprises (SMEs) find themselves more restricted financially than large firms and also have greater difficulty in obtaining debt from financial institutions (Beck & Demirguc-Kunt, 2006).

Increasing studies on the subject of SMEs are largely stimulated by the recognition of this type of firm for a country's economic development (Daskalakis & Psillaki, 2009). Marsch *et al.* (2010) consider that SMEs are the backbone of the German economy, and we feel similar circumstances apply in Portugal.

Nevertheless, despite the present great development of studies about capital structure and this field comprising a great variety of theoretical approaches, none of them is universally accepted nor widely applied by firms in general (Daskalakis & Psillaki, 2009).

Forty-one years after the theory of Modigliani & Miller in 1958, other authors, namely Michaelas *et al.* (1999), consider that capital structure theories are very varied, and so they can be classified in three categories: theories based on taxes; agency cost theories; information asymmetry and signalling theories.

Theories based on taxes

Michaelas *et al.* (1999) consider that, according to this tax theory, when firms have to pay tax, they are expected to substitute equity for debt, at least to the point of exhaustation of debt. However, in their capital structure decisions, firms do not always follow this theory. In the study made by Michaelas *et al.* (1999) of 3,500 firms in the United Kingdom in the period 1986 to 1995, one of the conclusions drawn was that small firm owners do not consider tax effects in decisions related to short-term capital structure. The same is not found for the long term debt, the authors finding some evidence that firms consider the debt tax shields.

In the study carried out by Garcia & Mira (2008) of 3,569 Spanish non-finance SMEs, it was found that the fact of firms being profitable did not influence their capital structure, with the aim of reducing payment of tax. That is to say, it was not the fact of SMEs having to pay tax that would make them increase their ratio of debt. As a possible cause of this situation, the authors indicate the financial restrictions affecting this type of firm.

Besides the importance of taxes for capital structure decisions, the relevance of bankruptcy costs must be considered, as according to various authors (Fama & French, 2002), capital structure decisions are made based on a trade-off between tax shields and bankruptcy costs associated with debt.

Various theories can be applied to capital structure, but Daskalakis & Psillaki (2009:323) consider that "*theory based on tax, and agency theory are relevant for capital structure decisions*".

In a study carried out in 42 countries, Jong *et al.* (2008) concluded that in countries with greater stability and better legal conditions firms choose more debt, since economic agents feel more protected by the legal system.

Pettit & Singer (1985) pointed out that tax considerations are of little importance for SMEs, because these firms are less likely to generate high profits and so are less likely to use debt tax shields. In addition, SMEs are less likely to present annual positive earnings, and so there is increased uncertainty surrounding the debt tax shields (Pettit & Singer, 1985).

Agency Cost Theory

Different types of investment require different types of finance. Sometimes, considering their size, firms do not obtain the most suitable source of finance for the type of investment made. In the opinion of García & Matínez (2010) and Biekpe & Abor (2007), for larger firms it is easier to obtain debt, and on better terms, than smaller firms. Consequently, large firms become intermediaries between banks and small firms, granting credit via commercial transactions between them.

Financial costs depend on the type of assets in which the firm invests. Firms with major investments in land, equipment and other tangible assets will have lower financial costs than firms with substantial investment in intangible assets (Daskalakis & Psillaki, 2009). Michaelas *et al.* (1999) consider that when firms offer their fixed assets to guarantee debt, the debt is five times

more likely to be contracted. This implies that banks place more status on tangible assets, as a guarantee for loans granted, to minimize the risk involved (Biekpe & Abor, 2007; Michaelas *et al.* 1999). In the opinion of Jong *et al.* (2008), an asset's tangibility depends greatly on the firm's country of origin.

In addition, due to the high transaction costs and high information asymmetry, small firms face higher interest rates (Teruel & Solano, 2004). This situation is due to the greater informational opacity of these firms due the poor quality of accounting information, offering lower quality collateral (Beck & Demirguc-Kunt, 2006). According to the study of Beck *et al.* (2004), the difference between thr amount of debt obtained from banks by small firms and that obtained by large firms reaches 13 per cent (15% for small firms as against 28% obtained by large ones). This reveals the obstacle faced by small firms that may restrain their survival, development and/or growth (Beck & Demirguc-Kunt, 2006; Vasilescu, 2010).

Michaelas *et al.* (1999) consider that agency costs are greater in smaller firms, leading their owner to run higher risks and in isolation, especially in the first years when the firm's survival is at stake.

Solutions to agency problems are relatively more expensive for small firms, in this way raising transaction costs between small firms and their creditors or shareholders (Jensen & Meckling, 1976). Also, monitoring may be more difficult and costly in the case of small firms, since they are not required to reveal information to the market, as usually occurs with large firms, which allow a reduction of agency costs (Michaelas *et al.* 1999; Vasilescu, 2010).

Information Asymmetry and Signalling Theory

Pecking Order theory suggests that use of external financing is inversely related to firm profitability, based on the fact that firms in general, and SMEs in particular, use internally generated resources as the main source of finance (Harris & Raviv, 1991). In the USA, a significant part of non-financial gross investment is funded through self-financing – net earnings plus amortization and depreciations (Myers, 2001). SMEs that use external resources can have low profitability level (Biekpe & Abor, 2007; Jong *et al.* 2008; Michaelas *et al.* 1999). In this connection, Myers (2001) argues that firms presenting high profits have reduced debt, but firms with low profits will have high level of debt.

According to Fama & French (2002), the Trade-off and Pecking Order models forecast that firms with greater volatility of profits, and higher level of free cash flows, or with higher levels of investment will have less leverage, and consequently, less distribution of dividends.

In the Pecking Order model, the most profitable firms will pay better wages and distribute dividends, maintaining great capacity for debt, at a low risk, to finance investment.

SMEs are more dependent on internal resources and short-term finance. In addition, they are more volatile and therefore more suggest to bankruptcy (Garcia & Mira, 2008; Serrasqueiro & Nunes, 2010). However, Michaelas *et*

al. (1999) consider that the differences between the risk of SME bankruptcy and bankruptcy of large firms are not significant.

Firm age, according to Garcia & Mira (2008), is negatively correlated with debt ratio, inasmuch as older firms have more retained profits and consequently less debt (Michaelas *et al.* 1999). Serrasqueiro & Nunes (2010) consider that young SMEs' need to finance growth opportunities at the beginning of their life-cycle, with difficulty in generating internal finance and the considerable problems they face in accessing external sources of finance, can contribute decisively to those SMEs becoming excessively dependent on short-term debt.

Some authors, among them Baas & Schrooten (2006) and Biekpe & Abor (2007), consider that SMEs are more dependent than large firms on the relationship that they maintain with banks, due to the accounting information that they produce not being of such high quality. This situation leads to financing costs being higher for SMEs.

Hall *et al.* (2004) consider that information asymmetry and signaling play an important role in financing decisions and in obtaining loans. This role varies proportionately according to the relationships firms have with banks. Garcia & Mira (2008) concluded that SMEs face high asymmetric information problems which prevents them from turning to sources of finance other than the traditional short and long-term bank loans.

In the opinion of Myers (1976), beyond a certain level of debt, a firm should not contract more loans, or it will be subject to paying a higher rate of interest for debt.

Myers (1977) considers that for the majority of creditors is important the continuity of the firm and not the assets being financed. That is to say, the value of the loan depends more on the value of the operating firm than of the individual assets being financed.

According to Myers (1976:31) "*as far as I can see, the traditional theory of finance indicates that firms should not finance long-term assets with short-term debt, or short-term assets with long-term debt*".

Then according to Hall *et al.* (2004:715), "*because of fixed transaction costs and long-term debt without risk, we estimate that small firms have greater problems in increasing this type of debt. Long-term debt is positively related to firm size. In the absence of long-term debt, small firms make more use of short-term debt and that will be negatively related to firm size".* This idea was also defended by Michaelas *et al.* (1999), stating that SMEs are very dependent on short-term debt. Regarding the length of time firms are in existence, the same authors consider that the effect of time has approximately 50 times greater weight on short-term debt than that of long-term debt[1].

A country's macro-economic data also have implications for the type of debt available to SMEs. Michaelas *et al.* (1999) consider that in periods of economic recession, firms resort more to short-term debt in response to liquidity problems.

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[1] From our point of view, this situation exists in this country, and in the regions studied here, as we shall see later.

The effects of reputation, credibility and level of tangible assets, associated with greater age, are particularly important factors in reducing problems of information asymmetry, allowing SMEs to obtain credit on better terms (Serrasqueiro & Nunes, 2010).

According to Hall *et al.* (2004), the benefits of firm growth, if they are fulfilled, will not be appreciated by creditors, who will only recuperate the value of their loans, resulting in a clear agency problem which will be reflected in increased costs of long-term debt.

From the above, we are led to conclude that the theoretical reference, about the determinant factors of SME leverage, does not differ substantially from the theoretical framework of capital structure for large firms, although some specific characteristics of SMEs should be considered (Daskalakis & Psillaki, 2009).

Maturity of Assets and Maturity of Liabilities

Just as Cai *et al.* (2008) point out, the maturity of firms' financing sources should be in alignment with the maturity of their assets. Therefore, investment in fixed assets should be financed by medium and long-term debt and/or equity (permanent capital), whereas current activities, should be by financed with short-term debt.

However, the various theories on capital structure suggest different positions regarding this subject. While the theories of signalling (Flannery, 1986) and agency costs (Myers, 1976) are favourable to a predominance of recourse to short-term debt, tax-based theories seem to favour medium/long-term financing (Brick & Ravid, 1991).

Despite what is argued in the light of his agency theory, Myers (1976) states that firms presenting a more diversified asset structure manage to otain the finance they need on more advantageous terms, compared to firms in other situations.

Hart & Moore (1994) also speak out in defence of this same alignment, since that fact allows financing to be paid off by the profits generated by its underlying assets, over the whole period, which is hoped to be its useful life. The positions of these two authors are corroborated by the study made by Graham & Harvey (2001), which from a survey of 392 CFOs – *Chief Financial Officers* – concluded that SMEs seek to finance their investments through debt, which maturity will be similar to the assets it will finance.

3. Methodology

Firstly, we analyse sources of finance, and secondly we analyze the firm capital structure, attempting to find out if firms take into account the rule of minimum financial balance in their financing decisions, both in the short and long term.

To reach the goal of this study, we collect a set of accounting data, from 131 SMEs belonging to interior regions of Portugal. The data was gathered for the period 2005-2009.

Sample

The SMEs making up our sample belong to interior regions of Portugal, being the firms randomly selected. The data were collected from the SBI – Simplified Business Information declaration. As the criterion for selection of firms to include in the sample, they were considered micro-firms based on the three criteria mentioned above, whatever their legal structure. The initial sample was made up of 144 firms, 13 of them being excluded due to the lack of some accounting elements and after applying the criteria for classifying firm size, obtaining therefore a sample of 131 firms.

Firms were also classified according to their industry sector of activity, which allowed us to obtain their various structural characteristics, particularly those related to their branch of activity (Jorge & Armada, 2001).

Since not all firms have the same capital structure, we decided to divide the sample in three sub-samples according to the ratio $r_1 = \frac{Permanent\ Capital}{Non{-}Current\ Assets}$. As our sample covers 5 years, we determine the average ratio to divide the sample. With this ratio, we sub-divide the sample in the su-sample 1 with the firms with a ratio under 0,9, the sub-sample 2 with firms that present a ratio between 0,9 and 1,1 and the sub-sample 3 with the firms with a ratio above 1,1.

Since we are dealing with SME, non-listed firms, the data that we have are accounting data, as Michaelas, *et al.* (1999), since they are the only available data.

The variables, dependent and independent, are calculated using relative values so the inflation effect does not exist.

Variables

Dependent Variable

Our dependent variable[2] related to the **financing sources** is given by:

$$a_1 = \frac{Sources\ of\ Medium\ and\ Long\ Term}{Total\ Sources}$$

The dependent variables related to the capital structure are:

$$a_2 = \frac{Permanent\ Capital}{Total\ assets}$$

$$a_3 = \frac{Non\ Current\ Debt}{Total\ assets}$$

[2] The debtors Accruals and Deferrals are considered as part of the Current Assets. The creditors Accruals and Deferrals are considered as part of the Current Debt.

Independent Variable

The proxies of our work are:

The **growth** of the company measured by the growth of the Medium and Long Term Applications

$$b_1 = \frac{Medium\ and\ Long\ Term\ Applications}{Total\ Applications}$$

The **aging of fixed assets** of the company allows us to check, firstly, the age of the company and secondly, if investments were made recently.

$$b_2 = \frac{Accumulated\ depreciations}{Gross\ Assets}$$

Regarding the measures of **profitability**, we use a ratio that allows us to specify the remuneration that the company is giving to shareholders by their invested capital.

$$b_3 = \frac{Net\ Profits}{Equity}$$

4. Analysis of the Results

In the study carried out by Hall *et al.* (2004) for 8 European countries, it was found that except for Germany, firms in the other countries have a capital structure based on short-term debt. The same study indicates, in the case of Portugal, a ratio of 48% short-term debt and 11.78% long-term debt. A study carried out by Teruel & Solano (2004) of 11,533 SMEs found that the smaller the firm, the greater the short-term debt. Our study shows a ratio of 7.03% of long-term debt and 53.67% of short-term debt, with a ratio of 39.0% for equity. Although not the subject of this study, we find that the firms in our sample present financial autonomy of 39.3%, a value slightly above the data presented by the INE[3], which indicate that nationally firms present financial autonomy of 34%.

Results of the Multivariate Regression[4]

Regarding dependent variable $\mathbf{a_1}$, which represents medium and long-term financing sources, we find that there is a positive relationship between this dependent variable and the independent variable $\mathbf{b_1}$, which corresponds to the ratio non-current assets/total net assets. As for the other variables – $\mathbf{b_2}$ and $\mathbf{b_3}$, representing the ageing of non-current assets and the return on equity respectively – a negative correlation is found. Concerning variable $\mathbf{b_3}$, a

[3] www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_indicadores&indOcorrCod=0000443&contexto=bd&selTab=Tab2 accessed on 10 February

[4] The *two-stage least squares* test was also carried out, where identical values were found, and so we can conclude that the results were not affected by heteroskedasticity.

reduced influence on the dependent variable is visible, for the total sample and for sub-sample 1. These results may indicate that the return on equity has a negative influence, although practically nil, on the medium and long-term financing sources.

Sub-sample_2, which presents a balanced capital structure, may explain the greater correlation between the independent variable $\mathbf{b_1}$ and the dependent variable $\mathbf{a_1}$. That major positive correlation, with medium and long-term assets, is due to the fact of these firms seeking to finance their non-current assets through recourse to medium and long-term funding sources.

The dependent variable $\mathbf{a_2}$, presents, for the total sample, a positive strong relationship with the independent variables $\mathbf{b_1}$ and $\mathbf{b_2}$, considering the estimated parameters of 0.705 and 0.422, respectively. We find, therefore, that when firms invest in medium and long-term assets, the dependent variable $\mathbf{a_2}$, which relates permanent capital to total net assets, will increase. We also find a positive relationship between the dependent variable $\mathbf{a_2}$ and firm ageing, that is may be due to the diminished value of total net assets for older firms.

An inverse relationship is also identified between the dependent variable $\mathbf{a_2}$ and the independent variable $\mathbf{b_3}$, although almost nil in the total sample and sub-sample_1, a little greater in sub-sample_3 and significant in sub-sample_2. These relationships, except for that shown in sub-sample_1, are not statistically significant.

So in sub-sample_1, referring to firms with negative working capital, we find a negative, and statistically significant, relationship between return on equity and the ratio of permanent capital to total net assets, represented by the dependent variable $\mathbf{a_2}$, which is apparently contradictory since increased return on equity would result in increased equity, and so there would be an increase of permanent capital, contributing to an increase of this ratio. From this relationship, we can conclude that firms in this sub-sample, when presenting positive net results, appear to make investment financed by retained profits. Therefore, despite an increase in the return on equity, due to the increase of net profits, firms seem to use these profits as a source of financing assets, contributing in this way to a negative relationship between return on equity and the ratio of permanent capital to total net assets.

Regarding the dependent variable, which refers to the ratio of non-current liabilities to total net assets, we find that for the total sample the independent variable b_1 shows a positive impact on the dependent variable $\mathbf{a_3}$, for a level of significance under 0.1%, which agrees with what we would expect, since an increase in medium and long-term assets will tend to be financed with medium and long-term debt (non-current liabilities).

Similarly and for the same sample, the independent variable $\mathbf{b_2}$ presents a positive relationship with the dependent variable analyzed, although without statistical significance. Since the independent variable $\mathbf{b_2}$ shows the degree of asset ageing, it is easily concluded that assets being older their net value will be less, and so the ratio of medium and long-term liabilities to total net assets tends to be greater, with diminished denominator value compared to the ratio numerator.

As for the independent variable $\mathbf{b_3}$ we find that also for the total sample it presents a negative relationship with the dependent variable $\mathbf{a_3}$, for a degree of statistical significance under 7.5%. This relationship is justified by the fact that more profitable firms finance themselves primarily through recourse to retained profits (Pecking Order theory), and so turn less to debt. In addition, more profitable firms will register a greater increase of net assets, and so the value of the ratio represented by $\mathbf{a_3}$ will show a lower value.

All the conclusions presented above are also applicable to the results obtained for sub-sample 1, with differences only in their statistical significance. In this sub-sample, we find the same positive relationship between the independent variables $\mathbf{b_1}$ and $\mathbf{b_2}$ and the dependent variable $\mathbf{a_3}$ without statistical significance. The negative relationship between the independent variable $\mathbf{b_3}$ and the dependent variable $\mathbf{a_3}$, which was not significant in the total sample, is statistically significant in this sub-sample (for a level of statistical significance under 1%).

The results obtained for sub-samples 2 and 3, with the exception in both sub-samples of the relationship between the independent variable $\mathbf{b_1}$ and the dependent variable $\mathbf{a_3}$, are not statisticaly significant. The relationship between the independent variable $\mathbf{b_1}$ and the dependent variable $\mathbf{a_3}$ is also positive, for a level of statistical significance under 2.5%, as was justified above.

5. Conclusions

Based on a sample of 133 micro-firms located in interior regions of Portugal and by carrying out multivariate regressions, it was possible to conclude that:

- There is a relationship between **assets** and **medium and long-term financing sources**, which allows us to state that medium and long-term firm growth is financed through funding sources of the same maturity, and so firms are found to follow the rule of minimum financial balance.
- There is a negative relationship between **medium and long-term financing sources** and **return on equity** agrees with the conclusions presented by Jorge & Armada (2001), although in our study this relationship is only statistically significant for sub-sample_3. It is therefore confirmed that firms, particularly those presenting positive working capital, follow a financing behaviour predicted by Pecking Order theory. This negative relationship between profitability and external financing sources was also found by Fattouh, Harris, & Scaramozzino (2008) in a study of British SMEs.
- The dependent variable related to **permanent capital** to **total net assets** presents a positive relationship with **medium and**

long-term assets, once again reinforcing that firms finance their medium and long-tem assets with financing sources of the same maturity, and so preserving the collateral value of assets.

In the study by Sogorb-Mira (2005), of Spanish SMEs, the author concludes that both size and firm growth present a positive relationship with level of debt, the study also concluding that firms seek to keep alignment between the maturity of asset structure and the external capital that finances them, which also corroborates our conclusions.

- ✓ The **ageing** of non-current assets presents a positive relationship, and with a proof value close to zero, with the ratio of firm capital structure, meaning that older firms tend to have a greater prevalence of permanent capital in their financing structure. However, the statistical significance of this relationship only applies to the total sample, as the three sub-samples do not show the same.
- ✓ Contrary to expected, there is no statistical significance (except for firms with negative working capital) between the ratio of capital structure and the ratio of **equity profitability**.
- ✓ The positive relationship between the ratio of **non-current liabilities** to **total net assets** and **medium and long-term applications** reinforces once more that the micro-firms in our study follow Pecking Order theory. Only in sub-sample_1 is this relationship not statistically significant, the relationship being high in sub-sample_2.
- ✓ **Ageing** of non-current assets, contrary to expectations, presents a positive, although statistically insignificant, relationship with the ratio of **non-current liabilities** to **total net assets**. Only sub-sample_2 ties in with our expectations, i.e., that asset ageing will cause a reduction of the ratio of **non-current liabilities** to **total net assets**, but the proof value of this negative relationship is 0,116.
- ✓ **Equity profitability**, in the total sample, is negatively related with the ratio of **non-current liabilities** to **total net assets**, with a proof value of 0.052, in accordance with what was initially expected. Nevertheless, this relationship is only statistically significant in the total sample and in sub-sample_1.

We can therefore conclude that micro-firms finance their medium and long-term applications through origins that are also medium and long-term, also following Pecking Order theory. Contrary to expectations, sub-division of our sample did not allow us to draw conclusions about very significant differences concerning the capital structures of the different sub-samples analyzed.

In addition, these data allow us to conclude that, although developed essentially for large firms, these capital structure theories are also applicable to the SMEs analyzed, just as found by Holmes & Cassar (2003), in a similar

study made of Australian SMEs, and by Daskalakis & Psillaki (2008), in a comparative study of French and Greek SMEs.

6. *Suggestions for Future Research*

For future research, we suggest:

- ✓ Analysis of the relationship of equity profitability and equity with total net assets, checking the existence of profit distribution.
- ✓ The significance obtained in the different sub-sectors for the independent term of each regression leads us to conclude there may be other determining factors, both in capital structure and in micro-firms' financing sources, which should be considered in future investigations, both through inclusion of other determining factors and through recourse to the methodology of fixed effect and dynamic effect panel data

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