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How the presence of Foreign Ownership affects the companies' capital structure in a small economy?

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Dissertation

Master in Finance

Supervised by
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2020

Bibliographical Note

Carlota Marinho Martins Pereira was born on June 9th, 1997, in Santo Tirso, Porto. She took a bachelor's degree in Economics, between 2015 and 2018, at the University of Minho and since September 2018, she is studying at the School of Economics and Management of the University of Porto (FEP) on its Master in Finance.

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Acknowledgements

This dissertation represents the achievement of a very important milestone in my life because it was a goal that I established to myself since I started University Education. This journey would not be so enjoyable and enriching without the support of a group of important people, to whom I must thank.

First, I have to thank to my parents, for all their unconditional support, and my closest family. The presence of my friends, which I have had the pleasure of knowing over the years was also crucial for my success and determination.

To my supervisor, Professor Miguel Sousa, I leave a special thanks for all his guidance and availability to help me during all the process. I would also like to thank to all the professors that taught me in these years.

Abstract

With this study, we pretend to assess if the capital structure of a company is affected by the presence of foreign shareholders. The capital structure theory has revolutionized the financial theory and new theories and vast empirical studies have arisen to try to understand how companies define their capital structure in order to finance its total assets. Over the last years, another topic that has attracted the attention of the researchers was the Foreign Direct Investment (FDI). This is a key element that creates stable and long-lasting links between different economies and is the indicator regarding the international investment in a country. The impact of foreign investment in domestic firms is controversial and we try to contribute to this stream of research studying a sample of Portuguese listed companies in Portugal, more specifically the companies of PSI-20, between 2008 and 2018. Portugal was one of the most affected European countries by the financial crisis of 2008 and we want to understand how the presence of foreign shareholders in the ownership structure of companies from a small economy, impact the capital structure of these companies during this difficult period.

In the end, we, provide evidence that the presence of foreign investment has a positive impact on corporate indebtedness, especially on medium and long-term debt. However, we also concluded that the debt level ratios did not suffer a significant change during this period.

Keywords: Capital Structure; Capital structure Determinants; Foreign Investment; Firm Performance

JEL-Codes: C12; C33; F21; G01; G30; G32

Resumo

Com este estudo, pretendemos avaliar se a estrutura de capital de uma empresa é afetada pela presença de investimento estrangeiro alinhado com algumas variáveis específicas da empresa. A teoria da estrutura de capital revolucionou a teoria financeira e surgiram novas teorias e vastos estudos empíricos para tentar entender como as empresas definem a sua estrutura de capital para financiar os seus todos os seus ativos. Nos últimos anos, outro tema que chamou a atenção dos investigadores foi o Investimento Direto Estrangeiro (IDE). Este é um elemento-chave que cria vínculos estáveis e duradouros entre diferentes economias e é o indicador que nos fornece dados sobre o investimento internacional. Diferentes investigadores têm diferentes pontos de vista sobre o impacto do investimento estrangeiro em empresas domésticas e é isso o que pretendemos analisar. Neste estudo, é considerada uma amostra de empresas listadas em Portugal, mais especificamente as empresas do PSI-20, por um período entre 2008 e 2018, uma vez que Portugal foi um dos países europeus mais afetados pela crise financeira de 2008 e queremos entender como é que estas empresas reagiram a este período.

No final, a evidencia mostra que os índices de endividamento não sofreram uma mudança significativa durante esse período. No entanto, os resultados também nos permitem concluir que a presença de investimento estrangeiro afeta positivamente o endividamento das empresas, principalmente a dívida de médio e longo prazo.

Classificação JEL: C12; C33; F21; G01; G30; G32

Palavras-Chave: Estrutura de Capital; Determinantes da Estrutura de Capital; Investimento Estrangeiro; Desempenho da Empresa

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1. Introduction

Since the original work of Modigliani and Miller (1958) about the capital structure theory, that has revolutionized the financial theory, new theories and vast empirical studies have arisen to try to understand how companies define their capital structure in order to finance its total assets.

There are two main sources of capital, equity and debt, that a company can manage and, in this way, define a capital structure. The firm value is maximized when the proportion of debt and equity minimizes the WACC (Weighted Average Cost of Capital). The capital structure also affects the financial performance of the company and its risk. A bad decision may be linked to financial distress, or even bankruptcy, if the company fails to cover the debt obligations.

The study mentioned, previously, encouraged other authors to further investigate some questions related to this topic by relaxing some of the assumptions to reach more realistic explanations and conclusions, as the trade-off theory, the pecking order theory and the agency theory, three of the most pertinent theories in the study of decisions regarding the capital structure of a company.

Over the last years, another topic that has attracted the attention of the researchers was the Foreign Direct Investment (FDI). The FDI is an important global capital flow that finances investment. For international economic integration, this is a key element that creates stable and long-lasting links between different economies. The impact of foreign investment in domestic firms is not consensual. According to Meyer and Sinani (2009), the host countries can experience positive spillovers, however giving the research of Acemoglu et al. (2006) and Aghion et al. (2009), among others, foreign firms can reduce the output of domestic firms.

This topic becomes even more relevant since Portugal was one of the most affected European countries by the financial crisis of 2008, which had an impact in the capital (equity and debt) available and so represented a huge threat to the firms' future. For this reason, this study focuses on a particular timeline that includes three different periods: a period between 2008 and 2010, which was when the countries began to feel some of the first consequences of the financial crisis. Then, the period between 2011 and 2014, which in Portugal was one of the most difficult periods since it was when the country was subject to further financial constraints. Finally, between 2015 and 2018 the country experienced a period of recovery. Although, the role of ownership structure on firm performance is investigated widely, foreign

ownership effects on corporations in Portugal remains a topic underexplored. Our sample comprises all PSI-20 companies with the exception of the financial companies.

Besides this first section, the report is organized as follows: in section 2 a literature review of the topic is made based on the theories of capital structure as well as its empirical determinants and how it all ties together with the presence of foreign investment. The section 3 is comprised of an explanation of methodology. In the section 4, it will be presented the sample and descriptive statistics. For the section 5, we will include the empirical analysis and results, namely the regression analysis. Finally, the section 6 will present the overall conclusions and further research that could be made in order to improve the gathered results.

2. Literature Review

In this chapter, we plan to do a literature review of the main capital structure theories and some of the works about the presence of foreign investment and its impact on the operational performance of companies. All these theories and studies will be helpful to understand the companies' financing decisions.

Firstly, we are going to present the theme of capital structure, starting by the Modigliani and Miller model and its assumptions, followed by the trade-off theory, the pecking order theory and, lastly the agency costs theory. The last topic to be approached is the presence of different determinants that can influence the capital structure of a company and, consequently, the firm performance.

Finally, we are going to present some studies related to the foreign direct investment and how its presence may impact the companies, including their capital structure and, therefore, their value.

2.1. Main Theories of Capital Structure

2.1.1. Modigliani and Miller model

The work developed by Modigliani and Miller, in 1958, considering a perfect market context, states that the capital structure of a firm does not affect its value. For that, the authors considered that there are no market frictions (no agency costs, no transaction costs, no tax and no bankruptcy costs), no arbitrage opportunities, no asymmetric information, and expectations that are homogeneous from investors regarding the company's future profitability. Two propositions were formulated considering all these assumptions.

The first proposition states that the capital structure of a company, that is, the proportion of debt and equity chosen by the company does not impact its market value. According to this proposition, the capacity of the company to generate future cash flows and its investment policy determine its market value, that is, the value derives from the discounted future cash flows.

With the second proposition, Modigliani & Miller suggest that will be required a higher rate of return on equity as the debt-to-equity ratio increases, since the equity holders will face a higher risk. Consequently, the authors consider that is necessary to add a risk premium to the value of an unlevered company to equal the value of a levered company.

Later, in 1963, the M&M theorem was reformulated, and the authors included the financial benefit from tax-deductible expenses, such as interest payments. With this new assumption, they consider that the company's value will increase as its level of debt increases. Nevertheless, it is important to take in consideration that it doesn't mean that companies should be totally financed by debt, since there are cheaper alternatives of financing, such as the retained earnings, and some companies are restricted to a given level of debt from lenders.

This theory challenged other researchers to improve some assumptions that were seen as unrealistic, leading to different theoretical perspectives regarding the impact of capital structure in the value of a company. Three of the most pertinent theories are the trade-off, pecking order and agency theories.

2.1.2. Trade-off Theory

The trade-off theory was originally developed by Kraus and Litzenberger (1973), by relaxing the assumptions of the model of Modigliani & Miller regarding the corporate taxes and bankruptcy cost. Myers (1984) suggests that the value of a firm increases with leverage because the interests are tax deductible, providing a tax shield. However, it is important to consider that the increase of debt is offset by a negative effect, the bankruptcy costs. The author says that managers must trade-off between two different consequences, when a company increases its level of debt: the benefit of the tax shield and the increase of the probability of financial distress. It is possible to maximize the value of a company when it chooses a capital structure that optimizes the relationship between these consequences.

Other authors studied this theory, but in a global way, they concluded that the value of a company is maximized by an optimal debt-to-equity ratio.

2.1.3. Pecking Order Theory

Myers and Majluf (1984) proposed a pecking order theory that states that companies follow a hierarchical order of preference by types of financing, not admitting the existence of an optimal capital structure. There are internal resources, like retained earnings, that are preferred to the external ones, such as equity and debt, being the last one the most preferred.

Many other authors started to study this theory and, Hamilton and Fox (1998) found that managers do not choose to issue equity, since it means that there would be a dilution of the control over the company and they do not want that. For this reason, they prefer to use

internal resources to finance the activities of the company. More recently, Ebaid (2009) states that issuing more equity is expected to affect that the current value of the existing firm's stocks, due to the transfer value between the new and old stockholders. So, this may undervalue the firm's new shares relative to the intrinsic value measured by managers. In this way, managers will choose firstly internal financing. If these sources are not enough, the firm will issue short term debt since does not require collateral and then long-term debt. The equity capital is the last resort.

Therefore, the pecking order theory implies that firms will only issue shares overpriced. This can be a signal that the equity may be overpriced and, then, it is not secured to finance the company by debt. Otherwise, Myers (1984) states that if a company uses debt as a financial source, it is a signal that the company is confident about its future financial health.

Rajan and Zingales (1995) suggest that there is a negative relation between profitability and leverage, so the more profitable a firm is the less debt it needs to use, since the company would have higher retained earnings. However, Fama and French (2005) found that, usually, the pecking order theory is not followed in some financial decisions.

2.1.4. Agency Theory

Although the agency theory has not been focused on the capital structure issues, this theory, mainly developed by Jensen and Meckling (1976), also had a significant role for the explanation of financing decisions by firms. It is very difficult to align the interests between shareholders and managers, since they are both two individual agents and each have their own self-interests. For this reason, and according to Jensen (1986), the main reservations came to the fact that managers tend to waste the free cash flows of the company in unprofitable investments, not paying out to investors.

In this way, we can say that this theory encourages profitable firms, with agency problems, to engage in more debt to discipline managers. So, it is seen as a way to constrained managers not to waste free cash flows and at the same time to provide pay-outs to investors, in particularly, debtholders.

These two authors also believe that the existence of agency costs also contributes to the rejection of the irrelevance theorem advanced by M&M, besides the positive bankruptcy costs, taxes and tax advantages on the payment of interests. Furthermore, they focused the existence of agency costs between shareholders and bondholders. Some projects and

investments have to be withdrawn due to the fact that previous financing decisions led to the imposition of covenants. These covenants limit some of the decisions of the companies, which may increase the agency costs. There are also other costs, like monitoring, bonding, bankruptcy and reorganization costs. One of the major problems that may arise is the possibility of expropriation of value of debtholders by the shareholders (e.g. by engaging in very risky investments or projects at the expense of creditors) or expand their wealth with the increase of dividends (Niu, 2008).

2.1.5. Determinants of Capital Structure and Firm Performance

The firm capital structure depends on a number of factors. To understand the impact of foreign shareholders in capital structure, we will control for the determinants that previous literature found to impact the capital structure, such as, firm size, tangibility of assets, growth opportunities, profitability and volatility of earnings (Ozkan, 2001; Deesomsak et al., 2004; Frank and Goyal, 2009; Proença et al., 2014).

These variables help also to control for agency costs and other issues arising from asymmetric information faced by stakeholders, as debt holders, equity holders and firm managers.

The firm size that can be measured by the natural logarithm of number of employees or by the natural logarithm of firm assets is a variable that can have an impact on the capital structure and also on the firm performance. Large firms tend to diversify their business and therefore have a lower risk of default presenting better results, when compared to smaller firms (Rajan and Zingales, 1995). This argument is also stated by the trade-off theory that expects that there is a positive relation between the size of the company and its level of debt. According to Jensen and Meckling (1976), as the company is bigger, higher is the potential separation between managers and shareholders, so it is expected to have higher agency costs. The increase of the leverage of the company is a way to discipline managers (Jensen, 1986).

It is also expected that when firms grow in size, they tend to substitute short-term debt with long-term debt (Palacín-Sánchez et al., 2013). Besides that, the costs of issuing long-term debt may be higher for smaller firms (Titman and Wessels, 1988). Considering this, small firms tend to prefer to borrow on a short-term rather than on a long-term basis.

In terms of tangibility of assets, we can have two contrasting effects on firm leverage. According to Titman and Wessels (1988), a higher level of tangible assets can reduce the scope of asset substitution and have a higher liquidation value than intangible assets in case

of bankruptcy (Fattouh et al., 2008; Huang, 2006). These authors and Akhtar and Oliver (2009) reported a positive relation between tangible assets and leverage, stating that firms with higher tangible assets have a tendency to have lower default costs and fewer debt related agency problems.

However, it is important to note that some authors discuss that the maturity of debt is linked to the maturity of assets. In this way, short-term debt will be secured with short-term assets and long-term debt secured with long-term assets (Hall et al., 2000; Palacín-Sánchez et al., 2013; Proença et al., 2014).

Growth opportunities can also have an impact on the firm leverage since this will imply changes in the agency costs. This effect arises from the conflict of interest between shareholders and managers. Myers (1977) predicts a negative relation between long-term debt and growth. As there is a higher probability of expropriation of value as a result of risky investments, the agency costs related with debt may also be higher (Deesomasak et al., 2004). However, these costs could be mitigated if the companies issue short-term debt instead of long-term debt. According to Jensen (1986), firms that have good investment opportunities will have lower debt levels comparing to the ones that are more mature, i. e., slow growth firms.

However, it is important to consider what predicts the pecking order theory. Companies with more opportunities, considering the same level of profitability, should increase their level of debt (Frank and Goyal, 2009), since the internal funds may not be sufficient. Gaud et al. (2005) predict that growth firms with financing needs will issue short-term debt.

The firm profitability is expected to have an influence on the capital structure of the firm. However, this is an ambiguous determinant since it is expected different signs for the relation with the level of leverage according to the different theories: pecking order-theory, trade-off theory and agency theory.

According to Meyers (1984) and the pecking order theory, firms will first use funds that were internally generated for financing investment, so more profitable firms tend to have a lower level of leverage. Based on the trade-off theory and authors like DeAngelo and Masulis (1980) and Ross (1977), who present models that are tax-based, highly profitable firms can borrow more to shield income from corporate taxes, which predicts a positive relation between profitability and leverage. Based on agency theories, as the study of Jensen

(1986), it is also expected that highly profitable firms have a higher level of debt, since it is a way to discipline the manager's behaviour.

Regarding liquidity, this variable is not too much used for other authors in their research hypothesis. However, it is important to consider the pecking order theory. Based on this theory, we can predict that a firm will borrow less when this firm presents more liquidity, since it will have a higher capacity to finance itself with the generated internal funds. Besides that, we can see higher agency costs of debt since managers can manipulate liquid assets favouring shareholders against the interests of debtholders as mentioned for Deesomsak et al. (2004).

Nevertheless, firms with higher levels of liquidity can also support more debt since they have greater capacity to accomplish the short-term debt obligations when they fall due (Ozkan, 2001). This argument gives a different prediction. Alternatively, if firms do not have liquidity, they will have less capacity to meet short-term obligations, so firms would need to borrow on short-term basis.

In this way, and based on the empirical evidence (Ozkan, 2001; Deesomsak Paudyal and Pescetto, 2004; Akdal, 2012), we can state that there is a negative relation between liquidity and debt.

Lastly, previous literature also suggests that the business risk, more specifically the volatility of earnings, can also affect the capital structure. As the volatility increases, the probability of financial distress also increases and there is lower capacity of the earnings of the firms since it can make more difficult the fulfilment of the debt service (Deesomsak et al., 2004).

2.1.6. Sovereign Debt Crisis in Portugal

Taking into account the time period that will be analysed, it is important to understand how the sovereign debt crisis may affected the companies in Portugal. Antão and Bonfim (2008) have shown, in relation to Portuguese firms, an increase in indebtedness ratios during the previous decade, which almost doubled between 1995 and 2007, being one of the largest across the European countries. They also stated that during the years of crisis, the increase in the level of debt could led to changes in the capital structure of Portuguese firms.

For countries that are several affected by the financial crisis, there is less credit channelled to non-financial firms and this can lead firms to a financially constrained situation, so these firms can experience credit rationing and higher costs for borrowing and lose some

profitable investment opportunities (Harrison and Widjaja, 2014). Arteta and Hale (2008) even found significant statistical evidence of a decline in foreign credit to domestic private firms. So, all these conditions can have an impact in the way firms decide their financing in periods of crisis and recession.

The credit supply shock caused by the sovereign debt crisis led to significant distress in the banking sector, and as a result there was an increase in the cost of loans for non-financial firms and households since 2010 (Neri, 2010), being this one of the reasons for changes in the capital structure of Portuguese companies.

Other studies were done with the purpose of finding if periods of crisis may change the capital structure of firms and Fosberg (2012) states that "Any recession would be expected to cause changes in firm profitability and other capital structure determinants and, therefore, cause a change in firm capital structure."

For the Portuguese financial situation, the empirical evidence of previous studies shows that it is expected a decrease in the level of leverage of Portuguese companies, more specifically for the construction industry, due to the shortage on credit supply, caused by the sovereign debt crisis, that limited the ability of banks to finance themselves and consequently the existence of constraints on the way firms finance themselves. Firms will have a lower capacity to finance themselves due to lower profitability and liquidity, so, during crisis, it is expected an increase in short-term debt (Farinha and Félix, 2014).

2.2 Main theories of Foreign Direct Investment

The sustained growth of Foreign Direct Investment (FDI) has attracted the attention of many researchers over the past decades (e. g., Buckley and Casson, 1976; Dunning, 1980; Caves, 1996). Most of the research has been focused on the perspective of investing firms, such as why, when and where the FDI enters the host economy.

2.2.1. Foreign Direct Investment

In Dunning (1980) pointed out the determinants that make an enterprise to engage in international production financed by foreign direct investment. The first one is related to the assets that the firm has or what it can acquire, on more favourable terms than what its competitors (or potential competitors). The second determinant is associated to the interest to sell or lease these assets to other firms or make use of them in an internal way. Lastly, how it is profitable to explore these assets in combination with the indigenous resources of foreign

countries rather than those of the home country. The author states that as a company has more ownership-specific advantages, the greater the incentive to internalize them; and the wider the attractions of a foreign rather than a home country production base, the greater the likelihood that a company will engage the international production, given the incentive to do so.

Later, Dunning (1988) also showed that the FDI can affect the output of domestic firms, which results to the fact that the foreign companies have significant advantages over domestic companies. In this way, the domestic firms can be affected in a direct or indirect way through FDI-linked spillover effects. The entrance of foreign firms increases the competition, which may limit the opportunities of growth of domestic firms and then their profitability may be affected.

2.2.2. Other empirical studies

D. Zhou et al. (2002) focused their research in the way the host economy, in particular the local firms, is affected by FDI, that is, how the productivity on domestic firms can be affected, more particularly, in China. It is important to understand the issues that concern the foreign investors, but also the concerns of host governments. The FDI can have a negative impact on the host economy, and the government may have to implement some policies that constrain future FDI.

These authors studied the impact of FDI in regions and industries, and they achieved different conclusions for each one. The productivity tends to be higher in local firms located in regions that attract more FDI and/or have a longer history of FDI. On the other hand, local firms tend to have a lower productivity when operating in industries that attract more FDI and have a longer history of FDI. The entrance of FDI in a region seems to improve their production efficiency bringing positive externalities, like management expertise, marketing skills, effective incentive schemes, among others. Although some domestic firms competing directly with FDI may be affected in a negative way. Another point that is positive is the fact that FDI makes pressure to the local firms be more competitive, and for that they need to be more productive and efficient.

In contrast, on the industry side, the negative effects may be explained by the fact that FDI may reduce the production efficiency of these domestic firms since many employees go away from the domestic firms competing for the same market. D. Zhou et al. also found that many foreign-invested firms in China had conquer a higher market share in

the country, which lead to a reduction in the production scale of domestic firms. Meanwhile, the host governments may continue encourage foreign investors to develop new industries in regions. However, the government should take in consideration other factors, like industrial differences, differences in regional economic development levels beyond the FDI.

It is evident that the conclusions related to the impact of foreign direct investment on the host country diverge and, more recently, other authors continue to reach to these conclusions. Meyer and Sinani (2009) state that the foreign presence in the host country leads to positive spillovers experience by domestic firms. However, Acemoglu et al. (2006) and Aghnion et a. (2009), among others, suggest that the presence of foreign firms can reduce the output of domestic firms, depending on the distance from the world technology frontier. So, the productivity spillover effect can be negative.

2.3 How the Foreign Direct Investment affects the corporate governance

Another point that has been studied for different researchers is the impact of Foreign Direct Investment (FDI) on corporate governance. One of the main questions is what the domestic firms can gain with the international business strategy. Therefore, it is mainly recognized that the FDI has an important role for the economic growth and development, particularly in developing and transition economies.

Goethals and Ooghe (1997) commanded a study to investigate the performance between 25 Belgian firms and 50 foreign companies, which are Belgian taken over by foreigners and they concluded that firms experience positive impacts from foreign takeovers. Moreover, the firms with foreign ownership performed better than their domestically owned counterparts.

Alan and Steve (2005) also observed the short and long performance of UK corporations that were acquired by foreigners. They also concluded that these firms also had positive returns on the firm performance.

Although, it is commonly agreed that foreign owned firms have been performing better than their domestically owned counterparts, some conflicted results in respect to the conclusions mentioned above were come cross in the literature.

A study conducted by Barbosa and Louri (2005) investigate if Multinational Enterprises (MNEs) operating in Portugal and Greece perform different from their domestic counterparts. In the Portuguese situation, it was considered a sample of 523 manufacturing firms' data produced by Portuguese Ministry of Labour in 1992 and based on a standard

survey that must be answered by firms with wage earners every year. For the Greek situation, 2,651 firms were used, and the data was obtained from ICAP directory in 1997. The authors concluded that the ownership ties do not make a significant difference with corresponding to the performance in Portugal and Greece.

2.4. How the Foreign Investment affects the capital structure

Finally, based on all the previous studies and argumentation we can understand how the foreign presence can affect the different companies, regions and economies. However, we observed that the study of the impact of the foreign investment in the capital structure of a company is not very usual. In this way, we would like to investigate if there is a relation between the foreign investment of a company and its level of debt for the PSI-20 companies between 2008 and 2018.

Our study is similar to Anwar and Sun (2015), as they investigated how the presence of foreign investment can affect the capital structure of domestic firms. Using a firm level panel data from China's manufacturing sector over the period 2000-2007, they show that there is a link between the foreign presence and the capital structure of domestic firms. The main conclusions show that the foreign presence has a negative and statistically significant impact on the leverage of domestic firms in China's manufacturing sector. They also found that this negative impact on the leverage of privately-owned domestic firms is relatively strong, which can be explained by the fact that domestic banks in China are state-owned, and then, they tend to favour state and collectively owned firms. Furthermore, they also found that the impact of the foreign presence on leverage varies from industry to industry, which is consistent with the presence of heterogeneity in the productivity spillover effect.

However, we also have to consider the study of Chen and Yu (2011) that investigated the impact of foreign direct investment (FDI) on capital structure for firms in emerging companies. They formulated their hypothesis on the agency theory perspective using a sample of 566 Taiwanese firms. They considered that MNCs in emerging economies with at least one foreign subsidiary or some extent of FDI facing higher levels of risk with increased foreign investment, namely the exchange rate risk, political risk and social risk may see their creditors to raise the agency costs. So, the creditors tend to reduce their incentive to lend money to these companies.

These authors concluded that these companies have a higher level of debt than non-MNCs, contrasting with the findings for MNCs based in developed countries. So,

considering that Portugal is a developed country, according to this study we may expect that companies with foreign investment tend to present lower levels of debt.

Considering the conclusions of these authors, and although their studies are related to countries that are very different from Portugal, we predict the following:

H1: *The relation between foreign investment and the debt ratio is negative.*

In the next chapters, it will be explained in more detail the data and methodology that will be applied, followed by the main results.

3. Methodology

To assess the impact of the firm-specific variables, and even more important, whether the foreign impact affected or not the capital structure of firms, we will estimate two econometric models for a sample of listed Portuguese companies, from 2008 to 2018.

We used two models, (1) and (2), where the first model will be used to assess the impact of foreigner investment on the capital structure of Portuguese firms, controlled by the main determinants previously found by the literature, and the second model will be used to assess how different those determinants impact the capital structure of Portuguese firms in the presence of the foreign investment. In the second model, we divide our sample in two sub-samples, according the presence or not of foreigner shareholders in the ownership structure.

To consider the differences in debt maturity, i.e., long-term debt ratio, short-term debt ratio and total debt ratio, we will consider three different debt ratios estimating and so we estimate six different models.

$$Debtrat_{i,t} = \alpha + \beta_1 FOREIGN_{i,t} + \beta_2 TANG_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 PROF_{i,t} + \beta_5 GROWTH_{i,t} + \beta_6 VOL_{i,t} + \beta_7 LIQ_{i,t} + c_i + \varepsilon_{i,t} \quad (1)$$

$$Debtrat_{i,t} = \alpha + \beta_1 TANG_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 PROF_{i,t} + \beta_4 GROWTH_{i,t} + \beta_5 VOL_{i,t} + \beta_6 LIQ_{i,t} + c_i + \varepsilon_{i,t} \quad (2)$$

$$i = PSI - 20\ companies;\ t = 2008, \dots, 2018$$

The dependent variables will be defined as the ratio between debt (short-term debt, long-term debt and total debt) and total assets.

Our main variable (FOREIGN) is a binary variable that takes the value of 1 if the sum of the foreign companies and/or individuals that hold qualified participations exceeding 2%, of the voting rights is higher than 10%., and zero otherwise. We consider these values under the articles 16 and 20 of CMVM, i.e., the Portuguese securities market commission, where it is stated what are the percentage of voting rights corresponding to the share capital that is necessary to be considerable.

In the case of the control variables, the variable tangibility (TANG) is defined as the ratio between fixed assets and total assets, while the variable size (SIZE) is measured by the logarithm of total assets.

The variable profitability (PROF) is defined by the ratio of earnings before interest, taxes, depreciation and amortization (EBITDA) over total assets and the variable growth (GROWTH) is given by the growth rate of total assets. Finally, the variable volatility (VOL) is measured by the ratio between gross margin (the difference of sales and the cost of goods sold) and the earnings before interest and taxes (EBIT) and the variable liquidity (LIQ) is measured by the ratio between current assets and current liabilities[1].

The model will be estimated using an unbalanced panel data, since there is a combination of cross-section data and time-series data providing a set of observations with two dimensions, one observation for each individual over a time period and some of the companies have some missing years in the sample.

According with Hsiao (2003), panel data models provide some advantages like a higher amount of data with more detail, which helps to increase the degrees of freedom and reduce collinearity among the independent variables, when compared with other types of data. In this study, it is also referred that the econometric estimation is more efficiency. When some characteristics of firms are not observed, it is easier to control with the existence of multiple observations on the same firms, however it is important to take into consideration the correlation across time (Wooldridge, 2012). We test two different methods of panel data estimation, the fixed effects model and the random effects model and according to the Hausman (1978) test, we concluded that the random effects became inconsistent and, in the other side, the fixed effects model was still consistent. In this way, we will only use the fixed effects models to present our results in the empirical results' section.

[1] The summary of key variables can be found in the Appendix

4. Sample and Descriptive Statistics

Data was collected from the database Refinitiv Eikon that is one of the world's largest providers of financial markets and infrastructure. We selected only the 19 firms that belong to the PSI-20 in 2020, since they are the ones that can reflect, in a more efficient way, how the firms and markets in Portugal are more affected by externalities and how is their development in this more recent years, specifically between 2008 and 2018. We excluded BCP, since it is a financial institution and so our final sample comprises 18 companies. Our observations include a period of eleven years, part during the crisis and part during a non-crisis period. Table 1 shows the main descriptive statistic of our sample.

Table 1 - Descriptive Statistics. The variables are $DEBTR_{i,t}$ = (Total Debt/Total Assets); $LTDR_{i,t}$ = (Long-term Debt/Total Assets); $STDR_{i,t}$ = (Short-term Debt/Total Assets); $TANG_{i,t}$ = (Fixed Assets/Total Assets); $SIZE_{i,t}$ = LN (Total Assets); $PROF_{i,t}$ = (EBITDA/Total Assets); $GROWTH_{i,t}$ = LN((Fixed Assetst) – (Fixed Assetst-1)); $VOL_{i,t}$ = (Gross Margin/EBIT); $LIQ_{i,t}$ = (Current Assets/Current Liabilities). The variables TA (total assets), EBITDA, TD (total debt) and SALES are stated in € thousands. A t-test and Wilcoxon Rank Sum [Signed Rank?] tests were used in order to test whether average values and median values of the sub-samples, respectively, are significantly different from each other. We use *, **, and * to denote significance at the 1%, 5%, and 10% level (two-sided), respectively.**

	Total of the Sample				Companies with foreign shareholders				Companies without foreign shareholders			
	Observations	Mean	Median	Std. Dev.	Observations	Mean	Median	Std. Dev.	Observations	Mean	Median	Std. Dev.
DEBTR	196	0.64	0.66	0.16	88	0.65	0.69	0.19	108	0.62	0.59***	0.14
LTDR	196	0.33	0.33	0.15	88	0.34	0.34	0.18	108	0.32	0.32	0.13
STDR	196	0.31	0.29	0.15	88	0.32	0.28	0.16	108	0.30	0.30	0.13
TANG	196	0.37	0.39	0.26	88	0.38	0.46	0.24	108	0.37	0.37	0.27
SIZE	196	7.53	8.00	1.91	88	7.87	8.34	1.90	108	7.25**	7.83**	1.87
PROF	196	0.10	0.09	0.05	88	0.10	0.10	0.05	108	0.10	0.09	0.06
GROWTH	196	0.01	0.02	0.25	88	-0.02	0.02	0.34	108	0.03	0.02	0.13
VOL	196	3.57	2.14	19.22	88	3.73	2.25	3.73	108	3.44	2.08	25.73
LIQ	196	1.21	1.00	0.86	88	1.19	0.89	1.13	108	1.23	1.09***	0.54
TA	196	6,032.7	2,966.2	9,614.1	88	8,919.5	4,193.5	13,022.7	108	3,680.5***	2,506.3**	4,256.6
TD	196	4,070.4	1,897.4	6,753.3	88	6,271.7	2,988.6	9,291.32	108	2,276.7***	1,310.9**	2,385.4
EBITDA	196	565.53	306.22	840.16	88	839.46	479.38	1,122.92	108	342.33***	277.58***	386.17
SALES	196	3,486.2	979.66	5,222.1	88	5,699.8	1,866.2	6,660.2	108	1,682.5***	927.3**	2,513.7

Regarding the ratio of debt, we can see that the firms in the total of the sample have, on average, 64% of debt of the total assets, where 33% corresponds to long-term debt and 31% corresponds to short-term debt. When we observe the two sub-samples, we can see that companies with foreign shareholders tend to have a higher level of debt, although the difference is not statistically significant. However, for both type of companies, we can see that the trend maintains, and companies tend to have a higher amount of debt in a long-term way. Although, there is no statistically difference between the samples of companies with foreign shareholders and companies without foreign shareholders in terms of short-term debt and long-term debts, the median total ratio debt of companies with foreign shareholders (69%) is statistically higher (at 1% significance level) than the median total ratio debt of companies without foreign shareholders (59%)

The firms in the sample have, on average, 37.4% of tangible assets out of the total assets. Not surprisingly, as we are talking about big companies and, normally, they have real estate properties, warehouses, manufacturing plants, vehicles, and offices, among others, that make the portion of this type assets more representative in their balance sheet. There is no difference between companies with foreign shareholders and companies without foreign shareholders.

Additionally, in both sub-samples, we can verify that in terms of size, there are differences in terms of mean and median between the two types of companies, and both are statistically significant.

Regarding the profitability, we verify that there is no significant difference between companies with foreign shareholders and companies without foreign shareholders.

The firms in the sample tend to present good investment opportunities presenting a positive growth, however when we analyse the sub-samples, we see that the companies with foreign shareholders present, on average, a negative growth, which is the opposite when compared with companies without foreign shareholders. Although this is mainly due to a small number of outliers as the median is the same.

In terms of volatility of earnings, we see that the sub-samples present a significant difference between them for both mean and median. We also highlight that the standard deviation is higher in the total sample and in companies without foreign shareholders. Regarding the liquidity of companies, the difference is not significant between the total sample and the two sub-samples.

In terms of total assets and total debt, we see that there is a significant difference between the two sub-samples, as the companies with foreign shareholders present a higher level of total assets and total debt. It is important to consider that the standard deviation is much bigger for companies with foreign shareholders than for companies without foreign shareholders. For both variables, we see that the t-test and the Wilcoxon-Mann-Whitney test confirm the difference between the two samples is statistically significant at 1% and 5% level, respectively.

Lastly, we observe that we have similar results for *EBITDA* and *SALES*, where, on average, we see that companies with foreign shareholders present higher values for both variables. The differences between the sub-samples are also statistically significant.

The correlation matrix is available in the Appendix.

4.1. The evolution of Debt for PSI-20 Companies

In figure 1, we can observe that, in a global way, firms were slightly decreasing their levels of debt, between 2008 and 2018, which can be explained through the fact that at this time there was less liquidity available and so banks were less willing to lend, even more for longer periods. In situations of great uncertainty, banks not only cut credit, but prefer to finance at short-term, since if something goes wrong, they can act in a faster way. It is important to notice that the short term-debt remained somewhat constant and in 2014, this ratio was higher than the ratio of long term-debt. This was the year where the ratio of short term-debt reached its peak. In terms of long term-debt, we can observe that this ratio presents a negative trend, and even in the years after the crisis, the ratio slightly decreased.

Figure 1 - Evolution of Debt for PSI-20 Companies (using yearly means)



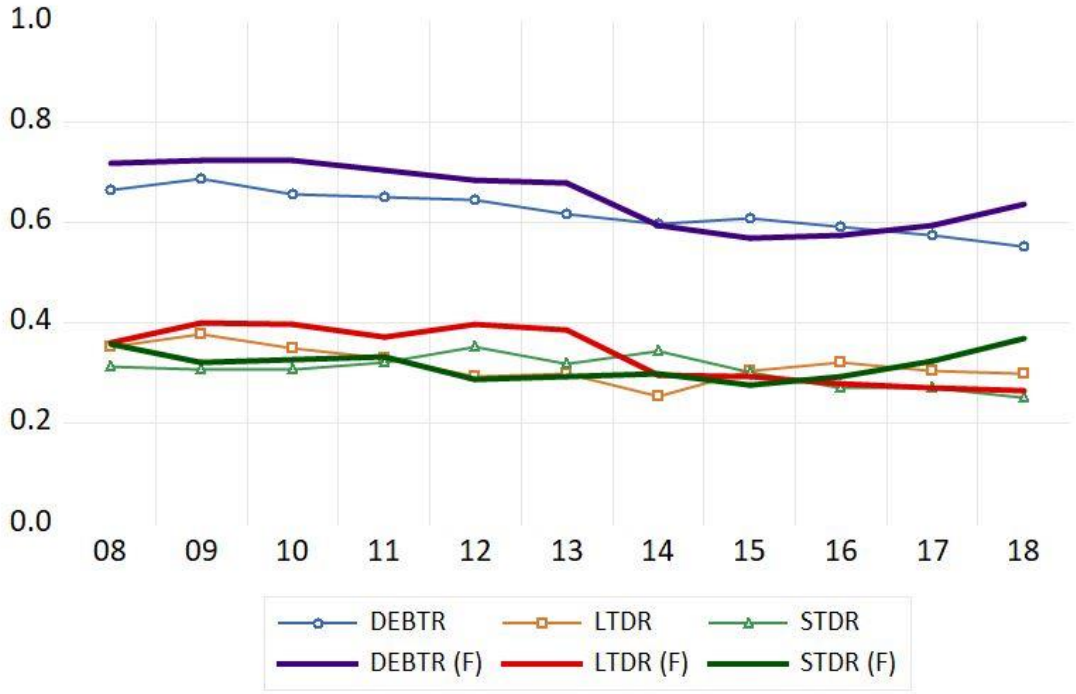
It is also necessary to highlight that, on average, these companies have a positive growth. So, higher values of debt may represent investments on new opportunities that may have appeared during these years. The reduction in the debt ratio may not necessarily be due to a decrease in debt, but to more assets and investments with less debt, as it is more difficult to have access to that.

As this is the general view, as we mentioned before, we may expect different behaviours for firms with or without foreigner investment, especially for the time period of our sample. This can be explained through the fact that companies with foreign investments did not suffer from the sovereign debt crisis as the others. These companies present a structure and a financial capacity that allow them to deal with situations of higher financial constraints in a smoother way.

In the figure 2 we can see the evolution of the different levels of debt for companies without foreign shareholders and companies with foreign shareholders. The lighter lines and identified in the graphic subtitle with DEBT, LTDR and STDR represent the companies without foreign shareholders and the other ones represent the companies with foreign shareholders. We can verify that in a global way companies with foreign shareholders presented higher values in terms of total debt ratio, except between 2014 until the first semester of 2016.

In terms of long term-debt, we see that companies that present foreign shareholders in their ownership structure presents higher values until 2015. From this year, both types of companies show a decreasing trend for this type of indebtedness. Regarding the short-term debt we see that companies present similar results, however for the last years we see that companies with foreign ownership present a tendency of growing, increasing the distance for companies that do not have foreign investors.

Figure 2 - Evolution of Debt for PSI-20 Companies with and without foreign shareholders (using yearly means)



5. Empirical Results

As it was previously mentioned, the main objective of this dissertation is to assess the impact of the presence of foreign investment over the capital structure of the PSI-20 companies listed in 2020. Besides that, we also want to evaluate if the main drivers that explain the amount of debt used by firms change with the presence of foreign investment in the ownership structure. So, we estimated our model using three different dependent variables and the panel data fixed effect estimations are presented in the table 3.

The models (1), (4) and (7) only reflect the relation between the three different debt maturity ratios with the presence of foreign ownership. In the three models the relation is positive, however it is not statistically significant when the dependent variable is the long-term debt. This result is not consistent with previous studies like Chen and Yu (2011) and Anwar and Sun (2015) as they found a negative relation for developed countries as Portugal.

With the models (2), (5) and (8) we can confirm that in fact companies with foreign shareholders present a higher value in terms of total debt and short-term debt than companies without foreign shareholders, when we compare with the models (1), (4) and (7). This greater indebtedness is due to the presence of foreign shareholders and not to the fact that these companies with foreign shareholders have different characteristics that could cause these companies to have more indebtedness. For the models (2), (5) and (8), we see that the different control variables present different significant impacts for the different three models.

Regarding the variable TANG became statistically significant, at 5% level of significance, when we consider the long-term debt, and a positive relation between the tangibility of assets and the long-term debt ratio is explained since credit institutions will require more collateral to grant long-term.

The variable *SIZE* presents a positive correlation with the level of debt. Most studies give a similar result and, although, in theory, they would also have more capacity to finance themselves it was already expected that larger companies would be less risky to creditors since the agency costs of debt are lower for these companies (Rajan and Zingales, 1995). These variables also have a positive impact when we consider the long-term debt and the short-term debt, as we can see in the models (5) and (8). It is expected that when firms grow in size, they tend to substitute short-term debt with long-term debt, which was also referred by Palacín-Sánchez et al. (2013).

The variable PROF is statistically significant when we consider the total debt ratio and the long-term debt ratio as dependent variables. This outcome is not surprising since according to the trade-off theory, where authors like DeAngelo and Masulis (1980) and Ross (1977), and the agency costs theory, where on the study of Jensen (1986) it is expected that firms with higher levels of profitability also have more capacity to service the debt and the tax benefits are more valued.

The variable *GROWTH* exhibits a negative statistically significant relation with the short-term debt, at 1% level of significance, only for the model (8). In this way, we can conclude that growing firms with good investment opportunities will have lower debt levels when compared to the ones that present a slow growth, in terms of short-term.

In terms of the volatility of earnings, we see that this variable does not have any statistically significant impact on the different types of debt.

The variable *LIQ* presents a negative correlation with the level of debt. This result validates what is stated by the pecking order theory, which is that a firm will borrow less when presents higher levels of liquidity, since it will have a higher capacity to finance itself with the generated internal funds. Authors like Deesomsak et al., (2004) and Ozkan (2011) also confirms the negative relation between these two variables. The impact is even smaller when considering a short-term debt and it is not statistically significant if we consider a long-term debt.

Table 2 - Results of the fixed effects estimations for two dependent variables: DEBTR, LTDR and STDR. The dependent variables are given by $DEBTR_{i,t}$ = (Total Debt/Total Assets); $LTDR_{i,t}$ = (Long-Term Debt/Total Assets) and $STDR_{i,t}$ = (Short-Term Debt/Total Assets). The independent variables are $TANG_{i,t}$ = (Fixed Assets/Total Assets); $SIZE_{i,t}$ = LN (Total Assets); $PROF_{i,t}$ = (EBITDA/Total Assets); $GROWTH_{i,t}$ = LN((Fixed Assets$_t$) – (Fixed Assets$_{t-1}$)); $VOL_{i,t}$ = (Gross Margin/EBIT); $LIQ_{i,t}$ = (Current Assets/Current Liabilities). The standard deviations are within the parentheses. The coefficients of the variables are significant at 1% (***), 5% (**) and 10% (*) levels of significance.

	DEBTR (1)	DEBTR (2)	DEBTR (3a)	DEBTR (3b)	LTDR (4)	LTDR (5)	LTDR (6a)	LTDR (6b)	STDR (7)	STDR (8)	STDR (9a)	STDR (9b)
FOREIGN	0.054**	0.051***			0.012	0.023			0.042***	0.028**		
	(0.027)	(0.016)			(0.022)	(0.017)			(0.015)	(0.013)		
TANG		0.045	0.158**	-0.001		0.074**	0.212**	0.018		-0.029	-0.054	-0.019
		(0.034)	(0.075)	(0.032)		(0.036)	(0.086)	(0.037)		(0.027)	(0.072)	(0.025)
SIZE		0.095***	0.100***	-0.119***		0.084***	0.071***	-0.023		0.012	0.030	-0.096***
		(0.012)	(0.019)	(0.031)		(0.012)	(0.022)	(0.035)		(0.009)	(0.018)	(0.024)
PROF		0.418**	0.545	0.196		0.467***	0.667	0.298		-0.049	-0.122	-0.102
		(0.165)	(0.362)	(0.216)		(0.176)	(0.416)	(0.244)		(0.131)	(0.345)	(0.164)
GROWTH		-0.042	-0.041	0.008		0.029	0.030	0.018		-0.071***	-0.071**	-0.010
		(0.027)	(0.031)	(0.047)		(0.029)	(0.036)	(0.053)		(0.021)	(0.029)	(0.036)
VOL		-0.000	0.003	-0.000		-0.000	0.005	-0.000		0.000	-0.002	-0.000
		(0.000)	(0.003)	(0.000)		(0.000)	(0.004)	(0.000)		(0.000)	(0.003)	(0.000)
LIQ		-0.084***	-0.073***	-0.042**		-0.009	-0.008	0.055***		-0.075***	-0.065***	-0.097***
		(0.010)	(0.013)	(0.017)		(0.011)	(0.015)	(0.019)		(0.008)	(0.012)	(0.013)
C	0.613***	-0.061	-0.175	1.517***	0.321***	-0.377***	-0.374***	0.379	0.292***	0.316***	0.199*	1.138***
	(0.014)	(0.085)	(0.119)	(0.227)	(0.012)	(0.091)	(0.137)	(0.257)	(0.008)	(0.068)	(0.114)	(0.173)
N	197	196	88	108	197	196	88	108	197	196	88	108
R-squared	0.563	0.861	0.922	0.877	0.670	0.826	0.887	0.830	0.822	0.893	0.905	0.925
Prob (F-Statistic)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

We divided the sample according to the presence (or not) of foreign shareholders in the ownership structure, in order to compare the results and see in a clearer way the impact of the presence of foreign shareholders in the level of debt taking in consideration the other variables.

The models (3a), (6a) and (9a) include only companies that present foreign shareholders in their ownership structure and the models (3b), (6b) and (9b) include the observations of companies without foreign shareholders.

When we consider the two models (3a) and (3b) that have the total debt ratio as dependent variable, we see that the main difference between the two samples is related to SIZE. We see that this variable has a positive and statistically significant impact in companies with foreign shareholders and the opposite impact in companies without foreign shareholders. The variable LIQ presents the same sign for both samples, however the impact is bigger for companies with foreign shareholders. This result is expected since companies tend to engage in lower levels of debt when they have a higher liquidity.

For the models (6a) and (6b), we also have some differences between them in terms of variables and their impacts. We see that when we have foreign shareholders in the ownership structure, the tangibility of assets and the size of companies have a positive and statistically significant impact in the level of long-term debt, which is not surprising since big companies, that also tend to have a higher amount and value of tangible assets, may engage in higher levels of debt. In the other side we see that the liquidity is only significant for companies without foreign shareholders. So, in this type of firms, when we consider the long-term debt ratio, they tend to have higher values of this kind of debt when they present a higher liquidity, which is the opposite of what was concluded for the model (3b).

Regarding the models (9a) and (9b), where we consider the short-term debt, we can see that one difference is related to the variable SIZE. So, in companies where we do not have foreign shareholders, we see that the amount of short-term debt tends to be lower for bigger companies.

The variable PROF is not statistically significant to any of these models, nevertheless the relation between the variable and the different dependent variables in the different models is consistent, being positive when we consider the total ratio of debt and the long-term and negative when we consider the short-term debt. Also, for this type of firms we also verify that companies tend to engage in lower levels of debt when they have a higher liquidity. In terms of growth, the results are not consistent in the six models, however we see that the

variable has a negative and statistically significant impact in terms of short-term debt, when we consider companies with foreign shareholders.

One more time, the volatility of earnings still does not have a significant impact on the different models.

Besides this analysis, we can also see that the models (1) and (4) are the ones that present a lower r-squared, so these models explain a smaller proportion of variance in the dependent variable that can be explained by the model. All the other models present at least a proportion of 82.2% of variance in the dependent variable that is explained by the different independent variables.

6. Robustness Checks

Along this section, we split our sample in different subsamples, creating different models in order to test the robustness and complement our conclusions. Our models will follow the specifications described in table 3.

Table 3 – List of the robustness models

Models	Specification
Model 10	The model includes only firms with a size higher than the average.
Model 11	The model includes only firms with a size lower than the average.
Model 12	The model includes only firms with a growth higher than the average.
Model 13	The model includes only firms with a growth lower than the average.
Model 14	The model includes only firms with a liquidity higher than the average.
Model 15	The model includes only firms with a liquidity lower than the average.

We will estimate each of these models using three different dependent variables: *DEBTR*, *LTDR* and *STDR*. With these models, we want to assess if these sample restrictions cause a substantial difference either on the capital structure determinants either on the impact of the presence of foreign investment, comparing with the overall results of this dissertation, estimated in the previous section.

In the table 4 we compare in terms of the variable SIZE and we can observe that in terms of the variable that measures the presence of foreign ownership, the results obtained in the section 5 are close from the ones observed in firms with a size lower than the average. We also verify that the foreign presence has a negative impact on the short-term debt level of companies with a bigger size, being the impact of this variable the opposite for companies with a size lower than the average. We also see that in smaller companies, the presence of foreign shareholders has an impact in the level of indebtedness, but the same is not true for companies with a size higher than the average. So, in a general way, smaller companies tend to have higher levels of debt with the presence of foreign shareholders in their ownership structure. In terms of tangibility, we see that only the coefficient related to the long-term debt is consistent and statistically significant. Regarding, the other variables, we can see that, in a general way, the coefficients are consistent of what was obtained in the previous section.

Table 4 - Estimations' results including firms with a size higher or lower than the average. The dependent variables are given by $DEBTR_{i,t}$ = (Total Debt/Total Assets), $STDR_{i,t}$ = (Short-Term Debt/Total Assets) and $LTDR_{i,t}$ = (Long-Term Debt/Total Assets). The independent variables are $TANG_{i,t}$ = (Fixed Assets/Total Assets); $SIZE_{i,t}$ = LN (Total Assets); $PROF_{i,t}$ = (EBITDA/Total Assets); $GROWTH_{i,t}$ = LN((Fixed $Assets_t$) – (Fixed $Assets_{t-1}$)); $VOL_{i,t}$ = (Gross Margin/EBIT); $LIQ_{i,t}$ = (Current Assets/Current Liabilities). The standard deviations are within the parentheses. The coefficients of the variables are significant at 1% (***), 5% (**) and 10% (*) levels of significance.

	Firms with a size higher than the average			Firms with a size lower than the average		
	DEBTR	**LTDR**	**STDR**	**DEBTR**	**LTDR**	**STDR**
FOREIGN	0.005 (0.013)	0.035* (0.018)	-0.030** (0.014)	0.057*** (0.018)	0.029 (0.021)	0.028* (0.015)
TANG	0.035 (0.025)	0.097*** (0.035)	-0.062** (0.028)	0.010 (0.055)	-0.040 (0.061)	0.050 (0.044)
SIZE	-0.073** (0.028)	-0.021 (0.040)	-0.052 (0.032)	0.080** (0.033)	-0.032 (0.037)	0.112*** (0.026)
PROF	0.403** (0.183)	0.553** (0.259)	-0.150 (0.202)	0.150 (0.212)	0.042 (0.237)	0.108 (0.170)
GROWTH	0.045 (0.036)	0.051 (0.051)	-0.006 (0.040)	-0.069** (0.030)	0.014 (0.034)	-0.083*** (0.024)
VOL	0.001 (0.001)	0.002 (0.002)	-0.001 (0.002)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
LIQ	-0.055*** (0.012)	0.034** (0.017)	-0.090*** (0.013)	-0.071*** (0.018)	0.025 (0.020)	-0.096*** (0.014)
C	1.306*** (0.246)	0.408 (0.349)	0.898*** (0.272)	0.189 (0.181)	0.394* (0.202)	-0.205 (0.145)
N **R-squared** **Prob (F-Statistic)**	112 0.912 0.000	112 0.848 0.000	112 0.939 0.000	84 0.925879 0.000	84 0.848 0.000	84 0.880 0.000

In the table 5, we see that the coefficients associated to FOREIGN are consistent with the results obtained in the previous section, however it is only statistically significant for firms with a growth lower than the average in terms of the total debt ratio and long-term debt. In this way, we conclude that the presence of foreign shareholders has an impact on the level of indebtedness of companies with a growth lower than the average, which do not happen when companies present higher levels of growth. Nevertheless, we highlight the fact that the relations of the other variables with the different dependent variables are, in general, consistent, besides the profitability and the volatility of earnings that do not present any coefficient statistically significant, which was only expected for the variable *VOL*.

Table 5 - Estimations' results including firms with a growth higher or lower than the average. The dependent variables are given by $DEBTR_{i,t}$ = (Total Debt/Total Assets), $STDR_{i,t}$ = (Short-Term Debt/Total Assets) and $LTDR_{i,t}$ = (Long-Term Debt/Total Assets). The independent variables are $TANG_{i,t}$ = (Fixed Assets/Total Assets); $SIZE_{i,t}$ = LN (Total Assets); $PROF_{i,t}$ = (EBITDA/Total Assets); $GROWTH_{i,t}$ = LN((Fixed Assetst) – (Fixed Assetst-1)); $VOL_{i,t}$ = (Gross Margin/EBIT); $LIQ_{i,t}$ = (Current Assets/Current Liabilities). The standard deviations are within the parentheses. The coefficients of the variables are significant at 1% (***), 5% (**) and 10% (*) levels of significance.

	Firms with a growth higher than the average			Firms with a growth lower than the average		
	DEBTR	**LTDR**	**STDR**	**DEBTR**	**LTDR**	**STDR**
FOREIGN	0.028 (0.020)	0.019 (0.023)	0.010 (0.016)	0.064*** (0.022)	0.047** (0.023)	0.016 (0.014)
TANG	0.023 (0.044)	0.085* (0.048)	-0.062* (0.035)	0.099* (0.050)	0.049 (0.052)	0.050 (0.033)
SIZE	0.079*** (0.020)	0.090*** (0.023)	-0.011 (0.016)	0.115*** (0.015)	0.085*** (0.016)	0.030*** (0.010)
PROF	0.336 (0.287)	0.427 (0.319)	-0.090 (0.231)	0.138 (0.250)	0.254 (0.262)	-0.116 (0.165)
GROWTH	-0.169*** 0.064	-0.075 (0.071)	-0.094* (0.051)	0.027 (0.061)	0.196*** (0.064)	-0.169*** (0.040)
VOL	0.002 (0.006)	-0.003 (0.006)	0.005 (0.004)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
LIQ	-0.097*** (0.019)	0.016 (0.021)	-0.113*** (0.015)	-0.055*** (0.017)	0.023 (0.018)	-0.078*** (0.012)
C	0.098 (0.152)	-0.469*** (0.168)	0.566*** (0.122)	-0.210** (0.099)	-0.350*** (0.103)	0.139** (0.065)
N	111	111	111	85	85	85
R-squared	0.848	0.823	0.917	0.924	0.902	0.930
Prob (F-Statistic)	0.000	0.000	0.000	0.000	0.0000	0.000

Finally, in the table 6 we have the models which firms have a liquidity higher or lower than the average that reflect similar results to the previous one. However, we see that the variable FOREIGN is statistically significant for both type of firms when the dependent variable is the long-term debt ratio, which is not consistent with the results of the previous section since this variable was not statistically significant. We can also verify that companies with a higher level of liquidity tend to present a higher level of debt, with the presence of foreign shareholders, which was not expected if we consider the pecking order theory. In terms of size we also see that bigger firms with a liquidity lower than the average tend to present a lower level of the total debt ratio, which was not expected, based on the results of section 5.

Table 6 - Estimations' results including firms with a liquidity higher or lower than the average. The dependent variables are given by $DEBTR_{i,t}$ = (Total Debt/Total Assets), $STDR_{i,t}$ = (Short-Term Debt/Total Assets) and $LTDR_{i,t}$ = (Long-Term Debt/Total Assets). The independent variables are $TANG_{i,t}$ = (Fixed Assets/Total Assets); $SIZE_{i,t}$ = LN (Total Assets); $PROF_{i,t}$ = (EBITDA/Total Assets); $GROWTH_{i,t}$ = LN((Fixed Assetst) – (Fixed Assetst-1)); $VOL_{i,t}$ = (Gross Margin/EBIT); $LIQ_{i,t}$ = (Current Assets/Current Liabilities). The standard deviations are within the parentheses. The coefficients of the variables are significant at 1% (***), 5% (**) and 10% (*) levels of significance.

	Firms with a liquidity higher than the average			Firms with a liquidity lower than the average		
	DEBTR	**LTDR**	**STDR**	**DEBTR**	**LTDR**	**STDR**
FOREIGN	0.036**	0.034*	0.002	0.019	0.049**	-0.030
	(0.015)	(0.020)	(0.012)	(0.019)	(0.022)	(0.016)
TANG	-0.060	-0.002	-0.058*	0.024	0.088**	-0.065
	(0.041)	(0.055)	(0.033)	(0.037)	(0.041)	(0.030)
SIZE	0.143***	0.116***	0.027***	-0.071**	-0.005	-0.067
	(0.009)	(0.011)	(0.007)	(0.031)	(0.034)	(0.025)
PROF	0.032	-0.024	0.055	1.090***	0.988***	0.102
	(0.138)	(0.182)	(0.111)	(0.307)	(0.343)	(0.248)
GROWTH	-0.053***	-0.003	-0.049***	0.078	0.092	-0.013
	(0.020)	(0.026)	(0.016)	(0.050)	(0.055)	(0.040)
VOL	0.000	0.000	-0.000	-0.001**	-0.000	-0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
LIQ	-0.075***	-0.032***	-0.043***	-0.020	0.148***	-0.168
	(0.008)	(0.011)	0.007	(0.048)	(0.054)	(0.039)
C	-0.261***	-0.444***	0.183***	1.160***	0.120	1.041
	(0.055)	(0.073)	(0.044)	(0.257)	(0.287)	(0.207)
N	75	75	75	121	121	121
R-squared	0.962	0.925	0.956	0.822	0.831	0.927
Prob (F-Statistic)	0.000	0.000	0.000	0.000	0.000	0.000

Concluding, on one hand these models give evidence that the results related with the determinants of the capital structure are relatively strong but on the other hand, the evidence related with the presence of foreign investment is not so consistent. Therefore, it is difficult to formulate exact conclusions regarding the impact of the presence of foreign investment on the capital structure of the companies that belong to the PSI-20.

7. Conclusion

The main motivation for the development of this dissertation was to assess the impact of the presence of foreign investment on the capital structure of PSI-20 companies.

In the study, we obtained results that did not provide a strong evidence that the presence of foreign investment produced a consistent impact on the capital structure of the firms. When we have foreign shareholders in the ownership structure of companies, we see that the impact is different according to the type of debt. We also concluded that the presence of foreign investment has a positive impact on corporate indebtedness especially for the medium and long-term debt, which is the opposite impact of other studies like Chen and Yu (2011) and Anwar and Sun (2015).

The overall results reflect some of the consequences advanced by the studies that focused on the modifications in the capital structure caused by the different determinants. This study also englobes a period of time with a lot of instability, since includes three different main periods: before, during and after the sovereign debt crisis of 2008. This instability also could have contributed to the weaker conclusions related to the presence of foreign investment since the data can be more volatile. Nevertheless, we have to mention that the intervention in Portugal's bailout by the *TROIKA* also could had contributed to some credit restrictions by the banking system and the way firms financed themselves during this period, with the implementation of several austerity measures in the economy.

The robustness tests performed in the last section gave support to the overall results related with the determinants of capital structure, although they have exhibited that the evidence associated with the impact of the presence of foreign investment is not so strong. Although we do not have empirical studies that relate the determinants of capital structure with the presence of foreign investment, we see that this is a theme that needs to be addressed for other researchers, even in other type of markets, since PSI-20 only considers a small group of firms. Therefore, this dissertation cannot fully support previous studies that found modifications in the capital structure of companies caused for different determinants but can motivate new studies that can include the presence of foreign investment as a possible determinant.

In this way, we encourage other researchers to address this topic and analyse if the foreign investment can have a significant impact in the capital structure of companies, mainly in bigger markets.

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Appendix

Table 7 - Summary of the key variables

Variables	Formulas
DEBTR	$DEBTR = \frac{total\ debt}{total\ assets}$
LTDR	$LTDR = \frac{long - term\ debt}{total\ assets}$
STDR	$STDR = \frac{short - term\ debt}{total\ assets}$
TANG	$TANG = \frac{fixed\ assets}{total\ assets}$
SIZE	$SIZE = \ln(total\ assets)$
PROF	$PROF = \frac{EBITDA}{total\ assets}$
GROWTH	$GROWTH = \ln(total\ assets_t) - \ln(total\ assets_{t-1})$
VOL	$VOL = \frac{gross\ margin}{EBIT} = \frac{sales - COGS}{EBIT}$
LIQ	$LIQ = \frac{current\ assets}{current\ liabilities}$
FOREIGN	FOREIGN = 1, if the sum of the foreign companies and/or individuals that hold qualified participations exceeding 2% of the voting rights is higher than 10%. FOREIGN = 0, if the sum of the foreign companies and/or individuals that hold qualified participations exceeding 2% of the voting rights is lower than 10%.

Table 8 - Correlation matrix. The variables are given by: $DEBTR_{i,t}$ = (Total Debt/Total Assets); $LTDR_{i,t}$ = (Long-term Debt/Total Assets); $STDR_{i,t}$ = (Short-term Debt/Total Assets); $TANG_{i,t}$ = (Fixed Assets/Total Assets); $SIZE_{i,t}$ = LN (Total Assets); $PROF_{i,t}$ = (EBITDA/Total Assets); $GROWTH_{i,t}$ = LN((Fixed Assets$_t$) – (Fixed Assets$_{t-1}$)); $VOL_{i,t}$ = (Gross Margin/EBIT) and $LIQ_{i,t}$ = (Current Assets/Current Liabilities).

Correlation	DEBTR	LTDR	STDR	TANG	SIZE	PROF	GROWTH	VOL	LIQ	FOREIGN
DEBTR	1.00									
LTDR	0.5707	1.00								
STDR	0.5024	-0.4233	1.00							
TANG	-0.0216	0.2332	-0.2694	1.00						
SIZE	0.3323	0.6082	-0.2738	0.4292	1.00					
PROF	0.3082	0.1638	0.1676	0.1869	0.1634	1.00				
GROWTH	0.3615	0.2032	0.1849	0.1761	0.1381	0.2925	1.00			
VOL	-0.0103	-0.0972	0.0910	-0.0159	-0.0987	0.0009	0.0069	1.00		
LIQ	-0.6098	-0.3203	-0.3355	-0.2902	-0.2632	-0.3364	-0.6401	-0.0121	1.00	