



**The Determinants of Capital Structure:
impact of institutional determinants and
subprime crisis**

Nelson Lopes
(201205612@fep.up.pt)

Master in Finance and Taxation

Supervisor: António Cerqueira
Co-Supervisor: Elísio Brandão

2017

Biographical note:

Nelson Filipe Castro Lopes is a Portuguese national born on the 2nd of January, 1994 in Sandim, Vila Nova de Gaia. He attended the Faculty of Economics of the University of Porto (FEP) from 2012 to 2017. He enrolled in a Bachelor's course in Economics (from 2012 to 2015), immediately followed by a Master's course in Finance and Taxation (from 2015 to the present date).

In 1st of June, 2017, he started working at Ferbar, S.A. in the Finance and I.T. department.

Acknowledgements:

Almost certainly that this work would never be achievable without the support of many, I would like to thank to the ones mentioned below:

- My supervisors (PhD Professor António Cerqueira and PhD Professor Elísio Brandão) for all the guidance they gave me in this dissertation;
- My colleagues in the Master of Finance and Taxation, because without their teamwork this journey would have been much harder;
- All the professors I have had during my academic life, whose contribution shall be manifested throughout my entire life;
- Finally, but foremost, my family, friends and my love, for their support, motivation, patience and unconditional love.

Abstract:

This dissertation analyses how firms operate in capital market-oriented economies and bank-oriented economies determine their capital structure, taking into account the impact of institutional variables and the subprime crisis. This is relevant because only few studies of capital structure have concentrated in analyzing the implications of the financial orientation of the economy taking into account the effect of the subprime crisis in the choices of capital structure of a company. Using panel data and a two-step system-GMM procedure, we analyzed if there was a target of leverage and what was the speed of adjustment for that target. *Thomson Reuters Datastream database* was the main database used for this study and the sample includes companies of the G5 for the period 2000 to 2015. Our main findings show that after the subprime crisis companies use more debt than equity and use more short-term debt than long-term debt. Most profitable companies used less debt and companies with more tangible assets and bigger size use more debt than equity. This effect increases after de subprime crisis because fixed assets have a more important role in approval of bank financing. Finally, the most strong result is that exist a target of leverage confirming the trade-off theory.

Keywords

Capital Structure, Subprime crisis, Institutional environment

Resumo

Esta dissertação analisa a forma como as empresas que operam em economias orientadas para o mercado de capital e para as instituições financeiras determinam a sua estrutura de capital, tendo em conta o impacto das variáveis institucionais e da crise do subprime. Isto é relevante, pois poucos estudos sobre a estrutura de capital concentraram-se em analisar as implicações da orientação financeira da economia tendo em conta o efeito da crise do subprime na maneira como as empresas se financiam. Usando dados em painel e um processo two-step system-GMM, analisamos se existia uma alavancagem alvo e se sim, qual a velocidade de ajustamento para ela. A principal base de dados utilizada foi a *Thomson Reuters Datastream* e a amostra era constituída por empresas do G5 para o período 2000 a 2015. Os nossos principais resultados mostram que depois da crise do subprime as empresas usaram mais dívida que capital e usaram mais dívida de curto prazo do que longo prazo. As empresas mais rentáveis usam menos dívida que capital e por sua vez, as empresas com mais ativos tangíveis e maior dimensão usam mais dívida que capital. Depois da crise do subprime, este efeito acentua-se pois os ativos fixos passam a ter um papel mais importante na aprovação dos empréstimos financeiros. Por fim, o resultado mais significativo é que existe uma alavancagem alvo, confirmando a teoria do trade-off.

Palavras-Chave:

Estrutura de Capital, Crise Subprime, Ambiente Institucional

Índex de contingut

Biographical note:	i
Acknowledgements:	ii
Abstract:	iii
Resumo.....	iv
I. Introduction	1
II. Literature Review and Research Hypotheses.....	4
I. Subprime Crisis	4
II. Theories of Capital Structure and Firm-level variables.....	4
Profitability (PROF).....	6
Tangibility (TANG)	6
Growth opportunities (GWOP).....	7
Size (SIZE).....	8
Non debt tax shield (NDTS)	9
III. Economic Environment	10
General government gross debt (GGGD)	10
Current account balance (CAB).....	10
Capital market development (CMD) and Banking development (BD)	11
IV. Target Leverage and Speed of Adjusting.....	12
III. Sample, Variables and Methodology	13

I.	The Sample	13
II.	Variables	14
III.	Methodology	15
IV.	Results	18
I.	Univariate results	18
II.	Multivariate analysis	23
	Full Sample	23
	Individual Samples: France, Germany, Japan, UK and US	26
	Banking Development vs Capital Market Development	26
V.	Conclusion.....	34
	References	36

Index of Tables

Table 1: Summary statistics	20
Table 2: Pearson's Correlation.....	22
Table 3: Panel Data regressions: Total sample	25
Table 4: Panel Data regressions: Individual sample	28
Table 5: Panel Data regressions: BD vs CMD.....	33

I. INTRODUCTION

The capital structure of firms has been widely discussed in the world of corporate finance and the related literature has grown extensively in the last decades. The study of capital structure is an important subject because companies need resources to finance their projects and for that purpose need to choose between equity and debt. The analyze of the choice of the capital structure of a company and its impact became even more important after with the subprime crisis. The subprime crisis is considered by many economists the worst financial crisis since the 1930s Great Depression. This period was marked by a credit crunch that played a crucial role in the failure of business, a decline in consumers wealth and a downturn in economic activity leading to the 2008-2012 global recession (Akbar et al. 2013; Harrison & Wisnu Widjaja 2014; Alves & Francisco 2015; Gonzalez 2015). This is important because the subprime crisis led to losses in many financial institutions, which might reduce the availability of credit and increase the cost of accessing credit.

In the literature related with the capital structure , only few studies have concentrated in analyzing the implications of the financial orientation of the economy and those that exist use a sample prior to the subprime crisis (Antoniou *et al.* 2008; Alves & Ferreira 2011; Acedo-Ramirez & Ruiz-Cabestre 2014). Although, a deep analysis of the implications of the traditions of capital market-oriented and bank-oriented economies on the capital structure decision is important because they have direct implications on the sources of funds available to the corporate sector. So, the lessons learned from one environment cannot be generalized to countries with different legal and institutional traditions.

Generally, empirical studies focus on identifying the firm-specific factors that managers should consider in the choice of capital structure (Akbar et al. 2013; Harrison & Wisnu Widjaja 2014), while they ignore the possible implications of institutional conditions that could affect the choice of the financing mix. However, there are already some studies that take into account institutional conditions (Antoniou et al. 2008; Alves & Ferreira 2011; Acedo-Ramirez & Ruiz-Cabestre 2014; Alves & Francisco 2015; Gonzalez 2015; Öztekin 2015).

In addition, it is apparent that the role and strength of factors which influence firms' capital structure decisions do change over time. Furthermore, for a clear understanding of the dynamic aspects of a capital structure determinants, it wouldn't be enough a cross-section analysis of leverage ratios alone. Therefore, it is important to analyse whether corporations react to new circumstances that occur in financial markets and how quickly they revert to their target capital structure when moved away by random events (Antoniou et al. 2008; Acedo-Ramirez & Ruiz-Cabestre 2014; Öztekin 2015).

Therefore, the aim of this study is analyses how firms that operate in capital market-oriented economies and bank-oriented economies determine their capital structure, taking into account the impact of institutional environmental and the subprime crisis. Additionally, using panel data and a two-step system-GMM procedure, we analyzed if there was a target of leverage and what was the speed of adjustment for that target.

Our paper contributes to the extant literature on capital structure of firms on an empirical level. Firstly, we analyze the effect of a financial shock on capital structure choices of a company and extend the period of analysis, ranging from 2000 to 2015. Secondly, we analyze the implications of the financial orientation of the economy by analysing the determinants of capital structure in the G5 countries, which have different financial and institutional traditions¹. Thirdly, we extend the literature by analyze the possible implications of institutional environment on capital structure decisions. Finally, we extend the literature by incorporating a dynamic perspective on models of leverage by analysing panel data using a two-step system-Generalized Method of Moments (GMM) procedure. To the best of our knowledge, no work has been done with this set of specifications.

The main results of this dissertation show that after the subprime crisis companies use more debt than equity and use more short-term debt than long-term debt. Most profitable companies used less debt and companies with more tangible assets and bigger size use more debt and after de subprime crisis the intensity increased because fixed assets

¹ U.S. and U.K. are market-based economies and Japan, France and Germany are bank-based economies.

have a more important role in approval of bank financing. The impact of growth opportunities and NDTS change across the dependent variables used and across countries. Accordingly to previous literature, for the control variables and in contrast with the firm-level variables, the impact on leverage and financing choices is inconclusive. Finally, the most strong result is that exist a target of leverage confirming the trade-off theory.

The remaining dissertation is organized as follows: Section II presents an overview of the related literature and developed hypotheses. Section III presents the sample selection criteria, the variables definition and the methodology that we used in our study. Section IV describes the empirical findings. Finally, section V and VI present the conclusion and the references consulted in this research.

II. LITERATURE REVIEW AND RESEARCH HYPOTHESES

I. Subprime Crisis

The subprime crisis was a global crunch and its impact on financial deregulation cannot be left aside. The repeal of the Glass-Steagall Act in the US in 1999, which put an end to the separation between commercial banks and investment banks, created conditions for industrial corporations to increase their leverage. As a result, new financial products emerged, but financial institutions weren't able to monitoring such products. In the Europe the experience of shadow banking was tolerated, sometimes promoted, and risk management was weakened, leaving banking supervisory authorities completely lost. Thus, the levels of leverage increased without the level of risk being adequately taken into account. On September 15, 2008, Lehman Brothers filed for Chapter 11 bankruptcy protection sending shockwaves around the world. Custódio *et al.* (2013), Alves & Francisco (2015) and Gonzalez (2015) show that although the subprime crisis has created the conditions for the credit shocks and liquidity problems observed, it also had a positive impact on leverage, but through the issuance of short-term debt rather than long-term debt. In line with this, we expect that after the subprime crisis firms use more debt than equity and more short-term debt than long-term debt because the increase on the information asymmetries during the subprime crisis affected capital markets, leading companies to replace long-term debt by short-term debt and leaving the long-term debt markets for large firms.

The above discussion lead us to the following hypotheses:

H1: Firms use more debt than equity after subprime crisis.

H2: Firms use more short-term debt than long-term debt after subprime crisis.

II. Theories of Capital Structure and Firm-level variables

Capital structure theory was born from the irrelevance theory of M&M (Modigliani & Miller 1958), who argue that in a perfect market the way how a firm is financed

becomes irrelevant to its own value. The M&M theory is based on a number of unrealistic assumptions and for that matter has been criticized for being purely theoretical. The criticisms against the irrelevance theory led M&M to modify their model, reflecting the idea that corporate tax system giving tax relief on the payments of interest (Modigliani & Miller 1963).

However, M&M's (1963) theoretical assumptions inspired several other theories. The two most influential theories were the Trade-off theory and the Pecking order theory.

The Trade-off theory report us that an optimal capital structure is determined by the costs and benefits related with the use of debt against equity. Consequently, firms must choose an optimal capital structure taking into account the trade-off of the marginal benefits and costs of debt after consider market imperfections such as agency costs, taxes and bankruptcy (Kraus & Litzenberger 1973; Miller 1977; Scott 1977).

The pecking order theory is based on the existence of asymmetric information between the managers of the company and shareholders about the future prospects of the company. This theory defends a hierarchy in the financing decision, thus a firm's capital structure is motivated by the desire to finance new investment by using internally generated funds, followed by debt and finally equity (Myers 1984; Myers & Majluf 1984).

Most recently, the Market Timing Theory emerged and argue that managers are indifferent between the various sources of financing from one period to another. They just use the "cheapest" financing source when the company needs financing (Baker & Wurgler 2002).

To define the role of firm-specific factors on capital structure choice, several researches based their investigation on the theories of Capital Structure mentioned above (Hovakimian *et al.* 2001; Antoniou *et al.* 2008; Alves & Ferreira 2011; Akbar *et al.* 2013; Custódio *et al.* 2013; Acedo-Ramirez & Ruiz-Cabestre 2014; Harrison & Wisnu Widjaja 2014; Muradoğlu *et al.* 2014; Alves & Francisco 2015; Gonzalez 2015; Öztekin 2015). This firm-specific determinants are: profitability, tangibility, growth opportunities, size and non-debt tax shield, because they are the most commonly used and those that presented the most significant results in previous research.

Profitability (PROF)

Trade-off and pecking order theories suggest that a firm's profitability affects its financing mix.

The trade-off theory holds that a profitability company should be more highly leverage in order to offset corporate taxes. Therefore, defends that exists a positive relationship between profitability and debt.

Otherwise, the pecking order theory suggests that firms prefer to finance new investments from retained earnings and from the raise of debt, only if internal resources weren't enough. Rajan and Zingales (1995) and Titman and Wessels (1988), among others, empirically confirmed this prediction. So, contrary to the trade-off theory, this theory defends a negative association between profitability and debt.

Antoniou *et al.* (2008) found a stronger effect of the profitability on the capital structure of the firms from bank-based economies² because these firms are commonly closely held, while the corporate ownership in market-based nations is generally less concentrated. Therefore, we expect this effect to be stronger for France and Germany.

. In line with this, we expect that profitability have a negative impact on leverage because the ability to retain earnings depend on profitability. For France and Germany we expect this effect to be more pronounced.

Following the discussion above, we will test the following hypothesis:

H3: Profitability has a negative impact on leverage.

Tangibility (TANG)

In the case of bankruptcy, tangible assets are more likely to have a market value, while intangible assets will lose value. Therefore, the risk of lending to firms with higher

² Especially Germany and French

tangible assets is lower and lenders will required a lower risk premium (Antoniou *et al.* 2008; Alves & Francisco 2015).

According to Rajan and Zingales (1995) and Titman and Wessels (1988) tangible assets have a positive relation with leverage because the collateral may alleviate agency costs of debt.

Finally, it is expected that with the subprime crisis the intensity of the relationship between tangibility and leverage will be higher, because fixed assets have a more important role in approval of bank financing.

Therefore, it is expected a positive relation between leverage and tangibility of assets. In traditional bank lending, the need for collateral is more pronounced, so it is expected that the role of asset tangibility will be more pronounced in bank-oriented economies (Antoniou *et al.* 2008).

Therefore, we will test the following hypothesis:

H4: Tangibility has a positive impact on leverage.

Growth opportunities (GWOP)

The trade-off theory defends that the cost of financial distress increases with expected growth, which forces managers to reduce the debt in their capital structure. Additionally, in presence of information asymmetries, companies issue equity instead of debt when overvaluation leads to higher expected growth (Antoniou *et al.* 2008; Alves & Ferreira 2011; Alves & Francisco 2015; Öztekin 2015).

In otherwise, internal resources of growing companies may not be enough to finance their positive net profit value (NPV) of the investment opportunities and they may have to raise external capital. According to the pecking order theory, if companies require external finance, they issue debt before equity. So, in this case, growth opportunities should be positively associated with leverage (Harrison & Wisnu Widjaja 2014).

Following Antoniou *et al.* (2008), growth opportunities should have a stronger negative impact on leverage in capital market-oriented economies than in bank-oriented economies.

In conclusion, the related studies have contradictory results in relation to the signal of the relationship between growth opportunities and leverage. Although, we expect a negative signal because is the signal found in more researches, but we do not leave completely apart the hypothesis of a positive signal. Following this line of thought, we will test this hypothesis:

H5: Growth opportunities have a negative impact on leverage.

Size (SIZE)

Generally, it's accepted that firm size is an inverse proxy of the probability of bankruptcy.

Trade-off theory suggest that larger firms are more diversified and have lower agency costs and financial distress, therefore, they are able to borrow more than other small companies.

The pecking order theory suggests, like the trade-off theory, the existence of a positive relationship because larger companies give more information to market players and as a result obtain more easily new funding from creditors.

However, some studies such as Cortez and Susanto (2012) analysed the relation between the firm's specific experience and the level of debt. For that purpose, Cortez and Susanto (2012) a sample of Japanese firms and found a negative association between size and the leverage.

As most studies show a positive relationship (Antoniou *et al.* 2008; Alves & Ferreira 2011; Alves & Francisco 2015; Gonzalez 2015; Öztekin 2015) and regarding our sample specification we will test the following hypothesis:

H6: Company size has a positive impact on leverage.

Non debt tax shield (NDTS)

The impacts of tax on capital structure choice depends of the tax policy objectives, especially when the tax system is designed to favour the retention of earnings against dividend payout, or vice versa³. So, we expect that the impact of this factor to be different across countries.

High tax rates increase the interest tax benefits of debt. For this reason, firms will issue more debt when tax rates are higher (Antoniou *et al.* 2008). On the other hand, Cortez and Susanto (2012) state that companies with larger NDTS are less indebted because NDTS are substitute for tax benefits of debt financing.

The Trade-off theory defends that firms prefer debt because this gives a NDTS. That is why, with very high tax rates, firms will use more debt. So, NDTS has an indirect impact financial leverage.

Accordingly to Acedo-Ramirez and Ruiz-Cabestre (2014), the relation between NDTS and leverage can be positive because companies with high effective tax rate have more incentive to use debt to obtain a higher interest tax shield. On the other hand, it can be negative because companies with NDTS have already enjoyed of tax benefits.

Taking into account what has been discussed above, we hope that firms with high depreciation expenses have less need for the tax shield provided by debt financing. So, we will test the following hypothesis:

H7: NDTS has a negative impact on leverage.

³ German tax system favours payout against retention, discouraging internal equity. In Japan the system favours dividends against retention. The French tax system encourages retention, reducing the need for external finance.

III. Economic Environment⁴

Prior researches indicate that the institutional environment influences firms financing policies (Antoniou *et al.* 2008; Acedo-Ramirez & Ruiz-Cabestre 2014; Alves & Francisco 2015; Gonzalez 2015; Öztekin 2015).

The economic environment has a different impact on the financing choices of firms in countries that have a different institutional setting. For this and taking into account the countries of the sample, we select four variables: general government gross debt (GGGD), current account debt (CAB), capital market development (CMD) and banking development (BD).

General government gross debt (GGGD)

According to Alves and Francisco (2015), the first decade of the 21th century was characterized by a varied supply of debt capital. Financial innovation and economic conditions created, on the one hand, conditions for financial institutions systematically restructure their balance sheets, and, on the other, for bank customers replace deposits by government and corporate bonds. Thus, the authors observed a simultaneous trend in the evaluation of government debt and private credit, and show that GGGD has a positive impact on corporate leverage, but not in short-term debt.

Consequently, we expect a positive impact of GGGD on corporate leverage:

H8: GGGD has a positive impact on leverage.

Current account balance (CAB)

The current account balance is related to the level of competitiveness of an economy. A systematic current account surplus means a wealthy and competitive

⁴ The variables related with the economic environment are the control variables of our model.

economy: an economy with firms capable of selling tradable assets, of creating value, and of financing their investment by allocating their own resources.

According to Alves and Francisco (2015) and regarding our sample, we expect that CAB has a positive impact on corporate leverage. However, the authors obtained inconclusive results.

H9: CAB has a positive impact on leverage.

Capital market development (CMD) and Banking development (BD)

Based on shareholder' rights and creditors' rights in order to study the role of the legal environment, La Porta et al. (1997,1998,1999) show that countries with poor investor protection, particularly civil law systems⁵, have significantly smaller debt and equity markers. Contrarily, countries with common law traditions⁶, strong shareholder protection, and good accounting regulations tend to be more market-based (Alves & Francisco 2015).

Relatively to the empirical works related, Alves and Ferreira (2011) found that leverage is positively influenced by stock market development and negatively by banking development. Muradoğlu *et al.* (2014), in the same way, found that stock market development has a positive impact on leverage, however the relation between banking development and leverage was inconclusive. Finally, Alves and Francisco (2015) found inconclusive results in this variables. On the other hand, in empirical works it has been verified more often the positive impact of banking development on corporate short-term debt (Alves & Ferreira 2011; Alves & Francisco 2015). This is explained because it is cheaper to monitor short-term debt than long-term debt⁷. So, we expect that banking

⁵ In the sample of this dissertation the countries with civil law systems are France, Germany and Japan.

⁶ The countries with common law traditions of our sample are United Kingdom and United States.

⁷ Particularly when creditors are not well protected.

development has a negative impact on leverage but that this impact be less strong on short-term debt.

Relatively to capital-market development, Alves and Ferreira (2011) identified a positive relation with long-term debt, and concluded that equity is replaced by long-term debt after stock market development. So, we expect that capital-market development has a positive impact on leverage, however this impact will be stronger on long-term debt.

To analyse CMD and BD we will use this proxies: total values of shares traded during the period (% of GDP) to measure the capital market development (CMD) and domestic credit provided by financial sector (% of GDP) to measure the banking development (BD) (Alves & Ferreira 2011; Alves & Francisco 2015).

Taking into account what was said above, we will test the followings hypotheses:

H10: BD has a negative impact on leverage.

H11: CMD has a positive impact on leverage.

IV. Target Leverage and Speed of Adjusting

The Trade-off theory suggest that firms have a target capital structure and managers adjust the ratios toward this target. The speed of adjustment depends on the cost of adjustment relative to the cost of being off target (Hovakimian *et al.* 2001). An analysis of the effect of one-period *lagged leverage* on the current leverage must show us whether firms have a target capital structure and, if so, what the speed of adjustment (Antoniou *et al.* 2008; Acedo-Ramirez & Ruiz-Cabestre 2014; Öztekin 2015). A positive and below unity coefficient suggest that firms have a target leverage ratio and revise their capital structure over time. A coefficient greater than one implies that firms do not have any target debt-equity ratio.

Therefore, we will test the following hypothesis:

H12: Firms have a target of leverage ratio.

III. SAMPLE, VARIABLES AND METHODOLOGY

I. The Sample

The selection of sample countries is driven by the existence of different financial and institutional traditions across the five major economies of the world⁸. These selected countries can be categorized into two groups: (i) Market-based economies (U.S. and U.K.) and (ii) Bank-based economies (Japan, France and Germany). According to Antoniou *et al.* (2008), these two groups also coincide with the split between common law and code law countries, respectively.

The choice of the sample period, from 2000 to 2015, is motivated by the availability of data and to have the same years before and after the subprime crisis, in order to make a reliable comparison.

We used firms listed on the Euronext Liffe Paris, Deutsche Boerse AG, Tokyo, London, NASDAQ or NYSE.

Thomson Reuters Datastream database was the main source of data. The initial sample covered 11,600 firms (825 French, 790 German, 2,922 Japanese, 1,857 U.K., and 5,188 U.S).

Following exclusion criteria from related studies, we excluded all companies with missing data for DS Mnemonic Code, all financial companies⁹ and, because we used dynamic models estimation that require at least five consecutive annual observation for the analysis be robust (Arellano & Bond 1991; Antoniou *et al.* 2008; Acedo-Ramirez & Ruiz-Cabestre 2014), all companies with less than five consecutive annual observations.

⁸ U.S., U.K., Japan, France and Germany

⁹ Sic Code 60-67

The final sample comprises 5,923 firms (443 French, 367 German, 2,155 Japanese, 763 U.K., and 2,195 U.S.) with 94,769 firm-year observations (7,088 for France, 5,872 for Germany, 34,480 for Japan, 12,208 for the U.K., and 35,120 for the U.S.).

The firm-level variables were obtained from Thomson Reuters Datastream Database. Current account balance, capital market development, banking development and general government gross debt were obtained from World Bank. Finally, law are obtained from La Porta *et al.* (1998).

II. Variables

The dependent variables are defined as follows: book leverage (BKLEV) is total debt (WC 03255) divided by total assets (WC 02999); market leverage (MKTLEV) is total debt divided by the sum of total debt and market capitalization (WC 08001); long-term debt to total debt (LTDT) is defined as long-term debt (WC 03251) divided by total debt; short-term debt to total debt (STDT) is defined as short-term debt (WC 03051) divided by total debt.

We used two types of explanatory variables: firm-level variables and control variables.

The firm-level variables are defined as follows: profitability (PROF) is defined as EBITDA (WC 18198) divided by total assets; growth opportunities (GWOP) is defined as total liabilities (WC 03351) plus market capitalization divided by total assets; tangibility (TANG) is defined as property, plant and equipment (WC 02501) divided by total assets; firm size (SIZE) is defined as the logarithm of sales (WC 01001); non debt tax shield (NDTS) is defined as depreciation and depletion (WC 04049) divided by total assets.

Institutional variables are defined as follows: general government gross debt (GGGD) consists of all liabilities that require payment or payments of interest and/or principal by the debtor to the creditor at a date or dates in the future (this includes debt liabilities in the form of Specially Drawing Rights (SDRs), currency and deposits, debt securities, loans, insurance, pensions and standardized guarantee schemes, and other

accounts payable); current account balance (CAB) includes all transactions other than those in financial and capital items; capital market development (CMD) is a proxy for capital market development measured by the stocks traded during the period (% of GDP); banking development (BD) is a proxy for banking development measured by domestic credit provided by financial sector (% of GDP) and law (LAW) is a variable dummy which assume the value 1 for common law countries and 0 for civil law countries.

The last variable to be analyzed is a variable dummy, Dcrisis, which assumes the value 1 for the years 2008 to 2015 and 0 otherwise.

III. Methodology

According to Acedo-Ramirez and Ruiz-Cabestre (2014), Antoniou *et al.* (2008) and Öztekin (2015), instead of estimate a static model based on observed contemporaneous debt ratios, we estimate a dynamic panel model that produces an estimate of the unobserved target leverage and that can also provide an estimate of the adjustment speed to the target. So, the benefit of the partial adjustment model is that it incorporates rebalancing costs that may slow down the companies' rate of adjustment to its optimal leverage.

The target debt level of a firm i at time t (Lev_{it}^*) may be explained by the variables explained before:

$$Lev_{it}^* = \beta_1 + \sum_{k=2} \beta_k X_{k,it} + \epsilon_{it} \quad (1)$$

where X represent the vector of explanatory variables.

Capital structure decisions are dynamic by nature and must be modeled as such. If there is a target of leverage, then companies should follow the most appropriate path to achieve that goal. However, the existence of transaction costs leads to companies not automatically adjusting their level of leverage to the target level, then:

$$Lev_{it} - Lev_{it}^* = \alpha(Lev_{it}^* - Lev_{it-1}), \text{ with } 0 < \alpha < 1 \quad (2)$$

With Lev_{it} and Lev_{it-1} are the actual debt levels in the current and previous period respectively, while α measures the adjustment speed. The transaction costs are inversely relate to α and can be referred to as $1 - \alpha$. If the speed of adjustment is high ($\alpha = 1$), companies automatically adjust their level of leverage to optimal: $Lev_{it} = Lev_{it}^*$. If, on the other hand, the speed of adjustment is null ($\alpha = 0$), companies prefer to do nothing: $Lev_{it} = Lev_{it-1}$. When the speed of adjustment is at the intermediate level ($0 < \alpha < 1$), companies adjust their level of leverage to the target in a direct manner as to adjustment speed (α). Equation 3 gives us the current level of leverage:

Integrating equations 1 and 3, and taking into account that we are working with panel data, we obtain:

$$Lev_{it} = \alpha Lev_{it}^* + (1-\alpha)Lev_{it-1}, \text{ com } 0 < \alpha < 1 \quad (3)$$

$$Lev_{it} = \alpha \beta_1 + (1-\alpha)Lev_{it-1} + \alpha \sum_{k=2} \beta_k X_{k,it} + \eta_i + \varepsilon_{it} \quad (4)$$

where η_i is the firm-specific effect (to control for unobservable heterogeneity) and ε_{it} is the white noise or random disturbance.

We decide to include fixed effects after running the Hausman test. The Hausman test reject the null hypothesis that the random effects is adequate, so confirm that fixed effects should be included in the model.

Finally, in order to analyse the choices of maturity between long term and short term, the following regression will also be estimated:

$$DMC_{it} = \alpha \beta_1 + (1-\alpha)DMC_{it-1} + \alpha \sum_{k=2} \beta_k X_{k,it} + \eta_i + \varepsilon_{it} \quad (5)$$

where DMC is debt maturity choices (Long-term debt or short-term debt).

The dynamic model with the pre-defined variables will be estimated using a two-step system GMM procedure to avoid problems of unobserved heterogeneity and endogeneity (Antoniou *et al.* 2008; Acedo-Ramirez & Ruiz-Cabestre 2014; Öztekin 2015). Unobserved heterogeneity refers to omitted variables that affect the outcome of

interest and are correlated with covariates. Thus, through the individual effect of firms, η_i , which is assumed to be different for every company and constant over time, this problem was taken into account.

From the specification of the model, we can expect endogeneity problems to arise in the regressors due to:

- i. The time between taking the decision to change the capital structure and its execution;
- ii. And the lack of strict exogeneity of the explanatory variables.

The GMM system solves the problem of endogeneity using instruments. More specifically using two types of instruments:

- i. Instruments in levels for equations in first differences;
- ii. And instruments in first differences for equations in levels.

The model is estimated using the Eviews software.

Foremost, we study descriptive statistics for firm-specific and control variables, analyse the matrix of correlation of variables, and then estimate the regressions for Leverage and DMC for the 5 countries together, for each one of the 5 countries separately and confronting capital market-oriented economies with bank-oriented economies.

IV. RESULTS

I. Univariate results

The **table 1** presents the descriptive statistics for all variables for each of the G5 countries and for all the sample. We will analysed mean, median, standard deviation, maximum value, minimum value and the number of observations for dependent and independent variables from 2000 to 2015.

As we can see in **table 1**, the banking economies have a larger mean market leverage than the capital market economies, like it was expected. For example, Japan has the larger value for the mean of market leverage with 31%, while the UK has the lowest value with 17%. It is possible to see that the minimum debt amount is zero so there are companies with no debt in their capital structure.

An interesting result is that the mean of book leverage, other measure of leverage, show us that the country with the largest mean is US, with 23%, and the banking economies have the mean of book leverage more stable around 21%. This means that, in banking economies, the market finds the book value of assets undervalued. This is consistent with Alves and Ferreira (2011), Alves and Francisco (2015) and Antoniou *et al.* (2008).

In relation to the structure of debt in relation to the maturity, in mean, all countries have used more long-term debt than sort-term debt, and the US was the country that have used more long-term debt, with 76% of total debt.

Relatively to the firm-level variables, it is notorious that the mean of profitable is higher in banking economies (France and Germany with 0.09 and Japan with 0.08) than in market capital economies (UK with 0.01 and US with 0.03). Another relevant aspect is that the mean of growth opportunities is slightly lower in banking economies than in capital market economies.

Finally, relatively to the control variables the mean of general government gross debt is very similar to the mean of current account balance. Only German and Japan have

the mean of this two variables positives. The banking development and capital market development variables show higher volatility than the other variables. In average, the capital market development is lower in banking development than in capital market development, as Alves and Francisco (2015) defended.

The **table 2** shows Pearson's correlations coefficients in order to understand the correlation between dependent and independent variables. The most relevant results are: (i) the Pearson correlation coefficient for market and book leverage is relatively small; (ii) profitable is negatively correlated with market and book leverage, but the coefficient is higher in absolute value for book leverage; (iii) growth opportunities are negatively correlated with market leverage but positively correlated with book leverage; (iv) size is positively correlated with both leverage measures, but the coefficient is higher for market leverage; (v) NDTs is positively correlated with both leverage measures, but the coefficient is higher for book leverage; (vi) all control variables have the correlation coefficient higher for market leverage than book leverage; (vii) the variable Dcrisis, which is related to post subprime crisis period is positively correlated with market leverage, but negatively correlated with book leverage and the correlation between this variable and long-term debt and short-term debt is consistent with the use of long-term debt rather than short-term debt in that period.

Table 1: Summary statistics

	MKTLEV	BKLEV	LTDT	STDT	PROF	TANG	GWOP	SIZE	NDTS	GGGD	CAB	BD	CMD
France													
Mean	0,28	0,22	0,56	0,42	0,09	0,18	1,46	12,03	0,04	-0,13	-0,14	127,50	61,44
Median	0,23	0,19	0,62	0,36	0,10	0,12	1,16	11,79	0,03	-0,25	-0,26	138,83	58,69
Max.	0,98	9,28	1,00	1,00	0,87	0,97	52,22	19,02	0,76	1,51	1,52	148,59	108,74
Min.	0,00	0,00	0,00	0,00	-1,61	0,00	0,07	2,83	-0,03	-1,22	-1,23	100,12	39,36
Std. Dev.	0,23	0,25	0,31	0,31	0,13	0,18	1,33	2,53	0,05	0,89	0,89	19,95	19,48
Skew.	0,75	13,79	-0,44	0,48	-2,32	1,57	13,59	0,32	5,27	0,50	0,51	-0,37	0,79
Kurtosis	2,78	401,53	2,04	2,13	22,81	5,49	383,93	2,73	45,64	1,85	1,86	1,28	2,86
Obs.	6189	6536	6517	6517	6536	6536	6536	6545	6536	7088	7088	7088	7088
Germany													
Mean	0,26	0,21	0,59	0,41	0,09	0,22	1,43	12,29	0,04	4,70	4,71	138,45	55,31
Median	0,20	0,18	0,68	0,32	0,11	0,19	1,18	12,02	0,03	5,65	5,68	136,98	43,34
Max.	0,99	1,88	1,00	1,00	0,89	0,92	11,45	19,18	0,78	8,45	8,32	164,80	111,65
Min.	0,00	0,00	0,00	0,00	-1,65	0,00	0,00	2,94	0,00	-1,75	-1,73	120,48	32,71
Std. Dev.	0,24	0,18	0,32	0,32	0,16	0,19	0,90	2,39	0,04	2,81	2,79	12,43	23,59
Skew.	0,83	1,09	-0,58	0,58	-2,70	1,07	3,68	0,30	5,51	-0,99	-1,01	0,81	1,22
Kurtosis	2,81	5,31	2,04	2,04	21,54	3,90	24,97	3,17	60,29	2,90	2,91	2,89	3,12
Obs.	5049	5313	4772	4772	5313	5313	5313	5293	5313	5872	5872	5872	5872
Japan													
Mean	0,31	0,21	0,44	0,56	0,08	0,30	1,17	12,91	0,03	2,73	2,73	314,76	84,76
Median	0,27	0,17	0,45	0,55	0,08	0,29	0,96	12,79	0,03	2,81	2,80	305,03	74,43
Max.	0,98	1,45	1,00	1,00	1,38	0,95	61,06	19,17	0,99	4,71	4,69	357,32	145,86
Min.	0,00	0,00	0,00	0,00	-1,82	0,00	0,00	3,93	0,00	0,79	0,74	285,17	39,55
Std. Dev.	0,26	0,18	0,27	0,27	0,08	0,18	1,18	1,65	0,03	1,11	1,11	23,25	32,92
Skew.	0,45	0,80	-0,04	0,04	-2,28	0,61	16,09	0,21	3,99	-0,31	-0,34	0,58	0,30
Kurtosis	2,03	3,10	2,06	2,06	48,75	3,24	513,78	3,52	82,41	2,29	2,29	1,92	1,77
Obs.	31967	32770	30130	30130	32770	32770	32770	32766	32770	34480	34480	34480	34480

Table 1: Summary statistics (Continued)

	MKTLEV	BKLEV	LTDT	STDT	PROF	TANG	GWOP	SIZE	NDTS	GGGD	CAB	BD	CMD
UK													
Mean	0,17	0,17	0,60	0,40	0,01	0,23	2,03	11,46	0,03	-2,78	-2,71	164,82	93,37
Median	0,11	0,12	0,72	0,28	0,09	0,14	1,38	11,53	0,02	-2,34	-2,35	165,36	94,25
Max.	0,98	7,07	1,00	1,00	4,79	1,00	99,19	19,71	0,79	-1,21	-1,20	210,28	132,25
Min.	0,00	0,00	0,00	0,00	-11,22	0,00	0,00	0,00	0,00	-5,35	-4,66	117,56	59,60
Std. Dev.	0,19	0,23	0,36	0,36	0,40	0,24	2,90	2,90	0,03	1,17	1,05	29,81	24,77
Skew.	1,36	7,36	-0,58	0,58	-8,79	1,18	11,13	-0,35	5,11	-0,78	-0,55	-0,02	0,05
Kurtosis	4,53	159,77	1,85	1,85	154,66	3,55	218,97	3,34	73,09	2,47	2,00	1,68	1,54
Obs.	9990	10494	8112	8112	10494	10494	10494	9693	10494	12208	12208	12208	12208
US													
Mean	0,20	0,23	0,76	0,24	0,03	0,27	2,23	12,86	0,04	-3,82	-3,82	222,59	222,97
Median	0,13	0,19	0,90	0,10	0,11	0,19	1,52	13,07	0,03	-3,86	-3,86	228,44	222,40
Max.	1,00	12,54	1,00	1,00	25,04	2,55	224,96	19,92	0,99	-2,20	-2,20	251,00	320,99
Min.	0,00	0,00	0,00	0,00	-99,60	0,00	-1,38	0,00	0,00	-5,82	-5,82	190,96	139,39
Std. Dev.	0,22	0,31	0,31	0,31	0,80	0,24	3,78	2,42	0,03	1,19	1,19	17,98	50,15
Skew.	1,23	9,52	-1,44	1,44	-65,00	1,06	24,83	-0,62	4,80	-0,21	-0,20	-0,35	0,22
Kurtosis	3,95	238,92	3,78	3,78	7615,89	3,30	1014,16	4,04	68,53	1,68	1,68	2,07	2,33
Obs.	30436	31929	26324	26324	31929	31929	31929	31351	31929	35120	35120	35120	35120
Total													
Mean	0,25	0,21	0,59	0,41	0,05	0,27	1,70	12,62	0,03	-0,50	-0,49	236,36	133,52
Median	0,18	0,17	0,64	0,35	0,09	0,22	1,17	12,69	0,03	-1,21	-1,20	233,43	117,99
Max.	1,00	12,54	1,00	1,00	25,04	2,55	224,96	19,92	0,99	8,45	8,32	357,32	320,99
Min.	0,00	0,00	0,00	0,00	-99,60	0,00	-1,38	0,00	-0,03	-5,82	-5,82	100,12	32,71
Std. Dev.	0,24	0,25	0,33	0,33	0,51	0,22	2,68	2,28	0,03	3,45	3,44	70,12	79,21
Skew.	0,85	8,76	-0,42	0,43	-92,35	0,96	28,28	-0,46	5,44	0,23	0,24	-0,06	0,69
Kurtosis	2,76	259,61	1,90	1,90	16851,13	3,45	1533,73	4,17	77,39	1,88	1,88	2,00	2,35
Obs.	83631	87042	75855	75855	87042	87042	87042	85648	87042	94768	94768	94768	94768

BKLEV (book leverage) is total debt divided by total assets; MKTLEV (market leverage) is total debt divided by the sum of total debt and market capitalization; LTDT (long-term debt to total debt) is defined as long-term debt divided by total debt; STDT (short-term debt to total debt) is defined as short-term debt divided by total debt. PROF (profitability) is defined as EBITDA divided by total assets; GWOP (growth opportunities) is defined as total liabilities plus market capitalization divided by total assets; TANG (tangibility) is defined as property, plant and equipment divided by total assets; SIZE (firm size) is defined as the logarithm of sales; NDTS (non debt tax shield) is defined as depreciation and depletion divided by total assets. GGGD (general government gross debt (% of GDP)) consists of all liabilities that require payment or payments of interest and/or principal by the debtor to the creditor at a date or dates in the future (this includes debt liabilities in the form of SDRs, currency and deposits, debt securities, loans, insurance, pensions and standardized guarantee schemes, and other accounts payable); CAB (current account balance (% of GDP)) includes all transactions other than those in financial and capital items; CMD (capital market development) is a proxy for capital market development measured by the stocks traded during the period (% of GDP); BD (banking development) is a proxy for banking development measured by domestic credit provided by financial sector (% of GDP). The sample includes companies for the G5 countries and the sample period is from 2000 to 2015.

Table 2: Pearson's Correlation

	MKTLEV	BKLEV	LTDT	STDT	PROF	TANG	GWOP	SIZE	NDTS	GGGD	CAB	BD	CMD	DCRISIS
MKTLEV	1,000													
BKLEV	0,623	1,000												
LTDT	0,065	0,222	1,000											
STDT	-0,059	-0,217	-0,992	1,000										
PROF	-0,035	-0,225	0,072	-0,073	1,000									
TANG	0,321	0,249	0,200	-0,196	0,077	1,000								
GWOP	-0,234	0,149	0,035	-0,039	-0,425	-0,112	1,000							
SIZE	0,146	0,055	0,241	-0,235	0,254	0,142	-0,137	1,000						
NDTS	0,062	0,116	0,090	-0,088	-0,043	0,334	0,027	0,006	1,000					
GGGD	0,157	-0,066	-0,348	0,349	0,031	0,018	-0,162	-0,007	-0,044	1,000				
CAB	0,157	-0,067	-0,349	0,350	0,030	0,017	-0,163	-0,008	-0,044	1,000	1,000			
BD	0,131	-0,018	-0,214	0,221	0,002	0,138	-0,117	0,122	-0,083	0,372	0,370	1,000		
CMD	-0,129	0,084	0,330	-0,326	-0,028	0,036	0,142	0,092	0,022	-0,653	-0,657	-0,061	1,000	
DCRISIS	0,011	-0,015	0,064	-0,065	-0,018	-0,032	-0,048	0,012	-0,017	0,002	0,004	0,207	0,093	1,000

BKLEV (book leverage) is total debt divided by total assets; MKTLEV (market leverage) is total debt divided by the sum of total debt and market capitalization; LTDT (long-term debt to total debt) is defined as long-term debt divided by total debt; STDT (short-term debt to total debt) is defined as short-term debt divided by total debt. PROF (profitability) is defined as EBITDA divided by total assets; GWOP (growth opportunities) is defined as total liabilities plus market capitalization divided by total assets; TANG (tangibility) is defined as property, plant and equipment divided by total assets; SIZE (firm size) is defined as the logarithm of sales; NDTS (non debt tax shield) is defined as depreciation and depletion divided by total assets. GGGD (general government gross debt (% of GDP)) consists of all liabilities that require payment or payments of interest and/or principal by the debtor to the creditor at a date or dates in the future (this includes debt liabilities in the form of SDRs, currency and deposits, debt securities, loans, insurance, pensions and standardized guarantee schemes, and other accounts payable); CAB (current account balance (% of GDP)) includes all transactions other than those in financial and capital items; CMD (capital market development) is a proxy for capital market development measured by the stocks traded during the period (% of GDP); BD (banking development) is a proxy for banking development measured by domestic credit provided by financial sector (% of GDP). Dcrisis is a variable dummy which assumes the value 1 for the years 2008 to 2015 and 0 otherwise. The sample includes companies for the G5 countries and the sample period is from 2000 to 2015.

II. Multivariate analysis

Full Sample

The results present in **table 3** show how (i) leverage (market leverage and book leverage) and debt maturity choices (LTDT and STDT) react to the firm-level variables and the control variables and the impact of subprime crisis in that relation, and how (ii) the variables resulting from the interaction between the period after subprime crisis and firm-level variables and control variables influence the dependent variables. To explain the two dependencies we estimate eight models.

Relatively to the impact of the subprime crisis on leverage (H1), the models (1), (2) and (4) of **table 3** confirm a positive and significant coefficient (4.1%, 2.2% and 2.7%, respectively) like Alves and Ferreira (2011) and Alves and Francisco (2015). These results provide strong support for H1.

In relation to the debt maturity choices, the model (6) and (8) of **table 3** show us that after subprime crisis the companies use more short debt than long term debt as Alves and Francisco (2015). The coefficient of model (6) is negative and significant with the value of -5.7% and the coefficient of model (8) is positive and significant with the value of 8.7%. So these results confirm H2.

Regarding to the firm-level variables, profitability, growth opportunities and NDTS, are all negatively correlated with market leverage, less the tangibility and size that are positively correlated (models (1) and (2) of table 3). This provides support for H3, H4, H5, H6 e H7. This means that companies more profitable, with more growth opportunities and utilizing more NDTS use more equity than debt. On otherwise, companies with more tangible assets and more dimension use more debt than equity. However, in model (2) after the subprime crisis the tangibility and size gained importance in market leverage and NDTS has the contrary impact on market leverage. Alves and Francisco (2015) also obtain the same results. A possible reason for this have happened is the mandatory adoption of the IFRS for the European countries in 2005. Prior to the adoption of IFRS, each company had its own accounting policy in relation to depreciation and after the adoption of IFRS the financial reporting convergence

increased. The results for book leverage are relatively similar to the market leverage results. However, the coefficient of profitability is bigger in absolute value and the growth opportunities and NDTs have a positive impact on book leverage, which don't support H5 and H7. After the subprime crisis, the impact of profitability, tangibility, growth opportunities and size are smaller on book leverage.

Finally, the tangibility and size have a positive impact on long-term debt and NDTs has a negative impact. For the short-term debt, this firm-level variables have the opposite signals.

The control variables present somewhat controversial results. For model (1) of table 3 the GGGD is positively correlated with leverage, giving support to H8. However, for model (2) and (4) is negatively correlated, which don't give support to H8. The variable CAB, in models (2) and (4) is positively correlated with leverage, supporting H9. But, in model (1) the impact of this variable on leverage is negative, don't supporting H9. Finally, after the subprime crisis, the impact on leverage of GGGD is higher and positive and the impact on leverage of CAB is higher, but negative.

For the other two controls variables, the impact of BD on leverage is negative but very close to zero and after the subprime crisis still negative, which support H10. In relation to the impact of CMD on market leverage is positive but very close to zero and after the subprime crisis stills positive, supporting H11. However, for book leverage the impact of CMD is negative, don't supporting H11. Alves and Francisco (2015) also obtained mix results in their research.

According to the trade-off theory, all models show us that exist a target of leverage supporting H12. The speed of adjustment, for model (1) is 38.2%, for model (2) is 37.6%, for model (3) is 54.1% and for model (4) is 56.1%. These results are consistent with Antoniou *et al.* (2008) work. After the subprime crisis the speed of adjusting decreases for market leverage, LTDT and STD, and increases for book leverage variable.

Table 3: Panel Data regressions: Total sample

Variables	Market Leverage		Book Leverage		LTDT		STDT	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LEVERAGE(-1)	0,618***	0,624***	0,459***	0,439***	0,382***	0,404***	0,377***	0,401***
	220,262	181,709	155,439	116,600	102,861	80,708	101,570	79,830
PROF	-0,054***	-0,051***	-0,131***	-0,171***	0,008	0,001	-0,010***	-0,003
	-37,101	-21,466	-69,469	-55,744	2,044	0,216	-2,681	-0,532
TANG	0,148***	0,137***	0,136***	0,165***	0,116***	0,122***	-0,119***	-0,125***
	26,412	22,486	19,267	21,367	9,341	9,059	-9,516	-9,247
GWOP	-0,008***	-0,008***	0,001***	0,005***	0,000	-0,001*	-0,001	0,001
	-34,916	-22,475	4,492	12,598	-0,490	-1,655	-1,059	0,937
SIZE	0,016***	0,015***	0,010***	0,012***	0,011***	0,009***	-0,011***	-0,009***
	23,259	20,254	11,368	13,859	6,735	5,090	-6,505	-4,894
NDTS	-0,032*	-0,113***	0,114***	0,014	-0,176***	-0,159***	0,190***	0,164***
	-1,903	-5,246	5,211	0,490	-4,655	-3,280	4,991	3,375
GGGD	0,032***	-0,889***	-0,004	-0,281***	-0,023***	0,295***	0,023***	-0,278***
	8,972	-18,251	-0,900	-4,422	-2,638	2,795	2,599	-2,626
CAB	-0,042***	0,877***	0,005	0,280***	0,025***	-0,291***	-0,025***	0,274***
	-11,506	17,987	0,949	4,409	2,870	-2,758	-2,814	2,590
BD	-0,001***	-0,001***	-0,000***	-0,000	0,001***	0,001***	-0,001***	-0,001***
	-46,285	-33,682	-4,070	-0,961	10,399	7,991	-10,367	-8,093
CMD	0,000***	0,000***	-0,000**	-0,000***	-0,000***	-0,000***	0,000***	0,000**
	19,360	12,183	-2,017	-4,430	-4,026	-2,609	4,247	2,561
DCRISIS	0,041***	0,022***	0,002	0,027***	0,003	-0,057***	-0,004*	0,087***
	39,238	4,237	1,497	4,056	1,183	-4,716	-1,666	6,760
LEVERAGE(-1)*DCRISIS		-0,023***		0,035***		-0,042***		-0,043***
		-6,608		8,194		-6,973		-7,118
PROF*DCRISIS		-0,002		0,054***		0,011		-0,013*
		-0,868		15,151		1,575		-1,825
TANG*DCRISIS		0,014***		-0,050***		-0,005		0,005
		3,663		-9,960		-0,567		0,629
GWOP*DCRISIS		0,001		-0,005***		0,002*		-0,002**
		1,289		-11,011		1,813		-2,328
SIZE*DCRISIS		0,002***		-0,002***		0,006***		-0,006***
		6,268		-4,057		7,290		-6,675
NDTS*DCRISIS		0,162***		0,175***		-0,041		0,051
		6,650		5,553		-0,762		0,944
GGGD*DCRISIS		0,923***		0,277***		-0,321***		0,303***
		18,883		4,354		-3,029		2,848
CAB*DCRISIS		-0,918***		-0,277***		0,320***		-0,301***
		-18,811		-4,351		3,019		-2,837
BD*DCRISIS		-0,000***		-0,000***		0,000*		-0,000
		-12,345		-3,576		1,821		-1,262
CMD*DCRISIS		0,000***		0,000***		-0,000		0,000
		10,177		5,537		-1,338		1,573
CONSTANT	0,103***	0,084***	-0,008	-0,062***	0,051**	0,084***	0,565***	0,512***
	10,096	7,609	-0,614	-4,537	2,073	3,220	22,789	19,436
Observations	76 471	76 471	79 779	79 779	68 374	68 374	68 374	68 374
Number of firms	5 873	5 873	5 876	5 876	5 663	5 663	5 663	5 663
R-squared	0,862	0,864	0,736	0,738	0,674	0,674	0,671	0,672

The dependent variable are: *BKLEV* (book leverage) is total debt divided by total assets; *MKTLEV* (market leverage) is total debt divided by the sum of total debt and market capitalization; *LTDT* (long-term debt to total debt) is defined as long-term debt divided by total debt; *STDT* (short-term debt to total debt) is defined as short-term debt divided by total debt. The explanatory variables are: *PROF* (profitability) is defined as *EBITDA* divided by total assets; *GWOP* (growth opportunities) is defined as total liabilities plus market capitalization divided by total assets; *TANG* (tangibility) is defined as property, plant and equipment divided by total assets; *SIZE* (firm size) is defined as the logarithm of sales; *NDTS* (non debt tax shield) is defined as depreciation and depletion divided by total assets; *GGGD* (general government gross debt (% of GDP)) consists of all liabilities that require payment or payments of interest and/or principal by the debtor to the creditor at a date or dates in the future (this includes debt liabilities in the form of SDRs, currency and deposits, debt securities, loans, insurance, pensions and standardized guarantee schemes, and other accounts payable); *CAB* (current account balance (% of GDP)) includes all transactions other than those in financial and capital items; *CMD* (capital market development) is a proxy for capital market development measured by the stocks traded during the period (% of GDP); *BD* (banking development) is a proxy for banking development measured by domestic credit provided by financial sector (% of GDP); *Dcrisis* is a variable dummy which assumes the value 1 for the years 2008 to 2015 and 0 otherwise. We use a two-step system GMM procedure, panel data during the period: 2000 to 2015 and the sample includes firms from the G5 countries. Coefficient values are listed at the first row at bold and t-statistics are in second row. The symbol * means that the variables is significant at 10% level, ** means that the variable is significant at 5% level, and *** means that the variable is significant at the 1% level.

Individual Samples: France, Germany, Japan, UK and US

In **table 4**, we estimate the eight same models in table 3 but for each country individually. The results are very similar of table 3.

The most relevant results are: (i) the subprime crisis doesn't have impact on leverage of firms in German and for the UK, only in model (8) has a significant impact; (ii) the subprime crisis has a negative impact on leverage of firms in France in model (4) and for firms in Japan in model (2) and (3); (iii) only for US (model (6) and (8)) the firms after subprime crisis used more short-term than long-term debt; (iv) profitability, tangibility, and size have the expected signals, however NDTs is not significant in German and UK and the signal of the coefficient changes across countries. For growth opportunities, the signal of the coefficient changes across the models (1) to (4) for France, UK and US; (v) after the subprime crisis, for model (4) in Japan and US the impact of tangibility is lower, the impact of profitability for model (4) in US is higher and the impact of size is lower for that country. In this period the impact of NDTs in France, Japan and US is positive and strong; (vi) according to the trade-off theory, all countries have a target of leverage.

Banking Development vs Capital Market Development

For **table 5** we estimate the same eight models from table 3 and 4, but we divided the sample in banking development countries¹⁰ and capital market development countries¹¹.

As we can see in table 5, the period after the subprime crisis has a positive impact on market leverage for both economies and for CMD economies after the subprime crisis the companies use more long-term debt than short-term debt. For BD economies this variable isn't significant.

¹⁰ France, Germany and Japan.

¹¹ UK and US.

For firm level variables, the profitability, tangibility and size have the signals expected, however the coefficient is higher in absolute value for BD economies. For growth opportunities and NDTs the coefficient is negative for market leverage and positive for book leverage, such as in the table 3 and 4. However, in the BD economies, the coefficient for growth opportunities is higher in absolute value, contradicting Antoniou *et al.* (2008). Relatively to the debt maturity choices, tangibility and size have a positive (negative) impact on LTDT (STDT) and NDTs has a negative (positive) impact on LTDT (STDT).

In relation to the control variables, GGGD has a negative signal when BD economies are considered and a positive signal for CMD. This means that in BD (CMD) economies when the governments are more indebted companies tend to use less (more) debt. The CAB has exactly the opposite results in comparison to GGGD results. This means that when BD (CMD) economies are more competitive the companies use more (less) debt.

Finally, all models show that exist a target of leverage, confirming one more time the trade-off theory.

Table 4: Panel Data regressions: Individual sample

France

Variables	Market Leverage		Book Leverage		LTDT		STDT	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LEVERAGE	0,550***	0,546***	0,343***	0,283***	0,380***	0,388***	0,344***	0,359***
	51,317	38,912	33,115	18,647	31,331	23,212	28,075	21,260
PROF	-0,235***	-0,222***	-0,272***	-0,240***	-0,020	-0,041	-0,040	-0,003
	-14,808	-11,273	-12,715	-9,581	-0,639	-1,083	-1,233	-0,076
TANG	0,150***	0,155***	0,140***	0,186***	0,102**	0,103*	-0,117**	-0,113**
	6,277	5,849	4,216	5,140	2,093	1,895	-2,326	-2,041
GWOP	-0,025***	-0,026***	0,047***	0,015***	0,005	0,009*	-0,013***	-0,022***
	-11,882	-9,057	16,956	4,383	1,233	1,785	-3,087	-4,181
SIZE	0,016***	0,016***	-0,008*	-0,006	0,035***	0,036***	-0,031***	-0,033***
	5,130	4,887	-1,883	-1,397	5,815	5,838	-4,979	-5,290
NDTS	0,005	-0,071	-0,175***	-0,193***	0,076	0,067	-0,081	-0,121
	0,161	-1,597	-3,591	-3,136	1,062	0,716	-1,102	-1,267
DCRISIS	0,009***	-0,006	0,012***	-0,084***	0,010	0,057*	-0,023***	-0,115***
	2,893	-0,359	2,840	-3,883	1,595	1,707	-3,517	-3,142
LEVERAGE*DCRISIS		0,004		0,056***		-0,012		-0,027
		0,314		3,242		-0,565		-1,271
PROF*DCRISIS		-0,026		-0,079**		0,046		-0,080
		-1,089		-2,454		0,951		-1,607
TANG*DCRISIS		-0,004		-0,034		-0,010		0,019
		-0,229		-1,485		-0,291		0,538
GWOP*DCRISIS		0,001		0,066***		-0,008		0,017***
		0,248		15,141		-1,235		2,610
SIZE*DCRISIS		0,001		0,000		-0,003		0,007**
		0,566		0,103		-1,049		2,571
NDTS*DCRISIS		0,147***		0,048		0,021		0,071
		2,640		0,625		0,185		0,600
CONSTANT	-0,039	-0,035	0,166***	0,193***	-0,106	-0,126*	0,704***	0,742
	-1,030	-0,889	3,419	3,975	-1,466	-1,698	9,408	9,680
Observations	5 683	5 683	6 034	6 034	6 006	6 006	6 006	6 006
Number of firms	443	443	443	443	443	443	443	443
R-squared	0,836	0,836	0,642	0,658	0,542	0,543	0,504	0,506
Adjusted R-squared	0,822	0,822	0,613	0,630	0,505	0,505	0,464	0,465

Table 4: Panel Data regressions: Individual sample (Continued)

Germany

Variables	Market Leverage		Book Leverage		LTDT		STDT	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LEVERAGE	0,548***	0,556***	0,577***	0,580***	0,393***	0,425***	0,393***	0,425***
	48,255	40,160	52,513	43,303	27,084	21,001	27,084	21,001
PROF	-0,198***	-0,156***	-0,176***	-0,140***	0,071**	0,017	-0,071**	-0,017
	-15,362	-8,721	-18,051	-10,744	2,299	0,405	-2,299	-0,405
TANG	0,198***	0,199***	0,222***	0,223***	0,217***	0,193***	-0,217***	-0,193***
	8,644	7,711	13,156	11,777	4,376	3,479	-4,376	-3,479
GWOP	-0,047***	-0,049***	-0,009***	-0,012***	0,003	0,008	-0,003	-0,008
	-16,881	-13,463	-4,368	-4,895	0,538	1,002	-0,538	-1,002
SIZE	0,020***	0,020***	0,009***	0,010***	-0,003	-0,009	0,003	0,009
	6,019	5,845	3,931	3,869	-0,392	-1,133	0,392	1,133
NDTS	-0,024	-0,011	0,047	0,054	-0,144	0,049	0,144	-0,049
	-0,510	-0,167	1,303	1,098	-1,413	0,349	1,413	-0,349
DCRISIS	-0,005	0,002	-0,001	-0,013	0,025***	-0,029	-0,025***	0,087*
	-1,587	0,120	-0,552	-0,965	3,273	-0,649	-3,273	1,859
LEVERAGE*DCRISIS		-0,020		-0,008		-0,058**		-0,058**
		-1,231		-0,513		-2,350		-2,350
PROF*DCRISIS		-0,080***		-0,071***		0,097*		-0,097*
		-3,554		-4,264		1,799		-1,799
TANG*DCRISIS		-0,008		-0,001		0,044		-0,044
		-0,387		-0,072		1,024		-1,024
GWOP*DCRISIS		0,002		0,006*		-0,006		0,006
		0,482		1,892		-0,612		0,612
SIZE*DCRISIS		0,000		0,001		0,007**		-0,007**
		0,278		1,016		2,188		-2,188
NDTS*DCRISIS		-0,043		-0,031		-0,326*		0,326*
		-0,528		-0,501		-1,837		1,837
CONSTANT	-0,081**	-0,090**	-0,050*	-0,051*	0,333***	0,394***	0,273***	0,182*
	-1,992	-2,109	-1,723	-1,712	3,302	3,732	2,689	1,709
Observations	4 655	4 655	4 921	4 921	4 320	4 320	4 320	4 320
Number of firms	367	367	367	367	357	357	357	357
R-squared	0,834	0,834	0,820	0,821	0,553	0,556	0,553	0,556
Adjusted R-squared	0,819	0,820	0,805	0,806	0,512	0,514	0,512	0,514

Table 4: Panel Data regressions: Individual sample (continued)

Japan

Variables	Market Leverage		Book Leverage		LTDT		STDT	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LEVERAGE	0,652***	0,664***	0,686***	0,693***	0,418***	0,448***	0,418***	0,448***
	164,125	146,307	190,400	178,554	73,273	58,268	73,273	58,268
PROF	-0,390***	-0,367***	-0,291***	-0,299***	-0,012	-0,016	0,012	0,016
	-47,510	-31,055	-63,055	-45,906	-0,655	-0,646	0,655	0,646
TANG	0,220***	0,212***	0,133***	0,147***	0,125***	0,132***	-0,125***	-0,132***
	22,248	19,684	22,664	23,083	5,807	5,629	-5,807	-5,629
GWOP	-0,010***	-0,007***	0,000	0,000	-0,001	-0,001	0,001	0,001
	-13,854	-8,455	-1,335	0,899	-0,439	-0,248	0,439	0,248
SIZE	0,025***	0,025***	0,017***	0,016***	0,014***	0,013***	-0,014***	-0,013***
	14,035	13,208	17,604	15,280	3,785	3,204	-3,785	-3,204
NDTS	0,306***	0,201***	0,229***	0,140***	-0,292***	-0,197	0,292***	0,197
	8,149	3,823	10,472	4,626	-3,354	-1,626	3,354	1,626
DCRISIS	0,006***	-0,020**	-0,003***	-0,006	0,026***	-0,025	-0,026***	0,080***
	5,944	-2,340	-5,376	-1,241	11,862	-1,346	-11,862	3,763
LEVERAGE*DCRISIS		-0,026***		-0,022***		-0,055***		-0,055***
		-5,828		-5,949		-6,033		-6,033
PROF*DCRISIS		-0,025*		0,019**		0,002		-0,002
		-1,745		2,383		0,076		-0,076
TANG*DCRISIS		0,020***		-0,016***		-0,010		0,010
		3,049		-3,969		-0,716		0,716
GWOP*DCRISIS		-0,017***		-0,003***		-0,001		0,001
		-13,274		-3,791		-0,324		0,324
SIZE*DCRISIS		0,003***		0,001**		0,006***		-0,006***
		5,171		2,064		4,582		-4,582
NDTS*DCRISIS		0,138***		0,127***		-0,120		0,120
		2,814		4,473		-1,087		1,087
CONSTANT	-0,263***	-0,269***	-0,181	-0,168***	0,024	0,025	0,558***	0,527***
	-11,252	-10,732	-14,540	-12,654	0,489	0,470	11,177	9,918
Observations	29 789	29 789	30 602	30 602	27 684	27 684	27 684	27 684
Number of firms	2 155	2 155	2 155	2 155	2 105	2 105	2 105	2 105
R-squared	0,910	0,910	0,932	0,932	0,627	0,628	0,627	0,628
Adjusted R-squared	0,902	0,903	0,927	0,927	0,597	0,598	0,597	0,598

Table 4: Panel Data regressions: Individual sample (continued)

UK

Variables	Market Leverage		Book Leverage		LTDT		STDT	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LEVERAGE	0,544***	0,551***	0,448***	0,522***	0,362***	0,402***	0,362***	0,402***
	59,081	38,605	47,481	37,872	30,952	24,478	30,952	24,478
PROF	-0,039***	-0,029***	-0,043***	-0,034***	0,006	0,005	-0,006	-0,005
	-8,529	-4,462	-7,798	-4,384	0,422	0,244	-0,422	-0,244
TANG	0,107***	0,098***	0,112***	0,089***	0,143***	0,138***	-0,143***	-0,138***
	7,416	5,975	6,571	4,643	3,745	3,309	-3,745	-3,309
GWOP	-0,007***	-0,005***	0,004***	0,002*	-0,002	-0,002	0,002	0,002
	-10,980	-6,700	5,256	1,874	-1,066	-0,945	1,066	0,945
SIZE	0,011***	0,011***	0,009***	0,007***	0,013**	0,008	-0,013**	-0,008
	6,576	6,013	4,734	3,378	2,540	1,563	-2,540	-1,563
NDTS	0,091	-0,019	0,008	0,032	-0,473***	-0,584***	0,473***	0,584***
	1,580	-0,229	0,123	0,322	-3,245	-2,880	3,245	2,880
DCRISIS	0,011***	-0,006	-0,002	-0,024*	0,024***	-0,056*	-0,024***	0,129***
	4,158	-0,526	-0,520	-1,692	3,606	-1,668	-3,606	3,363
LEVERAGE*DCRISIS		-0,013		-0,119***		-0,073***		-0,073
		-0,868		-7,705		-3,652		-3,652
PROF*DCRISIS		-0,021**		-0,020**		0,001		-0,001
		-2,500		-2,040		0,033		-0,033
TANG*DCRISIS		0,025**		0,042***		0,030		-0,030
		2,017		2,909		1,036		-1,036
GWOP*DCRISIS		-0,008***		0,008***		-0,002		0,002
		-6,247		5,353		-0,340		0,340
SIZE*DCRISIS		0,002**		0,002		0,009***		-0,009***
		2,072		1,593		3,338		-3,338
NDTS*DCRISIS		0,130		-0,051		0,170		-0,170
		1,467		-0,481		0,791		-0,791
CONSTANT	-0,062***	-0,057***	-0,038*	-0,016	0,201***	0,242***	0,438***	0,356***
	-3,247	-2,831	-1,763	-0,696	3,241	3,777	7,009	5,453
Observations	8 585	8 585	9 022	9 022	7 027	7 027	7 027	7 027
Number of firms	728	728	730	730	673	673	673	673
R-squared	0,742	0,744	0,679	0,682	0,588	0,590	0,588	0,590
Adjusted R-squared	0,718	0,720	0,650	0,654	0,544	0,545	0,544	0,545

Table 4: Panel Data regressions: Individual sample (continued)

US

Variables	Market Leverage		Book Leverage		LTDT		STDT	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LEVERAGE	0,558***	0,576***	0,432***	0,375***	0,357***	0,363***	0,357***	0,363***
	112,927	91,357	87,083	58,953	54,614	41,286	54,586	41,282
PROF	-0,042***	-0,041***	-0,136***	-0,192***	0,006	0,001	-0,008*	-0,002
	-23,860	-13,277	-47,016	-38,719	1,347	0,193	-1,727	-0,322
TANG	0,138***	0,126***	0,073***	0,135***	0,097***	0,103***	-0,098***	-0,104***
	14,977	12,406	5,034	8,545	4,840	4,729	-4,896	-4,753
GWOP	-0,006***	-0,008***	0,001	0,010***	0,000	-0,002*	-0,001	0,002
	-24,191	-16,014	1,487	12,804	0,342	-1,702	-1,520	1,548
SIZE	0,011***	0,009***	0,009***	0,015***	0,014***	0,010***	-0,014***	-0,010***
	10,595	8,114	5,688	9,431	5,732	3,990	-5,748	-3,933
NDTS	-0,159***	-0,198***	0,491***	0,247***	-0,499***	-0,519***	0,498***	0,514***
	-4,800	-5,156	8,983	3,937	-6,189	-5,487	6,174	5,439
DCRISIS	0,011***	-0,019**	0,006***	0,063***	0,009***	-0,105***	-0,010***	0,120***
	8,717	-2,382	2,858	4,972	3,171	-5,360	-3,235	5,848
LEVERAGE*DCRISIS		-0,032***		0,104***		-0,014		-0,014
		-4,768		13,666		-1,289		-1,319
PROF*DCRISIS		0,000		0,071***		0,011		-0,013
		-0,024		12,595		1,199		-1,468
TANG*DCRISIS		0,021***		-0,097***		-0,013		0,012
		3,202		-9,487		-0,967		0,896
GWOP*DCRISIS		0,002***		-0,012***		0,003**		-0,004***
		4,187		-13,515		2,403		-3,108
SIZE*DCRISIS		0,002***		-0,004***		0,009***		-0,009***
		2,912		-4,059		6,353		-6,321
NDTS*DCRISIS		0,095**		0,388***		0,043		-0,040
		2,117		5,274		0,422		-0,396
Constante	-0,069***	-0,039***	-0,019	-0,113***	0,297***	0,348***	0,349***	0,288***
	-5,360	-2,784	-0,954	-5,350	9,304	10,368	10,934	8,606
Observations	27 759	27 759	29 200	29 200	23 337	23 337	23 337	23 337
Number of firms	2 180	2 180	2 181	2 181	2 085	2 085	2 085	2 085
R-squared	0,814	0,814	0,685	0,692	0,590	0,591	0,590	0,591
Adjusted R-squared	0,798	0,798	0,659	0,667	0,550	0,551	0,549	0,550

The dependent variable are: *BKLEV* (book leverage) is total debt divided by total assets; *MKTLEV* (market leverage) is total debt divided by the sum of total debt and market capitalization; *LTDT* (long-term debt to total debt) is defined as long-term debt divided by total debt; *STDT* (short-term debt to total debt) is defined as short-term debt divided by total debt. The explanatory variables are: *PROF* (profitability) is defined as EBITDA divided by total assets; *GWOP* (growth opportunities) is defined as total liabilities plus market capitalization divided by total assets; *TANG* (tangibility) is defined as property, plant and equipment divided by total assets; *SIZE* (firm size) is defined as the logarithm of sales; *NDTS* (non debt tax shield) is defined as depreciation and depletion divided by total assets; *Dcrisis* is a variable dummy which assumes the value 1 for the years 2008 to 2015 and 0 otherwise. We use a two-step system GMM procedure, panel data during the period: 2000 to 2015 and the sample includes firms from the G5 countries. Coefficient values are listed at the first row at bold and t-statistics are in second row. The symbol * means that the variables is significant at 10% level, ** means that the variable is significant at 5% level, and *** means that the variable is significant at the 1% level.

Table 5: Panel Data regressions: BD vs CMD

Variables	Market Leverage		Book Leverage		LTDT		STDT	
	BD (1)	CMD (2)	BD (3)	CMD (4)	BD (5)	CMD (6)	BD (7)	CMD (8)
LEVERAGE	0,625***	0,567***	0,522***	0,433***	0,403***	0,358***	0,394***	0,358***
	170,925	131,757	139,982	98,695	82,865	62,713	80,890	62,693
PROF	-0,294***	-0,039***	-0,254***	-0,122***	0,006	0,004	-0,020	-0,006
	-49,168	-24,525	-49,032	-48,146	0,440	0,991	-1,460	-1,256
TANG	0,196***	0,117***	0,179***	0,090***	0,143***	0,114***	-0,147***	-0,115***
	23,814	15,355	24,406	7,712	7,863	6,411	-8,036	-6,455
GWOP	-0,013***	-0,006***	0,004***	0,002***	-0,001	0,000	-0,001	-0,000
	-20,176	-24,368	7,322	4,625	-0,722	-0,471	-0,347	-0,569
SIZE	0,027***	0,014***	0,011***	0,009***	0,012***	0,012***	-0,011***	-0,013***
	19,939	16,125	10,183	7,205	4,280	5,630	-3,797	-5,671
NDTS	-0,023	-0,095***	-0,035*	0,325***	-0,022	-0,493***	0,039	0,492***
	-1,182	-3,376	-1,958	7,300	-0,516	-6,976	0,884	6,970
GGGD	-0,042**	0,021***	-0,066***	-0,006	0,030	-0,018*	-0,030	0,018*
	-2,230	5,382	-3,837	-0,878	0,699	-1,837	-0,711	1,814
CAB	0,030	-0,027***	0,064***	0,007	-0,023	0,018*	0,024	-0,017*
	1,618	-6,611	3,737	1,070	-0,547	1,695	0,562	-1,670
DCRISIS	0,041***	0,030***	0,002	0,000	0,001	0,008*	-0,003	-0,009**
	31,521	16,626	1,618	0,114	0,324	1,936	-0,934	-2,023
CONSTANT	0,153***	-0,014	0,009	-0,030	-0,159***	0,235***	0,747***	0,409***
	8,271	-1,107	0,610	-1,503	-3,909	7,076	18,097	12,234
Observations	40 127	36 344	41 557	38 222	38 010	30 364	38 010	30 364
Number of firms	2 965	2 908	2 965	2 911	2 905	2 758	2 905	2 758
R-squared	0,897	0,806	0,842	0,684	0,621	0,607	0,617	0,607
Adjusted R-squared	0,889	0,789	0,830	0,658	0,589	0,568	0,585	0,568

The dependent variable are: *BKLEV* (book leverage) is total debt divided by total assets; *MKTLEV* (market leverage) is total debt divided by the sum of total debt and market capitalization; *LTDT* (long-term debt to total debt) is defined as long-term debt divided by total debt; *STDT* (short-term debt to total debt) is defined as short-term debt divided by total debt. The explanatory variables are: *PROF* (profitability) is defined as EBITDA divided by total assets; *GWOP* (growth opportunities) is defined as total liabilities plus market capitalization divided by total assets; *TANG* (tangibility) is defined as property, plant and equipment divided by total assets; *SIZE* (firm size) is defined as the logarithm of sales; *NDTS* (non debt tax shield) is defined as depreciation and depletion divided by total assets; *GGGD* (general government gross debt (% of GDP)) consists of all liabilities that require payment or payments of interest and/or principal by the debtor to the creditor at a date or dates in the future (this includes debt liabilities in the form of SDRs, currency and deposits, debt securities, loans, insurance, pensions and standardized guarantee schemes, and other accounts payable); *CAB* (current account balance (% of GDP)) includes all transactions other than those in financial and capital items; *Dcrisis* is a variable dummy which assumes the value 1 for the years 2008 to 2015 and 0 otherwise. We use a two-step system GMM procedure, panel data during the period: 2000 to 2015 and the sample includes firms from the G5 countries. Coefficient values are listed at the first row at bold and *t*-statistics are in second row. The symbol * means that the variables is significant at 10% level, ** means that the variable is significant at 5% level, and *** means that the variable is significant at the 1% level.

V. CONCLUSION

This dissertation analyses how firms that operate in capital market-oriented economies and bank-oriented economies determine their capital structure, taking into account the impact of institutional variables and the subprime crisis. The main objectives are: investigate the effect of a financial shock on capital structure choices of a company, analyze the possible implications of institutional environment on capital structure decisions and analyze if firms have a target capital structure and, if do, what the speed of adjustment for that target.

For these analyses, we used a sample that comprises 5,923 firms (443 French, 367 German, 2,155 Japanese, 763 U.K., and 2,195 U.S.) related to the Euronext Liffe Paris for France, Deutsche Boerse AG for Germany, Tokyo for Japan, London for UK and NASDAQ and NYSE for US during the period of 2000-2015, panel data and a two-step system-GMM procedure with cross section fixed effects.

The results of this dissertation show that the subprime crisis has a significant impact on leverage, and that following this event companies use more debt than equity and use more short-term debt than long-term debt. Most profitable companies used less debt and companies with more tangible assets and bigger size use more debt and after the subprime crisis the intensity increased because fixed assets have a more important role in approval of bank financing. The impact of growth opportunities and NDTs change across the dependent variables used and across countries. Accordingly to previous literature, for the control variables and in contrast with the firm-level variables, the impact on leverage and financing choices is inconclusive. Finally, the most strong result is that exist a target of leverage confirming the trade-off theory.

In summary, the strength and the nature of the effect of firm-specific variables as well as environmental factors on capital structure choice of a company are dependent on the economic and legal traditions of the country in which the company is located.

The main limitations of our study are related to the fact that we don't take into account the industrial effects, because it is known that some industries are characterized by high leverage, while others are recognised by having low leverage. Additionally, because we use a two-step system-GMM procedure we must have five consecutive observations, therefore some companies have been eliminated according to this criteria.

Future research can include more firm-level variables such as effective tax rate, earnings volatility, dividend payout ratio or share price performance. Besides that, it can also be used other control variables like a term structure of the interest rate, a M&A activity or a market equity premium. It would also be important to analyse industrial effects, because as referred some industries have typically more leverage than others.

REFERENCES

- Acedo-Ramirez, M.A., Ruiz-Cabestre, F.J., 2014. Determinants of Capital Structure: United Kingdom Versus Continental European Countries. *Journal of International Financial Management & Accounting*, 237
- Akbar, S., Rehman, S.U., Ormrod, P., 2013. The impact of recent financial shocks on the financing and investment policies of UK private firms. *International Review of Financial Analysis* 26, 59-70
- Alves, P., Francisco, P., 2015. The impact of institutional environment on the capital structure of firms during recent financial crises. *The Quarterly Review of Economics and Finance* 57, 129-146
- Alves, P.F.P., Ferreira, M.A., 2011. Capital structure and law around the world. *Journal of Multinational Financial Management* 21, 119-150
- Antoniou, A., Guney, Y., Paudyal, K., 2008. The determinants of capital structure: Capital market-oriented versus bank-oriented institutions. *Journal of Financial and Quantitative Analysis* 43, 59-92
- Arellano, M., Bond, S., 1991. Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. p. 277. *Review of Economic Studies Ltd.*
- Baker, M., Wurgler, J., 2002. Market timing and capital structure. *Journal of Finance* 57, 1-32
- Cortez, M.A., Susanto, S., 2012. The determinants of corporate capital structure: evidence from Japanese manufacturing companies. 11, 121
- Custódio, C., Ferreira, M.A., Laureano, L., 2013. Why are US firms using more short-term debt? *Journal of Financial Economics* 108, 182-212
- Gonzalez, V.M., 2015. The financial crisis and corporate debt maturity: The role of banking structure. *Journal of Corporate Finance* 35, 310-328
- Harrison, B., Wisnu Widjaja, T., 2014. The Determinants of Capital Structure: Comparison between Before and After Financial Crisis. p. 55
- Hovakimian, A., Opler, T., Titman, S., 2001. The debt-equity choice. *Journal of Financial and Quantitative Analysis* 36, 1-24
- Kraus, A., Litzenberger, R.H., 1973. STATE-PREFERENCE MODEL OF OPTIMAL FINANCIAL LEVERAGE. *Journal of Finance* 28, 911-922
- La Porta, R., Florencio, L.-d.-S., Shleifer, A., 1999. *Corporate Ownership around the World*. p. 471. Blackwell Publishers

- La Porta, R., Florencio, L.-D.-S., Shleifer, A., Vishny, R.W., 1997. Legal Determinants of External Finance. p. 1131. American Finance Association
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R.W., 1998. Law and Finance. Journal of Political Economy -Chicago-
- Miller, M.H., 1977. DEBT AND TAXES. Journal of Finance 32, 261-275
- Modigliani, F., Miller, M.H., 1958. THE COST OF CAPITAL, CORPORATION FINANCE AND THE THEORY OF INVESTMENT. American Economic Review 48, 261-297
- Modigliani, F., Miller, M.H., 1963. CORPORATE-INCOME TAXES AND THE COST OF CAPITAL - A CORRECTION. American Economic Review 53, 433-443
- Muradoğlu, Y.G., Onay, C., Phylaktis, K., 2014. European integration and corporate financing. International Review of Financial Analysis 33, 138-157
- Myers, S.C., 1984. THE CAPITAL STRUCTURE PUZZLE. Journal of Finance 39, 575-592
- Myers, S.C., Majluf, N.S., 1984. Corporate financing and investment decisions when firms have information that investors do not have. pp. 187-187 - 221
- Öztekin, Ö., 2015. Capital Structure Decisions around the World: Which Factors Are Reliably Important? , pp. 301-301 - 323
- Rajan, R.G., Zingales, L., 1995. What Do We Know about Capital Structure? Some Evidence from International Data. p. 1421
- Scott, J.H., 1977. BANKRUPTCY, SECURED DEBT, AND OPTIMAL CAPITAL STRUCTURE. Journal of Finance 32, 1-19
- Titman, S., Wessels, R., 1988. The Determinants of Capital Structure Choice. p. 1