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The Impact of Capital Structure on Firm Performance: a post subprime mortgage crisis analysis of European companies

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Abstract

Capital structure is one of the most developed and important subjects in finance, however, the existing literature on capital structure does not suggest a clear relationship with performance. The main objective of this study is, while considering the reverse causality between performance and leverage, to test the impact of capital structure on the performance of the listed firms of four European countries: Cyprus, Greece, Portugal, and Spain for the period of 2012-2019. This period was chosen to minimize the impact of the subprime mortgage crisis and to avoid the covid-19 pandemic repercussions. The results from the regression analysis of the combined data support a negative relationship between performance and capital structure, in most regressions. When acknowledging the reverse causality, is it not clear which of these two hypotheses, franchise-value or efficiency-risk, prevails, because it is found support for both, depending on the performance and leverage ratios used in each regression.

Keywords: Capital Structure, Leverage, Firm performance, Reverse causality, Listed firms

JEL-Classification: G3; G32

Resumo

A estrutura de capitais é um dos temas mais desenvolvidos e importantes nas finanças, no entanto, a literatura existente não sugere uma relação clara com o desempenho. O principal objetivo deste estudo é, considerando a causalidade reversa entre desempenho e alavancagem, testar o impacto da estrutura de capitais no desempenho de empresas públicas de quatro países europeus: Chipre, Grécia, Portugal e Espanha para o período de 2012-2019. Este período foi escolhido com o intuito de minimizar o impacto da crise hipotecária subprime e evitar reprecurssões da pandemia covid-19. Os resultados da análise das regressões dos dados combinados dos países suportam uma relação negativa entre desempenho e estrutura de capitais, na maioria das regressões. Considerando a causalidade reversa, não é claro qual das hipóteses, franchise-value ou efficiency-risk, prevalece, pois, ambas são significativas, dependendo dos rácios de desempenho e alavancagem usados em cada regressão.

Palavras-chave: Estrutura de capitais, Alavancagem, Desempenho empresarial, Causalidade reversa, Empresas públicas

Classificação-JEL: G3; G32

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1. Introduction

The purpose of this dissertation is to empirically test the impact of capital structure on the performance of four European countries: Cyprus, Greece, Portugal, and Spain, considering the reverse causality between performance and leverage. Generally, a company's main goal is to maximize its shareholders' wealth, which is achieved when it "maximizes its growth opportunities by making superior financing and investing decisions, while optimally managing the operational risks of the business" (Asaf, 2004, pp.12). Capital structure is the mix of debt and equity financing, and it can influence a company's value by affecting return and risk, making this decision of major importance (Gitman and Zutter, 2012). According to Brigham and Ehrhardt (2011), this decision "includes the choice of a target capital structure, the average maturity of debt, and the specific types of financing to use for any particular time" (pp.600). The idea of capital structure irrelevance under a perfect market and with the absence of taxes is attributed to Modigliani and Miller (1958). However, when acknowledging taxes, this decision becomes important towards value maximization, because of the tax shield from debt financing (Modigliani and Miller, 1963). After Modigliani and Miller's, several theories have been developed considering their work as a starting point. The trade-off theory is commonly credited to Kraus and Litzenberger (1973). They built a model based on the trade-off between the benefits (tax shield) and the costs (bankruptcy penalties) from debt financing to achieve an optimal capital structure in which firm value is maximized. Competing with this theory, the pecking order theory argues that under information asymmetry, companies have an order of preference for financing sources, denying the existence of an optimal capital structure (Myers and Majluf, 1984). Whereas, Baker and Wurgler (2002) reached the same conclusion, considering the "equity market timing". Moreover, even other contributions like the agency theory from Jensen and Meckling (1976), the neutral mutations from Miller (1977), or the signaling theory from Ross (1977) could be used to explain the relationship between capital structure and firm performance, but in reality, there isn't a universal agreement on these immense studies on this subject, either theoretical or empirical (Myers, 2001). Acknowledging the reverse causality from performance to capital structure could help to explain the mixed results of the empirical evidence, avoiding mistaking the effects of capital structure on performance with the effects of performance on capital structure.

2. Literature review

2.1 (Ir)relevance of capital structure

Considering, particularly, a perfect market and the absence of taxes, Modigliani and Miller (1958) argued that the capital structure decision would be irrelevant. The value of an unleveraged firm would be the same as the value of a leveraged firm, in the same class and industry, and the weighted average cost of capital (WACC) would be constant, regardless of the capital structure implemented (Modigliani and Miller, 1958). Robichek and Myers (1966), however, asserted that a firm's value would still change with the degree of leverage, in the absence of taxes. The value of a firm would maintain for moderate levels of debt but would decrease for high levels of debt. Whereas, Stiglitz (1969) concluded that under less demanding assumptions, the conclusions of Modigliani and Miller's (1958) paper would still hold. Additionally, Hirshleifer (1966) in an article partially dedicated to the optimal structure problem, assuming no tax effects, considered that financial operations don't change wealth as a whole. Different mixes of equity and debt would result in the same wealth overall. Hence, there is not an optimal capital structure that can maximize firm value (Hirlshleifer, 1966). More than half a decade later, Modigliani and Miller (1963) improved their model by relaxing the assumption of a tax-free setting, introducing a corporate income tax. The tax benefits from debt financing would increase a company's value, making the value of an unleveraged firm lower than the value of a leveraged firm, in the same class and industry, by the amount of the tax shield and the WACC would also decrease with the level of debt (Modigliani and Miller, 1963). With the inclusion of taxes in the model, the capital structure decision became relevant since it could be used to maximize a company's value.

2.2 Trade-off theory

The idea that companies would be better off financed almost entirely with debt was discouraged by Brennan and Schwartz (1978). Debt effects can be either positive or negative, depending on which effect prevails, increased tax savings (positive), and reduced probability of

survival (negative). It is legitimate to assume that companies with low levels of debt will have a smaller negative impact when issuing debt and vice-versa. Likewise, Solomon (1963) analyzed the isolated effect of leverage, to argue that there is a maximum and optimal amount of debt in which the marginal cost of being financed with more debt is greater than the marginal cost of being financed with a mix of equity and debt, so a rational company would decide with the last. Robichek and Myers (1966) posit that, in the presence of taxes, there is an optimal capital structure due to market imperfections that limit arbitrage, considering the marginal increase of benefits and costs from debt financing. Acknowledging the risk of ruin, Baxter (1967) suggested that excessive leverage can increase a company's WACC, because of the enlarged riskiness in fulfilling its obligations and, also, the possible bankruptcy penalties. Moreover, the risk of ruin tends to become more important as the degree of financial leverage increases, and the earnings' stability decreases. The positive tax effect will likely prevail for firms with low levels of debt, but, for firms with high levels of debt, the risk of ruin will probably dominate the previous (Baxter, 1967). Again, with more realistic assumptions, the validity of MM's work is withheld. Along these lines, Kim (1978) reckoned that the market value of a firm increases with leverage for low levels of debt and decreases for high levels of debt. Most of these authors' contributions were very important to build the trade-off theory framework, which will be now further discussed. Kraus and Litzenberger (1973) built a model considering not only corporate income taxes but also bankruptcy penalties, relaxing the assumption of a perfect market. As already established before, debt financing provides tax advantages. Yet, it has also as a downside, bankruptcy costs. Firms can maximize their value by using an optimal mix of debt and equity, based on the trade-off between the costs and benefits of debt. The market value of a leveraged company is equal to the market value of an unleveraged one plus the tax shield (positive effect) and the bankruptcy costs (the negative effect) from debt financing (Kraus and Litzenberger, 1973). At the optimal point, the marginal benefits and costs from debt financing are equal. Until reaching the optimal capital structure, increasing the debt-to-equity ratio will decrease the cost of capital, but thenceforth, it will increase since the costs turn out to be bigger than the benefits. Nonetheless, Warner (1997), using evidence from a sample of firms from the railroad industry, suggested that the direct bankruptcy costs were smaller than expected. Seems that "the ratio of direct costs to the market value of the firm appears to fall as the value of the firm increases" (Warner, 1997 pp. 337). For sizeable firms, tax savings are much higher than the direct bankruptcy costs. However, these conclusions could be

industry-specific. Despite these direct costs being small relative to market values, indirect costs can be quite substantial (Barclay and Smith, 1999).

2.3 Pecking order theory

The pecking order theory was first introduced by Donaldson (1961) and further developed by Myers(1984) and Myers and Majluf (1984). Firms tend to prefer internal financing to external financing when confronted with investment decisions (Donaldson, 1961). Only when firms are short on internal funds, they will pursue the external venue. Myers (1984) explained how adjustment costs, debt and taxes, and the costs of financial distress could compromise the trade-off theories. Large adjustment costs, instead of the non-existent or small adjustment costs' assumption, could explain the actual variance of companies' capital structures. Relatively to debt and taxes, the idea that all firms have the same marginal tax rate is not feasible. "Plenty of firms face low marginal rates" (Myers, 1984 pp.579). Thus, tax shields are expected to be positive but small. Whereas, the costs of financial distress depend on not only "the probability of trouble" but also "the value lost if trouble comes" and firms with more intangible assets and growth opportunities are more likely to lose value in financial distress than firms holding tangible assets-in-place (Myers, 1984 pp.581). So, these costs are usually more pronounced in riskier firms, which tend to borrow less. Furthermore, Myers and Majluf (1984) developed a model based on the assumption of information asymmetry between agents due to the separation of ownership and management. Managers have an information edge over the market, about the company's assets and investment opportunities, in the form of private information. Financial slack, like cash or marketable securities, for example, is preferred to external financing, because it avoids conflicts of interest between current and new shareholders. Regardless of being over or undervalued, firms prefer to issue debt, instead of equity, if external financing is required because they are keen to safer than riskier securities. There is an order of preference for financing sources and managers will use the following pecking order, financial slack or internal funding, debt, and at last, equity (Myers and Majluf, 1984). Although considering it relevant, the pecking order theory refutes the existence of an optimal capital structure.

Even without an academic agreement, the relevance of the pecking order and the trade-off theories was and still is an immensely researched and discussed topic. For example, Shyam-Sunder and Myers (1994) argued that the pecking order theory has much more explanatory power than the static trade-off theory. However, Frank and Goyal (2005) compared existing theoretical work with empirical evidence to conclude that neither theory, trade-off nor pecking order, can explain the "full story". They argued that the choice of a debt-to-equity ratio seems to be influenced considerably by direct transaction costs and indirect bankruptcy costs. On this wise, Chen (2004) explored the Chinese public market and found evidence that neither the static trade-off model nor the pecking order theory seemed to explain Chinese companies' decisions. They, instead, use a different pecking order: retained profit, equity, and then long-term debt. Finally, Graham and Harvey (2001) found that financial flexibility and credit ratings are the most important debt policy factors by surveying 392 CFOs. Again, the trade-off theory and the pecking order theory don't seem to fully explain the practices of corporate finance.

2.4 Market timing and optimism

Contradicting the idea that firms care about which form of financing to use, Baker and Wurgler (2002) introduced a capital structure model based on market timing. On average, managers try to time the market, and they succeed at it. Firms tend to issue equity when investors are optimistic about the market's prosperity. In practice, they tend to issue equity when their market values are high relative to their book values and past values, and, make share repurchases and issue debt when it is low, which is a phenomenon known as "equity market timing" (Baker and Wurgler, 2002). Thus, leverage and a firm's market value are negatively correlated. To such a degree, there isn't an optimal capital structure that can maximize a company's value. Consistent with the market timing theory, Welch (2004) showed that stock prices are a major determinant of debt ratios. On the line of optimism, Heaton (2002) introduced a model of corporate finance using managerial optimism. Managers are considered optimistic when they consistently misestimate the probability of bad firm performance. Optimistic managers believe that an efficient market undervalues their companies' shares, resulting in a preference for internal financing, which can be socially costly.

Also, managers have an upward bias towards their corporate results. Because they are highly committed to the company and they believe to have control over the cash flows, managers tend to overvalue their firms' investments, emerging an underinvestment-overinvestment trade-off. To minimize costs and acknowledging that the market is less optimistic than the managers, firms will use the following pecking order of capital structure preference: internal financing, risk-free debt, risky debt, and, finally, equity. Considering this behavioral bias, there isn't an optimal capital structure.

2.5 Agency problem

Agency costs as a result of the separation between ownership and control were importantly discussed by Jensen and Meckling (1976). Managers, bondholders, and shareholders' utility maximization creates a divergence in decisions that can be limited with monitoring and bonding costs. The agency costs are always positive and never zero unless a manager owns 100% of a company. "The existence and size of the agency costs depend on the nature of the monitoring costs, the tastes of managers for non-pecuniary benefits, and the supply of the potential managers who are capable of financing the entire venture out of their personal wealth" (Jensen and Meckling, 1976 pag.330). Thus, larger firms are likely to have higher agency costs since they usually have more owners. A decade later, Jensen (1986) argued that leverage has control effects that can be either positive or negative. On the one hand, debt reduces the agency costs of the free cash flows, and it is used as a motivation to increase efficiency because of the threat of failing to fulfill the debt service payments. Hence, there is a positive relationship between leverage and efficiency. On the other hand, increased leverage means as well increased costs, for example, bankruptcy costs. Thus, firms decide on an optimal capital structure that minimizes agency costs, maximizing firm value (Jensen and Meckling 1976; Jensen, 1986). On the same page, Harris and Raviv (1990) suggested that debt is issued to discipline managers since they do not always act according to investors' best interests. Debt provides information to investors about the management's quality and business strategy, so it is used to control and monitor them. "The optimal amount of debt is determined by trading off the value of information and opportunities for disciplining management against the probability of incurring investigation costs" (Harris and Raviv, 1990 pag.323). Their static

model predicts that the optimal debt level and firm value increases with increases in liquidation value and decreases with increases in default costs. Firms with more tangible assets, which are used as a proxy of liquidation value, will have higher leverage as well as higher market value than firms with lower liquidation value. Moreover, Grossman and Hart (1982) argued that a corporation owned by many small shareholders will have an incentive problem, between shareholders and managers. To minimize this problem, firms can use salary incentive schemes, takeover threats, and the possibility of bankruptcy itself. Managers will thoughtfully choose a level of debt that maximizes their utility, considering the previous. Additionally, Stulz (1990) under the assumption of asymmetric information between shareholders and managers, suggested that the capital structure decision is important since it can reduce agency costs. Debt constrains managers because it decreases their ability to invest in bad projects. Firms that issue debt tend to have worse investment opportunities than those that issue equity, thus firms with better investment opportunities are likely to have less debt. However, profitability seems to increase debt issuance because the probability of overinvestment increases. The optimal capital structure is due to a trade-off between the benefits and costs of debt and equity, which have opposite effects in terms of managerial discretion.

2.6 Neutral mutations

The neutral mutation hypothesis was suggested by Miller (1977). Companies tend to create financing habits, like heuristics or rules-of-thumb, for example. Due to these patterns, there isn't an optimal capital structure. Besides that, considering, both the personal and corporate income taxes, the tax benefits from debt financing may be much lower than what they, Miller and Modigliani, suggested in 1963. Despite the tax rate being, realistically, higher than zero, in practice, taxes on capital gains can be deferred or even avoided by investors. Precisely, debt has no net tax benefits (Miller, 1977). This conclusion was supported by Fama and French (1998). However, DeAngelo and Masulis (1980), also accounting for the personal income tax, showed non-zero net tax benefits from debt financing, when acknowledging "the existence of corporate tax shield substitutes for debt such as accounting depreciation deductions and investment tax credits" (DeAngelo and Masulis, 1980 pp. 26 and 27).

2.7 Signaling Theory

The signaling theory is widely recognized to an incentive-signaling model developed by Ross (1977). In his model, he considers two types of firms, A and B, and the latest is assumed to have lower returns than type A firms. Investors cannot distinguish between these two types of firms, so they analyze firms' amount of debt to determine the firm's type, because type B firms, can't support as much debt as type A firms without going bankrupt. Thus, if a company has higher debt than the amount supported by a type B, the market assumes it to be of type A. Managers from successful firms, to signal the market correctly, will establish a debt level above the supported by type B firms since they will get higher compensations. Whereas, managers from unsuccessful firms will provide a correct signal to the market, only if the gain from having a higher debt than the maximum supported by the company is lower than the bankruptcy costs. This signaling approach implies that, since the market's perception of value is affected by leverage, the value of a firm increases as debt increases.

2.8 Managerial Entrenchment

Under managerial entrenchment, Zwiebel (1996), developed a model with interesting conclusions. Debt, which is voluntarily used by managers, because of the possibility of bankruptcy as well as the loss of control due to a takeover from a raider, constrains their empire-building ambitions. Debt-constrained managers are less likely to undergo inefficient projects because it may result in a loss of entrenchment. This model, instead of considering the capital structure decision from a standpoint of shareholder optimality, assumes managerial optimality. Firms with better investment opportunities are, usually, more profitable and have less debt. Thus, when the market is optimistic, firms should be financed with less debt, and when it is bearish, with more debt. Despite, the negative correlation between leverage and profitability, a company's value increases with the issuance of debt and decreases with the issuance of equity since leverage is used as a takeover defense. The capital structure decision is, therefore, based on managers' empire-building maximization. In like manner, Harris and Raviv (1988) view debt, or the capital structure decision, as an "antitakeover device". Managers'

resistance strategy is "driven by the potential gains to takeover and the personal benefits of control" (Harris and Raviv, 1988, pag.75).

2.9 Limited liability effect of debt

The idea of the limited liability effect of debt was explored by Brander and Lewis (1986). Assuming an oligopoly, firms that use more leverage tend to be more aggressive in the output market. Changing a company's financial structure will change the distribution of returns to both, shareholders and debtholders. Since the product market is affected by the financial structure and vice-versa, leveraged firms might use a different level of debt-to-equity to maximize their output. Increasing leverage can increase the conflicts of interest between some stakeholders. However, it also adds value due to a strategic benefit, that tends to dominate the previous for low debt levels. Owners will tend to use a financial structure that maximizes the company's output. This product market aggressiveness could translate into more R&D or/and innovation and, therefore more profitability. Accordingly, this aggressiveness can create a positive relationship between leverage and performance.

2.10 Repurchases, issuances and stock prices

Consistent with the trade-off theory, Hovakimian et al. (2001) argued that a firm has a target debt-to-equity ratio, despite in the short-run being affected by a pecking order. This target ratio is likely determined by changes over time with profitability and stock price variations, which are usually linked with growth opportunities. It is also important to notice that there are impediments to capital structure changes. By issuing new, retiring, or repurchasing existing capital, firms tend to move towards a target debt-to-equity ratio, which depends on changes both in assets in places and growth opportunities. More profitable firms usually have lower debt-to-equity ratios. However, they are also more likely to issue debt rather than equity and more likely to repurchase equity rather than retire debt. Conversely, firms with higher current stock prices, tend to issue more equity than debt and repurchase more debt than equity. The evidence seems to suggest that the capital structure decision is much more

important in repurchases rather than issuances and that stock prices play a very important role in the capital structure decision (Hovakimian et al. 2001).

2.11 Stakeholder approach and reputation

The stakeholder approach has also some important contributions to the capital structure literature. Assuming no direct bankruptcy costs and no taxes, Titman (1984) demonstrated that liquidation costs and the conflicts between stock and bondholders are factors to consider when deciding on an optimal capital structure. It is important to notice that bondholders have the highest priority claim when a firm is going through a process of liquidation. When choosing a specific capital structure, firms are bonding themselves to a value-maximizing or optimal liquidation policy. Increased leverage will increase the probability of liquidation, because of the higher probability of bankruptcy. According to the theory, "firms (such as computer and automobile companies) that can potentially impose high costs on their customers and business associates in the event that they liquidate choose capital structures with relatively low debt/equity ratios. Conversely, firms (such as hotels and retail establishments) which impose relatively low costs on their customers and business associates in the event that they liquidate choose high debt/equity ratios" (Titman, 1984 pag.150). Whereas, Cornell and Shapiro (1987) argued that, beyond managers and investors, all the other stakeholders are important in companies' finances. Explicit and implicit claims like for example, wage contracts and the promise of job security to employees, respectively, are both accounted for. The value of these claims is assumed to be information-dependent on the firm's finances and the market value of the firm is dependent on the selling price of these claims. They introduced the idea of net organizational capital (NOC), being the difference between organizational capital (OC) and organizational liabilities (OL). Organizational capital is equal to the present value of all future implicit claims that a firm expects to sell and organizational liabilities, to the expected costs regarding those current and future claims. Thus, a firm creates value if its NOC is positive. Also, a firm's market value is equal to its book value plus its NOC. Using the following pecking order: internal funding, debt, and equity, and assuming that information and transaction costs are higher at the top of the pecking order, Cornell and Shapiro (1987), argued that firms that have high expected levels of organizational capital, in

other words, that are expected to make large payouts on implicit claims, will be at the bottom of the pecking order, predominantly equity-financed and holding relatively large cash balances. As time passes and those successful firms mature and earn a solid reputation, the amount of debt issued should increase, although lower than similarly aged firms with less organizational capital. Thus, there isn't an optimal capital structure, as it depends on the reputation a firm has with its stakeholders. Additionally, on this subject, Maksimovic and Titman (1991) concluded that a firm's ability to maintain its reputation for product quality influences the effect of debt financing on a firm's value, so it is a determinant of the capital structure decision. If debt reduces the ability of a company to credibly offer high-quality products, then it will reduce a firm's value. Whereas, for firms going through liquidation, debt could increase their value, by increasing the ability to credibly offer high-quality products. Thus, the increase of leverage could have a positive or negative effect on the performance of a company, depending on the firm environment. For example, "the effects of debt financing may be different in firms in different industries in which assets are firm-specific than in industries in which they have high opportunity costs" (Maksimovic and Titman, 1991 pag.194).

2.12 Empirical Evidence

The empirical evidence on the relationship between capital structure and performance is quite ambiguous. Some authors find a positive relationship between leverage and performance (Margaritis and Psillaki, 2010; Berger and Bonaccorsi di Patti, 2006; Gill et al., 2011). Others find a negative one (Gleason et al., 2000; Booth et al., 2001; Majumdar and Chhibber, 1999; Rajan and Zingales, 1995; Deesomsak et al., 2004; Huang and Song, 2006; Fama and French 2002). There are also several that find a mixed relationship between leverage and firm performance or no relationship at all. Ebaid (2009) analyzed the Egyptian market and found that using ROA as a measure of performance, the effect of capital structure was negative. Whereas, using ROE or gross Margin, the capital structure had no impact on performance. Abor (2005) using a sample of firms on the Ghana Stock Exchange (GSE) found a positive relationship between capital structure measured by short-term debt to total assets and performance (ROE). However, measured by the long-term debt to total assets the relationship was negative. McConnell and Servaes (1995) using a sample of US-listed firms, found that high-growth firms' performance, measured by Tobin's Q, is negatively, and low-growth firms, positively, correlated with leverage. Zeitun and Tian (2007) found a significant negative impact of capital structure in firms' performance, measured by ROA and ROE, for the Jordanian companies. However, measured by Tobin's Q they found that short-term debt tends to increase market performance. Salim and Yadav (2012) using a sample of 237 Malaysian listed companies found a negative relationship between capital structure and firm performance, measured by ROA, ROE, and EPS, and a positive relationship, when measured by Tobin's Q. Whereas, Abor (2007), found a positive relationship between return on assets and short-term debt in small and medium enterprises and a negative one for the unquoted firms. Most of these studies are not accounting for the reverse causality between leverage and performance, which could explain the variability in results.

3. Data

This study uses data from listed firms of four European countries: Portugal, Spain, Greece, and Cyprus, collected from the database Eikon DataStream, to test the impact of leverage on firms' performance, accounting for the reverse causality between leverage and performance. A bullish market period after the subprime mortgage crisis until the present, in normal conditions, so before the covid-19 pandemic, is used in this study, more precisely between 2012 and 2019, to have a small to no impact from the crisis. The data for the listed companies from each country were collected using a criterion of being a company with its headquarters in the country or belonging to the country's exchange. Initially, was collected data from 58 Portuguese listed companies, 277 Spanish listed companies, 196 Greek listed companies, and 138 Cypriot listed companies. However, due to lack of available data for certain variables or years needed for the study, especially from financial companies since they address certain financial aspects differently, companies using different fiscal periods or being an outlier using a rule of being above the mean plus three times standard deviation or below the mean minus three times the standard deviation of the combined data, a lot of companies were removed from the overall sample. After this clean-up, the combined sample remained with a total of 227 listed firms: 28 Cypriot, 110 Greek, 27 Portuguese, and finally, 62 Spanish. All the variables used in the study to calculate either profit efficiency or in the models/regressions themselves were collected from the database Eikon DataStream.

4. Methodology

This study contributes to academia in two ways. To the best of my knowledge, it is the first to test the reverse causality in some of these markets, which is whether the capital structure of a firm is influenced by its performance. Also, it uses not only common financial ratios as a proxy of financial performance but also efficiency, more precisely profit efficiency. Thus, it is possibly the first on this matter as well in some of these markets since most studies just use common financial ratios to measure financial performance. According to Skopljak and Luo (2012), studies that use regular accounting and financial measures usually don't account for managerial performance. Using a sample of 15 Australian Authorised Deposit-taking Institutions (ADIs) they found a significant, not linear, but quadratic relationship between capital structure and firm performance for the period of 2005-2007. For relatively low levels of leverage, an increase in debt tends to increase profit efficiency and, therefore, performance. Whereas for relatively high levels of debt, it tends to decrease profit efficiency as well as performance, which according to the authors is likely explained by financial distress outweighing managerial performance at a certain point.

Skopljak and Luo's (2012) study is of the few that use not only the general common financial ratios, in this case, ROE to provide robustness to the results, to measure performance but also profit efficiency, a modified version of Berger and Mester (1997) which is a proxy for the productive efficiency of management. Moreover, Berger and Mester (1997) have found a positive and significant relationship between efficiency and performance. Based on the study from Berger and Mester (1997), for example, Skopljak and Luo (2012) developed a relatively simpler equation to quantify profit efficiency in the case of smaller sample sizes. This paper uses the following equation based on Skopljak and Luo (2012):

$$PE = \gamma + \ln(\boldsymbol{X_i}) + \ln(\boldsymbol{C_i}) + \ln(\boldsymbol{X_i/C_i}) + \ln(\boldsymbol{P_i/A_i}) + \ln(\boldsymbol{P_i})/\ln(\boldsymbol{E_i}) \quad (1)$$

Where, PE = profit efficiency, γ = constant added in order to standardize the negative values, since the expected efficiency must be equal or higher than zero, X = revenues (total revenues), C = costs (cost of revenue), P = profits (net income after taxes), A = assets (total assets), and, finally, E = equity (total equity). After calculating the profit efficiency for each company, the lowest negative value obtained was approximately -4.0842. Thus, the value of γ

used to calculate profit efficiency is approximately 4.0842. The company that had this level of efficiency, in this case, 0 after adding γ, was removed for being an outlier in the data, that's why the minimum profit efficiency of the combined data observed in the descriptive statistics is equal to 0.4108. Also, it is important to refer that the values of profit efficiency were transformed using to rule of 3 to be between 0 and 1, the least and most efficient firm, respectively.

The ability of a certain company to convert inputs/costs into outputs/revenues is measured by the natural logarithm of Xi/Ci. Thus, companies with a larger Xi/Ci are expected to be more efficient. Similar to Skopljak and Luo (2012), this study uses the control variables Profits (Pi), Assets (Ai), and Equity (Ei) to enable the model to deliver correct and robust numbers since acknowledging only the conversion of inputs into outputs would be unrealistic. For example, two different companies could have the same Xi/Ci, but very different sizes, in terms of equity and assets. Assuming a similar profit between the two, the company with smaller assets and equity is likely more efficient than the company with higher assets and equity, since fewer resources can provide the same results. This study, similar to Skopljak and Luo (2012), uses also common financial ratios as a measure of performance to increase robustness. Return on equity (ROE), return on assets (ROA), and Tobin's Q, measured by net income/total equity, net income/total assets, and market capitalization/total assets, respectively, are used on this matter. Whereas similar to a study from Kharabsheh et al. (2017), capital structure is measured using leverage in three different forms: the total debt ratio measured the total debt/total assets, the short-term debt ratio measured by short-term debt/ total assets, and long-term debt ratio measured by the long-term debt/total assets.

As already discussed before, it is important to test the reverse causality from firm performance to financial leverage to avoid mistaking the effects of capital structure on firm performance with the effects of firm performance on capital structure, the so-called simultaneous-equations bias. Thus, the first model has financial performance as the dependent variable, whereas in the second model the dependent variable is leverage. This study tests two different hypotheses, mainly based on the literature analyzed previously both theoretical and empirical, which has inconclusive and mixed results:

H1: There is a statistically significant relationship between leverage and firm performance.

H2: There is a statistically significant relationship between firm performance and leverage.

Despite considering it to be irrelevant at first in a tax-free setting, Modigliani and Miller posit that the capital structure decision seemed relevant to maximize a company's value due to tax shield from debt (Modigliani and Miller, 1963). Moreover, the main theories analyzed in this study: the trade-off theory, the pecking order theory, the agency theory, and such, seem to agree in the fact that there is a relationship between leverage and firm performance, despite the type of relationship being theory dependent. For example, the trade-off theory suggests a non-monotonic relationship between leverage and performance, hence the use of the variable LEV^2 in the first model. This applies as well to the agency theory since debt is also beneficial to a certain point. However, the pecking order theory states that leverage has a negative impact on firm performance, whatever the amount used. For example, Brennan and Schwartz (1978) argued that the effect of debt depends on the level of debt a certain company has. Likewise, Solomon (1963), Baxter (1967), Kim (1978) and others, posit that the impact of leverage on a firm is dependent on its level of debt. Hence, this study assumes the more realistic approach that leverage impact on performance is dependent on the level of debt. That being said, it is not important if the impact is either positive or negative for low/high levels of debt, but the fact that there is a relationship and it changes with the level of debt. Thus, similar to Myers (2001), this paper argues that there is no universal theory of capital structure to describe firms' capital structure decisions.

Identical to Margaritis and Psillaki (2010), for example, this paper considers that the past performance of a company is what influences its capital structure decision. Therefore, instead of using the current value of the independent variables, this paper uses the lagged values.

To test the impact of leverage on a firm's performance using 2LS and based on studies like Margaritis and Psillaki (2010) and Adhari and Viverita (2015), for example, the following model is used:

$$\mathbf{PERF}_{i,t} = \boldsymbol{\alpha_0} + \boldsymbol{\alpha_1 LEV}_{i,t-1} + \boldsymbol{\alpha_2 LEV}^{2}_{i,t-1} + \boldsymbol{\alpha_3 Z1}_{i,t-1} + \boldsymbol{u}_{i,t} \quad (2)$$

Where PERF is the performance of a firm i at time t, measured in four different ways: profit efficiency, return on equity, return on assets, and Tobin's Q. Leverage is measured by the variable LEV in three different ways, as already mentioned before: total debt ratio, short-term debt ratio, and long-term debt ratio. Z1 is a vector of firm-specific factors that affect performance, and it includes firm size, asset tangibility, profitability and growth, and u a stochastic error term. The model uses a quadratic form to allow the relationship between performance and leverage to be non-monotonic. However, the results of the Durbin-Watson test for autocorrelation showed that the data had auto-correlation throughout all the different regressions. To solve this problem, a lagged variable of performance was introduced in the model:

$$\mathbf{PERF}_{i,t} = \boldsymbol{\alpha_0} + \boldsymbol{\alpha_1 LEV}_{i,t-1} + \boldsymbol{\alpha_2 LEV}^{2}_{i,t-1} + \boldsymbol{\alpha_3 Z1}_{i,t-1} + \mathbf{PERF}_{i,t-1} + \boldsymbol{u}_{i,t} \quad (3)$$

Firm size is measured by the natural logarithm of the firm's total assets (Adhari and Viverita, 2015; Kharabsheh et al. 2017). The trade-off theory, for example, supports the notion that larger firms tend to be more leveraged. Whereas, the pecking order theory predicts a negative relationship between size and leverage. However, this study follows the idea that larger firms tend to be highly leveraged since they are usually more diversified than smaller ones, so better able to surpass difficulties ahead of them. Hence, it predicts a positive relationship between capital structure and size.

Asset tangibility is measured by the ratio of fixed assets to total assets (Adhari and Viverita, 2015). It is expected to be positively correlated with leverage since companies that are highly leveraged tend to have a higher amount of fixed to total assets.

Regarding the control variable profitability, it is measured by EBIT divided by total assets (Adhari and Viverita, 2015; Margaritis and Psillaki, 2007; Fama and French, 2002). As

already discussed before, the literature on this matter is mixed. The pecking order theory, for example, predicts that leverage and profitability have a negative relationship since there is an order of preference of financing sources and firms rather use internal financing than debt (Myers and Majluf, 1984). Whereas the trade-off theory argues that there is an optimal level of debt and equity that maximizes firm value (Kraus and Litzenberger, 1973). Moreover, agency theory predicts a positive relationship between profitability and leverage (Jensen and Meckling 1976). This idea is also recognized in the signaling theory from Ross (1977).

The firm's growth is measured by the increase in annual earnings, similar to, for example, Margaritis and Psillaki (2007). It is not clear whether to expect a positive or negative relationship on this matter as well since as already seen before growth opportunities can be seen as an opportunity to increase leverage or actually, contrarily as in no need for leverage. For example, Stulz (1990) argues that firms with better investment opportunities tend to use less debt.

Table 1: Variables and measurements

Variable	Measurement
Profit Efficiency	Formula (1)
Return on Equity (ROE)	Net income/Total equity
Return on Assets (ROA)	Net income/Total assets
Tobin's Q	Market capitalization/Total assets
Total debt ratio	Total debt/Total assets
Short-term debt ratio	Short-term debt/Total assets
Long-term debt ratio	Long-term debt/Total assets
Size	Natural logarithm of Total assets
Asset tangibility	Fixed assets/Total assets
Profitability	EBIT/Total assets
Growth	Increase in Total assets

Some or perhaps most renowned theories on capital structure, like MM irrelevance theory, pecking order theory, market timing theory, signaling theory, among others, tend to expect a unidirectional relationship between capital structure and firm performance. However,

it is important to consider the possibility of a bi-directional relationship between capital structure and firm performance. The second hypothesis [H2] is proposed to test the reverse causality from firm performance to leverage, acknowledging both the efficiency risk and franchise value hypotheses. Hence, there are two underlying hypotheses in a single hypothesis. As firstly suggested in a study by Berger and Bonaccorsi di Patti (2006) of the US Banking industry, this reverse causality hypothesis is based on two hypotheses: the efficiency-risk hypothesis and the franchise-value hypothesis. Under the efficiency-risk hypothesis, to prevent financial distress, bankruptcy, and liquidation, more efficient firms tend to use more debt (substitution effect), which is in support of the agency theory, for example. Under the franchise-value hypothesis, to protect future income, more efficient firms tend to use more equity (income effect). The goal is, by analyzing these two contrasting effects, to identify which one is more dominant.

Margaritis and Psillaki's (2010) results showed support to the dominance of the efficiency-risk hypothesis, using a sample of French companies. They found a positive effect of efficiency on leverage in low to high ranges of the leverage distribution. Likewise, Berger and Bonaccorsi di Patti (2006) found evidence of the dominance of the efficiency-risk hypothesis, but not over the range of the data. The franchise-value hypothesis prevailed for low levels of profit efficiency. Whereas Adhari and Viverita (2015) found a negative impact of efficiency on leverage for Indonesian firms and firms in the Food & Beverages industry, despite the other countries from the sample supporting the contrary. Skopljak and Luo's (2012) evidence suggests that an increase in debt decreases profit efficiency for highly leveraged firms and vice-versa, therefore a non-monotonic relationship between leverage and profit efficiency as well as performance. Kharabsheh et al. (2017) using panel data from the Jordanian non-financial companies between 2006 and 2016 have found a non-monotonic relationship between firm performance and leverage as well as support for the franchise value hypothesis. She and Guo (2018) in a sample of global e-retailing companies found evidence suggesting that higher leverage is associated with lower efficiency, however a non-monotonic relationship as well. Regarding the reverse causality, the results suggested that efficiency does not affect leverage. Margaritis and Psillaki (2007) using a sample of 12240 New Zealand firms found evidence supporting the agency theory and also that a positive effect of efficiency on leverage at low to mid-leverage levels and negative at high leverage ratios. Thus, support for the efficiency-risk

hypothesis for low to mid-leverage ranges and for the franchise-value hypothesis for the upper range leverage. Warokka et al. (2011) using a sample of 532 East Asian companies for the period of 2000-2001 found evidence to support the efficiency-risk hypothesis, due to a positive and statistically significant relationship between Tobin's Q and leverage. Lastly, Yinusa et al. (2016) found a statistically significant negative relationship between firm performance and capital structure, which is consistent with the franchise-value hypothesis, using a sample of Nigerian companies.

To test the reverse causality hypothesis using 2LS, this study uses the following model:

$$\mathbf{LEV}_{i,t} = \boldsymbol{\beta_0} + \mathbf{\beta_1}\boldsymbol{PERF}_{i,t-1} + \mathbf{\beta_2}\boldsymbol{Z2}_{i,t-1} + \boldsymbol{v}_{i,t} \quad (4)$$

Under the efficiency-risk hypothesis, $\beta 1 > 0$ since efficiency has a positive effect on leverage. Whereas under the franchise-value hypothesis, the effect is negative, thus $\beta 1 < 0$. Z2 is a vector of control variables that are correlated with leverage and v a stochastic error term. The vector Z2 uses the same variables as in the first model. Acknowledging the studies mentioned above, it is expected that neither hypothesis will dominate the entire range of the data since the relationship between leverage and performance is expected to be non-monotonic. Similar to the first model, we had to add a lagged variable of the proper leverage ratio to solve autocorrelation:

$$\mathbf{LEV_{i,t}} = \mathbf{\beta_0} + \mathbf{\beta_1 PERF_{i,t-1}} + \mathbf{\beta_2 Z2_{i,t-1}} + \mathbf{LEV_{i,t-1}} + \mathbf{v_{i,t}} \quad (5)$$

The following descriptive statistics tables address all the non-squared variables used from 2019 to 2011 since both these models use lagged variables. For example, the ROE for the year 2012, results from lagged variables from 2011, that's why the descriptive statistics include data from 2011. Also, outliers were already removed before these statistics were produced.

5. Descriptive Statistics

Table 2: Descriptive Statistics for the Cypriot companies

The descriptive statistics table for the Cypriot companies shows the minimum value, maximum value, mean, standard deviation, and variance of each performance variable, leverage ratio, and control variable. Regarding the performance variables, ROE shows the highest standard deviation of them all, with a minimum of -3.1832 and a maximum of 4.6212. The total debt ratio has the highest standard deviation of 0.1693 and a mean of 0.2617, within the leverage ratios used in this study. As far as the four control variables: Size, Asset tangibility, Profitability, and Growth, the latest has the highest standard deviation of 4.3937, with a minimum of -30.7960 and a maximum of 23.3638.

	Minimum	Maximum	Mean	Std Dev	Variance
ROE	-3.1832	4.6212	.0335	.4519	.2042
ROA	-1.2090	.3861	.0018	.1308	.0171
Profit Efficiency	.4108	.9054	.7023	.0841	.0071
Tobin's Q	.0019	3.3315	.3241	.4205	.1768
TD ratio	0	.8513	.2617	.1693	.0287
LTD ratio	0	.5932	.1202	.1415	.0200
STD ratio	0	.8513	.1415	.1355	.0184
Size	14.4681	22.0234	18.3854	1.7306	2.9949
Asset tangibility	.0470	.9867	.6317	.2442	.0596
Profitability	-.7825	.3212	.0222	.0850	.0072
Growth	-30.7960	23.3638	-.7224	4.3937	19.3043

Table 3: Descriptive Statistics for the Greek companies

The descriptive statistics table for the Greek companies shows the minimum value, maximum value, mean, standard deviation, and variance of each performance variable, leverage ratio, and control variable. Regarding the performance variables, ROE shows the highest standard deviation of them all, with a minimum of -4.8921 and a maximum of 5.8456. The total debt ratio has the highest standard deviation of 0.2119 and a mean of 0.3319, within the leverage ratios used in this study. As far as the four control variables: Size, Asset tangibility, Profitability, and Growth, the latest has the highest standard deviation of 3.5917, with a minimum of -62.1315 and a maximum of 13.5742.

	Minimum	Maximum	Mean	Std Dev	Variance
ROE	-4.8921	5.8456	-.0317	.4585	.2102
ROA	-.8867	.3036	-.0067	.0711	.0051
Profit Efficiency	.4338	.9627	.7258	.0814	.0066
Tobin's Q	.0087	2.7512	.3732	.4233	.1792
TD ratio	0	1.4366	.3319	.2119	.0449
LTD ratio	0	.7643	.1587	.1546	.0239
STD ratio	0	1.4259	.1732	.1853	.0343
Size	15.8267	23.5782	18.6506	1.7288	2.9888
Asset tangibility	.0486	.9838	.5490	.2169	.0471
Profitability	-.2004	.3639	.0278	.0547	.0030
Growth	-62.1315	13.5742	-.2554	3.5917	12.9002

Table 4: Descriptive Statistics for the Portuguese companies

The descriptive statistics table for the Portuguese companies shows the minimum value, maximum value, mean, standard deviation, and variance of each performance variable, leverage ratio, and control variable. Regarding the performance variables, Tobin's Q shows the highest standard deviation of them all, with a minimum of 0.0205 and a maximum of 1.9254. The total debt ratio has the highest standard deviation of 0.1941 and a mean of 0.3680, within the leverage ratios used in this study. As far as the four control variables: Size, Asset tangibility, Profitability, and Growth, the latest has the highest standard deviation of 3.3775, with a minimum of -44.1513 and a maximum of 5.3491.

	Minimum	Maximum	Mean	Std Dev	Variance
ROE	-5.1484	.9194	.0766	.3868	.1496
ROA	-.4252	1.4133	.0334	.1153	.0133
Profit Efficiency	.6044	.9590	.7877	.0652	.0043
Tobin's Q	.0205	1.9254	.4737	.4112	.1691
TD ratio	0	1.4862	.3680	.1941	.0377
LTD ratio	0	.7181	.2458	.1529	.0234
STD ratio	0	1.2871	.1222	.1221	.0149
Size	16.3699	24.5094	20.6138	1.6920	2.8630
Asset tangibility	.0541	.9277	.5072	.2154	.0464
Profitability	-.3694	.4254	.0546	.0618	.0038
Growth	-44.1513	5.3491	-.3985	3.3775	11.4075

Table 5: Descriptive Statistics for the Spanish companies

The descriptive statistics table for the Spanish companies shows the minimum value, maximum value, mean, standard deviation, and variance of each performance variable, leverage ratio, and control variable. Regarding the performance variables, Tobin's Q shows the highest standard deviation of them all, with a minimum of 0.0222 and a maximum of 3.9579. The total debt ratio has the highest standard deviation of 0.1880 and a mean of 0.3136, within the leverage ratios used in this study. As far as the four control variables: Size, Asset tangibility, Profitability, and Growth, the latest has the highest standard deviation of 3.4156, with a minimum of -46.9704 and a maximum of 12.3864. It is also important to notice that the company with the highest efficiency in a certain year is Spanish, which equals a Profit Efficiency value of 1.

	Minimum	Maximum	Mean	Std Dev	Variance
ROE	-4.3674	3.1800	.0762	.5473	.2995
ROA	-.4425	.5245	.0227	.0803	.0064
Profit Efficiency	.4317	1.0000	.7974	.0881	.0078
Tobin's Q	.0222	3.9579	.7916	.7114	.5062
TD ratio	0	1.1428	.3136	.1880	.0353
LTD ratio	0	.8154	.2137	.1530	.0234
STD ratio	0	1.1359	.0999	.1349	.0182
Size	16.8199	25.5891	20.9227	2.1316	4.5438
Asset tangibility	.0376	.9197	.4844	.2125	.0452
Profitability	-.3453	7.9611	.1139	.5603	.3139
Growth	-46.9704	12.3864	-.2771	3.4156	11.6662

Table 6: Descriptive Statistics for the combined data

The descriptive statistics table for the combined data of all companies from the four countries: Cyprus, Greece, Portugal, and Spain, show the minimum value, maximum value, mean, standard deviation, and variance of each performance variable, leverage ratio, and control variable. Regarding the performance variables, Tobin's Q shows the highest standard deviation of them all of 0.5491, with a minimum of 0.0019 and a maximum of 3.9579. The total debt ratio has the highest standard deviation of 0.2003 and a mean of 0.3225, within the leverage ratios used in this study. As far as the four control variables: Size, Asset tangibility, Profitability, and Growth, the latest has the highest standard deviation of 3.6298, with a minimum of -62.1315 and a maximum of 23.3638.

	Minimum	Maximum	Mean	Std Dev	Variance
ROE	-5.1484	5.8456	.0187	.4784	.2289
ROA	-1.2090	1.4133	.0072	.0902	.0081
Profit Efficiency	.4108	1.0000	.7499	.0897	.0080
Tobin's Q	.0019	3.9579	.4933	.5491	.3015
TD ratio	0	1.4862	.3225	.2003	.0401
LTD ratio	0	.8154	.1793	.1571	.0247
STD ratio	0	1.4259	.1432	.1631	.0266
Size	14.4681	25.5891	19.4719	2.1440	4.5969
Asset tangibility	.0376	.9867	.5366	.2235	.0500
Profitability	-.7825	7.9611	.0538	.2997	.0898
Growth	-62.1315	23.3638	-.3360	3.6298	13.1754

6. Regression Analysis

6.1 Regression analysis for Cypriot companies

Table 7: Regression analysis with ROE as the dependent variable for Cyprus

	Regression using STD (1)	Regression using LTD (2)	Regression using TD (3)
Coefficient			
STD	**-0,236613**		
LTD		**-0,396165***	
TD			**-0,497118****
Size	**0,108821***	**0,222273*****	**0,096886**
Asset tangibility	**-0,016407**	**0,040873**	**-0,021449**
Growth	**0,010113**	**0,010804**	**0,019376**
Profitability	**0,157404****	**-0,010045**	**0,063147**
STD^2	**0,605280*****		
LTD^2		**0,248124**	
TD^2			**0,629777*****
Adjs. Rsquared	**0,127932**	**0,054946**	**0,076924**
Prob(F)	**0,000005**	**0,007257**	**0,000947**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

This table shows that all the three regressions using ROE as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. Long-term debt and total have a significant negative relationship with the dependent variable, considering a level of significance of 10% for the first and 5% for the last. The control variable size has a positive and significant relationship with performance using short-term and long-term debt, with coefficients of 0.109 and 0.222, respectively, considering a level of significance of 10% using STD and 1% using LTD. The variables asset tangibility measured by fixed assets/total assets and growth don't seem to explain the return on equity at all. Whereas, profitability has a significant and positive relationship with ROE, using short-term debt, with a coefficient of 0.157 and considering a level of significance of 5%. As far as the squared leverage variables, both short-term debt squared, and total debt squared have a significant and positive relationship with performance.

Table 8: Regression analysis with ROA as the dependent variable for Cyprus

	Regression using STD (1)	Regression using LTD (2)	Regression using TD (3)
Coefficient			
STD	**-0,337779****		
LTD		**-0,730337*****	
TD			**-0,667630*****
Size	**0,135042****	**0,302522*****	**0,217607*****
Asset tangibility	**-0,079075**	**0,069109**	**-0,037585**
Growth	**-0,062231**	**-0,066973**	**-0,068365**
Profitability	**0,085745**	**0,092673**	**0,114231**
STD^2	**0,456147*****		
LTD^2		**0,464877****	
TD^2			**0,541579*****
Adjs. Rsquared	**0,122198**	**0,152290**	**0,136731**
Prob(F)	**0,000009**	**3,2497E-7**	**0,000002**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

Similar to the previous table analyzing the Cypriot companies, all the three regressions using ROA as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. All three leverage ratios, short-term, long-term and total, have a negative and significant relationship with ROA, with coefficients of -0.338, -0.730, and 0.0002, respectively. However, for STD it is considering a level of 5%, unlike the 1% for the other ratios. The control variable size has a positive and significant relationship with performance using all the three different leverage ratios, with 0.135, 0.303, and 0.218, respectively, using a level of significance of 5% for the first ratio and 1% for the rest. The variable asset tangibility measured by fixed assets/total assets doesn't seem to explain the return on assets at all. Similarly, the control variables growth and profitability also don't seem to explain performance. As far as the squared leverage variables, they have a positive and significant relationship with the performance measurement, using a level of significance of 5% for the regression using LTD and 1% for the other two regressions.

Table 9: Regression analysis with Tobin's Q as the dependent variable for Cyprus

	Regression using STD (1)	Regression using LTD (2)	Regression using TD (3)
Coefficient			
STD	**-0,204770****		
LTD		**-0,022866**	
TD			**-0,336329*****
Size	**0,061011**	**0,096688***	**0,166021*****
Asset tangibility	**-0,102962****	**-0,047053**	**-0,062692**
Growth	**-0,101839****	**-0,097894****	**-0,105084****
Profitability	**-0,040493**	**-0,044371**	**-0,042271**
STD^2	**0,098342**		
LTD^2		**-0,087560**	
TD^2			**0,112314**
Adjs. Rsquared	**0,603104**	**0,599494**	**0,624089**
Prob(F)	**1,6595E-41**	**4,3512E-41**	**5,0914E-44**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

The table using Tobin's as the performance measurement for Cyprus shows that all the three regressions using Tobin's Q as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. Short-term debt and total debt have a significant negative relationship with the dependent variable, using a level of significance of 5% for the first and 1% for the last. The control variable size has a positive and significant relationship with performance using long-term debt considering a level of significance of 10% and total debt with a level of significance of 1%. The variable asset tangibility has a surprising negative relationship with Tobin's Q, using short-term debt with a coefficient of -0.103, considering a level of significance of 5%. Growth has a negative and significant relationship with the performance measurement, considering, again, a level of significance of 5%. Whereas, profitability and the squared leverage ratios don't seem to explain Tobin's Q.

Table 10: Regression analysis with Profit efficiency as the dependent variable for Cyprus

	Regression using STD (1)	Regression using LTD (2)	Regression using TD (3)
Coefficient			
STD	**0,092053**		
LTD		**0,113834**	
TD			**0,040016**
Size	**0,425638*** **	**0,436130*** **	**0,417011*** **
Asset tangibility	**-0,143740*** **	**-0,163826*** **	**-0,157401*** **
Growth	**-0,060899**	**-0,066134**	**-0,063682**
Profitability	**0,013511**	**-0,000928**	**0,006404**
STD^2	**-0,036982**		
LTD^2		**-0,170488**	
TD^2			**-0,039492**
Adjs. Rsquared	**0,549639**	**0,551419**	**0,546382**
Prob(F)	**1,1311E-35**	**7,432E-36**	**2,4298E-35**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

This table shows that not a single leverage ratio has a significant relationship with the efficiency measurement, despite all the three regressions using profit efficiency as the dependent variable being a good fit for the data used in this study due to prob(F) values lower than 0.01. The control variable size has a positive and significant relationship with performance throughout each regression, with coefficients of 0.426 using short-term debt, 0.436 using long-term debt, and 0.417 using total debt. The variable asset tangibility measured by fixed assets/total assets, again, has, throughout each regression, a significant and negative relationship with profit efficiency, with coefficients of -0.144 using STD, -0.164 using LTD, and -0.157 using TD. Growth, profitability, and the squared leverage ratios don't seem to explain this performance measurement's behavior.

Table 11: Regression analysis with short-term debt ratio as the dependent variable for Cyprus

	Regression using ROE (1)	Regression using ROA (2)	Regression using Tobin's Q (3)	Regression using Profit Efficiency (4)
Coefficient				
ROE	**-0,400954*** **			
ROA		**0,143668***		
Tobin's Q			**-0,163924*** **	
Profit Efficiency				**-0,024426**
Size	**0,040498**	**0,020316**	**0,059223**	**0,038875**
Asset tangibility	**-0,021687**	**-0,022351**	**-0,077562**	**-0,041652**
Growth	**-0,016176**	**0,005582**	**0,005663**	**0,002151**
Profitability	**0,184763*** **	**-0,080072**	**0,067631**	**0,025869**
Adjs. Rsquared	**0,526342**	**0,409169**	**0,421030**	**0,401740**
Prob(F)	**5,683E-34**	**9,2887E-24**	**1,0842E-24**	**3,4849E-23**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

Regarding the second model, all the four regressions using the short-term debt ratio as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. However, of all the four performance measures, only ROE, ROA, and Tobin's Q have a significant relationship with this leverage ratio with coefficients of -0.401, 0.144, and -0.164, respectively, considering a level of significance of 10% for the regression using ROA and 1% for the regressions using the other two significant performance measurements. Size, asset tangibility, and growth don't seem to be significant to explain the short-term debt ratio, considering a level of significance of 10%. However, profitability has a positive and significant relationship with short-term debt using ROE, with a coefficient of 0.185.

Table 12: Regression analysis with long-term debt ratio as the dependent variable for Cyprus

	Regression using ROE (1)	Regression using ROA (2)	Regression using Tobin's Q (3)	Regression using Profit Efficiency (4)
Coefficient				
ROE	**0,223938*** **			
ROA		**-0,079989**		
Tobin's Q			**0,047374**	
Profit Efficiency				**0,050881**
Size	**0,022855**	**0,049756**	**0,034158**	**0,016028**
Asset tangibility	**0,031557**	**0,026591**	**0,036206**	**0,042438**
Growth	**0,029792**	**0,013584**	**0,012587**	**0,017321**
Profitability	**-0,099453*** **	**0,037697**	**-0,036439**	**-0,022426**
Adjs. Rsquared	**0,815522**	**0,774466**	**0,773502**	**0,773235**
Prob(F)	**4,8022E-78**	**1,2796E-68**	**2,0275E-68**	**2,3032E-68**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

Using the long-term debt ratio as the dependent variable, all four regressions seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. However, of all the four performance measures, only ROE has a significant and positive relationship with this leverage ratio with a coefficient of 0.224. Size, asset tangibility, and growth don't seem to be significant to explain the short-term debt ratio, considering a level of significance of 10%. However, profitability, similar to the regression using short-term debt, has a negative relationship with long-term debt using ROE, with a coefficient of -0.099.

Table 13: Regression analysis with total debt ratio as the dependent variable for Cyprus

	Regression using ROE (1)	Regression using ROA (2)	Regression using Tobin's Q (3)	Regression using Profit Efficiency (4)
Coefficient				
ROE	**-0,158861*** **			
ROA		**0,121103*** **		
Tobin's Q			**0,000027**	
Profit Efficiency				**-0,020906**
Size	**0,018379**	**0,011353**	**0,020162**	**0,032645**
Asset tangibility	**0,008959**	**0,022732**	**0,017037**	**0,012124**
Growth	**0,016914**	**0,027528**	**0,026127**	**0,024794**
Profitability	**0,091762*** **	**-0,058099**	**0,031147**	**0,031144**
Adjs. Rsquared	**0,839353**	**0,823476**	**0,817740**	**0,817974**
Prob(F)	**1,5399E-84**	**4,0984E-80**	**1,299E-78**	**1,131E-78**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

Finally, all the four regressions using the total debt ratio as the dependent variable seem to be a good fit for the Cypriot data used in this study due to prob(F) values lower than 0.01. However, of all the four performance measures, only ROE and ROA have a significant relationship with this leverage ratio with coefficients of -0.159 and 0.121, respectively. Size, asset tangibility, and growth don't seem to be significant to explain the total debt ratio, considering a level of significance of 10%. However, profitability has a positive relationship with total debt using ROE with a coefficient of 0.092.

6.1.1 Summarized Regression analysis for Cypriot companies

When analyzing the data from the Cypriot companies using the first model, it is found a significant negative relationship between most of the performance and leverage ratios. Profit efficiency is the only performance measurement with no significant relationship with any leverage ratio. Return on equity has a significant relationship using long and total debt, Tobin's Q with short and total debt, and Return on assets with all the different leverage ratios used in this study. Regarding the control variables, there is a positive relationship between performance and size, measured by the natural logarithm of total assets, throughout most regressions. Using ROA and Profit efficiency, size is significant using all three different leverage measurements. However, considering ROE, it is only significant in the regressions using STD and LTD and considering Tobin's Q in the regressions using LTD and TD. The relationship between asset tangibility measured by fixed assets/total assets and performance was expected to be positive, however, it is surprisingly negative with the data used from this country. Besides the models using ROA and ROE, there is a negative and significant relationship between performance and asset tangibility, considering Tobin's Q and STD and throughout the three Profit Efficiency's regressions. Similar to size, there is a positive and significant relationship between performance and profitability, but only considering the regression using simultaneously ROE and STD. Lastly, growth had only a significant and negative relationship with performance, when considering Tobin's Q as the performance ratio. The squared leverage ratios were only significant in the regressions using ROE and ROA. There is a significant and positive relationship between performance using ROE, with STD^2 and TD^2 and throughout all the regressions using ROA. Concerning the second model for Cyprus, the results were mixed. There is a negative and significant relationship between leverage using short-term debt and performance, but only considering two performance ratios: ROE and Tobin's Q. Regarding long-term debt ratio, there is a positive and significant relationship between leverage and ROE. Whereas using total debt, there is a negative and significant relationship between leverage and ROE and a positive and significant relationship between leverage and ROA. As we already discussed before a negative relationship between leverage and performance supports the franchise-value hypothesis. Contrary, a positive relationship between leverage and performance supports the efficiency-risk hypothesis

6.2 Regression analysis for Greek companies

Table 14: Regression analysis with ROE as the dependent variable for Greece

	Regression using STD (1)	Regression using LTD (2)	Regression using TD (3)
Coefficient			
STD	**-0,288392*** **		
LTD		**-0,112213**	
TD			**-0,269268*** **
Size	**-0,009178**	**-0,000351**	**0,002413**
Asset tangibility	**-0,065271***	**-0,031199**	**-0,036037**
Growth	**0,006856**	**0,010021**	**0,008927**
Profitability	**0,091671** **	**0,101524*** **	**0,097508*** **
STD^2	**0,306738*** **		
LTD^2		**0,093303**	
TD^2			**0,266498*** **
Adjs. Rsquared	**0,036418**	**0,022912**	**0,030204**
Prob(F)	**0,000002**	**0,000299**	**0,000019**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

All the three regressions using ROE as the dependent variable seem to be a good fit for the Greek data used in this study due to prob(F) values lower than 0.01. Short-term and total debt have a significant negative relationship with the dependent variable with coefficients of -0.288 and -0.269, respectively. Nonetheless, long-term debt doesn't have a significant relationship with the performance measurement. Size and growth don't seem to have a significant relationship with return on equity. Whereas, profitability has a significant and positive relationship with ROE throughout each regression, with coefficients of 0.092 using STD, 0.102 using LTD, and 0.098 using TD. Also, asset tangibility has a negative and significant relationship with ROE using STD, considering a level of significance of 10%. As far as the squared leverage variables, STD and TD have positive and significant relationships with the performance variable.

Table 15: Regression analysis with ROA as the dependent variable for Greece

	Regression using STD (1)	Regression using LTD (2)	Regression using TD (3)
Coefficient			
STD	**-0,111827***		
LTD		**-0,080314**	
TD			**-0,103425**
Size	**-0,016257**	**-0,008576**	**0,010033**
Asset tangibility	**-0,093596*****	**-0,055453***	**-0,061052****
Growth	**0,007316**	**0,012415**	**0,003273**
Profitability	**0,447043*****	**0,443934*****	**0,448428*****
STD^2	**-0,022619**		
LTD^2		**0,056421**	
TD^2			**-0,033848**
Adjs. Rsquared	**0,392279**	**0,378404**	**0,392596**
Prob(F)	**1,835E-91**	**3,162E-87**	**1,4642E-91**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

This table shows that all the three regressions using ROA as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. Short-term debt has a significant negative relationship with the dependent variable, considering a level of significance of 10%, with a coefficient of -0.112. Nonetheless, long-term and total debt don't have a significant relationship with the performance measurement. Size and growth don't seem to have a significant relationship with return on assets. Asset tangibility has a significant and negative relationship with ROA, with coefficients of -0.094 using STD, -0.055 using LTD, and -0.061 using TD. Regarding the control variable profitability, it has a positive and significant relationship with performance, throughout each regression. As far as the squared leverage variables, none of them seem to be significant to explain performance's behavior.

Table 16: Regression analysis with Tobin's Q as the dependent variable for Greece

	Regression using STD (1)	Regression using LTD (2)	Regression using TD (3)
Coefficient			
STD	**-0,098899*** **		
LTD		**-0,017637**	
TD			**-0,069235***
Size	**-0,008143**	**-0,005004**	**0,000013**
Asset tangibility	**-0,027918***	**-0,013602**	**-0,013066**
Growth	**0,018394**	**0,020706**	**0,018248**
Profitability	**0,040844****	**0,046092*****	**0,043629****
STD^2	**0,069740****		
LTD^2		**0,009538**	
TD^2			**0,034933**
Adjs. Rsquared	**0,832474**	**0,831361**	**0,832474**
Prob(F)	**0,0E0**	**0,0E0**	**0,0E0**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

The table using Tobin's as the performance measurement for Greece shows that all the three regressions using Tobin's Q as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. Short-term debt and total debt have a significant negative relationship with the dependent variable, with coefficients of -0.099 and -0.069, respectively. Nonetheless, the long-term doesn't have a significant relationship with the performance measurement. Size and growth don't seem to have a significant relationship with Tobin's Q. Whereas, profitability has a significant and positive relationship with Tobin's Q throughout each regression. Asset tangibility has a negative and significant relationship with performance, considering a level of significance of 10%, in the regression using STD. As far as the squared leverage variables, only STD squared seems to be significant to explain Tobin's Q's behavior, considering a level of significance of 5%.

Table 17: Regression analysis with Profit Efficiency as the dependent variable for Greece

	Regression using STD (1)	Regression using LTD (2)	Regression using TD (3)
Coefficient			
STD	**0,126508****		
LTD		**-0,022353**	
TD			**0,105391**
Size	**0,416497*****	**0,398308*****	**0,397949*****
Asset tangibility	**-0,054038****	**-0,077612*****	**-0,080200*****
Growth	**-0,008612**	**-0,012483**	**-0,006641**
Profitability	**-0,003331**	**-0,025267**	**-0,006373**
STD^2	**-0,042977**		
LTD^2		**0,043580**	
TD^2			**-0,017720**
Adjs. Rsquared	**0,541466**	**0,535275**	**0,541421**
Prob(F)	**1,8564E-144**	**6,252E-142**	**1,9387E-144**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

The table above shows that all the three regressions using Profit Efficiency as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. Short-term debt has a significant positive relationship with the dependent variable, considering a level of significance of 5%, with a coefficient of -0.127. Nonetheless, long-term and total debt don't have a significant relationship with the performance measurement. Profitability and growth don't seem to have a significant relationship with Profit Efficiency. Whereas, size and asset tangibility have significant relationships with Profit efficiency, positive and negative, respectively. As far as the squared leverage variables, none of them seem to be significant to explain performance's behavior.

Table 18: Regression analysis with short-term debt ratio as the dependent variable for Greece

	Regression using ROE (1)	Regression using ROA (2)	Regression using Tobin's Q (3)	Regression using Profit Efficiency (4)
Coefficient				
ROE	**0,074441*** **			
ROA		**-0,049884***		
Tobin's Q			**-0,037601**	
Profit Efficiency				**0,021714**
Size	**-0,009292**	**-0,010979**	**-0,015698**	**-0,026533**
Asset tangibility	**-0,016129**	**-0,027710**	**-0,020374**	**-0,019216**
Growth	**0,025525**	**0,023808**	**0,025365**	**0,026208**
Profitability	**-0,062075*** **	**-0,012647**	**-0,026519**	**-0,042645** **
Adjs. Rsquared	**0,689344**	**0,685266**	**0,685122**	**0,684405**
Prob(F)	**5,5449E-219**	**1,6261E-216**	**1,9839E-216**	**5,3454E-216**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

Table 18 shows that all the four regressions of the second model using the short-term debt ratio as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. However, of all the four performance measures, only ROE and ROA have a significant relationship with this leverage ratio with coefficients of 0.074 and -0.050, respectively. Size, asset tangibility, and growth don't seem to explain short-term debt's behavior. Whereas, profitability has a significant and negative relationship with leverage, with coefficients of -0.062 using ROE and -0.043 using Profit Efficiency, considering a level of significance of 1% using ROE and 5% using Profit Efficiency.

Table 19: Regression analysis with long-term debt ratio as the dependent variable for Greece

	Regression using ROE (1)	Regression using ROA (2)	Regression using Tobin's Q (3)	Regression using Profit Efficiency (4)
Coefficient				
ROE	**-0,003157**			
ROA		**0,005211**		
Tobin's Q			**-0,026845**	
Profit Efficiency				**0,043063**
Size	**0,078272*** **	**0,078276*** **	**0,075706*** **	**0,047502**
Asset tangibility	**0,071932*** **	**0,072432*** **	**0,075242*** **	**0,078781*** **
Growth	**-0,038940***	**-0,038802***	**-0,038963***	**-0,037354***
Profitability	**-0,014144**	**-0,018578**	**-0,000206**	**-0,008208**
Adjs. Rsquared	**0,640677**	**0,640681**	**0,641180**	**0,641687**
Prob(F)	**1,8633E-191**	**1,8548E-191**	**1,0131E-191**	**5,472E-192**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

Using the long-term debt ratio as the dependent variable, all the regressions seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. However, of all the four performance measures none has a significant relationship with the leverage ratio. Size and asset tangibility have positive and significant relationships with long-term debt in most regressions. Whereas, growth has a negative and significant relationship with long-term debt, considering a level of significance of 10%. Profitability doesn't seem to be significant to explain the long-term debt ratio's behavior.

Table 20: Regression analysis with total debt ratio as the dependent variable for Greece

	Regression using ROE (1)	Regression using ROA (2)	Regression using Tobin's Q (3)	Regression using Profit Efficiency (4)
Coefficient				
ROE	**0,076625*** **			
ROA		**0,012731**		
Tobin's Q			**0,000218**	
Profit Efficiency				**0,012935**
Size	**0,000486**	**-0,000230**	**0,000279**	**-0,008609**
Asset tangibility	**0,008303**	**0,004796**	**0,003889**	**0,005899**
Growth	**0,006741**	**0,006975**	**0,006462**	**0,006786**
Profitability	**-0,035699*** **	**-0,027017***	**-0,018798**	**-0,017238**
Adjs. Rsquared	**0,903442**	**0,898044**	**0,897971**	**0,898059**
Prob(F)	**0,0E0**	**0,0E0**	**0,0E0**	**0,0E0**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

All the four regressions using the total debt ratio as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. However, of all the four performance measures, only ROE has a positive and significant relationship with this leverage ratio with a coefficient of 0.077. Considering a level of significance of 10%, size, asset tangibility and growth don't seem to explain the total debt ratio. Whereas, Profitability has a negative and significant relationship with the leverage ratio, with coefficients of -0.036 using ROE and -0.027 using ROA.

6.2.1 Summarized Regression analysis for Greek companies

Similar to Cypriot companies, a negative relationship between most performance measurements (ROE, ROA, and Tobin's Q) and leverage ratios, is found in the Greek data. However, instead of a non-significant relationship between Profit Efficiency and leverage, there is a positive and significant relationship between performance and leverage, using short-term debt. Moreover, there is a negative and significant relationship between performance(ROE, ROA, and Tobin's Q) and leverage in the form of short-term debt. Also, there is a similar relationship between performance (ROE and Tobin's Q) and total debt. Regarding the control variables for the Greek data, asset tangibility, profitability and size are the only variables to have significant relationships with performance. Again, similar to the Cypriot case, there is a negative relationship between performance and asset tangibility. Throughout each regression, there is a negative relationship between performance, using Profit Efficiency and ROA, and asset tangibility. Whereas, only in the regressions using short-term debt, there is a negative relationship between performance (ROE and Tobin's Q) and asset tangibility. Concerning profitability, there is a positive and significant relationship between performance and profitability for all regressions besides the regressions using Profit Efficiency. Instead, the regressions using Profit Efficiency as the performance measurement have a positive and significant relationship between performance and size. The squared leverage ratios were only positive and significant in the regressions using ROE and Tobin's Q. In the first being STD^2 and TD^2 and the last being only STD^2. The regressions from the second model found support to the efficiency-risk hypothesis, but only considering ROE as the performance measurement. There is a positive relationship between leverage using STD or TD and ROE as performance. Whereas, long-term debt doesn't have any significant relationship with performance.

6.3 Regression analysis for Portuguese companies

Table 21: Regression analysis with ROE as the dependent variable for Portugal

	Regression using STD (1)	Regression using LTD (2)	Regression using TD (3)
Coefficient			
STD	**0,570946*** **		
LTD		**-0,386135**	
TD			**1,006857*** **
Size	**0,080111**	**0,267824*** **	**-0,029505**
Asset tangibility	**-0,002158**	**-0,128737**	**0,032339**
Growth	**0,023560**	**-0,050851**	**-0,080230***
Profitability	**0,022911**	**0,314348*** **	**0,030659**
STD^2	**-1,174085*** **		
LTD^2		**0,404882**	
TD^2			**-1,523281*** **
Adjs. Rsquared	**0,540934**	**0,139085**	**0,548367**
Prob(F)	**1,7776E-33**	**0,000002**	**3,3592E-34**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

Regarding the first model for Portuguese data, all the three regressions using ROE as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. Short-term debt and total have a significant positive relationship with the dependent variable. Nonetheless, long-term debt doesn't have a significant relationship with the performance measurement. The control variable size has a positive and significant relationship with performance using long-term debt, with a coefficient of 0.268. The variable asset tangibility measured by fixed assets/total assets doesn't seem to explain the return on equity at all. Considering a level of significance of 10%, the control variable growth has a negative and significant relationship with the performance measurement, using the total debt ratio. Whereas, profitability has a significant and positive relationship with ROE, using long-term debt. As far as the squared leverage variables, both short-term debt squared, and total debt squared have a significant and negative relationship with performance.

Table 22: Regression analysis with ROA as the dependent variable for Portugal

	Regression using STD (1)	Regression using LTD (2)	Regression using TD (3)
Coefficient			
STD	**-0,520225*** **		
LTD		**0,185957**	
TD			**-1,149205*** **
Size	**0,046567**	**-0,106077**	**0,155360*** **
Asset tangibility	**0,002412**	**0,130217**	**-0,029506**
Growth	**0,064457**	**0,123268***	**0,152437*** **
Profitability	**0,341518*** **	**0,044643**	**0,319903*** **
STD^2	**1,082192*** **		
LTD^2		**-0,301236**	
TD^2			**1,582817*** **
Adjs. Rsquared	**0,385538**	**0,047092**	**0,443451**
Prob(F)	**1,2103E-20**	**0,016643**	**5,612E-25**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

As far as ROA, all the regressions using this performance measurement as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.02. Short-term and total debt have a significant negative relationship with the dependent variable. Nonetheless, long-term debt doesn't have a significant relationship with the performance measurement. The control variable size has a positive and significant relationship with performance using the total debt ratio, with a coefficient of 0.155. The variable asset tangibility, again, seems to not explain this performance measurement. The control variable growth has a positive and significant relationship with ROA, using long-term debt and total debt, with coefficients of 0.123 and 0.152, respectively. Profitability, however, has a positive and significant relationship with ROA, but using short-term debt and total debt, with coefficients of 0.342 and 0.320, respectively. As far as the squared variables of leverage, short-term debt squared, and total debt squared have a positive and significant relationship with ROA, whereas long-term debt squared doesn't have a significant relationship with performance.

Table 23: Regression analysis with Tobin's Q as the dependent variable for Portugal

	Regression using STD (1)	Regression using LTD (2)	Regression using TD (3)
Coefficient			
STD	**0,002098**		
LTD		**-0,048493**	
TD			**-0,039868**
Size	**-0,003300**	**-0,001967**	**-0,002482**
Asset tangibility	**0,025178**	**0,027490**	**0,024812**
Growth	**0,008750**	**0,010442**	**0,010232**
Profitability	**0,041444**	**0,034967**	**0,041145**
STD^2	**0,016080**		
LTD^2		**0,032515**	
TD^2			**0,042375**
Adjs. Rsquared	**0,807602**	**0,807698**	**0,807619**
Prob(F)	**2,3974E-72**	**2,2767E-72**	**2,3758E-72**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

Again, the three regressions using Tobin's Q as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. However, not a single variable except the lagged Tobin's Q seems to explain Tobin's Q behavior for the Portuguese companies, even considering a level of significance of 10%.

Table 24: Regression analysis with Profit Efficiency as the dependent variable for Portugal

	Regression using STD (1)	Regression using LTD (2)	Regression using TD (3)
Coefficient			
STD	**-0,177971***		
LTD		**-0,122783**	
TD			**-0,216978***
Size	**0,296572*****	**0,296956*****	**0,328989*****
Asset tangibility	**0,134147****	**0,141618****	**0,142038*****
Growth	**-0,039436**	**-0,012751**	**-0,025715**
Profitability	**0,125072****	**0,078438**	**0,133159****
STD^2	**0,244917****		
LTD^2		**0,130024**	
TD^2			**0,278937**
Adjs. Rsquared	**0,516644**	**0,505370**	**0,516135**
Prob(F)	**3,4081E-31**	**3,5632E-30**	**3,7937E-31**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

All the three regressions using Profit efficiency as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. Total debt and short-term debt have a significant negative relationship with the dependent variable, considering a level of significance of 10%. The control variable size has a positive and significant relationship with performance throughout each regression, with coefficients of 0.297, 0.297, and 0.329, respectively for short-term, long-term, and total debt. The variable asset tangibility, similar to size, has a positive and significant relationship with profit efficiency throughout each regression, considering a level of significance of 5% for STD and LTD and 1% for TD. Growth doesn't seem to explain this performance measurement. Profitability, however, has a positive significant relationship with Profit efficiency, but using only short-term debt and total debt, with coefficients of 0.125 and 0.133, respectively, and considering a level of significance of 5%. As far as the squared variables of leverage, only short-term debt squared, has a significant and positive relationship with efficiency, considering a level of significance of 5%.

Table 25: Regression analysis with short-term debt ratio as the dependent variable for Portugal

	Regression using ROE (1)	Regression using ROA (2)	Regression using Tobin's Q (3)	Regression using Profit Efficiency (4)
Coefficient				
ROE	**-0,086040**			
ROA		**0,047510**		
Tobin's Q			**-0,088975**	
Profit Efficiency				**0,167614****
Size	**-0,046077**	**-0,064010**	**-0,067308**	**-0,162905****
Asset tangibility	**-0,083711**	**-0,073874**	**-0,056251**	**-0,100312***
Growth	**-0,008288**	**-0,012286**	**-0,009140**	**-0,002589**
Profitability	**-0,139568****	**-0,147436***	**-0,087502**	**-0,133859****
Adjs. Rsquared	**0,405418**	**0,400023**	**0,406071**	**0,416484**
Prob(F)	**1,3556E-22**	**3,3997E-22**	**1,212E-22**	**1,9991E-23**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

Regarding the second model for Portugal, all the four regressions using the short-term debt ratio as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. However, of all the four performance measures, only Profit Efficiency has a significant relationship with this leverage ratio with a coefficient of 0.168, considering a level of significance of 5%. The variable size has a negative and significant relationship with this leverage ratio using profit efficiency with a coefficient of -0.163 and considering a level of significance of 5%. Asset tangibility has a negative and significant relationship with short-term debt using profit efficiency as well, considering a level of significance of 10%. Growth doesn't seem to explain this leverage ratio. However, profitability has a negative relationship with short-term debt with ROE and Profit efficiency with a level of significance of 5% and with ROA with a level of significance of 10%.

Table 26: Regression analysis with long-term debt ratio as the dependent variable for Portugal

	Regression using ROE (1)	Regression using ROA (2)	Regression using Tobin's Q (3)	Regression using Profit Efficiency (4)
Coefficient				
ROE	**-0,037118**			
ROA		**0,102871***		
Tobin's Q			**-0,060012**	
Profit Efficiency				**-0,062587**
Size	**-0,016363**	**-0,014751**	**-0,021600**	**0,006721**
Asset tangibility	**0,040759**	**0,031897**	**0,059563**	**0,060859**
Growth	**-0,033851**	**-0,031281**	**-0,036197**	**-0,040940**
Profitability	**0,040107**	**-0,028459**	**0,071749***	**0,059303**
Adjs. Rsquared	**0,722822**	**0,726029**	**0,724645**	**0,724076**
Prob(F)	**9,1968E-57**	**2,7494E-57**	**4,6376E-57**	**5,7462E-57**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

Using long-term debt ratio as the dependent variable, all the four regressions seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. However, of all the four performance measures, only return on assets has a significant relationship with this leverage ratio with a coefficient of 0.103 and considering a level of significance of 10%. Regarding the control variables: size, asset tangibility, and growth don't seem to explain the long-term debt ratio's behavior. However, using Tobin's Q and considering a level of significance of 10%, profitability has a positive relationship with leverage with a coefficient of 0.072.

Table 27: Regression analysis with total debt ratio as the dependent variable for Portugal

	Regression using ROE (1)	Regression using ROA (2)	Regression using Tobin's Q (3)	Regression using Profit Efficiency (4)
Coefficient				
ROE	**-0,082790****			
ROA		**0,117796****		
Tobin's Q			**-0,070162***	
Profit Efficiency				**0,019713**
Size	**0,028098**	**0,020189**	**0,007338**	**-0,005003**
Asset tangibility	**-0,000543**	**-0,002258**	**0,027170**	**0,011317**
Growth	**-0,052371**	**-0,052772**	**-0,056185**	**-0,056621**
Profitability	**0,042123**	**-0,020828**	**0,087510****	**0,068654***
Adjs. Rsquared	**0,759493**	**0,759384**	**0,757670**	**0,753875**
Prob(F)	**3,6652E-63**	**3,8421E-63**	**8,0316E-63**	**4,0353E-62**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

Lastly, for the Portuguese case, all the four regressions using the total debt ratio as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. However, of all the four performance measures, only ROE, ROA, and Tobin's Q have a significant relationship with this leverage ratio with coefficients of -0.083, 0.118, and -0.071 respectively, considering a level of significance of 5% for the first two performance ratios and 10% for the last. The control variables size, asset tangibility, and growth are not significant to explain total debt's ratio behavior. Profitability, however, considering a level of significance of 5% using Tobin's Q and 10% using Profit Efficiency, has a positive and significant relationship with total debt ratio, with coefficients of 0.088 and 0.069, respectively.

6.3.1 Summarized Regression analysis for Portuguese companies

Portugal shows mostly a mixed relationship between performance and leverage. Tobin's Q has no significant relationship with any leverage ratio or even control variable, ROA and Profit Efficiency have a negative and significant relationship with leverage and ROE has a positive and significant relationship with leverage. The Two leverage ratios that have a significant relationship with performance are the short-term debt and the total debt, for the three performance measurements with significant relationships with leverage. There is a positive and significant relationship between ROE and leverage and a negative one using Profit Efficiency and ROA, as the performance measurement. The control variable size has a positive and significant relationship with the performance measurements that have significant relationships. There is a positive and significant relationship between ROE and size, in the regression using LTD and a similar relationship between ROA and size, in the regression using TD. Considering Profit efficiency, however, there is a positive and significant relationship between performance and size throughout all three regressions. Asset tangibility has only a significant and positive relationship with performance, that is using, again, profit efficiency. There is a significant and negative relationship between ROE and growth, using total debt and a positive relationship between ROA and growth, and Profit Efficiency and growth, using long-term debt and total debt, and short-term debt and total debt, respectively. The variable growth is only significant in the regressions using ROE and ROA. There is a positive and significant relationship between ROE and profitability, in the regression using LTD and a positive and significant relationship between ROA and profitability, in the regressions using STD and TD. Regarding the squared leverage variables, the results are mixed. There is a negative and significant relationship between performance, using ROE, and STD^2 and TD^2, and a positive and significant relationship between performance, using ROA, and Profit Efficiency, and STD^2 and TD^2, and STD^2, respectively. The regressions from the second model support the franchise-value hypothesis only when considering leverage as the total debt and return on equity or Tobin's Q as the performance measurement. Whereas, using short-term debt and long-term debt, the relationships are positive, supporting the efficiency-risk hypothesis.

6.4 Regression analysis for Spanish companies

Table 28: Regression analysis with ROE as the dependent variable for Spain

	Regression using STD (1)	Regression using LTD (2)	Regression using TD (3)
Coefficient			
STD	**-0,024660**		
LTD		**-0,224011***	
TD			**-0,017426**
Size	**0,026280**	**0,052979**	**0,035434**
Asset tangibility	**-0,097865***	**-0,065153**	**-0,088620***
Growth	**-0,067569**	**-0,071918**	**-0,066590**
Profitability	**-0,005779**	**-0,007664**	**-0,007725**
STD^2	**-0,024385**		
LTD^2		**0,199454**	
TD^2			**-0,037122**
Adjs. Rsquared	**0,002917**	**0,006557**	**0,003605**
Prob(F)	**0,297110**	**0,176839**	**0,270545**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

Surprisingly, all the regressions using ROE as the dependent variable seem to not be a good fit for the Spanish data used in this study due to prob(F) values higher than 0.1.

Table 29: Regression analysis with ROA as the dependent variable for Spain

	Regression using STD (1)	Regression using LTD (2)	Regression using TD (3)
Coefficient			
STD	**-0,216711****		
LTD		**-0,000578**	
TD			**-0,157168**
Size	**-0,046764**	**-0,005934**	**0,001952**
Asset tangibility	**0,003747**	**0,047290**	**0,046258**
Growth	**0,120581*****	**0,117403*****	**0,121968*****
Profitability	**0,000314**	**0,014948**	**-0,003343**
STD^2	**0,040460**		
LTD^2		**-0,060397**	
TD^2			**-0,025687**
Adjs. Rsquared	**0,191714**	**0,169217**	**0,192573**
Prob(F)	**4,7671E-21**	**2,9139E-18**	**3,715E-21**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

Using ROA as the dependent variable, all the regressions seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. Short-term debt has a significant negative relationship with the dependent variable, considering a level of significance of 5%, with a coefficient of -0.217. Nonetheless, long-term and total debt don't have a significant relationship with the performance measurement. Size, asset tangibility, and growth don't seem to have a significant relationship with return on assets. Whereas, growth has a significant and positive relationship with ROA throughout each regression, with coefficients of 0.121 using STD, 0.117 using LTD, and 0.122 using TD. As far as the squared leverage variables, none of them seem to be significant to explain performance's behavior.

Table 30: Regression analysis Tobin's Q as the dependent variable for Spain

	Regression using STD (1)	Regression using LTD (2)	Regression using TD (3)
Coefficient			
STD	**-0,038514**		
LTD		**-0,053467**	
TD			**-0,029042**
Size	**-0,072247*** **	**-0,058710** **	**-0,063854** **
Asset tangibility	**0,014670**	**0,027441**	**0,022759**
Growth	**0,018585**	**0,016601**	**0,018951**
Profitability	**-0,012859**	**-0,010594**	**-0,013585**
STD^2	**0,004321**		
LTD^2		**0,043533**	
TD^2			**-0,005410**
Adjs. Rsquared	**0,739066**	**0,738389**	**0,739047**
Prob(F)	**1,8088E-139**	**3,3972E-139**	**1,8414E-139**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

Table 30 shows that all the three regressions using Tobin's Q as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. None of the leverage ratios have a significant relationship with the performance measurement. The control variable size has a negative and significant relationship with performance, with coefficients of -0.072 using STD, -0.059 using LTD, and -0.064 using TD, considering a level of significance of 1% using the first regression and 5% for the other two regressions. The rest of the control variables and the squared leverage ratios don't seem to explain Tobin's Q's behavior.

Table 31: Regression analysis with Profit Efficiency as the dependent variable for Spain

	Regression using STD (1)	Regression using LTD (2)	Regression using TD (3)
Coefficient			
STD	**-0,102614**		
LTD		**-0,088966**	
TD			**-0,128318***
Size	**0,270315*** **	**0,289281*** **	**0,292817*** **
Asset tangibility	**0,037811**	**0,064070****	**0,057743***
Growth	**0,039108**	**0,037698**	**0,039862**
Profitability	**-0,026302**	**-0,022503**	**-0,031336**
STD^2	**0,044445**		
LTD^2		**0,406508**	
TD^2			**0,051965**
Adjs. Rsquared	**0,649803**	**0,648427**	**0,652374**
Prob(F)	**1,9961E-108**	**5,171E-108**	**3,3374E-109**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

Lastly, for the first model, all the three regressions using Profit Efficiency as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. Total debt has a significant negative relationship with the dependent variable, considering a level of significance of 10%, with a coefficient of -0.128. Nonetheless, short-term debt and long-term debt don't have a significant relationship with the performance measurement. The control variable size has a positive and significant relationship with performance, with coefficients of 0.270 using STD, 0.289 using LTD, and 0.293 using TD. The variable asset tangibility measured by fixed assets/total assets has a positive and significant relationship with Profit efficiency, using long-term debt and total debt, considering a level of significance of 5% for the first and 10% for the last. Growth, Profitability, and the squared leverage ratios are not significant to explain Profit Efficiency's behavior.

Table 32: Regression analysis with short-term debt ratio as the dependent variable for Spain

	Regression using ROE (1)	Regression using ROA (2)	Regression using Tobin's Q (3)	Regression using Profit Efficiency (4)
Coefficient				
ROE	**0,010179**			
ROA		**-0,134146*** **		
Tobin's Q			**-0,110267*** **	
Profit Efficiency				**-0,065710**
Size	**-0,034370**	**-0,029807**	**-0,066034***	**0,007826**
Asset tangibility	**-0,076708****	**-0,089205****	**-0,084898****	**-0,072932***
Growth	**0,006252**	**0,007014**	**0,012254**	**0,005102**
Profitability	**-0,055941**	**-0,048377**	**-0,055868***	**-0,056583***
Adjs. Rsquared	**0,449475**	**0,464733**	**0,459901**	**0,451558**
Prob(F)	**1,3438E-61**	**1,4852E-64**	**1,3103E-63**	**5,3658E-62**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

The regressions from the second model using the short-term debt ratio as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. However, of all the four performance measures, only ROA and Tobin's Q have a negative and significant relationship with this leverage ratio with coefficients of -0.134 and -0.110. Considering a level of significance of 10%, size has a significant and negative relationship with the short-term debt ratio using Tobin's Q, with a coefficient of -0.066. Asset tangibility has a negative and significant relationship with leverage throughout each regression, considering a level of significance of 10% using Profit Efficiency and 5% using the other three performance measurements. Whereas, Growth and Profitability don't seem to explain short-term debt behavior.

Table 33: Regression analysis with long-term debt ratio as the dependent variable for Spain

	Regression using ROE (1)	Regression using ROA (2)	Regression using Tobin's Q (3)	Regression using Profit Efficiency (4)
Coefficient				
ROE	**0,016755**			
ROA		**-0,047589***		
Tobin's Q			**-0,007171**	
Profit Efficiency				**0,074441****
Size	**0,032534**	**0,040885**	**0,032544**	**-0,014907**
Asset tangibility	**0,056023****	**0,056341****	**0,055169****	**0,047872***
Growth	**0,002202**	**0,002488**	**0,003098**	**0,004759**
Profitability	**-0,001235**	**0,003403**	**-0,000777**	**-0,001158**
Adjs. Rsquared	**0,708886**	**0,710798**	**0,708651**	**0,711488**
Prob(F)	**7,181E-129**	**1,4416E-129**	**8,74E-129**	**8,053E-130**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

Similarly, all the four regressions using the long-term debt ratio as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. However, of all the four performance measures, only ROA and Profit Efficiency have a significant relationship with this leverage ratio with coefficients of -0.048 and 0.074, respectively, considering a level of significance of 10% using ROA and 5% using Profit Efficiency. Size, Profitability, and Growth don't seem to be significant to explain the long-term debt ratio, considering a level of significance of 10%. However, asset tangibility has a positive and significant relationship with long-term debt ratio, with coefficients of 0.056 using ROE, 0.056 using ROA, 0.055 using Tobin's Q, and 0.048 using Profit Efficiency.

Table 34: Regression analysis with total debt ratio as the dependent variable for Spain

	Regression using ROE (1)	Regression using ROA (2)	Regression using Tobin's Q (3)	Regression using Profit Efficiency (4)
Coefficient				
ROE	**0,028160**			
ROA		**-0,079819*** **		
Tobin's Q			**-0,043900**	
Profit Efficiency				**0,049689**
Size	**0,036012**	**0,048731***	**0,028850**	**0,005103**
Asset tangibility	**0,026484**	**0,025255**	**0,024823**	**0,019387**
Growth	**0,001473**	**0,003031**	**0,004952**	**0,003625**
Profitability	**-0,023203**	**-0,019669**	**-0,023793**	**-0,022326**
Adjs. Rsquared	**0,652088**	**0,656613**	**0,652875**	**0,652560**
Prob(F)	**5,1435E-110**	**2,1228E-111**	**2,9641E-110**	**3,6946E-110**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

To conclude for the Spanish data, all the four regressions using the total debt ratio as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. However, of all the four performance measures, only ROA has a negative and significant relationship with this leverage ratio with a coefficient of -0.080. Profitability, asset tangibility, and growth don't seem to be significant to explain leverage's behavior, considering a level of significance of 10%. However, size has a positive and significant relationship with total debt using ROA, with a coefficient of 0.049, and considering a level of significance of 10%.

6.4.1 Summarized Regression analysis for Spanish companies

Lastly, Spanish data supports mainly the idea that there is a negative relationship between performance and leverage. All the performance ratios, except Tobin's Q, have at least one regression with a negative and significant relationship with leverage. ROE has a negative significant relationship with long-term debt, ROA with short-term debt, and Profit efficiency with total debt. Tobin's Q and Profit efficiency have, respectively, a negative and positive, relationship with size, throughout all three different regressions. As far as asset tangibility, the results depend on the performance measurement. There is a negative relationship between performance (ROE) and asset tangibility, in the regressions using STD and TD. Whereas, using Profit efficiency, there is a positive and significant relationship between performance and asset tangibility, in the regressions using LTD and TD. Growth is only significant in the regressions that use ROA as the performance measurement. Throughout the regressions using the three different leverage ratios, there is a positive and significant relationship between performance and growth. The second model from the Spanish companies almost fully supports the franchise-value hypothesis. There is a negative relationship between STD and ROA, STD and Tobin's Q, between LTD and ROA, and also between TD and ROA. However, there is a positive relationship between LTD and Profit Efficiency.

6.5 Regression analysis for the combined data

Table 35: Regression analysis for the combined data with ROE as the dependent variable

	Regression using STD (1)	Regression using LTD (2)	Regression using TD (3)
Coefficient			
STD	**-0,005535**		
LTD		**-0,178923*** **	
TD			**0,063894**
Size	**0,077605*** **	**0,112355*** **	**0,085671*** **
Asset tangibility	**-0,087514*** **	**-0,070689*** **	**-0,080529*** **
Growth	**-0,012792**	**-0,013965**	**-0,676477**
Profitability	**0,016270**	**0,018594**	**0,015177**
STD^2	**-0,053180**		
LTD^2		**0,142805** **	
TD^2			**-0,141868** **
Adjs. Rsquared	**0,015889**	**0,016450**	**0,020066**
Prob(F)	**0,000007**	**0,000005**	**2,4485E-7**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

All the three regressions using ROE as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. Long-term debt has a significant negative relationship with the dependent variable. Nonetheless, short-term debt and total debt don't have a significant relationship with the performance measurement. The control variable size has a positive and significant relationship with performance throughout each regression, with coefficients of 0.078 using STD ratio, 0.112 using LTD ratio, and 0.086 using TD ratio. The variable asset tangibility measured by fixed assets/total assets has a significant and negative relationship, which is surprising since this relationship is usually and was predicted to be positive. The coefficients are -0.088, -0.071, and -0.081, respectively to each regression in numerical order. However, both Profitability and Growth don't seem to significantly explain the variable ROE. As far as the squared variables of leverage, long-term debt, and total debt have a positive and significant relationship with ROE, considering a level of significance of 5%.

Table 36: Regression analysis for the combined data with ROA as the dependent variable

	Regression using STD (1)	Regression using LTD (2)	Regression using TD (3)
Coefficient			
STD	**-0,379818*** **		
LTD		**-0,138095** **	
TD			**-0,587199*** **
Size	**0,083337*** **	**0,142690*** **	**0,158419*** **
Asset tangibility	**-0,104637*** **	**-0,060658** **	**-0,062727*** **
Growth	**0,018878**	**0,023424**	**0,019737**
Profitability	**0,024682**	**0,031196**	**0,019361**
STD^2	**0,354821*** **		
LTD^2		**0,058292**	
TD^2			**0,523318*** **
Adjs. Rsquared	**0,134309**	**0,112688**	**0,155978**
Prob(F)	**3,8418E-54**	**1,2193E-44**	**6,1508E-64**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

As far as ROA, all the regressions using this performance measurement as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. All the different leverage ratios have a significant negative relationship with the dependent variable, considering a level of significance of 5% using long-term debt and 1% using short-term and total debt. The control variable size has a positive and significant relationship with performance throughout each regression, with coefficients of 0.083 using STD ratio, 0.143 using LTD ratio, and 0.158 using TD ratio. Again, asset tangibility has a significant and negative relationship with performance. The coefficients are -0.105, -0.061, and -0.063, respectively to each regression in numerical order. However, growth and profitability don't seem to significantly explain the return on assets' behavior. Regarding the squared variables of leverage, short-term debt and total debt have a significant and positive relationship with return on assets, with coefficients of 0.355 and 0.523, respectively.

Table 37: Regression analysis for the combined data with Tobin's Q as the dependent variable

	Regression using STD (1)	Regression using LTD (2)	Regression using TD (3)
Coefficient			
STD	**-0,074716*** **		
LTD		**-0,014174**	
TD			**-0,053647***
Size	**0,001777**	**0,010933**	**0,015865**
Asset tangibility	**-0,028146** **	**-0,018681**	**-0,018432**
Growth	**-0,001224**	**0,000032**	**-0,001360**
Profitability	**-0,000919**	**0,001434**	**-0,000678**
STD^2	**0,043780***		
LTD^2		**0,009454**	
TD^2			**0,023234**
Adjs. Rsquared	**0,784635**	**0,783338**	**0,784222**
Prob(F)	**0,0E0**	**0,0E0**	**0,0E0**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

Using Tobin's Q as the dependent variable, all the regressions seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. Short-term debt has a significant negative relationship with the dependent variable, with a coefficient of -0.075. Total debt has also a significant and negative relationship with Tobin's Q but considering a level of significance of 10%. Whereas, long-term debt doesn't have a significant relationship with the performance measurement. Considering a level of significance of 5%, besides asset tangibility in the regression using short-term debt, the control variables don't have a significant relationship with Tobin's Q measured by market capitalization/total assets. Regarding the squared leverage variables, only short-term debt has a significant and positive relationship with performance, with a coefficient of 0.044.

Table 38: Regression analysis for the combined data with Profit Efficiency as the dependent variable

	Regression using STD (1)	Regression using LTD (2)	Regression using TD (3)
Coefficient			
STD	**0,023067**		
LTD		**-0,031584**	
TD			**-0,012054**
Size	**0,389668*** **	**0,385463*** **	**0,383921*** **
Asset tangibility	**-0,031191** **	**-0,033015** **	**-0,035179** **
Growth	**-0,008920**	**-0,009683**	**-0,008589**
Profitability	**-0,004455**	**-0,007326**	**-0,005307**
STD^2	**0,003137**		
LTD^2		**0,030032**	
TD^2			**0,033554**
Adjs. Rsquared	**0,635984**	**0,635481**	**0,635876**
Prob(F)	**0,0E0**	**0,0E0**	**0,0E0**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

Finally, all the regressions using Profit efficiency as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. However, neither short-term, long-term nor total debt have a significant relationship with this performance measurement. The control variable size has a positive and significant relationship with Profit efficiency, with coefficients of 0.390 using STD, 0.385 using LTD, and 0.384 using TD. Whereas, considering a level of significance of 5%, asset tangibility has a negative and significant relationship with performance, with coefficients of –0.031, -0.033, and -0.035 respectively to each regression in numerical order. Growth, Profitability, and the squared leverage variables don't seem to explain profit efficiency's behavior.

Table 39: Regression analysis for the combined data with short-term debt ratio as the dependent variable

	Regression using ROE (1)	Regression using ROA (2)	Regression using Tobin's Q (3)	Regression using Profit Efficiency (4)
Coefficient				
ROE	**-0,006938**			
ROA		**-0,034020****		
Tobin's Q			**-0,074729*****	
Profit Efficiency				**0,033989**
Size	**-0,041612*****	**-0,038264****	**-0,037730****	**-0,067511*****
Asset tangibility	**-0,018848**	**-0,024151**	**-0,030967****	**-0,016835**
Growth	**0,011467**	**0,011680**	**0,013318**	**0,012752**
Profitability	**-0,023928**	**-0,020086**	**-0,017484**	**-0,024092**
Adjs. Rsquared	**0,591663**	**0,592587**	**0,596502**	**0,592164**
Prob(F)	**0,0E0**	**0,0E0**	**0,0E0**	**0,0E0**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

Table 39 shows that all the four regressions from the second model using the short-term debt ratio as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. However, of all the four performance measures, only return on assets and Tobin's Q have a significant negative relationship with this leverage ratio with coefficients of -0.034 and -0.075 respectively, considering a level of significance of 5% for ROA and 1% for Tobin's Q. The variable size has a negative and significant relationship with this leverage ratio, throughout these four different measurements, considering a level of significance of 1% using ROE and Profit Efficiency, and 5% using ROA and Tobin's Q. Asset tangibility has a negative and significant relationship with short-term debt using Tobin's Q, considering a level of significance of 5%, with a coefficient of -0.031. Growth and Profitability don't have a significant relationship with this leverage ratio.

Table 40: Regression analysis for the combined data with long-term debt ratio as the dependent variable

	Regression using ROE (1)	Regression using ROA (2)	Regression using Tobin's Q (3)	Regression using Profit Efficiency (4)
Coefficient				
ROE	**0,015959**			
ROA		**-0,009173**		
Tobin's Q			**-0,009863**	
Profit Efficiency				**0,048764*** **
Size	**0,064758*** **	**0,068502*** **	**0,068405*** **	**0,031423**
Asset tangibility	**0,044213*** **	**0,041731*** **	**0,041907*** **	**0,045376*** **
Growth	**-0,020197**	**-0,019928**	**-0,019793**	**-0,018008**
Profitability	**-0,000959**	**0,000990**	**0,000743**	**0,000162**
Adjs. Rsquared	**0,699672**	**0,699501**	**0,699514**	**0,700571**
Prob(F)	**0,0E0**	**0,0E0**	**0,0E0**	**0,0E0**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

All the four regressions using the long-term debt ratio as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. However, of all the four performance measures, only profit efficiency has a significant relationship with this leverage ratio with a coefficient of 0.049. Asset tangibility throughout all four regressions has a significant and positive relationship with long-term debt ratio, with coefficients of 0.044 using ROE, 0.042 using ROA, 0.042 using Tobin's Q, and 0.045 using Profit Efficiency. Size, however, has a positive and significant relationship with leverage using ROE, ROA, and Tobin's Q. Growth and Profitability don't seem to explain long-term debt's behavior.

Table 41: Regression analysis for the combined data with total debt ratio as the dependent variable

	Regression using ROE (1)	Regression using ROA (2)	Regression using Tobin's Q (3)	Regression using Profit Efficiency (4)
Coefficient				
ROE	**0,015519**			
ROA		**0,011178**		
Tobin's Q			**-0,020310***	
Profit Efficiency				**0,043136****
Size	**0,007022**	**0,0062868**	**0,012011**	**-0,022154**
Asset tangibility	**0,016584**	**0,016360**	**0,012947**	**0,017515***
Growth	**0,000934**	**0,001024**	**0,001327**	**0,002662**
Profitability	**-0,005735**	**-0,006611**	**-0,003586**	**-0,005145**
Adjs. Rsquared	**0,811689**	**0,811560**	**0,811803**	**0,812341**
Prob(F)	**0,0E0**	**0,0E0**	**0,0E0**	**0,0E0**

*** Considering a level of significance of 1%; ** Considering a level of significance of 5%; * Considering a level of significance of 10%

This last table shows that all the regressions using the total debt ratio as the dependent variable seem to be a good fit for the data used in this study due to prob(F) values lower than 0.01. However, of all the four performance measures, only profit efficiency has a significant relationship with this leverage ratio with a coefficient of 0.043, considering a level of significance of 1%. Tobin's Q has a negative and significant relationship with this leverage ratio, but considering a level of significance of 10%, with a coefficient of -0.020. None of the control variables seem to explain total debt's behavior.

6.5.1 Summarized Regression analysis for the combined data

The combined data analysis showed that there is a negative relationship between performance and leverage when the relationship is significant. Profit efficiency, however, doesn't have a significant relationship with leverage. ROE has a negative and significant relationship with LTD and Tobin's Q with STD and TD. Whereas, performance, measured by ROA, has a negative and significant relationship with leverage throughout all three regressions. Regarding the control variables, all the regressions using these three performance ratios: ROE, ROA, and Proffit efficiency, have a positive relationship with size and a negative relationship with asset tangibility. Whereas, using Tobin's Q as the performance measurement, there is a significant and negative relationship between performance and asset tangibility, in the regression using STD. Growth and profitability don't seem to be significant to explain performance's behavior. There are significant squared variables in all performance regressions, except the ones using Profit Efficiency. There is a negative and significant relationship between ROE and TD^2 and a positive and significant relationship between performance and LTD^2. Whereas, ROA has a positive and significant relationship with STD^2 and TD^2 and Tobin's Q has a similar relationship with STD^2. Regarding the second model of the combined data, the results are, again, mixed. There is a negative relationship between STD and performance, using ROA and Tobin's Q, a positive relationship between LTD and PE, a positive relationship between TD and PE, and also a negative relationship between TD and Tobin's Q.

7. Conclusions

This thesis examined the relationship between capital structure and firm performance, acknowledging the reverse causality between performance and leverage for four European countries: Cyprus, Greece, Portugal, and Spain for the period of 2012 to 2019. Was conducted an analysis for each country individually and the combined data of the four countries. Analyzing more in-depth the combined data it is clear that a negative relationship between performance and leverage emerges, making the first hypothesis valid since there is a statistically significant relationship between leverage and firm performance, but not across all regressions, that is using all leverage and performance ratios. Furthermore, a negative relationship between leverage and firm performance is supported by major theories like the trade-off, pecking order, and agency, for example. It was also found support to the idea of a non-monotonic relationship between performance and leverage, however mixed. Similarly, it was not across all the regressions studied. The second hypothesis, using leverage ratios as dependent variables, was also considered to be valid in some of the regressions, despite not being clear which hypothesis prevailed overall, franchise or efficiency-risk. It is important to notice however that these results from the combined data are largely influenced by differences in sizes of individual country data. In this case, the Greek and Spanish data are the most influential. Hence, the results outlined in this study face some limitations, like for example, representing a country like Portugal using only a small sample of 27 listed companies. Following studies could conduct the same analysis but using a more realistic approach of these countries' markets, that is, instead of using just public listed companies, use public and private. All in all, these results follow the notion that there is not a single capital structure theory that can explain the "full story" of capital structure, similar to Myers (2001), because these relationships depend on several factors, like the variables used to measure performance and capital structure, for example.

8. References

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