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Optimizing capital structure: a model of optimal capital structure from the perspective of recent developments in decision making

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Abstract – Many studies have been conducted to test the validity of capital structure theories, but it still remains one of the most debated issues in modern corporate finance. The question of how companies choose the ideal capital structure still needs an answer today. For this reason, other empirical studies on this issue have been done and will continue to be done in order to bring further facts on the theories of capital structure. The study of Myers (1984) is one of the most cited in the extensive literature on capital structure, which explains corporate financing by considering some of the firm-specific factors in developed countries. Two competing theories have attracted considerable interest over the years, the optimal capital structure theory and the Pecking order theory. This paper presents a summary of all the controversies that have resulted in capital structure theories and at the same time tests the two most prominent theories, the optimal capital structure theory and the choice order theory to see which theory fits best. well the way of selecting the capital structure throughout the period considered. The purpose of this paper is to provide an in-depth review of important topics related to capital structure and corporate financing decisions. Coverage ranges from discussion of basic components and existing theories to their application to increasingly complex, real-world situations. The paper highlights how a sound capital structure can simultaneously reduce a firm's cost of capital while increasing shareholder value. Given the large volume of theoretical and empirical studies involving the capital structure and the financial decisions of its good management, the prospect of surveying the existing literature is a task that requires serious commitment.

Keywords – Pecking Order Theory, Optimal Capital Structure Theory, Trade Off, Capital Structure Decisions, Market Timing

I. INTRODUCTION

Many studies have been conducted to test the validity of capital structure theories, but it still remains one of the most debated issues in modern corporate finance.

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this reason, other empirical studies on this issue have been done and will continue to be done in order to bring further facts on the theories of capital structure. The study of Myers (1984) is one of the most cited in the extensive literature on capital structure, which explains corporate financing by considering some of the firm-specific factors in developed countries.

Two competing theories have attracted considerable interest over the years, the optimal capital structure theory and the Pecking order theory. Through this paper, at the same time, it tests the two most prominent theories, the theory of optimal capital structure and the theory of the Pecking order to observe which theory fits better the way of selecting the capital structure in companies during the period taken in review.

In a quick survey of the literature, the author highlights the wide academic interest in this aspect. The problem of the capital structure has been addressed, analyzed and further advanced, adding new elements not considered until then by the authors Modigliani-Miller. So, in the field of capital structure, several important theories have been developed such as:

The static trade-off theory of optimal capital structure assumes that firms balance the present value of pre-tax interest-deductible benefits against the costs of financial risk (Shyam-Sunder and Myers, 1999).

Among the theory of the firm's capital structure and financing decisions, we mention the Pecking order theory (POT), developed by Myers and Majluf (1984).

The theory of agency costs, capital structure can be affected by the managerial decisions of the firm (Myers, 2001).

Different authors have studied the specific factors of the firm, which influence its financial decisions (Titman and Wëessels, 1988; Rajan and Zingales, 1995; Antoniou et al., 2002; Frank and Goyal, 2009), but the internal factors of the country are as important as the characteristics of the firm in determining the financial leverage of the firm. (Cheng and Shiu, 2004).

Macroeconomic variables have also been mentioned as external and important factors, which influence the capital structure of firms in different countries, despite the little attention that has been paid to them (Abzari et al., 2012), (Concorou, 1977; Gulati , 1997; Mateus, 2006; Basset al., 2009).

“Capital structure describes the proportional relationship between debt and equity” (Owolabi and Inyang, 2012,). The Modigliani-Miller theory, otherwise known as the MM theory, has served as a foundation for many subsequent studies of capital structure and modern finance. The authors in 1958 in their paper "Cost of capital, corporate finance and investment theory" came to some important conclusions. The results showed that managers cannot change the value of a company by repackaging a company's securities (Ross, Westerfield, Jaffe and Jordan, 2007). According to this theory, the value of the company remains the same regardless of the debt-equity mix of financing. The principle which is also known differently as the principle of the irrelevance of the capital structure. According to these two authors "since companies can have different proportions of debt in their capital structure, the shares of different companies can give growth in different probability distributions of returns". The studies done later, based on the revolutionary ideas of the two authors, have gradually incorporated variables and new elements that were not taken into consideration before. A value maximizing firm will create an optimal capital structure and then raise new capital, aiming to target over time this capital structure (Brigham and Ehrhardt, 2008).

Modigliani and Miller (1958) have identified two criteria for making rational decisions, which are: profit maximization and market value maximization. "The profit

maximization criterion states that an asset should be purchased if it increases the net profit of the owners of the firm, while the criterion of maximizing the market value, states that an asset should be purchased, if it increases the value of the owners' capital". Previous literature on capital structure and investment suggests that the investment decision can be decoupled from the financing decision, arguing that in a perfect market, how a firm is financed is irrelevant to determine its value (Modigliani and Miller, 1958). But in the real world the capital structure is important and the value of a company is affected by the selection of the optimal capital structure. If we make a summary of the studies carried out later, we can mention the article of Modigliani and Miller (1963), which ruled out one of the basic assumptions of their MM theory (1958), placing in the model corporate taxes and / or bankruptcy costs, in an attempt to better explain the capital structure.

The study of DeAngelo and Masulis (1980) proved that it is the tax benefit to the use of non-monetary expenses such as, for example: depreciation, which determines the optimal capital structure of a firm. Recently, arguments have been given on the fact that agency costs should also be taken into consideration as one of the main determinants of financial leverage (Jensen, 1976).

II. LITERATURE REVIEW

In this part, a summary of the most important and at the same time most accepted theories from the wide literature on the influence on capital structure decisions in modern finance is presented. Below we list some of the most prominent theories:

Trade-off theory

According to trade-off theory, the capital structure is determined by a trade-off between the benefits of debt and the costs of debt. Benefits and costs can be derived in different ways. The "tax benefit-bankruptcy trade-off" perspective is that firms balance the tax benefits of debt against the costs of bankruptcy. The "agency" perspective is that debt disciplines managers and mitigates agency problems for free cash flow, since debt must be repaid to avoid bankruptcy (Jensen and Meckling, 1976; Jensen, 1986). Although debt mitigates shareholder-manager conflicts, it exacerbates shareholder-debtholder conflicts (Stulz, 1990).

Pecking order theory

While Pecking order theory (POT) has long roots in the descriptive literature, it was clearly articulated by Myers (1984). Consider three sources of funds available to firms, retained earnings, debt, and equity. Equity has adverse selection, debt has only a small adverse selection, and retained earnings avoid the problem. From an outside investor's point of view, equity is strictly riskier than debt. For all but the lowest-quality firms, the decline in equity valuation makes equity appear undervalued, conditional on equity issuance. From the perspective of those inside the firm, retained earnings are a better source of funds than external financing. Thus, retained earnings will be used when possible. If retained earnings are insufficient, debt financing will be used. While capital is only used as a last resort. This is a theory of leverage in which there is no notion of an optimal leverage ratio. Although selection order theory is almost always framed in terms of asymmetric information, it can also be generated by tax, agency, or behavioral considerations.

Market timing

Market timing, a relatively old idea (Myers, 1984), is gaining new popularity in the academic literature. In surveys, such as those by Graham and Harvey (2001), managers continue to provide at least some support for the idea of this theory. Consistent with market timing behavior, firms tend to issue equity following an increase in stock price. In addition, studies analyzing long-term stock returns following corporate financing events find

evidence consistent with market timing. Lucas and McDonald (1990) analyze a dynamic adverse selection model that combines elements of choice order theory with the idea of market timing. Baker and Wurgler (2002) argue that capital structure is best understood as the cumulative effect of past market timing efforts.

The basic idea is that managers are constantly looking at current conditions in both debt and equity markets. If they need financing, they use whichever market currently looks the most favorable. If no market looks favorable, they can delay issuance. Alternatively, if current conditions appear extremely favorable, funds may be raised even if the firm does not currently need funds. While this idea may seem plausible, it has nothing to say about most of the determinants traditionally considered in studies of corporate leverage. However, it suggests that stock returns and debt market conditions will play an important role in capital structure decisions.

III. A DEVELOPMENT ON CAPITAL STRUCTURE: TESTING OPTIMAL CAPITAL STRUCTURE THEORY AND PECKING ORDER THEORY

Optimal capital structure theory evolved through the writings of Franco Modigliani and Merton Miller. Since the article published by Myers in 1984, interest in the analysis of the capital structure of firms has increased significantly, especially in recent years. Before Myers' publication the prevailing theory was the theory of optimal capital structure where debt can be increased by taking advantage of the firm's tax shield, but after a point the costs of a possible bankruptcy as a result of high debt will outweigh the advantages of received from taxes. Precisely starting from this, in 1984 Myers also proposed his theory called the theory of the order of choice, where he emphasizes that "firms do not have a clearly defined objective of the debt ratio" so they will first prefer to be financed from internal sources, then from external sources and finally from the issuance of new capital.

This means that if the firm has little debt and is in a good financial situation, it will use internal resources to invest in new projects and will use resources from issuing capital only as a last resort due to the costs of high and problems with the ownership of the capital that can derive.

In 1982 Bowen, Daley and Huber, Jr. had provided a technique by which to test the optimal capital structure. They proposed that a firm's debt structure tends to follow its industry average over time. To examine whether firms track their capital structure toward their industry average, two-by-two matrices were analyzed for each year and for each industry in the following way: The hypothesis tested by this procedure is that gamma is important non-zero statistic.

In the text of the author Ghosh (2008) the study of Bowen, et al (1982) is also presented, who concluded that firms present a significant statistical tendency to move towards the industry average in terms of their debt.

Taggart (1986) used the choice order theory in his study of capital structure and found that the choice order hypothesis was more valid than the optimal capital structure hypothesis.

Clagget, Jr (1992) tested both hypotheses using data from databases obtained from Compustat published data on companies in the USA and concluded that the ratio of long-term debt to total assets tends to move towards the industry average more recently. According to this view, firms will behave according to the Pecking order theory description although some industries will not be able to achieve it during periods of financial turbulence. Claggett, Jr. concludes his study by stating that perhaps a new hybrid theory between optimal capital structure and Pecking order theory (POT) may arise in the future and will be the next step to better explain how firms build and manage their ideal capital structure (1992).

While in the study conducted by Ghosh & Cai (1999) testing theories of capital structure, more specifically analyzing empirically whether firms will follow the theory of optimal capital structure (which according to their point of view is represented by the average of industry) or the theory of the order of choice. Based on the list published by the American magazine of the 500 largest companies in the manufacturing industry (Fortune magazine), they studied a sample of 256 companies for an observation period of 1974-1992. The methodology used is the same as that used by Clagget, Jr (1992). The results of their study showed that both hypotheses of the optimal capital structure and the Pecking order theory interact. According to Myers (1984) who stated that the Pecking order theory "performs as well as the static trade off theory" in explaining the capital structure. The study conducted by Ghosh & Cai also shows that capital structure theory and Pecking order theory are not mutually exclusive. But according to the authors, the hypothesis of the theory of Pecking order is more pronounced than the hypothesis of the theory of the optimal capital structure, since it was significant for all industries and all the years considered in the study.

IV. CONCLUSIONS

This conclusion presents some concluding thoughts on the concepts discussed in the previous parts of this paper. Here is an overview of the controversy and debates on capital structure construction. It shows that firms will adjust their capital structure towards the industry average when it is above the average, while when it is below the average they do not find it necessary to adjust it towards it Ghosh & Cai (1999).

Based on the results of the study, a considerable number of the firms taken into consideration have converged towards the industry average during the period 1974-1992, confirming the optimal capital structure again. The results showed again a strong support of the hypothesis of the order of choice for all industries and for the entire period in which the value of the gamma coefficient had a positive and statistically significant Z-test. Also, their study showed that both hypotheses tested, the hypothesis of the optimal capital structure and the hypothesis of the order of choice, work together, but they are not the only ones, so they are not exclusive. But the hypothesis of the theory of the order of choice is more pronounced than the hypothesis of the optimal capital structure, where initially it was important for all industries and the entire period, then in the following years it was important for a significant part of the industry and the period under consideration.

Some problems emerged during the study, expressed by the author, which could not be solved. First, as stated in this research paper, it refers to the data obtained from large companies, so it would be interesting to know if we would reach the same results but take into consideration small-sized companies (SMEs). Second, in the study conducted by the authors Ghosh and Cai, the accounting data of the financial statements of the companies were used, but it would not be useful to use the market data. This is left as an open question for future studies on capital contraction decisions.

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