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## OVERVIEW OF CAPITAL STRUCTURE THEORY

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**Abstract:**

*The aim of this paper is to provide a comprehensive review on two major theories of capital structure; pecking order theory and static-trade off theory in regard with achieving an optimal capital structure. Researchers believed bankruptcy costs, transactions costs, agency conflicts, adverse selection and taxes has been attribute as major explanations of the corporate used of debt financing which has been used as an argument in both theory. To date there is no consensus on the existing of optimal capital structure. However over the past four decades, the ability of the economists to explain the determinants of optimal capital structure has progressed significantly. In this paper, based on the review of past literature it is suggested that the determinants of capital structure is vary among firms depending on its characteristics.*

**Key words:** *Capital structure, Pecking order theory, Static-trade off theory*

### 1. Introduction

Determining optimal capital structure is one of the most important tasks to be fulfilled by financial managers. In fact the search for optimal capital structured has dominated the theory of capital structure. However, is there an optimal capital structure in reality? An optimal capital structure can be described as the best debt to equity ratio for the firm in which this will minimizes the cost of financing and maximizes the value of the firm. Thus financial managers should always choose between debt and equity financing which will be more beneficial to the company. Choosing on the best source of finance also related to the minimizing the tax liability of the company. This is due to the fact that in trade-off theory, interest on debt is tax-deductible which resulted to the lower cost of financing. However this is not always the case if the debt is used not in the production of gross income.

There is large theoretical literature on capital structure (see: Miller (1977), DeAngelo and Masulis (1980), Harris and Raviv (1991)). Focusing on capital structure and taxation, it can be concluded that corporate tax is one of the important factor in the capital structure decision. A firm that utilizes a higher debt financing is more likely to

pay less tax. The fact that traditionally equity financings are treated less favorably than the debt financings has given rise to the earlier mentioned tax puzzle. The existence of this puzzle was created by the fact that firms pay less tax on one hand and are exposed to bankruptcy in the form of higher interest payment on the other hand.

On top of that there is also an ample empirical evidence on the way financial managers conduct the capital structure decision (see e.g. Aggarwal (1981), Naidu (1986), Rajan and Zingales (1995), Bevan and Danbolt (2000), Ghosh et al. (2000), Booth et al. (2001) and Yang et al. (2001)). The results of these studies show that there are a lot of factors that significantly determine the firm capital structure (e.g: size of the firm, country and industry). Realizing the importance of tax in determining the capital structure, the tax deductions also received much attention from researchers. Most of the empirical literatures (among others are Elton and Gruber (1970), Mackie-Mason (1990), Graham (1999) and Booth et al. (2001) focus on the benefits of tax. Although payment of tax is a common practice for many firms, the tax puzzle remains a controversial issue in the corporate finance literature. This is mentioned by Titman and Wessels (1988), Fisher et al. (1989), Shyam-Sunder and Myers (1999), Anderson and Makhija (1999), Yang et al. (2001) and Booth et al. (2001) as: "tax deduction encourages firm to utilize debt, and hence encourage bankruptcy". In addition the tax deductions are expected to influence the capital structure decisions.

This paper discussed the emergence of the existing capital structure theory to include static trade-off theory and pecking order theory developed by De Angelo and Masulis (1980). In addition, corporate finance also benefit from the use of a wider array of methods and data sources to test theories. Each method has its strength and weaknesses. It is believed that alternative methods allow different and, potentially, improved the tests of theories.

The remainder of the paper is organised as follows. Sections 2 discussed the existing capital structure theory followed by the discussion on past literature. Section 4 concludes the paper.

## **2. Capital structure Theory**

Theory of corporate capital structure has been a study of interest to finance researcher. Thus, over the past four decades, the capability to explain capital structure has progressed significantly. Just to name a few, researchers such as Modigliani & Miller (1958), De Angelo & Masulis, (1980), Booth et.al (2001), discussed theoretical models to explain the determinants of capital structures across companies and countries. Based on the literature surveys observed, few theories of capital structure emerged; trade-off theory, pecking order theory, agency problem theory, and the most recent market Baker and Wurgler (2002) introduced market timing theory. However the most prominent theory which is widely discussed is trade-off theory and pecking order theory which will be discussed further.

## **2.1 Static Trade-off Theory**

### **2.1.1 Corporate Tax**

The link between debt and tax was initiated by Miller (1977). He focused on the effects of corporate and personal taxes on leverage ratio. His research also attempted to prove the existence of tax benefit that causes the preference of firm towards debt financing. However, his finding showed that leverage is still irrelevant to the firm capital structure choices.

Later, DeAngelo and Masulis (1980) proved that the relevancy of capital structure only exists in several situations. The uniqueness of optimum capital structure equilibrium can be reached in the presence of corporate and personal taxes. They explained that the increase of inflation decreases the real value of investment tax shield and immediately increases the proportion of debt. Therefore, by incorporating the tax element, tax deduction or tax benefit makes debt financing cheaper than equity financing. Thus, without the existence of personal tax, firm may use debt to reduce corporate tax liability. However, if the marginal tax value of debt financing equals to zero, the capital structure is considered irrelevant.

The mixed results have motivated Mackie-Mason (1990) to adopt the incremental and probit model approach to examine the relationship between corporate tax and firm the incentive for firm to utilize debt. The findings reflect that the high tax shield increases the probability of tax deduction. Therefore, it reduces the expected marginal tax rate and hence, there is a less tendency to use debt financing.

On the other hand, the higher dividend payment causes individual to pay high personal tax. Therefore, in order to increase the firm value, firms have to maintain low dividend and low debt. It implies that firms reduce interest payment and taxable dividend without reducing the return on capital. The best strategies of tax deduction and the maximization of firm value are: issue more debt and maintain small dividend payment. However, the empirical evidence produced by Fama and French (1998) proves that the positive and negative relationships exist between the dividend and firm value; and between the former and taxes, respectively.

Graham (1999) produced an additional evidence of capital structure in the presence of personal tax. In addition, he measured the changing debt value (incremental) as dependent variable. The results showed that firm uses less debt. He identified two reasons to support his findings: first, the reduction in dividend payment increases the personal tax penalty and decreases the net tax benefit; and second, a lower personal tax rate on the return on equity. These findings also denoted that the corporate tax benefit proportionately diminishes with the tax penalty in personal tax.

### **2.1.2 Bankruptcy Cost**

As mentioned above, debt financing not only produces tax benefit, but it also leads to bankruptcy. The question arises on how to balance between the tax benefit and the bankruptcy cost. Firm faces financial distress due to the extremely high interest payment which may lead to higher probability of bankruptcy. The probability of

firm to face bankruptcy is also due to economic factors including the economic risk and financial risk.

The process of firm recapitalization has been proposed by Scott (1977). In this study, bankruptcy affects the equity value, subordinated debt and secured debt differently. The finding shows that; first, the equity value of firm depends on the value of net operating income and the interest that should be paid to debt holders. Firm with small earnings compared to interest payment can avoid bankruptcy and fulfill the interest payment by selling additional debt (such as subordinated debt), sell assets and equity. Secondly, the total market value of firm which issues only subordinated debt depends on the current value of equity and the face value of debt. For these firms, if they sell the subordinated debt only, then the optimal capital structure is irrelevant. Thirdly, the issuance of secured debt increases the firm value. As long as the firm has unutilized secured debt capacity, it can increase its total market value by issuing additional secured debt. The finding reveals that the capital structure is relevant if the debt is fully secured. However, capital structure is irrelevant in two situations. First, if additional debt is issued until the debt holders claim greater than the firm value; and second, in the situation where interest payment does not occur. These situations may cause debt holders to gain only the face value of debt, hence, firm debt cannot be fully secured.

The effect of bankruptcy cost on firm financing choices was pioneered by Haugen and Senbet (1978). They considered two situations, i.e., bankruptcy cost without any boundary and bankruptcy cost with boundary in debt ratio. Furthermore, they divided the bankruptcy cost to direct cost and indirect cost. They also demonstrated the irrelevance of capital structure in the absence of corporate taxes and the domination of debt in capital structure in the presence of corporate taxes under the framework of perfect markets and associated costless bankruptcy. Their finding denoted that bankruptcy costs which affect the capital structure decision must be trivial or nonexistent if one merely assumes that the capital market prices are competitively determined by rational investors. Therefore, Haugen and Senbet (1978) suggested that it is better for firms to increase their equity when there is a direct bankruptcy cost and vice versa.

As suggested by Fischer et al. (1989), firms also make recapitalization to prevent bankruptcy. The increasing amount of debt decreases the leverage ratio and this condition increases the debt amount and gets the tax benefit. Thus, in this circumstance, it is optimal for the firm to recapitalize. On the other hand, the decrease of debt ratio increases the firm leverage ratio. Besides preventing bankruptcy, the firm needs to recapitalize because the equity holders could not sell the asset (bigger part of the asset in fixed asset) to pay the coupon payment. Therefore, the coupon payment decreases the dividend received by the equity holders. In the case of unlevered and levered firms, the dividends are negative. Therefore, this situation causes the equity holders to experience default and the debt holders will take over the firm and recapitalize. In addition, they also examine the firm's characteristics and include the debt range in analyzing the dynamic capital structure.

When a firm faces financial distress because of high interest expense, Asquith et al. (1994) suggested several alternatives to avoid bankruptcy. The alternatives include the issuing of public debt or private debt restructurings, assets sales, merger and/or reduction in capital expenditure. Firms can restructure the private debt by negotiating the content of contract such as exemption in debt payment or full provision of principal payment, and finally, firms with greater secured debt are more prone to bankruptcy. Firms can also restructure the public debt by exchange offers. The firm that completes the exchange offers has less probability to be involved in bankruptcy. By assets sales, firms that sell a large portion of their assets also have less probability to be involved in bankruptcy. The results show that a positive relationship exists between the probability of an assets sales and the outstanding amount of public debt. They also reported that if the public debt is difficult to restructure, firms need to sell assets or merge in order to avoid bankruptcy. Furthermore, firms that face financial distress may reduce the capital expenditure because of a wide decline in the industry and the decline in the size of company as firms sell their assets. However, it is difficult to determine whether capital expenditure reductions during financial distress are efficient or inefficient.

Since the interest rate leads to bankruptcy, Yang et al. (2001) suggested the interest rate swap in analyzing the dynamic of capital structure model. Their research is aimed to answer the hypothesis that it is better for firm to endure the high debt ratio in order to get the tax benefit. The interest rate swap is expected to reduce the firm incentive to take high-risk investment and reduce the bankruptcy cost especially among big firms. The finding shows that the firm with low bankruptcy prefers to lower its debt ratio range. According to the positive relationship between bankruptcy cost and debt ratio range, it implies that the interest rate swap induces the swap users with higher bankruptcy cost to have less debt ratio range.

## **2.2 Pecking Order Theory**

Myers and Majluf (1984) introduced pecking order hypothesis which claimed there is no well-defined target debt ratio exists. This theory was influenced by the earlier institutional survey literature including the book by Donaldson (1961). Pecking order theory assumed that there is no optimal structure where companies prefer internal (income) financing rather than external (debt) financing. However what does it means by prefer internal financing? Further this theory explains much more of the time-series variance in actual debt ratios. Does this mean that firm will uses sources available internally before seeking external funding such as debt or equity? How the firm justify that they have use all available sources internally? The discussion on practice of pecking order theory is widely discussed, however what have not been touch is the advantages of pecking-order theory in practice. While it is obvious the disadvantage of debt financing is it binds the company to the obligation of periodically meeting fixed interest charges and to the repayment of the principal which somehow become burden to the firm. Failure to do so will lead to property and asset repossession by the bank. Thus the advantage of applying this theory by the firm is

that they do not have to think about prepayment of loan. Second advantage of this theory is that the security of the firm. As mentioned earlier firms under this theory prefer internal as compared to external financing. However if they do require external financing they will issue the safest security first, showing that equity financing will be least favorable as compared to debt financing.

**3. Discussion of Literature**

As discussed earlier, both theories have advantages and disadvantages. Studies as per summarized in Table 1 have empirically tested both theory and the results are mixed. In fact to date there is no mutual decision on the best theory to determine the capital structure. As mentioned earlier pecking order theory is an excellent first-order descriptor of corporate financing behavior for mature corporations (Shyam-Sunder, Myers, 1999). Chen (2004) believed Chinese firms prefer short-term finance and have substantially lower amounts of long-term debt. To this extent, the pecking order theory along with asymmetric information theory seems to provide partial explanations. While Tong and Green (2004) although at a lower significance level, shed light on a significant positive correlation between current leverage and past dividends which bring result that favors the pecking order theory. The comparative analysis of results from findings in De Medeirosa and Daherb (2004) studies led to the conclusion that the pecking order theory is the dominant stream in the determination of the capital structure of Brazilian firms. Altogether, these factors lead to the conclusion that even if there were a debt target level to pursue, institutional and economic conditions would impose strong obstacles to it. Therefore, it is not difficult to explain why the pecking order theory beats the static trade theory.

**Table 1: Selected studies on capital structure theory.**

<b>Author</b>	<b>Journal</b>	<b>Preference</b>
Krishnan and Moyer (1997)	Performance, Capital Structure And Home Country: An Analysis Of Asian Corporations	Static trade-off
Opler, Pinkowitz, Stulz, and Williamson (1999)	The Determinants And Implications Of Corporate Cash Holdings	Static trade-off
Shyam-Sunder and Myers (1999)	Testing static tradeoff against pecking order models of capital structure	Pecking order
Adedeji (2002)	A Cross-Sectional Test Of Pecking Order Hypothesis Against Static Trade-Off Theory On UK Data	Static trade-off
Chen (2004)	Determinants of capital structure of Chinese-listed companies	Pecking order
Tong and Green (2005)	Pecking Order Or Trade-Off Hypothesis? Evidence On The Capital Structure Of Chinese Companies	Pecking order

de Medeiros and Daher (2004)	Testing Static Tradeoff against Pecking Order Models of Capital Structure in Brazilian Firms	Pecking order
Brounen, de Jong and Koedijk (2006)	Capital Structure Policies In Europe: Survey Evidence	Static trade-off
Getzmann, Lang, and Spremann (2010)	Determinants Of The Target Capital Structure And Adjustment Speed – Evidence From Asia Capital Markets	Static trade-off

Sources: Compiled by authors

Researcher also agreed the importance of static trade off theory in determining optimal capital structure. Brounen, de Jong, Koedijk (2006) claimed that static trade-off is more suitable to determine the optimal capital structure because financial flexibility is important, but not driven by the pecking-order theory. Several practical considerations are highly relevant. The findings are also in comparison with results by Adedjei (2002), who find a significant positive relationship between new debt issues and internal funds flow deficits where the one-to-one relationship between the two is far below as suggested by pecking order theory. Although Getzmann, Lang, Spremann (2010) assumed that the pecking order theory cannot be rejected due to its correct prediction of the signs of profitability and market expectations, they also believed that the relationship between leverage and the determinants tangibility of assets, size and non-debt tax shield behaves as predicted by the tradeoff theory. Further Opler, Pinkowitz, Stulz, Williamson (1999) found that the determinants of cash are so closely related to the determinants of debt specifically in examining the determinants and implications of holdings of cash and marketable securities by publicly traded U.S firms. In addition, Krishnan, Moyer (1997) examines the performance and capital structure of corporations from the emerging market economies of Asia by combining two strands of business research; one from the international business field on corporate performance and country of origin, and the other from corporate finance research. These studies provide support for a static trade-off view.

It is believed that whether pecking order or static trade-off theory it is depend on the firm nature of business and the resources available for the activities. The hypotheses tested were derived from pecking order and trade-off models. In general, both theoretical approaches appear to help explain the financial behavior and the results obtained can be considered robust. Regarding trade-off theory, the results clearly indicate the existence of an optimal or target debt level where firms partially converge. In general, the results show that the explanatory power of the models is relatively high and significant which indicates that the construct validity of the models is acceptable. As Myers (2001) stated that each capital structure theory works out under its own assumptions and does not offer a complete explanation of the financing decisions. Eldomiaty (2007) support this by approximated that as long as corporate capital structure decisions follow more than one theory, further research is warranted in the conditions under which each capital structure theory dominates relatively. These conditions represent firm's characteristics such as size, growth, business risk, etc. This

provides a support for searching the conditions under which a firm moves from a theory to another.

#### 4. Conclusion

The purpose of this research paper is to discuss the prominent theory of capital structure that is widely used in the studies. The static trade-off theory assumes that optimal capital structure. The pecking order theory is believed are more efficient than static trade-off as in this theory firm will list all the possible internal financing before seek for external financial which will later bind the company for the prepayment. Although there is no consensus on the preferable theory in determinant of optimal capital structure, it is worthwhile to look at both theory as it will give an idea on the strategy to manage firm capital structure.

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