

Capital Structure Management: Theories and Determinants ทฤษฎี และปัจจัยที่มีผลต่อการจัดโครงสร้างเงินทุน

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บทคัดย่อ

การจัดโครงสร้างเงินทุนเป็นบทบาทในการบริหารการเงินที่สำคัญประการหนึ่งของผู้บริหารกิจการ ซึ่งเป็นการจัดส่วนผสมของเงินทุนที่ได้จากแหล่งทุนต่าง ๆ อย่างเหมาะสม อาทิเช่นจากการกู้ยืมเงินจากสถาบันการเงินต่าง ๆ การระดมทุนจากเจ้าของหรือผ่านทางตลาดหลักทรัพย์ เพื่อให้เกิดต้นทุนเฉลี่ยของเงินทุนต่ำที่สุดและสร้างมูลค่าสูงสุดให้แก่กิจการ โดยตั้งแต่อดีตถึงปัจจุบันได้มีการศึกษาถึงโครงสร้างเงินทุนและทฤษฎีที่เกี่ยวข้องเพื่อใช้อธิบายปัจจัยที่มีอิทธิพลต่อการจัดโครงสร้างเงินทุนทั้งปัจจัยภายในกิจการเอง และปัจจัยภายนอก ซึ่งล้วนมีผลต่อการตัดสินใจในการจัดโครงสร้างเงินทุนของกิจการ ปัจจัยภายในอาจประกอบไปด้วยปัจจัยหลายประเภท อาทิเช่น ความเสี่ยงต่อต้นทุนการล้มละลาย อัตราการเติบโต ลักษณะโครงสร้างทรัพย์สิน ความสามารถในการทำกำไร ความยืดหยุ่นทางการเงิน ประโยชน์ทางด้านภาษี ขนาดของกิจการ และลักษณะของอุตสาหกรรมที่กิจการดำเนินธุรกิจอยู่ เป็นต้น ในส่วนปัจจัยภายนอกที่สำคัญก็คือ นโยบายการเงินทางด้านอัตราดอกเบี้ย ซึ่งเป็นปัจจัยที่มีความสำคัญในการกู้ยืม และการเติบโตของตลาดทุนซึ่งสะท้อนการเติบโตของสภาวะเศรษฐกิจ และจะมีผลทำให้เกิดแรงจูงใจในการระดมทุนของกิจการผ่านทางตลาดทุนอันเป็นทางเลือก

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อีกทางเลือกหนึ่งของการจัดหาแหล่งเงินทุน นอกเหนือจากการกู้ยืมเงินผ่านระบบสถาบันการเงิน การศึกษาเชิงเปรียบเทียบการจัดโครงสร้างเงินทุนของกิจการในภาวะเศรษฐกิจต่าง ๆ กัน จะช่วยทำให้ผู้กำหนดนโยบายได้เข้าใจตัวแปรที่มีอิทธิพลต่อการจัดโครงสร้างเงินทุนและสามารถกำหนดนโยบายหรือมาตรการสนับสนุนต่าง ๆ ให้สอดคล้องกับความต้องการของภาคเอกชนอันจะนำไปสู่ผลสำเร็จตามวัตถุประสงค์ของนโยบาย

Abstract

Capital structure management is one of the key activities of the firm's financial management achieved by mixing the level of debt, equity or other financial instruments to minimize the weighted average cost of capital and to meet the firm objective of maximizing the firm value. There have been many researches on capital structure and the theories which can explain the factors effecting capital structure management. There are both internal and external factors that impact on the capital structure decision of the firm. The bankruptcy cost, growth, tangibility, profitability, financial flexibility, non-debt tax shield, firm size and industry specifics are the key internal factors in the capital structure determinants model. The key external factors are interest rate which is the key instrument of monetary policy that directly impact the cost of debt financing and the growth of capital market which represents the growth of the economy. The growth of the capital market will encourage the firm to use alternative sources of funds such as the issue of new common stock instead of borrowing from financial institutions. The comparative study in the capital structure management of the

firm in different economic situations will help the policy makers to understand the factors affecting capital structure management and create the supportive policies or measures that most respond to the requirements of the firm and meet its policy objectives.

1. Introduction

Capital Structure Management is one of the main roles of the firm's management, to manage the financing options for its assets and is generally achieved by mixing the level of debt, equity or other financial instruments. The main objective of the firm when acquiring funding is to invest in new projects or to generate working capital to finance daily operations. The ultimate goal of course is to maximize firm value especially the "Profit" organization. The financial decision of mixing levels of debt and equity will affect the weighted average costs of capital (WACC) and, if it meets the optimal capital structure (which is minimum WACC) the firm value will be maximized. (Brigham and Ehrhardt, 2002: 620) The firm which lowers its WACC will have a competitive advantage over its competitors since it can invest in assets with the cheaper cost of money even if it buys the same assets at the same market price as its competitors.

The financing choices of the firm can be separated into 3 types based on the sources or type of financing. The first is equity financing—issuing common stock or using the retained earnings of the firm. The stockholders who invest in the firm can only claim rights over the firm assets after bondholders or residual claims, no taxes deductible, infinite maturity but they have the voting right in management control.

The second is debt financing—borrowing from individuals or financial institutions. The creditors or bondholders shall have rights on fixed claims i.e. interest and principal, but have no voting rights or no management control. Debt financing is fixed maturity and the debt interest can shield firm income from taxation (tax deductible). The third is hybrid financing—mixing between equity and debt e.g. preferred stocks and convertible debt. In general the newly established firm will start financing from the investment of the owner or shareholders in common stocks and after that the firm may mix the capital structure by acquiring additional capital from borrowing or issuing new equity. In practice we normally call the ratio of debt to total assets the “leverage” since debt can help the firm to achieve its ultimate goal with the lower cost of financing (imagine a lever that can help us to lift a heavy stone with less power). Each firm may have its own “target capital structure” at a specific period of times. The target capital structure may be different among the firms and they might setup the target capital structure at a low level of debt to total assets ratio (called leverage ratio) in order to reserve the spare borrowing capacity for future projects. The target capital structure may change over time, when the cost of financing is changed, which will affect the WACC of the firm.

When the non-leverage firm starts using debt financing, its bankruptcy cost will increase but the tax shield benefit is also increased, so the firm needs to trade off between risks and returns. When the firm uses a financing mix, the average cost of capital will depend on the weighted average cost of equity, debt and preferred stocks, the capital structure that can create the minimum WACC is called “*optimal capital*”

structure” –the mixing level that can balance between risks and returns and generate maximized firm value.

To study the capital structure management we need to understand the difference between each cost of capital that affect the WACC of the firm, the theories that explain the capital structure and the capital structure determinants model which we will discuss in the following sections.

2. Cost of Capital

In order to manage the firm capital structure, the finance manager should know the characteristics of each cost of capital which contribute towards the WACC. In our introduction, we defined the optimal capital structure as the mix of financing that can balance between risks and returns and generate the minimum WACC for firm value maximization. The cost of capital can be explained and calculated as below.

Cost of Debt (K_d)

Since debt interest can shield income from taxation, when we calculate the cost of debt we will use after-tax cost of debt. The creditors will evaluate the risks of the firm in order to determine the interest rate—it is the return which they will receive back, so the higher risk of the firm the more interest rate that firm needs to pay. In general the cost of debt will be lower than the cost of equity because creditor has more rights in claiming over the assets before the shareholders who can only be residual claimants. If T is the tax rate and K_d is the debt interest rate, the after-tax cost of debt can be calculated as the formula; After-tax cost of debt = $K_d (1-T)$.

Cost of Equity (K_e)

The cost of equity will depend on the returns that investors or stockholders need. The sources of equity come from either retained earnings (K_i)—internal source of fund, or issuing new common stock—external equity (K_e). Normally the firm needs to return profits back to the stockholders via dividends but if the firm needs to use retained earnings to invest in new projects, the returns of the new project should have values greater than the returns that stockholders could achieve if they used the dividend to re-invest by themselves. Beside the opportunity cost from the return on investments of stockholders there are some additional relevant costs when issuing the new common stock that make K_e higher, such as flotation costs—fees for stock issuance and brokerage fees. The cost of equity can be calculated using 3 different methods: Capital Assets Pricing Model (CAPM), Discounted Cash Flow Model (DCF) and Bond Yield-Plus-Risk Premium Approach². (Brigham and Ehrhardt, 2002: 425-434)

² Brigham and Ehrhardt (2002) proposed 3 models of the cost of equity calculation, see more details in “Financial Management Theory and Practice 10th edition”;

Approach 1: CAPM model, $K_e = K_{rf} + (RP_m) b_i$

Where K_{rf} = Risk Free rate return, RP_m = Market Risk Premium and b_i = beta coefficient of stock i

Approach 2: DCF model, $K_s = D_1 / (P_0 + g)$

Where P_0 = the current price of the common stock, D_1 = dividend at year 1
 g = expected growth rate of dividend

Approach 3: Bond Yield-Plus-Risk Premium,

K_s = bond yield + risk premium

Cost of Preferred Stock (K_p)

Preferred stock is a hybrid—it is similar to bonds in some respects and to common stock in other ways. It lies somewhere between debt and common equity. (Brigham and Ehrhardt 2002: 810) The cost of preferred stock can be calculated from $K_p = D_p / P_n$ where D_p is the dividend pay out ratio of the preferred stock and P_n is the current price of preferred stock deducted by the cost of selling the stocks.

Weighted Average Cost of Capital (WACC) and the Target Capital Structure

The capital structure is the mix of financing between debt, equity and preferred stock. The average cost of capital to the firm is the weighted average of the cost of each type of financing—called weighted average cost of capital or WACC. The formula of WACC is as below:

$$WACC = D/(D+E+P)*K_d(1-T) + E/(D+E+P)*K_e + P/(D+E+P)*K_p$$

Where D, E and P are the total value of debt, common equity and preferred stock respectively. As we mentioned before the cost of debt is calculated with reference to after-tax (1-T) cost. To achieve maximum firm value, the firm needs to mix the level of each cost of financing to get the minimum WACC, which we call the optimal capital structure.

In practice, the determination of the optimal capital structure is oftentimes difficult since there are many factors affecting the cost of capital and these can change frequently. So the firms normally setup their target capital structure for given periods with a variety of objectives, such as to reserve the spare borrowing capacity for the future opportunity, but

the target capital structure may not be the optimal point. Many firms may have a target capital structure aligned or comparative to the industry or market in which they operate which we call Industry Comparative Approach. (Damodaran 1999: 290) The leverage ratio in each industry may differ in line with specific characteristics of each industry. Table 1 in the Appendix provides us with the comparison of the average industry D/E ratio of the listed firms in Stock Exchange of Thailand (SET) between 2002-2006. The average D/E ratio of SET is 4.236, which is quite high because the Finance sector has an extremely high D/E ratio (10.544) because of the characteristic of their business must have more debt than equity while the average D/E ratio of Agro and Food, Consumer Products and Industrial are lower than SET (and even lower than 1.0 means that they use debt less than equity) but the average D/E ratio in Property, Resources, Services and Technology industry is more than 1.0 (but still less than SET), meaning that they use debt more than equity. The consumer products industry has the lowest D/E ratio (0.688) this may result from high fixed assets turnover (3.182)—there is less fixed assets but high sale revenue; the firm that has less fixed assets tends to use less debt ratio because of the less of collateral. Drobetz and Wanzenried had studied the factors affect the speed of adjusting the capital structure toward the target capital structure in 2003, the factors used in the study are both internal (e.g. growth, size and deviation of the observed leverage ratio from the estimated target level) and external factors (e.g. short term interest rate and term spread). The study pointed out that the growth firm is slowly adjusted toward the target capital structure but when the term spread is higher in the economic recovery period the adjusting speed toward the

target capital structure is faster. (Drobetz and Wanzenried, 2003) It means that the firm is trying to adjust its current capital structure toward the target capital structure and the speed of adjustment depends upon the factors and situations to which the firms are exposed.

3. The capital structure theories

The role of financial management executives of the firm is to manage the capital structure to meet the minimum WACC to achieve the ultimate goal: maximize firm value. The financing options of the firm are equity financing, debt financing and hybrid (mixing instrument between equity and debt e.g. preferred stock). Since Modigliani and Miller (M&M, 1958), the financial economists who announced the debt irrelevance propositions of the non-taxes firm and the number of leverage relevance theories which explain the variation of debt ratio across the firm which affect their firm value. One of the well known capital structure theories is "Trade-Off Theory" with the debt relevance proposition. A firm needs to trade off between the risk of bankruptcy costs when it gears up heavily and the advantage of debt as a tax shield benefit (Ross, 2005). When a firm uses more leverage, the financial risk to the shareholders will be increased, causing a higher expectation of the return from them. So the optimal capital structure is the level of mixed debt and equity which balances risk and return and creates maximum firm value. Figure 1 illustrates graphically the impact of using debt financing on firm value. At point A after the firm using more debts the bankruptcy costs start to increase causing the growth rate of the actual firm value to start declining.

The firm value is maximized at point B and then it starts declining rapidly due to the higher bankruptcy cost when using more debt beyond point B. This confirms that the firm needs to trade off between risks and benefits in using debt financing and the balance of the risk and return is the optimal point of the capital structure.

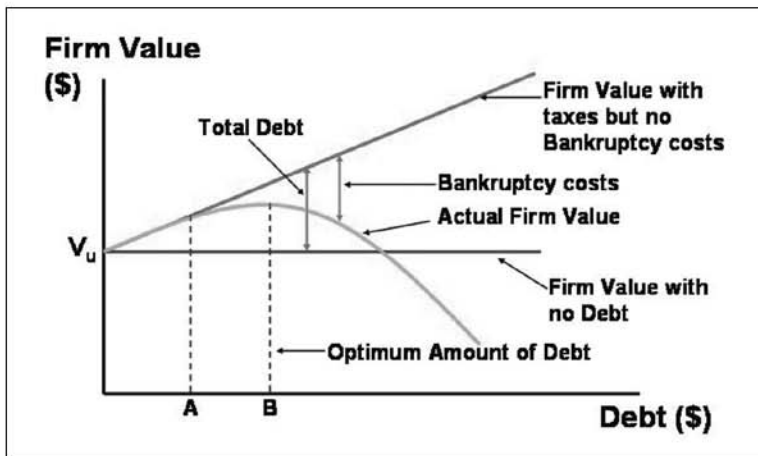


Figure 1 The impact of using debt financing on firm value

There is another benefit of using debt financing beside the tax shield which is the added discipline of management. When the firm uses more debt, the management will carefully control the expenses due to the fixed liability in paying the interest and having less cash on hand. The implications of the Trade-Off model are:

- The firm that has high business risks tends to use less leverage
- The firm that has more tangible assets can use more leverage

- The firm that has to pay high tax rate tends to use more leverage as long as “tax shield benefits” is outweigh the bankruptcy cost.

Margues and Santos (2004) conducted a survey of CEOs in the Portuguese Banking Industry to find out how influential capital structure theories were on the capital structure choices of CEOs. The survey indicates that the decisions of CEOs are consistent with Trade-Off Theory—they adjusted the capital structure toward the optimal point. (Margues and Santos, 2004)

The second capital theory is “Agency and Information Asymmetry Theory”. There are 3 agents involved in the firm financing decision: the managers, shareholders and bondholders. The assumption of M&M is all investors have equivalent or symmetric information but in fact managers have information that shareholders or bondholders do not have (Nicos, Francis and Panikkos, 1999). The managers are not willing to use debt financing even though the cost of debt is lower than the cost of equity because to use more debt will increase the risk of bankruptcy which in turn will affect their job security. Bondholders will increase the interest rate of debt because of the asymmetric information and belief that managers don't give all information on the project to them so they need to increase the return (interest) to compensate for the additional risk as well as the shareholders or investors will need more returns due to the higher risks. Actually investors believe that the good firm which has the potential project in the future should use debt financing because the cost of debt is lower than the cost of equity and they don't like to finance the project with new common stock because of the dilution effect. If the firm

still wants to issue new common stock to finance the project, investors will believe that the project may have some problems and the firm would like to attract new investors to share the risks. The conflicting objectives of each agent create more problems when the asymmetric information problem increases and it will affect the capital structure decision of the firm. The greater the distance between the owner and the manager is, the higher the level of asymmetric information problems the firm will face, which may result in moral hazard and adverse selection of the manager. So, to reduce the asymmetric information problem inside the firm, many firms have introduced Employee Stock Options Program or ESOP in order to encourage ownership mentality in the manager's mind set. Bharath, Pasquariello and Wu (2006) studied the asymmetric information problem inside the firm by measuring the ratio of "Insider Trading" to "Trading Volume" on the common stock of firms. The high ratio indicates that there is a high asymmetric information problem in the firm and investors reflect this problem by offering the lower price for the trading stocks. This study also tested the firm internal factors and found that some factors (e.g. Tangibility, Profitability, Size and Growth) have a correlation with the asymmetric information problem of the firm. (Bharath, Pasquariello and Wu, 2006)

The third theory is "*Pecking Order Theory*"—the firm has a hierarchical financing choice depended upon financing costs by using internal funding from its profit or retained earning first, followed by external debt, equity and preferred stocks respectively. (Brealey & Myers, 2003:513). Professor Gordon Donaldson (1961) from Harvard University studied the capital structure choices of firms and proposed the Pecking

Order Theory—the hierarchy of financing choices, namely.

- Using internal fund (retained earnings)
- Issuing new debt
- Issuing new common stock
- Issuing new preferred stock

There is some previous research reconciling these capital structure theories which explains the capital structure decisions of the firm, such as Pinegar and Wilbricht (1989), Margues and Santos (2004) and Palkar Darshana (2006). Palkar carried out a comparative study on both trade-off theory and pecking order theory to try to find out which theory can better explain the financing choice of firms. His results indicate that in the short term, the pecking order theory has more influence in capital structure choices than the trade-off theory but in the longer term, trade-off theory takes precedence. The empirical evidence from the research shows that over the long term firms tend to adjust their debt ratio toward the target capital structure but in the short term will consider using internal funds in order to reduce the bankruptcy risk. If the internal fund is not adequate they will consider financing their projects by external financing based on the cost of fund. This finding is consistent with the research of Pinegar and Wilbricht (1989)³ in surveying CFOs in the United States of America between 1975-1990 on how ranking CFOs make decision on sources of financing and found that the ranking of financing preference of CFOs

³ The survey research of Pinegar, J. Michael and Lisa Wilbricht (1989) which is referred in Damodaran A., 1999:248-249, the research title is “What Managers think of Capital Structure Theory” and printed in Financial Management Vol.18(4) 82-91.

in USA is to use retained earnings, then debt financing, common equity and preferred stock respectively which is consistent with the pecking order theory. The ranking score is shown in Table 2 of the appendix.

The research results also illustrate the relationship between the agency theory and pecking order theory—the firm which faces higher asymmetric information problems will have more agency costs which will lead its management to choose the source of funds consistent with pecking order theory.(Margues and Santos, 2004; Palkar, 2006) Because if the firm has a high level of asymmetric information problems and agency costs, the shareholders and bondholders will increase the cost of funds to compensate for the unexpected risks if they invest in the firm. So the management will tend to use internal retained earnings to finance its projects rather than external funds but if this is not sufficient the cheapest cost of external funds will be selected and so on.

From the above mentioned theories we can conceptualize the explanation of the theories in the capital structure decisions as in figure 2. The effect of asymmetric information and agency costs will also influence the capital structure decisions through the pecking order theory.

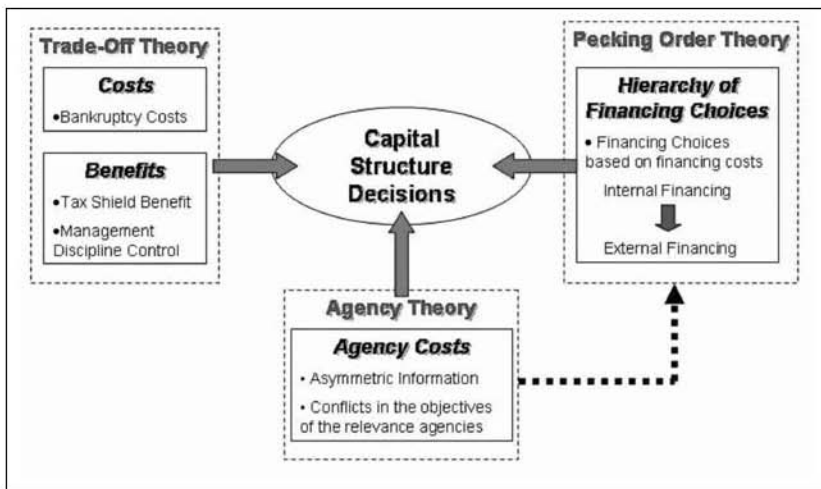


Figure 2 The explanatory framework of the capital structure theories in the capital structure management

4. The capital structure determinants

There has been much research that tried to study the determinants of the capital structure of the firm and to explain the financing choices as we mentioned in the previous section. For each theory there are factors that can explain the capital structure decision of the firm which we will discuss individually in the following sections. Before that we would like to explain the measurement of the leverage ratio which is the representative or proxy of the capital structure.

The leverage ratio is a reflection of the financing activities and can be measured in variety of ways depending upon the objective of the research. However, in general terms, the leverage ratio is the ratio of debt to total assets which is the right of the creditors in claiming over

the firm assets. It is normally measured with reference to the book value of the firm for which there is empirical evidence in the firm financial statements but some research focuses on the market value since market value arguably better reflects the future than book value. Actually the total debt of the firm can be separated into different maturity of debts—short term and long term. To study the leverage ratio for different kinds of debt maturity will help the researcher in the comparative study of the capital structure management in different views since short term debt and long term debt are different in nature and need to be managed in different ways. Short term debt is the current liability that needs liquidity or cash flows to pay back the creditors within one year. Accounts payable (trade liability) may be included in some short term debt definitions but may be excluded in others. Long term debt is a longer maturity liability, normally greater than one year. It is suitable for long term investment that will generate future cash flow in long term projection. Examples of leverage ratio calculation are as below,

- Total Debt leverage ratio = Total Debt / Total Assets
(Rajan and Zingales, 1995; Levy, 2002; Kobkul, 2004 and Palka, 2006)
- Short Term leverage ratio = Total Short Term Debt / Total Assets (Nicos Francis and Panikkos 1999)
- Long Term leverage ratio = Total Long Term Debt / Total Assets (Nicos Francis and Panikkos, 1999; Ghoseh Cai & Li, 2000; Maksimovic, 2001; Kobkul, 2004; Palka, 2006)

- Long Term debt to Market Assets ratio = Total Long Term Debt / Total Market value of Assets (Maksimovic, 2001; Levy, 2002; Plaka, 2006)

4.1 Bankruptcy Cost

The trade-off theory proposes that the firm makes financing decisions based on the benefit of a tax shield against the risk of bankruptcy generated by using higher debt financing. Firms that use the large portions of debt in their capital structure may face a high risk of financial distress if the cash flow from income or profit is not sufficient to pay the interest and principal to the creditor even though the debt interest can shield income from taxation. The risks may be caused by the volatility of operating earnings, illiquidity or poor profitability. Altman (1968)⁴ designed a well known composite indicator to measure the bankruptcy opportunity of the firm and revised the indicators for different kinds of firms (e.g. public, private, manufacturing and non-manufacturing) called the Altman revised Z-Score model. The original Z-Score is composed of 5 factors—Liquidity (X_1), Retained Earnings per Total Assets (X_2), Profitability (X_3), Equity-to-Liability ratio (X_4) and Capital Turnover (X_5). Altman (1995) further improved the revised Z-Score model for emerging market firms—the new Z-Score model was $6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$ (Dhanawat, 2003). In previous studies of the capitalstructure, researchers modified the

⁴ Edward Altman in “Financial Ratios, Discriminant Analysis, and the prediction of Corporate Bankruptcy”, *Journal of Finance*, September 1968. Referred from the book “Financial Statement Analysis 2007” page 540 by John J.Wild, K.R.Subramanyam and Robert F.Halsey.

indicators of Altman new Z-Score by cutting the equity-to-liability ratio (X_4) from the model and changing the model name to Z-Probe due to the high correlation with the leverage ratio (Graham, 1998; Dhanawat 2003) and found that the firm bankruptcy potential will be negatively related to the leverage ratio. A high Z-Score number indicates low bankruptcy risk whilst a low Z-Score indicates a high bankruptcy risk. The firm that has a higher Z-Score will have the opportunity to use higher debt level because it can get a lower cost of external financing (especially the cost of borrowing) since the creditor has a lower risk in a high Z-Score firm than a low Z-Score firm.

Modified Z-Score: is the composite indicator which is modified from Altman Z-Score = $6.56 X_1 + 3.26 X_2 + 6.72 X_3$

Where X_1 = Working capital or liquidity of the firm = $(CA-CL) / TA$

X_2 = Retain Earning = RE / TA

X_3 = Profitability = $EBIT / TA$

The low Z-Score means high bankruptcy potential

The high Z-Score means low bankruptcy potential

4.2 Agency and Asymmetric Information Cost

Agency cost stems from the conflict of the goals between the relevance agencies of the firm—Managers, Stockholders and Bondholders who each have different interests. The managers normally worry about their job security and their own benefits, the stockholders are looking for good dividend payment and the maximum stock price which increases the capital gain on their investment but the bondholders want to get the

debt interest on time and the principal when the debt matures. Everybody needs the returns that cover their risks but unfortunately the managers have more information than investors, so the investors need more return to compensate for the risks that are created from asymmetric information. This in turn causes a higher cost of external financing of the firm. So there has been a move away from the traditional trade-off theory towards a consideration of agency costs as being the major determinant of the capital structure. (Nicos, Francis and Panikkos, 1999)

When the growth firm has a new project and it needs funds to finance the project, there are many financing choices which the firm can select but the managers are willing to get lower risk financing even though the cost of fund may not contribute to the higher firm value such as equity financing.(e.g. issuing new common stock) The more the firm has asymmetric information, the greater the agency cost problem. This will create a higher cost of financing and reduce the opportunity for using the external source of fund. If creditors are not confident in the proposed project they will request a higher interest rate and tighten borrowing conditions which make the firm decide to use an alternative source of fund rather than borrowing from financial institutions. This would also cause a lower leverage ratio of the firm. It means the firm that has high growth will have less leverage ratio due to the agency problem and it will be more severe if the firm has more asymmetric information. There are many variables can be a proxy for growth (e.g. growth of assets, capital expenditure per total assets or CE/TA) as in the previous research of Titman and Wessels (1988); Ghosh, Cai and Li (2000) which shows that the growth of a firm is negatively related to the leverage ratio.

When the creditor believes that there is a chance of high asymmetric information in the firm which may create problems in moral hazard and lead to adverse selection of management, the creditor will request more collateral to shield itself from the risk of being unable to get the return back. So the firm that has high fixed asset to total asset ratio can use its fixed assets as collateral for borrowing more debt from the commercial bank. Previous research papers have found that the asset structure or tangibility has a positively influence on the capital structure of the firm which has a significant level. (Moh'd, Perry and Rimbey, 1998; Rao and Lukose, 2000)

As a profitable firm can generate enough cash flow to self finance its potential project and working capital for day-to-day operation, the managers will make a financing decision which reduces the risk of bankruptcy potential by using cash flow from its operating—retained earnings. This is also consistent with the pecking order theory when the first preference of financing choice in the hierarchical source of fund is to use internal fund from its cash flow. A firm that has more agency problems will face a higher cost of borrowing and common stock issuance so the manager will prefer to use retained earnings rather than external financing. This proposition is consistent with the finding of previous papers. (Rajan and Zingales, 1995; Kobkul, 2004) So the profitability will be negatively related to leverage ratio.

4.3 Financial Flexibility

Financial Flexibility is the ability of the firm to deal with unexpected financial situations, (Wild, 2007) such as having spare borrowing capacity

or equity capital raising power. The flexible firm can easily acquire financing from external sources when it has good potential projects in the future. Marchica and Mura (2007) consider that a firm has financial flexibility if it has a leverage ratio lower than the average industry or its target leverage ratio for a number of consecutive periods (e.g. 3 quarters or years). The firm that has a lower leverage ratio than the industry average (i.e. high financial flexibility) should have more spare borrowing capacity and therefore can use more debt financing to finance its project. So the financial flexibility should be positively related to leverage ratio. Recent survey suggest that financial flexibility is the primary factor influencing the Chief Finance Officer (CFO) in capital structure decisions (Marchica and Mura, 2007) but there are still not many research papers that use the financial flexibility variable in the capital structure determinants model.

4.4 Tax Benefit

Since the debt interest expense can shield income from taxation, firm that has more benefit from tax shields can use more debt financing. To measure the taxes shield benefit we can either measure the level of taxes paid directly or level of non-debt tax shield, the firm that has to pay more taxes or has more non-debt tax shield will have less motivation to use debt financing. For instance, if the firm already has enough non-debt tax shields, (e.g. more depreciation expense) it will be less advantage for the firm to use more debt financing. (Titman and Wessels, 1988; Dhanawat, 2003) So the non-debt tax shield should be negatively related to leverage ratio.

4.5 Firm size and Industry effects

Firm size is a firm specific factor that influences the capital structure decision. Large firms tend to be more diversified and less likely to go bankruptcy, so they can use more leverage than small firms. Many previous studies measure firm size by using logarithm of total assets (Rao, 2000; Prasad and Ghosh, 2005) or logarithm of sales. (Titman and Wessels, 1988; Moh'd, Perry and Rimbey, 1998) The relationship between firm size and the capital structure decision has not yet been clearly analyzed but most findings indicate a positive relationship between firm size and the leverage ratio.

Some previous research included the industry dummies variable in the capital structure determinants model. Since there are different industry specific factors that may influence the leverage ratio of the firms in the industry (e.g. some industries use large amounts of plant equipments or some industries have more intangible assets). Heavy industry involves a high level of maintenance expenses for long periods so it needs to reduce the risk of bankruptcy by using less debt financing. The maturity of debt is also related to the maturity of the assets. The firm that needs to invest in long term assets (e.g. plant, land and equipment) should use long term debt financing to match the time maturity. Many studies include the industry dummies in the test model but the relationship between some industry dummies and leverage ratio is not statistically significant. The direction of the relationship between each industry and its leverage ratio may be different due to the different specific factors of each industry. For summary, the findings indicate that industry specific factors influence the capital structure of the firm but the direction of relationship is depended

upon the nature of the industry.

4.6 Macro economic factors

Macro economic factors are also the key external factors that influence a firm's financial decision since they affect demand and supply and definitely impact on the performance of the firm. So the management of the firm must accept that the macro economic situation is important and needs to carefully consider its impact. In fact there are many macro economic factors which may influence the firm decision, but the most significant factor affecting leverage usage is interest rate (the key instrument of monetary policy) because the interest rate is a direct cost of borrowing. The second factor affecting the capital structure decision is the tax rate (the key instrument of fiscal policy) because of the tax shield benefit. The other macro economic factors which may affect capital structure decision are the growth rates of the economic system such as the growth rate of real GDP per capita and capital market growth. Capital market growth is a lead indicator of the overall economy, if the capital market is growing it means that the economy will expand and this will motivate the firm to invest in potential projects that need additional financing.

Few studies in the past have focused on the external factors or macro economic factors, most of them instead examining the firm internal factors that affect the capital structure decision. However, there is some research focused on the macro economic factors. Levy (2002) studied the impact of macro economic factors on the capital structure determinants in the USA. This research used 3 macro economic factors—the first is

2-years corporate profit growth as the aggregate domestic non-financial corporate profit growth to represent the overall picture of the growth firm. The second factor is 2-years equity market return to represent the growth of capital market and the third factor is the spread of the commercial paper which represents the trend of return on commercial paper over the Treasury bill. The results of the research indicated that the leverage ratio of the firm with no financial constraint is negatively related to the macro economic factors—when the economy is growing a firm will use less debt financing and turn to equity financing via the capital market. But the financial constrained firm still relies heavily on debt financing even when the economy is growing.

In addition, Nicos, Francis and Panikkos (1999) studied the impact of macro economic factors on the capital structure determinants of SME firms in England. The research provided empirical evidence of the impact of the macro economic factors on three different kinds of maturity financing: total debt ratio, short term debt ratio and long term debt ratio. Different economic situations—recession or expansion, had effects on the capital structure management, the result indicated that in economic expansion periods SME firms tend to use more long term debt financing, suggesting that the growth of the economy is positively related to long term debt ratio. Conversely, growth of economy is negatively related to short term debt ratio, as SME firms use more short term debt in the economic recession period since in that period the capital market is also in a down turn and firms need more short term loans to increase their working capital. The result also indicates that the macro economic factors have influence on the leverage ratio of SME firms.

Research of IMF by Prasad and Ghosh (2005) studied the impact of monetary policy on the capital structure management in India. The 525 firms in the period of 1992-2003 had been studied by using the return on 364-days Treasury bill as the key policy interest rate. The objective of the research was to study the mechanism of monetary policy that transmit through the interest rate channel and credit channel to the capital structure management. The results confirmed that when government adopts a restrained monetary policy (increase interest rate) in the current period the overall leverage usage is reduced but the restrained monetary policy in the previous quarter (1 quarter lag) will create the higher leverage usage in the current quarter.

The results from the above research provide us with strong evidence that the monetary policy effects have an influence on the firm capital structure and the capital market growth effects also have an influence on the firm capital structure.

Some previous studies used direct proxy of monetary policy or other macro economic factors in the capital structure determinants model, (Booth, Aivazian, Demirguc-Kunt and Maksimovic, 2001; Levy and Korajczyk, 2002; Prasad and Ghosh, 2005) but the use of variables with different levels of unit of analysis (country level and organization level) may lead to statistical argument. So to study the influence of macro economic factors in the capital structure determinants model Nicos, Francis and Panikkos (1999) included the time dummies variables into the test model and analyzed the relationship between the macro economic factors and the capital structure through the coefficients of the time dummies variables. This technique is frequently used when the explanatory variable is different in the level of

analysis with the other variables, especially the dependent variable.

5. Conclusion

The Capital Structure Management is one of the key activities of the firm's financial management by mixing the level of debt, equity or other financial instruments, known as the leverage ratio, to meet the firm objective—to achieve the highest firm value. Since Modigliani and Miller (1958), the financial economists who announced the debt irrelevance propositions of the non-taxes firm, there are a number of leverage relevance theories and many studies that explain the variation of leverage ratio across the firm that affect the firm value. The three central capital structure theories are Trade-Off Theory—the trade off between the risks of bankruptcy costs when using higher debt financing and the advantage of tax shield benefit. The second theory is Agency costs and Information Asymmetry Theory—the costs created by the conflicts in objectives of the agencies involved in the firm (Management, Shareholders and Bondholders) and the problem of inside information that managers have but shareholders or bondholders do not have. The third theory is Pecking Order Theory—the hierarchical financing choices which the firm prefers to use internal source of funds before external financing.

The factors that relate to the capital structure theories and which affect the capital structure determinants model are classified into 6 groups. //The first one is the bankruptcy cost factor which is the risk of the firm when the firm uses more debt financing. Altman proposed the composite indicator named Z-Score to measure the overall bankruptcy potential of the

firm which consisted of liquidity, retained earnings and profitability. The modified Z-Score has been used to measure the bankruptcy potential of the firm, the positive relationship is expected between the modified Z-Score and the leverage ratio. //The second factor is the agency and asymmetric information cost, the cost generated from the problem in asymmetric information—managers have more information than investors and the conflicts in the different objectives among the relevant agencies of the firm—Managers, Stockholders and Bondholders. The proxies that represent the agency cost of the firm are growth, tangibility and profitability which are negatively, positively and negatively related to the leverage ratio respectively. //The third factor is financial flexibility—the spare borrowing capacity which currently becomes the primary factor that drives Chief Finance Officer (CFO) on capital structure decisions (although there are still not many research papers that use financial flexibility variable in testing the capital structure determinants model). The expected relationship between financial flexibility and the leverage ratio is positive. //The fourth one is tax shield or non-debt tax shield benefit that is frequently used in many previous capital structure researches. The tax shield benefit will motivate the firm to use more or less debt financing depending on how much the debt interest expenses can shield income from taxation. So the non-debt tax shield is expected to be negatively related to the leverage ratio. //The fifth factor is the firm size and industry specifics. The size of the firm is expected to have a positive relationship to the leverage ratio since large firms normally tend to be more diversified and less chance to go bankrupt. For the industry factor there are some different industry specifics that may influence the leverage ratio of firms in the industry, for

example some industries use large amounts of plant and equipment, while other industries have more intangible assets so they will have different collateral against which to borrow debt. So, the influence of the industry factors may be different in the direction which is depended on each industry specific factors.

The last factor is the macro economic factor which is also the key external drives that influence the firm financial decision since they affect demand and supply and definitely impact on the performance of the firm. Some previous research used the macro economic factors as the explanatory variables in the capital structure determinants models, the interest rate and growth of capital market which are the key instruments of monetary policy and the growth of economy respectively are frequently used to test the model. The direction of the relationship between macro economic factors and the leverage ratio will depend on the state of the economy or business cycle.

In summary there are many previous papers which study the determinants of the capital structure or financing choice decisions. They observed the capital structures in various firm characteristics or industry classifications by using both internal and external factors.(Titman and Wessels, 1988; Rajan and Zingales, 1994; Nicos, Francis and Panikkos, 1999; Kobkul, 2004) There are some comparative studies working on the cross-country determinants of capital structure choice (Maksimovic, Booth, Aivazian and Demirguc-Kunt, 2001; Bancel and Mittoo, 2004) or firm type comparison (Dhanawat, 2003). Some researchers focus on macro economic factors influencing the capital structure choices. (Nicos, Francis and Panikkos, 1999; Levy, 2002; Prasad and Ghosh, 2005).

6. Policy and research Implications

One of the problems of firms in the Thai economy is the weakness in capital structure management. Many firms have higher level of debts than their industry average even if they are listed on the Stock Exchange of Thailand (SET) and therefore have the flexibility to acquire equity funding via the stock market. So when the economy crisis occurred, these firms fell into financial distress, illiquidity and missed the opportunity to capture good incoming projects. When the real sector business fold down the economic system will be affected and slow down too. The government as the policy maker needs to align key economic policy to meet private sector requirements and create supportive measures to stimulate the firm investments under the proper capital structure management. The misalignment of private sector financial policy and government policy will weaken the outcome of policies implementation and create difficulties for the government to meet its economic targets.

Most research papers in the past focused on the determinants of the capital structure decision of the firm by considering internal factors and only some of them explained the effects from external factors—the macro economic factors. Previous research especially in Thailand mostly studied the capital structure determinants by using the cross sectional analysis which may not be able to explain the influences of the macro economic factors such as the key economic policy outcomes or the business cycle effects which are changed from time to time. So it is quite interesting to study and analyze the determinants of the capital structure management of Thai firms by using longitudinal analysis such as the

comparative study of the capital structure management under different policy frameworks (e.g. exchange rate targeting, monetary targeting and inflation targeting) or business cycle (e.g. recession and expansion period) or different economic situations (e.g. before-crisis, in-crisis and post-crisis period) This will help policy makers to have a better understanding of the factors affecting capital structure management and will be able to align policy to serve private sector requirements in order to meet policy objectives.

7. Appendix

Table 1: The comparison of average D/R Ratio by industry of Stock Exchange of Thailand (2002-2006)

Industry	D/E Ratio (Times)	Net Profit Margin (%)	Return on Asset (%)	Return on Equity (%)	Fixed Asset Turnover (Times)	Total Asset Turnover (Times)
SET	4.236	9.734	4.840	19.264	1.962	0.370
Agro and Food	0.986	3.716	8.526	11.580	4.046	1.548
Consumer Products	0.688	3.670	6.304	5.814	3.182	0.996
Financial	10.544	15.082	1.136	10.942	2.900	0.064
Industrial	0.954	9.386	10.854	16.304	1.430	0.852
Property	1.358	12.818	10.642	20.068	1.584	0.632
Resources	1.458	9.082	18.618	30.336	2.590	1.284
Services	1.486	8.530	9.758	18.464	1.318	0.818
Technology	1.566	7.334	10.198	15.906	1.938	0.820

Source: Stock Exchange of Thailand by SETSMART.COM

Table 2: The Ranking of the preference in sources of fund of CFOs in USA (1975-1990)

Ranking	Source	Score
1	Retained Earnings	5.61
2	Straight Debt	4.88
3	Convertible Debt	3.02
4	External Common Equity	2.42
5	Straight Preferred Stock	2.22
6	Convertible Preferred	1.72

Source: Survey research of Pinegar and Wilbricht (1989) modified from Damodaran (1999:249)

References

- Bancel Franck and Mittoo R. Usha. 2004. "Cross-Country Determinants of Capital Structure Choice: A survey of European Firms," *Journal of Financial Management* (Winter).
- Bharath T. Sreedhar, Pasquariello Paolo and Wu Guojun. 2006. *Does Asymmetric Information Drive Capital Structure Decisions ?*. Department of Finance, Ross School of Business, University of Michigan, USA.
- Booth Laurence, Aivazian Varouj, Demirguc-Kunt Asli and Maksimovic Vojislav. 2001. "Capital Structures in Developing Countries," *The Journal of Finance* LVI, no.1 (Feb).
- Brealey A. Richard and Myers C. Stewart. 2003. *Principles of Corporate Finance 7th Edition*. New York: McGraw-Hill/Irwin.
- Brigham F. Eugene and Ehrhardt C. Michael. 2002. *Financial Management Theory and Practice 10th Edition*. Singapore: Thomson Learning Inc.
- Damodaran Aswath. 1999. *Applied Corporate Finance, Stern School of Business New York University*. New York: John Wiley & Sons, Inc.
- Dhanawat Siriwattanakul. 2003. *A comparative Study of Capital Structure of Listed and Non-Listed firms in Thailand*. Bangkok: Chulalongkorn University.
- Dobetz Wolfgang and Wanzenried Gabrielle. 2003. *What determinants the speed of adjustment to the target capital structure*. Switzerland: University of Basel.
- Ghosh Arvin, Cai Francis and Li Wenhui. 2000. "The Determinants of Capital Structure," *American Business Review* (Jan).

- Graham R. John. 1998. "Do Personal Taxes affect Corporate Financing Decisions ?," *Journal of Public Economics* 73 (1999): 147–185.
- Harris Milton and Raviv Artur. 1991. "The Theory of Capital Structure," *The Journal of Finance* 46, no. 1 (Mar): 297-355.
- Kobkul Chintanawetchakul. 2004. *An Investigation of factors related to capital structure of Thai firms*. Bangkok: Ramkhamhaeng University.
- Levy Amnon and Korajczyk A. Robert. 2002. "Capital structure choice: Macroeconomic conditions and financial constraints," *Journal of Financial Economics*, no.279.
- Maksimovic Vojislav, Laurence Booth, Varouj Aivazian and Asli Demircug-Kunt. 2001. "Capital Structures in Developing Countries," *The Journal of Finance* LVI, no.1 (Feb).
- Marchica Maria-Teresa and Mura Roberto. 2007. *Financial Flexibility and Investment Decisions: Evidence from Low-Leverage Firms*. UK: Manchester Business School.
- Margues and Santos. 2004. *Capital Structure Policy and Determinants, Theory and Managerial Evidence*. Portuguese banking industry, Portugal.
- Moh'd A. Mahmond, Perry G. Larry and Rimbey N. James. 1998. "The Impact of Ownership Structure on Corporate Debt Policy: a Time-Series Cross-Sectional Analysis," *The Financial Review*, (Aug): 85-98.
- Nicos Michaelas, Francis Chittenden and Panikkos Poutziouris. 1999. "Financial Policy and Capital Structure Choice in U.K. SMEs: Empirical Evidence from Company Panel Data," *Journal of*

Small Business Economics (March).

Palkar Darshana. 2006. *Reconciling Capital Structure Theories in Predicting the Firm's Decisions*. Phd. Dissertation, University of North Texas, USA.

Prasad A.and Ghosh Saibal. 2005. *Monetary Policy and Corporate Behavior in India*. IMF Working Paper WP/05/25, February.

Rajan G. Raghuram and Zingales Luigi. 1994. *What Do We Know about Capital Structure? Some Evidence from International Data*. Working Paper No.4875, National Bureau of Economic Research, MA.

Rao S Narayan and Lukose Jijo P.J. 2000. *An Empirical Study on the Determinants of the Capital Structure of Listed Indian Firms*. Indian Institute of Technology Bombay.

Ross A. Stephen. 2005. "Capital Structure and the Cost of Capital," *Journal of Applied Finance* (Spring).

Titman Sheridan and Wessels Roberto. 1988. "The Determinants of Capital Structure Choice," *The Journal of Finance* XLIII, no.1(March).

Wild J. John, Subramanyam K.R. and Halsey F. Robert. 2007. *Financial Statement Analysis 9th Edition*. Singapore: Mc Graw Hill.