THE DETERMINANTS OF CAPITAL STRUCTURE FOR FIRMS IN CONSTRUCTION AND MATERIALS SECTOR IN MALAYSIA

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BY

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DECLARATION

We hereby declare that:

(1) This undergraduate research project is the end result of our own work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.

(2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

(3) Equal contribution has been made by each group member in completing the research project.

(4) The word count of this research report is _____.

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DEDICATION

We would like to dedicate our final year project work to our family, friends, and relatives for their unlimited support, help us as well as encouragement and motivation throughout the completion of this research. A special feeling of gratitude and appreciation to our loving supervisor, Ms Zuriawati, who spent hours with us over a one-year period to prepare us for completing this research, whose words of encouragement and consideration to us throughout the process.

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LIST OF ABBREAVTIONS

9MP	Ninth Malaysia Plan
BNM	Bank Negara Malaysia
EBIT	Earnings before Income Tax
GRO	Growth Opportunity
LDEBT	Long-term Debt
LIQ	Liquidity
MM	Modigliani and Miller
NDTS	Non-debt Tax Shield
PRO	Profitability
SC	Security Commission
SDEBT	Short-term Debt
SME	Small and Medium Enterprise
TAN	Tangibility
TDEBT	Total Debt
UK	United Kingdom
US	United States

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PREFACE

Capital structure has become more and more crucial in business planning these days. It is very necessary that companies should have optimal capital structure that can maximize the price of the company's stocks. There are several financing options to finance its assets but it is necessary to choose the financing options that maximize its overall value. What is more, in order to survive and prosper in the long run, the need to plan about the capital structure and determine the characteristics as well as the relationship with the determinants is a must.

Besides, we notice that construction and materials sector has been one of the leading sectors in Malaysia. It has high growth but required high capital as well. Therefore, we are interested in knowing the methods of the companies use to finance their operating capital and also the purchase of fixed assets.

Lastly, we have put a lot of efforts and time into it in order to produce the best possible research paper. Last but not least, we are grateful to the people who have helped us and we hope that this research paper will be useful to others too.

ABSTRACT

Although there has been a great deal of research on the determinants of the capital structure in Malaysia firms, they are only based on one measurement of debt level which is the total debt ratio. Hence, our research is analyzing the relationship between the three different measurements of debt level which are the short-term debt, long-term debt and total debt with the six determinants which are the profitability, liquidity, tangibility, non-debt tax shield, growth opportunity and firm size. On top of that, we uses panel data of 92 firms from construction and materials sector observed over 5-year period from 2005 to 2009 that are retrieved from data stream provided in the library of Universiti Tunku Abdul Rahman (UTAR). Our panel data regression results show that profitability and liquidity are significant and have negative relationships with short-term debt. However, firm size, tangibility, growth opportunity and non-debt tax shield are found to be insignificant with short-term debt.

On the other hand, the results show that profitability, liquidity, tangibility and non-debt tax shield are significant and have negative relationship with long-term debt and total debt except for tangibility which has a positive relationship with both long-term and total debt. The remaining two determinants which are the grow opportunity and firm size are insignificant with long-term debt and total debt. Finally, the results we concluded are consistent with the combination of both pecking order and the trade-off theories but market timing theory is found to be inappropriate.

CHAPTER 1: RESEARCH OVERVIEW

1.0 Introduction

Capital structure is one of the most debated topics in corporate finance. Capital structure has been broadly defined as "the relationship between company's debt and equity" (Awan et al., 2010). In finance, the term capital structure defined as the mix of debt and equity financing employed to provide capital needed for the firm (David, 2004). A further definition of capital structure by Eckert and Engelhard (1999) is that capital structure is the combination of financing contracts, in which a firm has to choose between debt and equity in order to finance its investments. The financing contracts in this context refer to the agreements respecting to the nature of returns paid (whether the returns will be fixed or variable), the time period for which the financial resources are/ will remain at the firm's disposal, and the currency in which the resources is denominated (Awan et al., 2010).

Since the seminal work by (Modigliani and Miller (1958), which is the origin researchers of the capital structure, many researchers had extensively conducted the research on this area mainly in United States, France, Japan, United Kingdom, Germany and other G-7 countries. Their focal point is to identify the unique combination of debt and equity, the aspects and the factors that influence on the optimal capital structure.

The major goal for almost of the firms is to maximize the shareholder wealth and the firm's value. To achieve this, firms need to appropriate determine the capital structure between debt and equity by taking consideration into the internal and external conditions. Based on previous researches, six determinants of capital structure were identified for this study. They are firm size, tangibility, profitability, non-debt tax shield, firm age, growth opportunity and liquidity.

1.1 Research Background

1.1.1 Overview of Capital Structure

The paper of Modigliani and Miller on the irrelevance of capital structure in 1958 are one of the most influential papers in the economics literature and commonly known as the MM theory. It is also the beginning for the subsequent researchers to broadly debate on this subject. The first versions of the paper were very simple. It states that based on the assumption of perfect capital markets, no brokerage, no corporate or personal tax, no bankruptcy costs, investors can borrow at the same rate as corporations and they would tend to have the same information as management about the firm's future investment opportunities (Teker et al., 2009). According to MM theory, under some restrictions, a firm's value will not be affected by its capital structure and assumes that earnings before income tax (EBIT) will not be related to the use of debt, and thus leads to the inference that capital structure may be considered as irrelevant. Even though, the fact of the fundamental irrelevance theory can be assumed unrealistic by the investors, it is generally accepted and many researchers focus on this subject on relaxing some of the assumptions to develop more realistic approach. In 1963, there was another amendment paper published by Modigliani and Miller to improve the limitation on the previous paper.

The in depth theoretical work and empirical investigation have resulted in two major theories of optimal capital structure, which is the trade-off theory and the pecking order theory (Myers, 1984). In the application of trade-off theory, firms use debt as a source of financing. Based on trade-off theory, the firms with optimal debt financing can benefits from tax shield against various cost associated with debt. The various costs could be bankruptcy and agency cost.

On the other hand, the pecking-order theory by Myers 1984 suggests that firms are supposed to prefer internal financing (retained earnings) to external funds. When internal cash-flow is not sufficient to finance capital expenditures, firms will borrow, rather than issue equity (Bauer, 2004). In brief, pecking-order theory will follow the sequence of financing from retained earnings, followed by debt and equity as the last resort.

Firms' value is determined by the positive net present value cash flow of investment. The cash flow is generated through the investment of assets. Usually, the assets can be financed through three sources of financing, retained earnings, debt instruments and equities. These three types of financing generally make up the capital structures of firms. Among these, debt financing is the cheaper form of financing. However, firms cannot only make used of it, because when there is high interest rates, earnings of investment will wiped off the interest cost and it is high possibility that firms will incur losses. Thus it could be a risky way of financing. Alternatively, firms can also issue new shares to obtain funds instead of debt but shares cannot always generate cash when firms need funding. Also not every firms is suitable to issue new shares, some small and younger firms are at high risk to issue new shares (Berger and Udell, 1998; Coleman, 2000). It is clear that firms should not only rely on one type of capital financing but should consider the combination of three sources of financing in order to obtain optimal capital structure. A well capital structure combination of debt and equity will attempt to increase the market value of the firms (Rafiq et al., 2008; Titman and Wessels, 1988; Harris and Raviv, 1991; Awan et al., 2010).

One of the main objectives of firms is to maximize the shareholders' wealth and business value. Financial managers are the one who obliged to determine and make the ideal decision on capital financing choices. The decisions they made are the most crucial and have large impact on the firms overall performance. Hence, they must equip with powerful capital structure

knowledge in dealing to the fast-ever changing business world. However, in response to the uncertainty and risky world, it is tough for firms to achieve the best capital structures. Furthermore, the empirical work is still lagged behind the theoretical models (Rajan and Zingales, 1995).

Capital structure style can be differ from country to country, firm to firm, sector to sector as well as the industry to industry. The differential of these could be due to country cultures, firm characteristics and industry types. A lot of researchers have been studied on the countries specific and firms specific. Based on the paper written by Jong et al. (2008), they found that firms' specific factors such as tangibility, firm size, firm risk, growth and profitability on cross-country could influence on the capital structure choice. Also, their paper indicate that the country-specific factors on aggregate leverage such as capital formation, inflation rate, trade openness, GDP growth, market/ bank-based financial system, shareholder/ creditor right protection and legal enforcement could significantly affect on the capital structure decisions. Other researchers such as Rajan and Zingales (1995) conduct the research on G-7 countries based on the evidence from international data and also conclude that common firms specific and countries specific factors do affect the financing decision. Booth et al. (2001) analyze capital structure choices of firms in ten developing countries, the result shows that the firm's capital structure variables of European countries are also relevant in developing countries but the country factors is rather different. Hence, it is obvious that firms must fully understand the structure and objective of their firms in order to well manage their capital structure and so to increase firms' market value.

1.1.2 Capital Structure Development in Asia- Malaysia

Capital markets in Asia were being researched on an aggregate level with regard to their unexpected growth and the additional volatility in the advancement of this growth. For example, the asset price bubbles and the moral hazard in capital markets indicate one important stand of empirical finance research on Asia (Getzmann et al., 2010). However, even though the factors such as over investment and excessive leverage are crucial for Asian growth, only few empirical studies take this observation as a motivation to broadly research corporate capital structures in Asia.

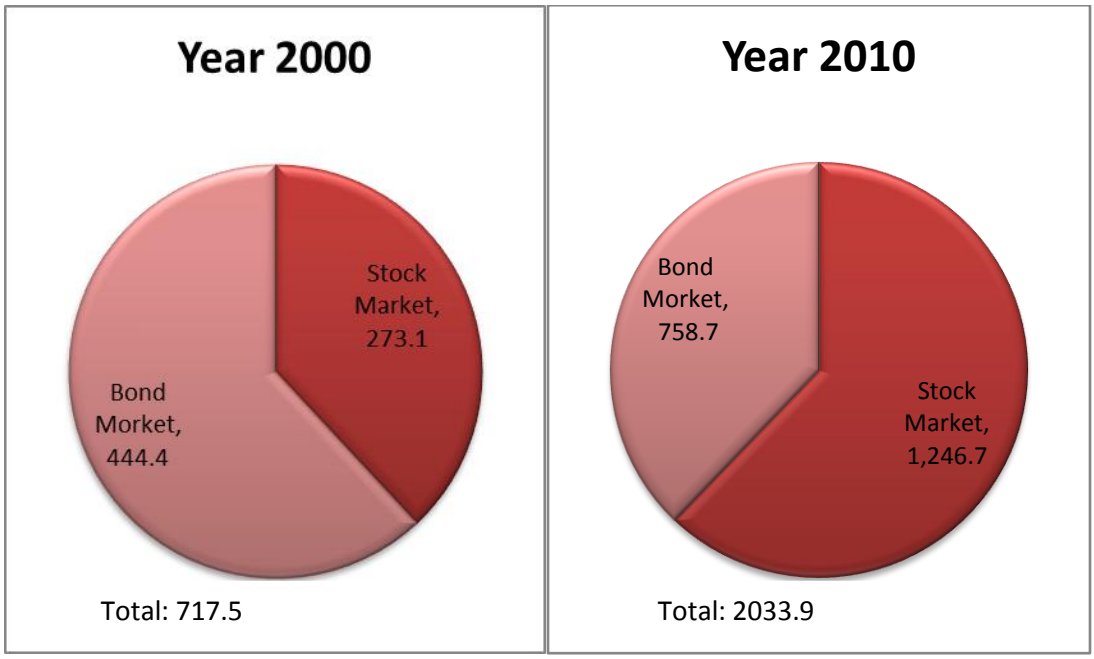
Capital market is a physical market place for securities, debt or equity, where the firms and government can raise the long-term funds. It is a market in which money is provided for more than one year period. According to article of Capital Market in Malaysia (2009), emerging markets in Asia, including Malaysia is largely dependent on foreign capital inflows. Since Malaysian capital markets are more developed, it has an opportunity for growth as compared to other Asian countries. Structural changes and intense competition have been made in order to further increase the development of the capital market in Malaysia.

The capital market in Malaysia has undergone a tough development since the late 1980s. Those Malaysian and Singaporean companies which had been delisted from their stock exchanges was a landmark in the development of Malaysia's equity market. The equity market has contributed to the growth for private sector with issuances of new shares to enable firms to obtain cheaper financing of capital. Meanwhile, bond market was starting to develop. The central bank, bank Negara Malaysia (BNM) plays an important role to introduce the principal dealer and system to develop the secondary market for bonds. Since 1995, the government has encouraged firms to raise fund from issuing bonds. But during the financial crisis, many bonds are defaulted,

hurting the confidence in the market. Thus, the capital market of Malaysia is facing many serious challenges during the time. Along with the expansion of capital markets, other activities such as investment management funds, stock brokerages and advisory services are also affected. By September 2000, Malaysia had 62 licensed stock brokerages, 32 futures broking firms and 735 licensed futures brokers' representatives (Capital Market in Malaysia, 2009).

According to The Star by Sarif (2011), Tan Sri Zarinah Anwar, chairman of Securities Commission (SC) said, "Malaysia's capital market crossed the RM2 trillion thresholds for the first time ever as at end 2010." Malaysia capital market had achieved annual compounded growth rate of 11% from RM717 billion in 2000 due to rapid industry expansion and the strong regulatory supervision that underpinned investor confidence. The equity market had grown by 27% from RM979 billion in 2009 to RM1.2 trillion in 2010 as the market sentiment improved on the back of the launch of new economic programmes. The bond market also has a steady growth with the outstanding debt securities rising 16.2% from RM653.2 billion in 2009 to RM758.7 billion in 2010. Below is the overview of capital market of Malaysia in year 2011.

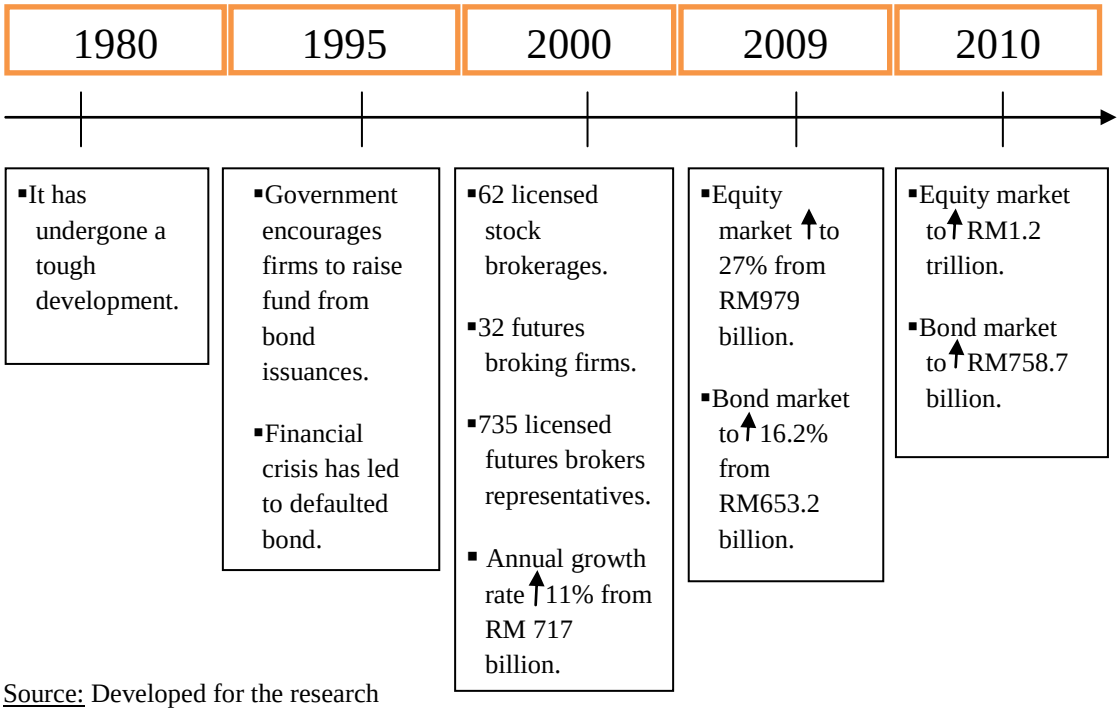
Figure 1.1: Capital Market Overview in Malaysia



Size (RM billion)

Source : The Star online, March 18, 2011

Figure 1.2: Timeline of the Capital Market development in Malaysia



Source: Developed for the research

1.1.3 Overview of Construction and Materials Sector

Construction sector is a new sector in the market which is not globalized yet in the nature. Countries involve construction sector in their national industry include Europe, North America, and Asia, predominantly China. Firms in construction sector are firms that handling infrastructures and building project such as shopping mall construction, houses, bridges and office blocks. Based on article of construction and building materials, the industry is partly related to Civil Engineering on infrastructure projects such as handling ground works and ground preparation for site construction. However, some countries such as Malaysia include Civil Engineering as a sub sector of construction sector (Bank Negara Malaysia [BNM], 2007) It is difficult for firms to do cross country project as there are different laws and regulations implemented by different countries such as building laws, retail laws and building regulations for residential.

Furthermore, construction is a very materials and skills intensive industry. Owing to the pre-requisite of huge professions and labors to perform the project, the development of the sector is slower. According to article of construction and building materials, a great deal of global infrastructure expansion is undertaken by emerging countries and most of the western companies are fighting to obtain the contracts from China and India. It is also mentioned that in year 2010, India needed to double infrastructure spending from US$500 billion (£325 billion) to US$1 trillion in the next five year plan. If the plan is workable, then it would be the biggest and most ambitious infrastructure in the world. In Malaysia, construction sector is important in generating better life for Malaysian based on the quality infrastructure provided by the sector. Referring to Sahudin et al. (2011), construction sector has shown a positive growth from year 2003 to year 2008 due to the ongoing Ninth Malaysia Plan (9MP). The authors also mentioned that, there will be a

greater demand for construction professions and buildings materials in Tenth Malaysia Plan which was just launched.

Materials sector is a sector which is highly dependent on construction sector since its role is to provide goods to construction sector those goods are such as paint and wiring, steel, iron, furniture and so on. One of the biggest improvements for the sector is the "green building" planning desired by various nations. Based on the construction and building materials article, in United States, the "green building" materials market was worth US$60 billion in year 2009. Another huge and high demand sub sector in materials sector is the green floor-covering sector. In Malaysia, there is not much development of materials sector as compared to construction materials such as steel and iron, and cement (BNM, 2007).

In this research, we choose to use the combination of construction and materials sector to examine the relationship of firm capital structure determinants. The reason we choose the combination of these two sectors is because they are interrelated. Construction sector requires construction materials such as cements, iron, steel, fabricated metal product such as metal fixtures and furniture and so on to perform their project. Therefore, both sectors rely on each other heavily. The growth of construction sectors would also lead to growth of materials sector. This could be seen in the year 2007 to 2009 of Malaysia construction sector whereby it was doing well due to the Ninth Malaysia Plan (9MP) and this has led to the expansion of construction related materials (BNM, 2007).

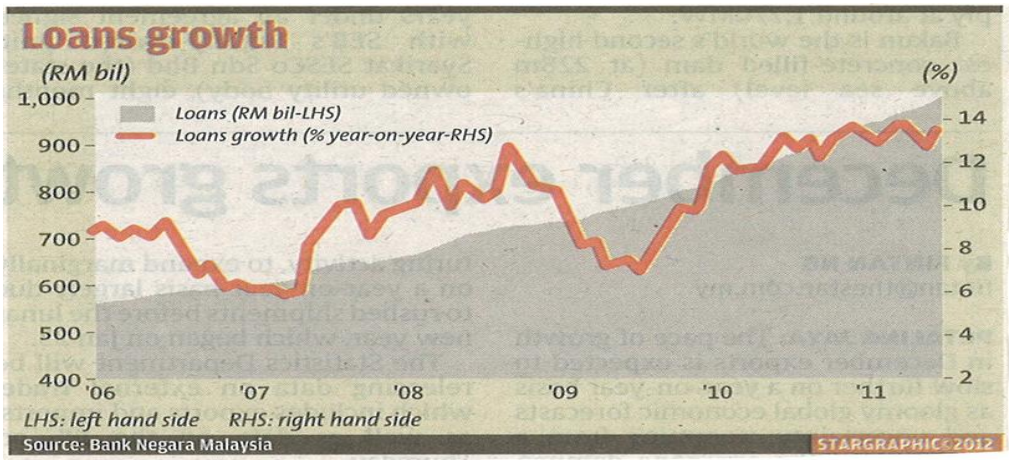
1.1.4 Debt financing in Malaysia – Construction Sector

Institutions rely heavily on debt to finance their business. Based on previous researchers, they used short- term debt, long- term debt and total of both short- term debt and long- term debt to examine the relationship with the independent variables for construction and materials sector. Short- term debt is a debt that borrowers have to repay within 12 months while long- term debt is a debt that borrowers can repay after one year or more. Debt financing in Malaysia varies among the sectors. According to BNM, there are 12 sectors in Malaysia (primary agriculture, mining and quarrying, manufacturing (including agro-based), electricity, gas and water, wholesale and retail trade, accommodation and restaurant, construction, real estate, transport, storage and communication, financing, insurance and business services, education, health and others, household sector and other sector).

Recently, there are several researches from banks analysts revealed the overall loan growth from the year 2006 to 2011 that the retail and business-related loans is expected to increase in December 2012 (The Star, February 7, 2012). Figure 1.3 shows the loans growth in Malaysia from year 2006 to year 2011. The overall loan in year 2007 is lower as compared to year 2008, year 2010 and year 2011. However, this overall loan growth is analyzed for the entire industry of Malaysia, it could be different loans amount based on different sectors. Table 1.1 and Figure 1.4 show the total business loan of construction sector in Malaysia. Based on the figure, at year 2006 there was a smaller amount loan by construction sector because the loan application has declined. We can also observe that loan of construction sector is higher in year 2007 which is a slightly decrease in year 2008 and year 2009 as compared to other years. This was because in these three years, the businesses mainly manufacturing, wholesale trade and construction sectors are supported by acquiring a larger amount of financing through bank loans (short-term financing) to fund their working capital (BNM, 2007).

It was also mentioned that construction sector was doing well was mainly due to the implementation of Ninth Malaysia Plan (9MP) whereby most of the financing was used to finance new projects and upgrade existing infrastructure facilities such as roads, schools, hospitals and government quarters. Therefore, construction sector from year 2007 to year 2009 is recorded as strong growth compare to other sectors which is shown in Figure 1.5 below. (Growth in construction sector versus Growth in Federal Government Development Expenditure and Private Investment).

Figure 1.3: Loans Growth of Malaysia from year 2006 to year 2011



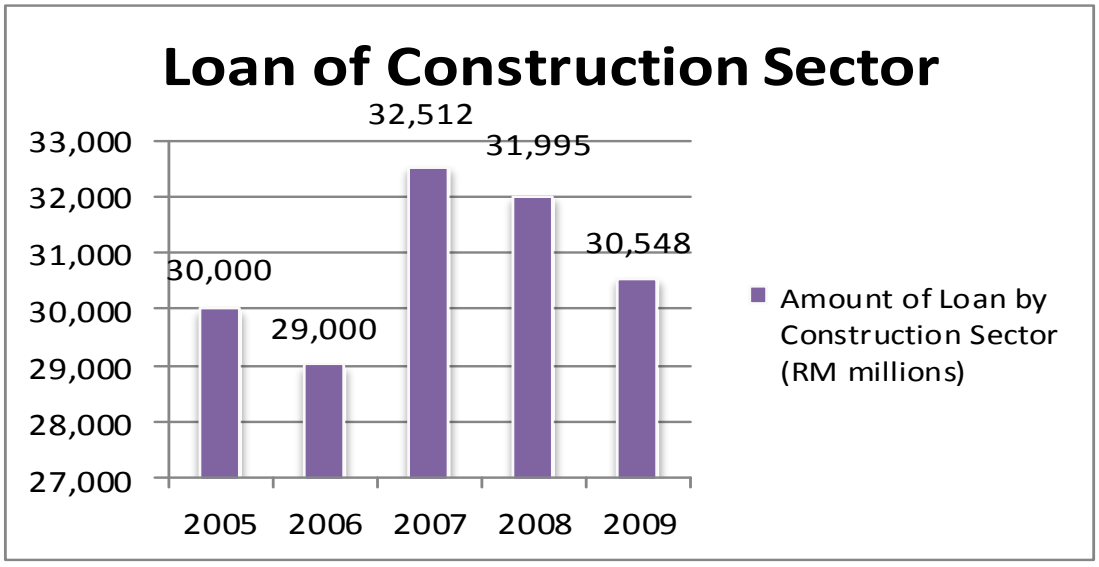
Source: The Star, February 7, 2012

Table 1.1: Business loan of Construction Sectors in Malaysia within the year 2005 – 2009

Year	Amount of Loan by Construction Sector (RM millions)	Total Loan (RM millions)	Percentage of Loan based on Total Loan
2005	30,000	529,000	6%
2006	29,000	362,500	8%
2007	32,512	406,400	8%
2008	31,995	639,900	5%
2009	30,548	644,980	4.7%

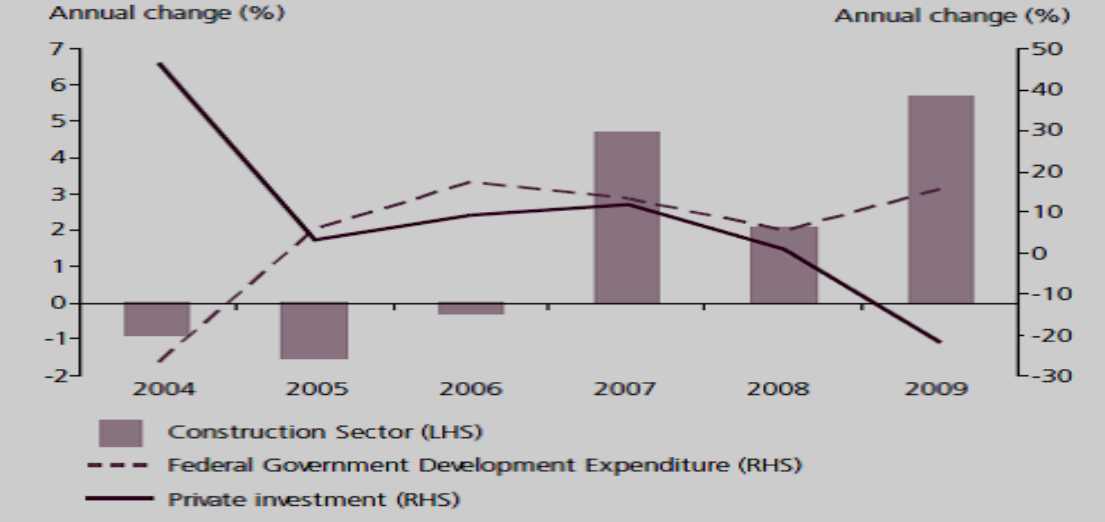
Source: Bank Negara Malaysia year 2005–2009 (www.bnm.gov.my)

Figure 1.4: Loan of Construction Sector



Source: Bank Negara Malaysia year 2005-2009 (www.bnm.gov.my)

Figure 1.5: Growth in Construction Sector versus Growth in Federal Government Development Expenditure and Private Investment



Source: Bank Negara Malaysia year 2009 (www.bnm.gov.my)

1.2 Problem Statement

It is clearly stated that capital structure refers to the firm's financial framework which consists of the usage of debt and equity to finance the firm. The best mixture of capital structure (optimal combination of equity and debt) could lead to best firms' performance. Thus, it is essential on how a firm finances its overall operations and growth by using different sources of funds as the ability of companies to carry out their stakeholders' needs is tightly related to capital structure (Ong and Teh, 2011).

In reality, capital structure of a firm is difficult to determine (Ong and Teh, 2011). Firms' financial managers are difficult to exactly determine the optimal capital structure because there are a lot of factors that could directly and indirectly affect the capital structure decision. Therefore, firms must be very clear with various factors that could affect the capital structure decision. The mentioned factors include form of equity, form of debt (short-term, long-term, or both short-term and long-term debt),

and determinants of capital structure such as firm size, firm age, liquidity, profitability, growth opportunity, tangibility, non-debt tax shield and collateral.

Referring to previous researchers, there are a lot of indicators and theories used to determine the capital structure; however there is no precise tool or formula to determine the optimal capital structure. The capital structure indicators could be in terms of equity, debt or both debt and equity and they are purely based on the objective of study (Rajan and Zingales, 1995). Some firms in US apply long-term debt ratio whereas in developing countries such as UK and Malaysia, both short-term and long-term debt ratio are applied (Bevan and Danbolt, 2002). As regard to the theories used, there is also no clear way to determine which theories should be applied. According to previous researchers, the pecking theory is lied on the fundamental concept of financing hierarchy after considering the transaction and information asymmetry costs(Myers, 1984). The main focus of pecking theory is it concentrates on the internal funds, followed by debts and external equities (Myers, 1984). On the contrary, trade-off theory assumes the existence of optimal capital structure which is determined by substituting debt for equity until the value of firm is maximized. Even there are lots of researchers include the original founder of capital structure theories, other factors such as determinants of capital structure should not be ignored (Modigliani and Miller, 1958).

As for determinants of capital structure lots of studies were carried out based on different countries and industries. Some researchers such as Abdullah (2011), Patel (2009), Teker et al. (2009), carried out their research by using tangibility, firm size, profitability, non-debt tax shield and growth opportunity. Some researchers include more determinants such as tax, industry classification, liquidity and volatility in their research (Bauer, 2004). This shows that the effects of determinants on capital structure have been researched in various industries and countries by different researchers. Yet, limited research was found on the determinants of capital structure on various industries. The majority of the Malaysia studies focus on overall firms value that are influenced by both financing of debt and equity. For example, Pandey

(2004) conduct the research on the relationship between capital structure and market structure using data from 2008 Malaysian companies for the period from 1994 to 2004. Pratomo and Ismail (2006) examine the relationship between bank performance and capital structure based on 15 Malaysia Islamic Banks' Annual Report from 1997 to 2004. This shows that there is limited research towards determinants of capital structure in Malaysia, thus it is important to conduct this research.

Therefore, as regard to the above issues and based on the data availability we primarily study the determinants of capital structure in construction and materials sector within the year 2005 to 2009 so that we could work out the lacking of studies between capital structures behaviors in Malaysia. The indicators of capital structure we used in this study are short-term debt, long-term debt and total debt. The determinants that we include in this study are firm size, tangibility, non-debt tax shield, growth opportunity and liquidity.

1.3 Research Objectives

Our primary objective of this study is to examine the relationship between a number of potential capital structure determinants and the debt level (short-term debt, long-term debt and total debt) of the construction and materials sector in Malaysia. Furthermore, this study also aims to investigate which financing practice is adopted by the sector.

1.4 Research Questions

We probe the following questions in this study:

1. What is the relationship between capital structure determinants and short-term debt in construction and materials sector?

2. What is the relationship between capital structure determinants and long-term debt in construction and materials sector?

3. What is the relationship between capital structure determinants and total debt in construction and materials sector?

4. What is the preference of financing practices adopted by construction and materials sector? Short-term debt or long-term debt financing.

1.5 Hypothesis of the Study

Based on the developments of the literature, several hypotheses are developed. The first hypothesis is about the relationship between six capital structure determinants and short-term debt of constructions and materials sector in Malaysia. The second hypothesis is about the relationship between six capital determinants and long-term debt. The third hypothesis is about the relationship between six determinants and total debt. The last hypothesis is the differences of preference of financing practices adopted by constructions and materials sector. Based on the four hypothesis development, further tested is carried out to find out whether there is a positive or negative relationship between firm size, tangibility, profitability, non-debt tax shield, growth opportunity and liquidity with debt as capital structure.

1.6 Significance of the Study

This research topic is chosen with the purpose to identify the determinants that affect the capital structure decision in Malaysia of construction and materials sector. It is important to carry out this research since decision making on corporate financing is still a tough decision for most of the firms due to the uncertainty world no matter in Malaysia or other countries and once the decision is incorrect, it could highly affect

the firms' performance. Furthermore, there is no specific tool and guidelines on assisting the firm management to obtain the best capital mixture of debt and equity (Suhaila et al., 2008). Thus, we hope that the findings would primarily assist the management of existing firms and new ventures in making capital structure decision.

The contribution of this study also could assist investors for both domestic and foreign to distinguish the current capital structure trend of construction and materials sector in Malaysia. Investors need research and information before making decision on their investment. They can study the result obtained from the research and have a better picture on the current capital mixture trend in Malaysia and distinguish which variables will highly affect the capital mixture and also relate it to their investment. For example, firm size will positively affect the debt level of a firm, thus when small firms want to finance in huge debt the firm could be in high risk.

Lastly, contribution of this study also could be as a reference or guideline for the tertiary educational level undergraduate student when they are in the same research area. It could also help them direct their research in deeper way or carry out research from the limitations.

1.7 Chapter Layout

Chapter 1: Research Overview

This chapter is the introductory chapter which provides overview of the study context in which formulates the research background, research problems, research objectives, hypotheses of the study, significance of the study and conclusion of the chapter.

Chapter 2: Literature Review

This chapter presents the theoretical model, in which the theories of capital structure is analyzed and review based on previous researchers. This chapter also provides in-depth discussion of literature review on both international and domestic view of capital structure. This is followed by the theoretical framework, hypothesis development and lastly the conclusion of chapter.

Chapter 3: Methodology

This chapter provides in-depth discussion on how the research is carried out in terms of research design, data collection methods, sampling design, data processing, and method of data analysis and conclusion of chapter. With support by previous research, three dependent variables and six independent variables are identified. Each of these variables is discussed in detail in this chapter.

Chapter 4: Data Analysis

This chapter presents the discussion of statistical results and the analysis of the results which are relevant based on the research questions and hypotheses. Both the results of descriptive and inferential analysis are discussed thoroughly in this chapter. The chapter is concluded by the conclusion of the chapter.

Chapter 5: Discussion, Conclusion and Implications

This chapter focuses on the broad summary of entire research project in line with research objective and hypotheses. It consists of the summary of statistical analyses, discussion of major findings, implications of study, limitations of the study, recommendations for future research and conclusion of the chapter.

1.8 Conclusion

In brief, chapter one defines the capital structure and determinants of capital structure in a broad view and slowly narrow down to the construction and materials sector in Malaysia. Capital structure could be different in various countries, sectors as well as firms. It is important for firms to obtain optimal capital structure so that they can maximize firm value in accordance to the shareholder wealth. However in order to obtain optimal capital structure, management have to study factors that could directly and indirectly affect the decision such as form of equity, form of debt (short-term, long-term, or both short-term and long-term debt), and determinants of capital structure such as firm size, firm age, liquidity, profitability, growth opportunity, tangibility, non-debt tax shield and collateral. Even though the factors mentioned above are the direction for firms to forecast their forms of financing, there are yet no clear guidelines or tools to precisely measure optimal capital structure due to the uncertainties of economies. Therefore, the following chapter is to discuss the empirical studies done by past researchers.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

This chapter presents the literature review in which the previous researchers on the similar topic are being analyzed, reviewed and consistent with the research objectives. It focuses on the theoretical framework and research methodology with the research approach, hypothesis development as well as the use of the types of statistical method.

2.1 Theoretical Model

2.1.1 Modigliani and Miller (MM) Theory

Modern capital structure theory was first created by Professor Franco Modigliani and Merton Miller (MM) in 1958 (Besley and Brigham, 2012).Modigliani and Miller (1958) produced two propositions based on the assumptions of a perfect capital market which are without existences of transaction costs, taxes, bankruptcy costs, information asymmetry and others. The first MM proposition stated that the choice between debt and equity to finance a given level of investment does not affect the value of a firm, implying that there is no optimal leverage ratio. The second MM proposition showed that firm's leverage has no effect on its weighted average cost of capital.

2.1.2 Static Trade-off Theory

The MM perfect market assumptions are impractical in real world. Modigliani and Miller (1963) later extended the basic theory by relaxing the assumptions and considering the tax deductibility of interest in their research (Besley and Brigham, 2012).

The static trade-off theory is the idea of the optimal target debt-equity ratio a company will use in financing through balancing the costs and benefits of issuing debt (Salami and Mohammed, 2011). In other words, the optimal target debt ratio can be achieved when the marginal value of the benefits associated with debt issues exactly compensate the increase in the present value of the costs related with issuing more debt (Myers, 2001).Modigliani and Miller (1963) found that the market value of firm increases continuously as more debt is used due to tax deductibility of interest on debt.

Furthermore, due to the distinctions in firm specific characteristics, target leverage ratios will be different from firm to firm. Besides institutional differences such as different financial systems, tax rate, bankruptcy law and others will also lead the target ratio to differ across countries (Niu, 2008). For instance, according to the trade-off theory, firms with high profitability level often have high level of income of tax shield (Marimuthu, 2009). The trade-off theory also predicts that safe firms with high level of tangibility assets should have high debt ratios (Kazemi and Ansari, 2012).

A brief discussion of the costs and benefits of debt that derive the optimal capital structure will be discussed at below.

2.1.2.1 Benefits of debt

Tax deductibility of debt

The main benefit of debt is tax deductibility of interest (Marimuthu, 2009). The corporate profit tax allows for the deduction of interest payments in computing taxable income (Modigliani and Miller, 1963). Consequently, a debt financing decrease a firm's expected tax liability and increases its after-tax cash flow. Thus, it made profitable firms employ higher level of debt in order to increase the value of their debt tax shield (Rasiah and Peong 2011).

Moreover, the effect of interest tax shield depends on the nature of the tax system implemented by each country. According to Ashton (1989) and Adedeji (1998), the tax system in United Kingdom discourages firms to use debt as much the classical tax system does in United States. The tax system of United States allows firms to sustain a loss for the year to carry back or carry forward such losses. Therefore, firms in United States are expected to rely more heavily on debt to finance their investments.

Moreover, the determination of the optimal level of debt would be affected by the existence of other non-debt tax shields such as depreciations, depletion, amortization and investment tax credits (Rasiah and Peong, 2011). DeAngelo and Masulis (1980) pointed out that firms with tax deductions for depreciation and investment tax credits can consider these deductions as a substitution for the tax shield. They concluded that the positive tax shield substitute suggests that the expected

marginal corporate tax advantage reduced as leverage is added to the capital structure. Thus, it implies a negative relationship between debt and non-debt tax shields as marginal tax savings from an additional unit of debt decreases with an increasing in non-debt tax shields.

Reduction of free cash flow agency costs

Another benefit of debt is that it alleviates conflict between shareholders and managers (Haris and Raviv, 1991). The conflict between shareholders and managers arise due to the separation between ownership and control as managers do not capture 100% gain from their profit enhancement activities (Jensen and Meckling, 1976). Thus, managers may have the incentive to maximize their wealth at the expense of shareholders (Rasiah and Peong, 2011) or misuse free cash flows on perks and bad investments (Ali, 2011). Debt financing keeps managers alert and cautious to generate sufficient cash flows to cover debt obligations thus avoid the managers to spend based on their own interest. (Ross et al., 2008).

Nevertheless, Jensen (1988) pointed that agency costs will significantly increase when managers have free cash under control. Free cash flow is an excess in discretionary cash flow that available to managers to finance all positive net present value investment projects. If there is any cash available after all wealth enhancing investments are made, managers may use the funds to increase their own wealth rather than distributing the cash to the shareholders (Mann and Sicherman, 1991). Jensen (1988) added that managers may have the incentives to hoard

and misuse free cash flow. On the other hand, conflicts between shareholders and managers can be resolved through explicit and implicit remuneration contracts (Zenovia and Anca, 2009). Study of Ang and Cox (1997) also proposed corporate control mechanisms like bonding mechanisms and monitoring mechanisms in order to reduce agency conflicts.

2.1.2.2 Costs of debt

Costs of financial distress

Myers (1984) argued that there are costs of issuing debt like cost of bankruptcy or financial embarrassment (Myers, 1984). According to Kraus and Litzenberger (1973), debt decreases the firm's corporate income tax liability and increases its after-tax operating income. However, a corporate bond is a legal obligation to pay a fixed amount to investors. If the firm cannot meet its debt obligation, it is forced into bankruptcy. It is aligned to the perspective of Nunes and Serrasqueiro (2007) and Kouki and Said (2012), they also agreed that debt provides tax shield but increase bankruptcy risk as level of debt rises.

In addition, Warner (1977) and Barclay and Smith (1995) stated that financial distress consists of both direct and indirect costs. The direct costs of financial distress are incurred in bankruptcy and reorganization which included the legal and administrative costs of liquidation, the costs of selling assets and the costs of shutting down operations. With respect to the indirect costs of financial distress, they arise from the reluctance to do business with a firm that maybe financially

distressed such as costs of losing or retaining customers and employees (Brealey and Myers, 2002). Furthermore, another indirect costs incurred is the distress cost of losing suppliers when suppliers refused to provide raw materials or services to firms who suffer bankruptcy as they afraid firms might not be able to pay them (Rasiah and Peong, 2011).

Agency costs of debt

Even though the application of debt can reduce the agency costs between managers and shareholders, yet as the amount of debt increase, it will bring out another cost of debt which is agency costs between shareholders and bondholders (Jensen and Meckling, 1976).

According to Rocca et al. (2008), overinvestment in risky projects or known as assets substitution produces a conflict of interest between shareholders and bondholders. When a firm has high debt relative to equity, managers of the firm may have the incentives to invest in risky projects. Any risk increases causing a reduction in debt value for bondholders is accompanied by an equivalent increase in anticipated income of the shareholders. Shareholders may even prefer the risky investment with a negative net present value compared to safer investment with total positive income. (Zenovia and Anca, 2009). According to Harris and Raviv (1991), the incentives for shareholders engaged in risky investment is due to debt contracts provides the fact that shareholders have limited liability that gives them greater value by invest in high risky projects and the large potential of capturing profits from these projects at the expense of larger potential losses that will be

bear by bond holders. By doing so, it increases share value and decrease debt value and thus provides a chance to transfer wealth from bondholders to shareholders (Rasiah and Peong, 2011).

Moreover, Fatma and Chichti (2011) stated that underinvestment is another problem that aggravates conflicts between shareholders and bondholders. According to Mayers and Smith (1987), underinvestment occurs when managers choose to forego a positive net present value investment, in the absence of bankruptcy risk. Myers (1977) shows that when there is risky debt, managers who act in shareholder interest tend to reject profitable investments that could provide positive net worth to the firm's value. It is due to if managers engage in positive net present value investments during financial distress, shareholders will receive less benefits than bondholders as they only have the rights in the claiming of the value of a firm after the debt is paid (Rasiah and Peong, 2011).

2.1.3 Pecking Order Theory

Pecking order theory was originated from the study of Myers (1984) and Myers and Majluf (1984). This theory predicts that there is a preference ranking on financing sources due to information asymmetry between managers and investors (Leary and Roberts, 2010). Based on Sen and Oruc (2008), a firm management has more information than investors caused investors cannot fully value the value of stock that issued by firm. The discrepancy of information will lead to under pricing of the firm's equity in the market, thus undervalue the wealth of existing shareholders. Therefore, manager's act on interest of shareholders will prefer internal financing without

any asymmetric information compared to external financing if they perceive that stocks of firms are undervalued (Fama and French, 2002). If firms require external financing to finance real investments with positive net present value, they will issue the safest security first which starts with debt before equity financing. As the firms seek more external financing, they will follow the pecking order of securities which is from safe to risky debt and finally to equity as a last resort (Myers, 1993). In this theory, it does not possess a target debt ratio but changes in debt ratio occur when there is imbalance internal cash flow, net of dividends, and real investment opportunities of firms (Shyam-Sunder and Myers, 1999).

The pecking order theory can also be explained by the existence of refinancing transaction costs (Donaldson, 1961). According to Bagley and Yaari (1996), internal equity is used first because it is free of transaction costs. When the internal funds are not sufficient, financing decision will be followed by incremental borrowing characterized by low transaction costs and then costly refinancing through the stock issuing. It is aligned with Fama and French (2004)'s point of view that debt is more preferable for firms that tend to avoid transaction costs due to stock issuing.

In addition, behavior of pecking order theory would also be affected by agency costs. This problem is arising from the increasing costs of external funding and consequently forcing firms toward the usage of internal funds in order to reduce the agency costs. These costs may force the firms to give up profitable projects, thus reduce their profitability and value. Therefore, firms with higher agency costs will have greater tendency to rely on internal funds rather than external (Rasiah and Peong, 2011).

2.1.4 Market Timing Theory

According to this theory, the behavior of firm's debt is affected by the market and economic conditions of share prices (Kouki and Said, 2012). Besides, Marsh (1982) said the choice of the financial instrument to be issued for a publicly traded company over a given period is influenced by market conditions and the history of its stock price. Baker and Wurgler (2002) stated that there are two versions of market timing. The first version assumes that managers and inventors are rational and adverse selection costs vary across firms or time. The second version involves irrational investors or managers. Managers issue equity when they believe the cost of equity is low and repurchase the equity when the cost equity is high. Inside the study of Baker and Wurgler (2002), they found that firms in United States are more likely to decrease their debt through issuing equity when their market values are high relative to book and past market values. In contrary, when market values are low relative to book and past market values, firms tend to increase their debt ratio.

2.1.5 Conclusion of Theoretical Model

Based on pecking order theory, agency costs are mitigated if the firm issues short-term debt rather than long-term debt (Barnea et al., 1980). Therefore, firms are encouraged to employ more short-term debt compared to long-term debt in external financing. It is aligned with data that we obtained which the total of short-term debts for all firms in construction industry is higher than total of long-term debts.

2.2 Empirical Review

2.2.1 Firm Size and Total Debt

Baharuddin et al. (2011) had done a study on debt and equity structure for the construction companies that listed in the Bursa Malaysia market for the period 2001 to 2007. They found that size is positively significant to total debt. Therefore, construction firm with a larger size will rely more on debt financing compared to equity financing. This is consistent with the result of Sahudin et al. (2011) who concluded that size has a significant and positive relationship with debt. They suggested that as the firm size increases, the needs for debt financing will increase. Besides, Antoniou et al. (2008) also discovered that firm size is positively significant to debt on their study on how firms in capital market oriented (United States and United Kingdom) and bank oriented (France, Germany and Japan) determine their capital structure.

Moreover, Rafiq et al. (2008) used data from Pakistan chemical sector and empirically proved that firm size is positively associated with debt. It is due to large firms in Pakistan tend to borrow more than small firms because small firms are fearful of larger debt level. Thus, the larger the firms, the higher the level of debt. This also gives support to the bankruptcy cost theory on debt that the fixed direct costs of bankruptcy constitutes a smaller portion of total value of the firms and thus larger firms do not hesitate to utilize more debt because of fearful of bankruptcy. The positive related impact of firm size with debt also supported by Pandey (2001) who examined the determinants of capital structure of Malaysian firms from year 1984 to 1999. The author suggested that this positive relationship confirmed with the hypothesis that larger firm tend to be more diversified and less probability to bankruptcy and the direct cost of issuing debt or equity is lower, and this result is tally with the trade-off theory. Wan Ismail (2005) and Mohamed Yunos (2002) also

found that firm size is positively significant with long- term debt in their studies.

However, Getzmann et al. (2010) conducted a study to examine the determinants of capital structures in Asian companies by using data of fourteen listed Asian stock exchanges for the period 1995 to 2009. They argued that firm size has a negatively impact on debt based on pecking order theory, because large firms are monitored more closely by analysts and therefore the information asymmetry is lowered by disclosure duties. It is aligned with the result obtained by Suhaila et al. (2008) which is firm size is negative relationship with debt ratio. They stated that larger firms are less depending on debt financing compared to smaller firms as they prefer to use equity financing as major source. On the other hand, Wan Mahmoodet al.(2011) argued that firm size do not have any significant impact on the capital structure decision and this is supported by the notion that firms with larger proportion of their value accounted by growth opportunities take less debt.

2.2.2 Tangibility and Total Debt

There are many evidences suggested that asset tangibility has a positive relationship with debt. Baharuddin et al. (2011) pointed that assets tangibility is positively significant to total debt in construction industry in Malaysia. When the companies have more assets tangibility, they tend to demand for more debt to finance the assets increase. This result is inconsistent with the evidence from Antoniou et al. (2008) and Gaud et al. (2003) who carried out a research on investigating the determinants of the capital structure for a panel of 106 Swiss companies that listed in the Swiss Stock Exchange for the period 1991 to 2000. Besides, Getzmann et al. (2010) and Teker et al. (2009) found that the relationship between tangibility of assets with debt is positive.

In addition, Jensen and Meckling (1976) pointed out that agency cost between the creditors and shareholders exists because firm may invest in riskier projects after borrowing and may transfer the wealth from creditors to shareholder. Companies having more fixed asset can borrow more by pledging their fixed asset as collateral and mitigating lenders' risk of bearing such agency cost of debt (Ross et al 2008). Therefore firm with low agency cost can increase the debt it means trade-off theory predicts positive relationship between tangibility of assets and debt. Teker et al. (2009) also predicted a positive impact between tangibility and debt based on agency model.

According to Myers and Majluf (1984), they stated that issuing debt secured by property can avoid the costs associated with issuing shares. This suggested that firms with more collateralised assets will be able to issue more debt at an attractive rate as debt may be more readily available. This results in a positive association between leverage and tangibility based on pecking order theory.

However, Pandey (2001) argued that tangibility has a significant negative relationship with book and market value short-term debt and confirmed with the maturity matching principle. These results are contradicted with the trade-off theory which stated tangibility and long-term debt should have a positive relationship since the fixed assets represent as collateral in debt issues. Moreover, Pandey (2001) also found that there is a negative relationship between tangibility and debt which indicated that firms with higher fixed assets would employ lower financial debt. This is consistent with the point of view of DeAngelo and Masulis (1980) who also suggested that tangibility is negative related with debt.

2.2.3 Profitability and Total Debt

Wan Mahmood et al. (2011) studied on the capital structure determinants of 20 property companies that listed in the Bursa Malaysia's property sector and found that property assets intensity and profitability are significant positive impact to capital structure decisions. Trade-off theory also predicted that profitable firms have higher level needs to shield income from the corporate tax thus should borrow more debt compared to less profitable firms (Niu, 2008). Yet, this result contradicted with the study of Pandey (2001) who discovered that profitability has a negative significant relationship with all types of debts.

Nevertheless, Mohamed Yunos (2002) had carried out a study to examine the determinants of capital structure of property companies on both short-term and long-term debt in year 2002. He found that the both short-term and long-term debt are inversely related to profitability. This negative relationship between profitability and debt is consistent with the study of Rafiq et al. (2008). Rafiq et al. (2008) stated that profitable firms in the Pakistan chemical sector utilize more equity and less debt. Wan Ismail (2005) also found that profitability is negative relationship with debt level. It is due to more profitable companies will retain the earnings for investment project in pecking order theory. Besides, Baharuddin et al. (2011) conducted a research in construction industry which showed that profit drops when firms employ more debt. Based on the findings of the research of Wan Ismail (2005), he concluded that profitability, non-debt tax shields and size are significant with debt especially before and after the financial crisis and they are important in determining the capital structure decisions. According to Titman and Wessels (1988), high profitable firms usually employ less debt than less profitable firms due to the reason of high profitable firms are often used their earnings to pay down the debt.

On top of that, Getzmann et al. (2010) found that the pecking order theory cannot be rejected due to its correct prediction of the signs of profitability and market expectations. According to pecking order theory, profitable firms finance internally and resulted lower debt level. Getzmann et al. (2010) also added that debt level of profitable firms is higher because of a lower bankruptcy probability according to trade-off theory. This is consistent with the point of view of Gaud et al. (2003) who also suggested that profitability is negatively related to debt level.

2.2.4 Non-debt Tax Shield and Total Debt

Getzmann et al. (2010) proposed that non-debt tax shield and debt are positively related in trade off theory. This result is consistent with findings of Wan Ismail (2005). According to Wan Ismail (2005), non-debt tax shield has a significant positively impact with the debt level. This indicated that the higher the level of debt, the more a company can get the tax shields. However, Mohamed Yunos (2002) suggested that tax rate is inversely related to short-term debt. In addition, DeAngelo and Masulis (1980) presented a model of optimal capital structure that included the impact of corporate taxes, personal taxes, and non-debt related corporate tax shields. They argued that tax deductions for depreciation and the investment tax credits are substitutes for the tax benefits of debt financing. Therefore, firms with larger non-debt tax shield relative to their expected cash flow used less debt in their capital structures. Moreover, Afza and Hussain (2011) found that the non-debt tax shield is insignificant negative related with debt which showed that the firms with high depreciation expenses prefer equity financing than debt, because depreciation provides tax shield to the firms.

The evidence from the Pakistan chemical sector by Rafiq et al. (2008) showed that non-debt tax shield is found to be positively related to debt. But according

to Rafiq et al. (2008), this positive relationship is not supported by theory which suggested that non-debt tax shield like depreciation will reduce the need for debt in order to prevent net income from going to a higher level of tax bracket, thus non-debt tax shield should be negatively related to debt. While Rafiq et al. (2008) explained that the most appropriate reason for this positive relationship can be given from the relevance of non-debt tax shield to capital structure in Pakistan economy. The corporate tax rate in Pakistan is not varying with the level of income. There are three types of rate which are the first one is applicable to public limited firms, second is to commercial organizations in government ownership and the third is to financial sector organizations. Therefore, the firms in a given group faced a constant rate of taxation, thus the depreciation do not work as a substitute to debt to prevent net income from going into I higher level of tax bracket.

2.2.5 Growth Opportunity and Total Debt

Growth opportunity is found that has a positively relationship with debt in construction industry. This is aligned with the perspective of Baharuddin et al. (2011) who claimed that constructions firms in Malaysia are depending heavily on the debt financing for the growth and expansion. According to pecking order theory, firms with higher growth opportunity are more likely to raise new funds than the firms that less growth possibilities (Degryse et al., 2009). This result is conformity consistent with Pandey (2001) who pointed that Malaysian firms seem to employ more on short-term debt to financing the growth. This finding supported both the trade-off and pecking order theory. On the other hand, Sahudin et al. (2011) who examined whether firms size, growth opportunity, and firm reputation affect the debt level of the construction sector in Malaysia for the period 2001 until 2008. From the pooled regression results, it showed that growth opportunity has a significant negative correlation with debt. This concluded that construction firms rely

more on its market value in the form of share price appreciation that is equity financing, over debt financing for their future expansion. Therefore, less debt is used as for firms in expansion.

Mohamed Yunos (2002) suggested that growth rate is positively related with long-term debt in property industry in Malaysia. This positive relationship is consistent with the evidence from Pakistan listed manufacturing corporate firms on Karachi Stock Exchange for 15 years by Awan et al. (2010). This positive relationship is highly significant for the firms with low and medium growth opportunity. The reason behind might be that the firms view the available growth opportunity as unsustainable and risky, so intend to pass the risk to the creditors. Moreover, unsustainable growth opportunity, less developed capital markets, a large number of low growth firms in Pakistan and their limited goodwill among investors and public may also be the reason of positive related with debt.

This result also same with Rafiq et al. (2008) who confirmed that growing firms in Pakistan chemical industry utilized more debt than equity to finance the new projects. One possible reason might that in order to grow in chemical industry, larger cash flow are required which is that a growing firms may not able to meet the internal financing sources, thus have to rely on debt. However, Gaud et al. (2003) found that growth is negatively relationship with debt level in Swiss firms, while this result is consistent with Antoniou et al. (2008) result on the both capital market oriented and bank oriented economies. According to trade-off theory, growth is inversely related to debt due to the reason of equity holders will earn less profit from a profitable investment if the interest payment is high, thus managers may neglect many valuable investment (Degryse et al., 2009). Goyal et al. (2002) finding is consistent with trade-off theory which suggested that growth opportunity of firms declines when firms increase debt financing, due to shareholders who control investment decisions will bear the whole cost of the projects, but the return is shared with debt

holders, this mean that they only receive a portion of the increase in value of the firms. Therefore, firms will prefer equity over debt to finance the future investment. Besides, high growth firms are being characterized by relatively more intangible assets compared to low growth firms, so it becomes difficult for the debt holders to identify any increase in the risk of high growth firms, therefore, growth is negatively related to debt.

On the other sides, Wan Ismail (2005) argued that growth opportunity and assets structure have not any significant impact on debt. This might be because Malaysian firms have more tangible assets than intangible assets. Wan Mahmood et al. (2011) also argued that growth rate do not suggest any significant impact on the capital structure decision and this is support by the notion that firms with larger proportion of their value accounted by growth opportunities take less debt. Moreover, Suhaila et al. (2008) also suggested that growth is found that insignificant negatively related with debt. These results are inconsistent with Baharuddin et al. (2011) and Mohamed Yunos (2002) results which suggested that growth have a positive relationship in Malaysian firms.

2.2.6 Liquidity and Total Debt

Sibilkov (2009) examined the alternatives theories on the effect of asset liquidity on capital structure that using data from a broad sample of United States publish firms. Sibilkov (2009) found that asset liquidity is positively correlation with debt. This positive effect relies on the factor that less liquid assets sell at higher costs, therefore increase the costs of liquidation, bankruptcy and debt. The positive relationship between liquidity and debt is supported by trade-off theory (Janbaz, 2010). Whereas lower asset liquidity will reduce the probability of costly default by lower down the level of debt. However, the model also predicts a non-positive impact that argues lower

asset liquidity more costly for managers to seize value from bondholder. Therefore, lower asset liquidity decrease the cost of debt and firms will employ more debt.

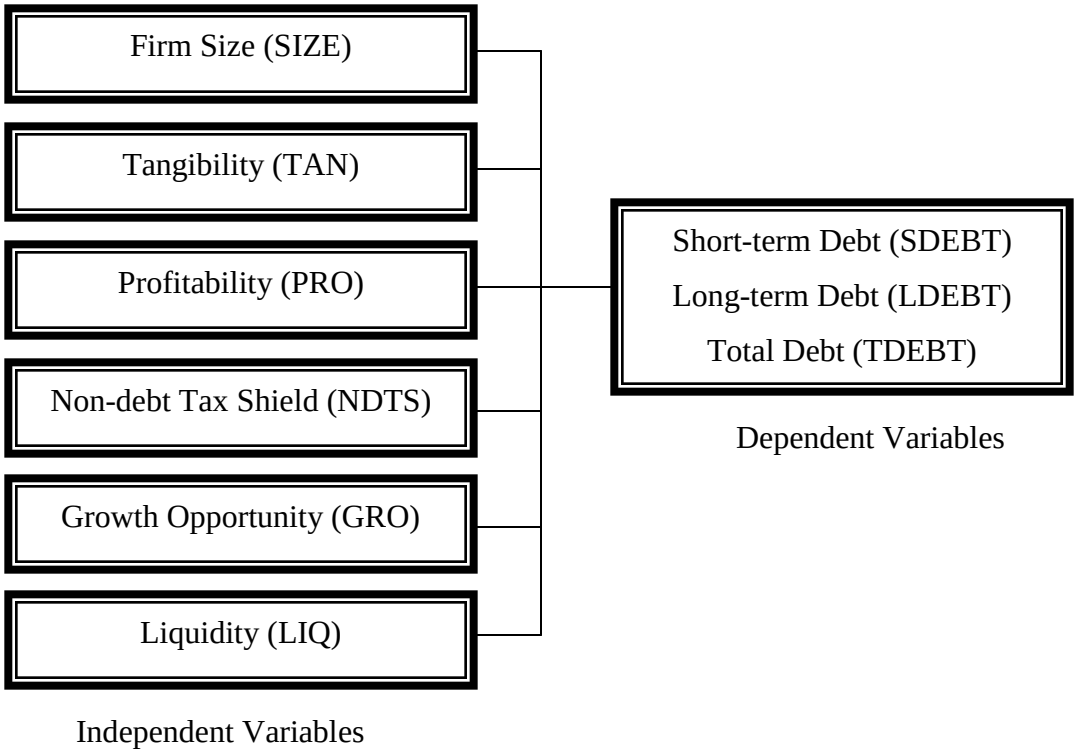
Further analysis also reveals that the relation between asset liquidity and secured debt is positive related. When managers have no discretion over the disposition of firm assets, liquidity will has a positive impact on debt. However, the relation between asset liquidity and unsecured debt is curvilinear. This finding is consistent with Myers and Rajan (1998), who argude that when managers have the discretion and transformation risk exists, the relationship between asset liquidity and debt is curvilinear. That means that asset liquidity has positive related to debt when liquidity is low, but has a negative impact when liquidity is high. This result is consistent with the view of Williamson (1988), and Shleifer and Vishny (1992), they pointed that asset liquidity can increase optimal debt level. The cost of illiquidity and inefficient liquidation are economically significant and substantial compared with the benefits of debt. Therefore, managers try to control these costs by adjusting the debt level and the probability of suffering liquidation costs. Myers and Rajan (1998) discovered that the impact of asset liquidity on debt depends on manager's decisions to disposition the assets. Asset liquidity has a positively impact on debt when managers cannot dispose the assets, while it will has a curvilinear effect on debt when managers managed to dispose the assets.

However, Suhaila et al. (2008) proposed that liquidity had shown that have negative relationship with debt. Firms that has higher liquidity tend to employ less debt, and able to generate high cash turnover to finance their operations and investment activities. Liquidity is predicted inversely related with debt in pecking order theory (Niu, 2008). Firms prefer internal financing compared to external financing. Thus, firms will generate liquid reserves from retained earnings. Therefore, firms will not need to raise external funds if the liquid assets are sufficient to finance their projects. Afza and Hussain (2011) and

Najjar and Petrov (2011) also suggested that liquidity is inversely related with debt which shows that more liquid firms prefer internal financing than external financing which consistent with pecking order theory. Moreover, Singhania and Seth (2010) also found the liquidity is inversely related to debt due to the reason high level of firms liquidity tend to employ less debt. It is because of higher liquidity firms maintain a higher amount of current assets which indicated they maintain higher level of cash flow and higher ability to generate high cash flow.

2.3 Theoretical Framework

Figure 2.1: The Determinants of Capital Structures



Source: Developed for the research

2.4 Hypothesis Development

1. **Capital Structure Determinants and Short-term debt**
2. **Capital Structure Determinants and Long-term debt**
3. **Capital Structure Determinants and Total Debt**

H_0 = There is no relationship between capital structure determinants and debt of constructions and materials sector in Malaysia

2.4.1 Firm Size and Debt

$H_{1a, 2a, 3a}$ = There is a positive relationship between firm size and short-term, long-term and total debt.

Pandey (2001), Mohamed Yunos (2002), Gaud et al. (2003), Wan Ismail (2005), Antoniou et al. (2008), Rafiq et al. (2008), Degryse et al. (2009), Getzmann et al. (2010), Sahudin et al. (2011), and Baharuddin et al. (2011) found that firm size have positive significant impact on debt.

Yet Suhaila et al. (2008) argued that firm size is negative relationship with debt. The larger the firms is less depending on debt financing compared to smaller firms, due to larger firms used more equity financing as major source. While Wan Mahmood et al. (2011) argued that the firm size does not suggest any significant impact on debt in the property sector.

Therefore, we expect that there is a positive relationship between firm size and debt level. The larger the firm size, the higher the debt level of the firms.

2.4.1.1 Tangibility and Debt

$H_{1b, 2b, 3b}$ = There is a positive relationship between tangibility and short-term, long-term and total debt

Gaud et al. (2003), Antoniou et al. (2008), Niu (2008), and Baharuddin et al. (2011), they found evidence that tangibility is positive impact with the debt level. Moreover, Teker et al. (2009) and Getzmann et al. (2010) also suggested that tangibility is positive relationship with debt level in the trade-off theory.

However, DeAngelo and Masulis (1980) and Pandey (2001) concluded that tangibility has a negative relationship with debt and stated that firms which with higher fixed assets would employ lower financial debt in the traditional view.

Therefore, we expect a positive relationship between tangibility with the debt level of the firms. The higher level of assets tangibility, the more debt needed to finance the assets.

2.4.2 Profitability and Debt

$H_{1c, 2c, 3c}$ = There is a negative relationship between profitability and short-term, long-term and total debt.

Niu (2008) and Wan Mahmood et al. (2011) suggested that profitability is positive relationship with debt.

Yet Titman and Wessels (1988), Pandey (2001), Mohamed Yunos (2002), Gaud et al. (2003), Wan Ismail (2005), Rafiq et al. (2008), Getzmann et al.

(2010) and Baharuddin et al. (2011) suggested that profitability has negative impact to the debt which can be explained by pecking theory where profitable firms will finance internally.

Therefore, we expect a negative relationship between profitability and debt. The higher level of profit of a firm, the lesser the firm to rely on debt.

2.4.2 Non-debt Tax Shield and Debt

$H_{1d, 2d, 3d}$ = There is a negative relationship between non-debt tax shield and short-term, long-term and total debt.

Wan Ismail (2005) and Getzmann et al. (2010) found that the non-debt tax shield is positive relationship with debt. This shown that higher debt level will lead to higher non-debt tax shield.

However, DeAngelo and Masulis (1980), Mohamed Yunos (2002) and Afza and Hussain (2011) argued that non-debt tax shield is negatively related with debt. They argued that tax deductions for depreciation and the investment tax credits are substitutes for the tax benefits of debt financing. Therefore, firms with larger non-debt tax shield relative to their expected cash flow include less debt in their capital structures.

Therefore, we expect a negative relationship between non-debt tax shield and debt level of firms.

2.4.3 Growth Opportunity and Debt

$H_{1e, 2e, 3e}$ = There is a positive relationship between growth opportunity and short-term, long-term and total debt.

Pandey (2001), Mohamed Yunos (2002), Rafiq et al. (2008), Awan et al. (2010) and Baharuddin et al. (2011) found that growth opportunity is positive relationship with long-term debt level.

Whereas Goyal et al. (2002), Gaud et al. (2003), Antoniou et al. (2008) and Sahudin et al. (2011) suggested that growth opportunity of the firms have a negative relationship with debt. Nevertheless, Wan Ismail (2005) and Wan Mahmood et al. (2011) argued that growth opportunity does not give any significant impact to the debt level.

Therefore, we expect a positive relationship between growth opportunities with debt level. The more opportunity a firm to grow, the more debt needed to finance the activities.

2.4.4 Liquidity and Debt

$H_{1f, 2f, 3f}$ = There is a negative relationship between liquidity and short-term, long-term and total debt.

Sibilkov (2009) suggested that liquidity has a positive impact on debt due to the factor of that less liquid assets sell at higher costs, therefore increase the costs of liquidation, bankruptcy and debt.

Whereas Suhaila et al. (2008), Singhania and Seth (2010), Afza and Hussain (2011) and Najjar and Petrov (2011) found that liquidity have negative

relationship with debt. Firms with a higher liquidity tend to employ less debt and they are able to generate high cash turnover to finance their operations and investment activities.

Therefore, we expect a negative relationship between liquidity and debt level. The more liquidity of the firms the less debt used to financing.

4. Differences of Preference of Financing Practices Adopted by Constructions and Materials Sector

H_0 = There is no different between preference of financing practices adopted by construction and materials sector.

H_3 = There is a different between preference of financing practices adopted by construction and materials sector.

2.5 Conclusion

Overall, this chapter has covered the relevant theoretical model and other related literature review on the debt and the six determinants of capital structure (firm size, tangibility, profitability, non-debt tax shield, growth and liquidity). At the same time, the proposed theoretical framework was formed by the relationship of dependent variables and independent variables. In particular, this study is to find out the relationship of the six determinants of capital structure and debt. The related hypotheses were stated and will be tested in Chapter 3 and Chapter 4 respectively.

CHAPTER 3: METHODOLOGY

3.0 Introduction

Research methodology is a vital part to ensure our research is conducted in a proper manner. According to Zikmund (2003), research methodology is defined as a discussion of body content that explains the research designs, sampling procedures, operational definitions of constructs, measurement scales, and methods of data analysis. In this chapter, we will further discuss on the research design, data collection method, sampling design, data processing and lastly formation of model equation of our research.

3.1 Research Design

Research design is a master plan that specifies the methods and procedures for collecting and analyzing the needed information. Besides, it is also a framework for the research plan of action. Basically, determination of research methods and procedures depends on the objectives of the study, the available data sources and the urgency of the decision and the cost of obtaining the data.

In this research, we used quantitative approach which analyzes results in mathematical way. Quantitative approach provides precise measurement and more convincing interpretation associated with the result derived from the companies' financial ratio. Moreover, the process of conducting quantitative research is relatively easy if compared to qualitative research and it can provide an exact approach to measurement.

The purpose of our research is to examine the determinants of capital structure in construction and materials sector in Malaysia. As such, the unit of analysis is the firms in construction and materials sector of Malaysia and Bursa Malaysia is our area of research. Firms in our sample were selected based on the list of firms in construction and materials sector from a data storage known as "DATA STREAM". Our research period is 5 years which is from year 2005 to 2009. In addition, we extracted data such as net sales or revenue, property plant and equipment, total asset, operating income, total depreciation, current asset, current liabilities, long-term debt, short-term debt and total Debt from company annual financial statement which consists of balance sheet, profit and loss and company account data in Data Stream accordingly.

Originally, the total firms in construction and materials sector obtained from Data Stream are 106. However, we only included 92 firms in our research after removed firms that do not have sufficient 5 years financial data.

3.2 Data Collection Method

We adopted secondary data collection method instead of primary data collection method in this research. According to Zikmund (2003), secondary data are those historical data which is previously collected and gathered to conduct some projects. It is easier, faster and inexpensive compared to primary data. By using secondary data, the researcher can provide a good starting point in defining the problem and stating the research objective. Besides, secondary data serves as a guideline for researchers to identify variables easily. The secondary data can be obtained through existing quantitative data, journals, articles, periodicals, books and others. We extracted the quantitative data from data storage software named as "DATASTREAM". While the journals, articles and periodicals are obtained from internet sources such as university's external database like JSTOR, ProQuest and others. We also gathered some related information from books in the university library.

3.3 Sampling Design

Sampling refers to any procedures of research engaged in to draw conclusion based on measurements of a portion of the population or sample (Zikmund et al., 2010). Sampling is also defined as a process where a sample is selected from a population. It involves a set of process including define the target population, determine the sampling location, decide the sampling elements, select the sampling technique, determine the sample size and execution of the entire sampling process.

Target population is the whole group of individuals to which we are interested in applying our conclusions (Kazerooni, 2001). In our research, the target population is all construction and materials firms that are listed in Bursa Malaysia. We obtained data like net sales or revenue, property plant and equipment, total assets, operating income, total depreciation, current assets, current liabilities, long-Term debt, short-Term debt and total debt from Data Stream in order to examine the determinants of capital structure for firms in construction and materials sector for the period 2005 to 2009. Initially, the population of this study consists of 106 firms from construction and materials sector. However, some of the firms that lack of 5 years financial data are disqualified. Therefore, we only included the remaining 92 firms in our research.

3.4 Data Processing

3.4.1 Dependent variables

Capital structure has been defined in different leverage measurements in previous studies. Suhaila et al., 2008 stated that firms in United States commonly use long term debt ratio as the measurement of capital structure. However in developing countries such as Malaysia, firms apply both measurements of short-term and long-term debt in determining capital

structure (Suhaila et al., 2008). Besides, Bevan and Danbolt (2002) pointed that firms in United Kingdom also apply both short-term debt and long-term debt measurements. In fact various capital structure theories have not specified which leverage measurement should be used, but it depends on the objective of the study (Ragan and Zingales, 1995). We use three measurements as indicators for the capital structure which are short-term debt, long-term debt and total debt ratio in order to get accurate and precise results. The short-term debt ratio is short-term debt divided by total assets (Abdullah, 2011; Doan & Nguyen 2011). The long-term debt ratio is long-term debt divided by total assets(Abdullah, 2011; Doan & Nguyen, 2011). The total debt ratio is total debt divided by total assets (Abdullah, 2011; Doan & Nguyen 2011; Suhaila et al., 2008).

$$\text{Short Term Debt Ratio (SDEBT)} = \frac{\text{Short Term Debt}}{\text{Total Assets}}$$

$$\text{Long Term Debt Ratio (LDEBT)} = \frac{\text{Long Term Debt}}{\text{Total Assets}}$$

$$\text{Total Debt Ratio (TDEBT)} = \frac{\text{Total Debt}}{\text{Total Assets}}$$

3.4.2 Independent variables

*Firm Size (SIZE):*Titman and Wessels (1988) and Rajan and Zingales (1995), Friend and Lang (1988) and Crutchley and Robert (1989) confirmed that there is a positive relationship between the firm size and the leverage. Titman and Wessels (1988) argued that the larger companies are more diversified and have lower variance of their earnings. Thus it makes them able to tolerate high debt ratios. Besides, Feri and Jones (1979) suggested that firm size has a

significant impact on leverage even though the sectorial decisions have been observed to vary among industries. The measurement of size used in this paper is the natural logarithm of net sales similar to the approach of Drobetz and Fix (2003).

$$\text{Firm Size (SIZE)} = \log(\text{Revenue})$$

Tangibility (TAN): Tangible assets are considered as collateral for the debt at the event of bankruptcy, they have higher value than the intangible assets (Jensen and Meckling, 1976; Myers, 1977; Abor, 2008). By pledging the firm's tangibles assets as collateral, the cost associated with adverse selection and moral hazard are reduced. The tangibility is derived as the ratio of fixed assets to total assets based on Teker et al. (2009) and Harris and Raviv (1995).

$$\text{Tangibility (TAN)} = \frac{\text{Fixed Assets}}{\text{Total Assets}}$$

Where:

Fixed Assets = Property Plant and Equipment

Profitability (PRO): The previous literatures provided conflicting evidences on the relationship between the company's profitability and the firm's capital structure. According to Myers and Majluf (1984) and Fama and French (2002), firms have a pecking order in the choice of their financing activities. The relationship between the leverage and the profitably is negative since internal funds are more preferable than debt. However, Peterson and Raghuram (1994) argued that more profitable firms have higher ability in tolerating high level of debt since they are in a good position to meet their financial obligations easily. Besides, Song (2005) suggested that profitability plays an important role in

leverage decisions and they use measurement of the ratio of operating income to total assets in order to test the effect of profitability on leverage.

$$\text{Profitability (PRO)} = \frac{\text{Operating Income}}{\text{Total Assets}}$$

Non-debt Tax Shield (NDTS): According to Teker et al. (2009), although interest is tax deductible due to default risk, firms may tend to use other tax shields such as depreciation on tangibles and intangibles. Moreover DeAngelo and Masulis, (1980) stated that tax deduction for depreciation and investment tax credits are substitutes for the tax benefits of debt financing. As a result, firms with large non-debt tax shield include less debt in their capital structure. In this study we use the ratio of total depreciation to total assets as the measurement of non-debt tax shield opportunities (Teker et al., 2009; Bauer, 2004).

$$\text{Nondebt Tax Shield (NDTS)} = \frac{\text{Total Depreciation}}{\text{Total Assets}}$$

Growth Opportunity (GRO): Another important variable is growth opportunity. In growing firm, agency costs related to the debt holder and shareholder conflict is expected to increase, as they have more choices on future investments. Song (2005) found that there is a positive relationship between growth opportunity and debt which is inconsistent with Titman and Wessels (1988) and Rajan and Zingales (1995) There is three measurements of growth opportunity in the study of Titman and Wessels (1988) which are capital expenditures over total assets, growth of total assets measured by the percentage change in total assets and research and development over sales.

Due to constraint of data, we choose percentage change in total assets (GTA) as the measurement of growth opportunity.

$$\text{Growth Opportunity (GRO)} = \frac{\text{Total Assets } t - \text{Total Assets } t-1}{\text{Total Assets } t-1}$$

Liquidity (LIQ): Liquid assets act as a cushion that allows the firm to survive in low earning period when the firm is unable to access capital market. Anderson (2002) found an evidence of a positive relation between leverage and liquid asset holding. Yet, Morellec (2001) and Myers and Rajan (1998) argued that the lower asset liquidity more costly to managers to seize value for bondholder, thus the firm will use more debt. In this research we use current asset divided by current liabilities as the measurement of liquidity (Ibrahim &Masron, 2011).

$$\text{Liquidity (LIQ)} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

3.4.3 Model Equation

Equation 1:

$$SDEBT = \beta 0 + \beta 1\ SIZE + \beta 2\ TAN + \beta 3\ PRO + \beta 4\ NDTS + \beta 5\ GRO + \beta 6\ LIQ + \varepsilon$$

Equation 2:

$$LDEBT = \beta 0 + \beta 1\ SIZE + \beta 2\ TAN + \beta 3\ PRO + \beta 4\ NDTS + \beta 5\ GRO + \beta 6\ LIQ + \varepsilon$$

Equation 3:

$$TDEBT = \beta 0 + \beta 1\ SIZE + \beta 2\ TAN + \beta 3\ PRO + \beta 4\ NDTS + \beta 5\ GRO + \beta 6\ LIQ + \varepsilon$$

Where:

SDEBT = Short-term debt

LDEBT = Long-term debt

TDEBT = Total Debt

SIZE = Firm Size

TAN = Tangibility

PRO = Profitability

NDTS = Non-debt Tax Shield

GRO = Growth Opportunity

LIQ = Liquidity

3.5 Data Analysis

3.5.1 Descriptive Analysis

In this research, we will use descriptive statistics to describe and compare variables numerically (Saunders et al., 2009). Descriptive analysis is recommended to use in this research because it is much easier to work with, interpret, and discuss than raw material. Besides, it includes useful techniques for summarizing and presenting data in visual form in better understanding manner. Moreover, it is important for the development of the statistical inference. The descriptive measurements included in this research are mean, median, maximum, minimum and standard deviation.

3.5.2 Inferential Analysis

Correlation analysis will be used to measure the strength of linear relationship between two variables (Saunders et al., 2009). When there is +1 coefficient, it represents a perfect positive correlation which indicates the two variables are precisely related as one variables value increase, another variables increase as well. When there is -1 coefficient, it represents a perfect negative correlation which means the two variables are precisely related as one variables value decrease, another variable will also decrease.

Moreover, we also conduct regression analysis by using the method of Ordinary Least Square (OLS). Three levels of significance were considered in this research: 1%, 5%, and 10%. Regression analysis can help us to have a better understanding on the relationship between dependent variables and one or more independent variables. In a more precise way, regression analysis helps one to understand how the typical value of the dependent variables vary when any one of the independent variables changes, while the other independent variables held fixed. The technique involves the process of developing the mathematical equation that describes the relationship between dependent variables (Y) and one or more independent variables (X_1 to X_k).

The data set for this research contained balanced panel data which is also called as longitudinal data. Panel data are repeated measures of one or more variables on one or more persons (Brüderl, 2005). It is a single dimension of cross-sectional data on N units (Individual, Firms, Countries, etc.) and time-series data on T (Time periods). We found that there are several authors study the capital structure on panel data analysis such as Teker et al. (2009), Vries (2010) and Sayılgan et al. (2006), thus it can be easier for us to refer as a guideline in our research.

We choose panel data because it can include variables at different level of analysis. Besides, it is more informative in the sense of more variability, less collinearity, more degrees of freedom, thus estimation are more precise and efficient even though there is a huge data set. It also allows us to control for unobserved heterogeneity (Brüderl, 2005). The data set for this study are six independent variables to be observed over 5 years for 92 firms in construction and materials sector.

Table 3.1: Sample Panel Data

Company	Years	Y	X1	X2	X3
1	2008	6.0	6.0	2.0	3.0
1	2009	4.0	3.0	3.0	9.0
2	2008	5.0	4.0	6.0	8.0
2	2009	3.0	5.0	8.0	7.0

Source: Developed for the research

3.6 Conclusion

Lastly, chapter three concludes that the research is based on final samples of 92 companies in construction and materials sector. There are three research models which is derived from three dependent variables and six independent variables. There are three measurements for dependent variables (short-term debt, long-term debt and total debt) and six measurements for six independent variables (firm size, tangibility, profitability, non-debt tax shield, growth opportunity and liquidity). The numerical data set are arranged in balanced panel form and regression analysis (OLS) is being carried out to examine the interrelationship between the variables.

Table 3.2: The Measurement of Variables

Dependent Variables	**Measurement of Variables**
Short-term debt Ratio (SDEBT)	$\frac{\text{Short Term Debt}}{\text{Total Assets}}$
Long-term debt Ratio (LDEBT)	$\frac{\text{Long Term Debt}}{\text{Total Assets}}$
Total Debt Ratio (TDEBT)	$\frac{\text{Total Debt}}{\text{Total Assets}}$
Independent Variables	**Measurement of Variables**
Firm Size (SIZE)	$\log(\text{Revenue})$
Tangibility (TAN)	$\frac{\text{Fixed Assets}}{\text{Total Assets}}$
Profitability (PRO)	$\frac{\text{Operating Income}}{\text{Total Assets}}$
Non-debt Tax Shield (NDTS)	$\frac{\text{Total Depreciation}}{\text{Total Assets}}$
Growth Opportunity (GRO)	$\frac{\text{Total Assets}_{t} - \text{Total Assets}_{t-1}}{\text{Total Assets}_{t-1}}$
Liquidity (LIQ)	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$

Source: Developed for the research

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

This chapter comprises several analysis including descriptive analysis, inferential analysis and panel data regression analysis. The results are based on the 92 firms from construction and materials sector in Malaysia. Eview is the software we used to run all the analysis testing mentioned above. Descriptive analysis is to present the mean, median, maximum and minimum value as well as the standard deviation of all the variables in either tables or graphs form. Besides that, inferential analysis is used to provide an overall conclusion on the characteristic of the analyzed variables as well as to examine the relationships between each of them. Panel data regression analysis is used to test the significance of the independent variables.

4.1 Descriptive Analysis

Table 4.1: Descriptive Statistic for Construction and Materials Sector

Variables	Mean	Median	Maximum	Minimum	Standard Deviation
SDEBT	0.145157	0.115489	1.812475	0.000000	0.156461
LDEBT	0.095119	0.045358	0.981193	0.000000	0.132494
TDEBT	0.240276	0.230888	1.830516	0.000000	0.199355
SIZE	5.224118	5.207883	6.790207	3.810971	0.534461
TAN	0.326354	0.296044	0.873267	0.008795	0.196633
PRO	0.025132	0.028546	0.229855	-0.343013	0.073477
NDTS	0.023991	0.019801	0.126149	-0.000414	0.019161
GRO	0.147522	0.024350	37.85520	-0.973000	1.790311
LIQ	2.346805	1.642328	16.38900	0.151405	2.194470

Source: Developed for the research

Table 4.1 provides the descriptive statistics for the dependent and independent variables used in the study over the period 2005 to 2009. Based on our research, the average short-term debt ratio for 92 companies from the construction and materials sector is 14.15 percent which is lower than the range of 45 percent - 50 percent, that was reported by Hall et al. (2004) using the financial data based on four thousands SMEs from eight countries: Belgium, Germany, Spain, Ireland, Italy, Netherlands, Portugal, and UK. According to Örtqvist et al. (2006), they found that the mean for short-term debt ratio for the 20,688 new ventures registered in Sweden during the year 2000, was approximately 47 percent.

Based on the comparison between our result and the past researches, it shows that the firms from construction and materials sector in Malaysia rely on lesser short-term

debt financing. This might be due to the analyzed firms more likely to adopt less risky financing during financial crisis.

Furthermore, our research shows an average long-term debt to total assets is 9.51 percent compared to 13.55 percent, the value reported by Hall et al. (2004). However, our result is lower compared to the value of 36.3 percent for Multinational Companies and 36.7 percent for Domestic Companies reported by Akhtar (2005) which were based on all the 4287 firms listed on the Australian Stock Exchange for each year from 1992 to 2001. What is more, Örtqvist et al. (2006) discovered the average long-term debt ratio for the new ventures registered in Sweden is about 17 percent which indicates that the first year mean for the new ventures in Sweden have 47 percent of their capital drawn from short-term debt and 17 percent from long-term debt compared to the average of 14 percent of short-term debt and 9.5 percent of long-term debt acquired by the 92 companies from construction and materials sector in Malaysia.

A study done by Mazur (2007) on 238 non-financial companies traded on the Warsaw Stock Exchange in years 2000 – 2004, found that the mean value of total debt to total assets is 53 percent, compared to our result which shows that the analyzed companies use merely an average of 24 percent of debt financing, which the latter is considerably low. Skowronski (2002) reported that the average debt ratio was 33 percent for the years between 1991 and 1997 for the Poland companies. However, the ratio of total debt to assets in 2004 depicts an increased to 52 percent showing signs that the corporate attitudes towards debt are changing. This might be due to the better development of the bond market in Poland. We believe that the reason behind the low average total debt financing is because of the financial crisis that erupted during the analyzed period which had significantly lowered the demand for debt financing. On the other hand, Kezemi and Ansari (2012) found that the listed companies in Tehran Stock Exchange for the periods of 1999-2004 and 2005-2010, on average, employ high level of total debt. For the first 6-year period 1999 to 2004, the total debt ratio is about 70 percent whereas for the second period, the total debt ratio is about 66 percent which indicates a 4 percent decrease.

In conclusion, we found out that the mean values for the short-term debt and long-term debt ratios in our study are lower than other researches. There are several factors that might contribute to this. One of them is the bond market is not as developed as the countries in Australia, Europe countries and others. Next, it could be due to the high costs of long-term debt compared to the short-term debt.

Based on the study done by Akhtar and Oliver (2009), the average size for the Japanese Multinational and Domestic Corporations are 12.95 and 12.10 respectively which are higher than the value of average size of the analyzed companies, 5.22. The huge difference between our result and their result might be due to the different measurement used by them, which is the logarithm of the total market value of assets. The other study done by Crnigoj and Mramor (2009) which tested on non-financial firms from year 1999 to 2006 showed an increasing pattern of average size from 5.539 (1999) to 5.703 (2006).

Next, our study shows that the average tangibility for the selected companies is 32.64 percent. The average tangibility for Japanese Multinational and Domestics Corporations respectively are 30 percent and 35 percent which are both relatively close to our value (Akhtar and Oliver, 2009). Qiu and La (2010) found that the average tangibility for all firms in the Australian Stock Exchange All Ordinaries Index excluding banks, financial institutions and insurance firms which were then pooled into unlevered and the levered groups are 25.1 percent and 37.2 percent respectively.

Furthermore, the average profitability of the analyzed companies is 2.5 percent which is lower than 4.5 percent, the value for levered group but higher than -3.3 percent for unlevered group since levered firms are generally more profitable than unlevered firms (Qiu and La, 2010). Hall et al. (2004) also found that the profitability for most of the SME across European countries ranged between 4 percent and 6 percent. The slender difference between our result and the study by Hall et al. (2004) could be due

to the different measurement used which is the ratio of the operating income to sales turnover.

On top of that, the mean for non-debt tax shield (NDTS) in our research is 2.4 percent compared to 4 percent and 3 percent for Japanese Multinational and Domestic Corporations respectively (Akhtar and Oliver, 2009). They also explained that Multinational Corporations have significantly higher NDTS implying that they are in better positions to exploit tax regulations. In another research conducted by Akhtar (2005), indicated that the NDTS for the Australian Multinational Corporations and Domestic Corporations were 3.6 percent and 2.4 percent respectively. The other researchers' results are slightly higher might be due to the corporations in developed countries such as Australia and Japanese are better equipped with the knowledge in exploiting tax regulations.

Next, Crnigoj and Mramor (2009) found that the average growth for the Slovenian firms is ranged between 35 percent and 50 percent which are significantly higher than the value of 14.75 percent in our research. According to Akhtar and Oliver (2009), Multinational Corporations have higher growth opportunities than Domestic Corporations which means that they have better chances to exploit imperfections in markets than the latter.

Lastly, on average, the liquidity ratio for the chosen companies from construction and materials sector is 2.35 times which represents that the RM1 of liabilities will be covered by RM2.35 of assets. As the value is greater than 1.00, it means most of the companies in this sector have their liabilities fully covered.

4.2 Inferential Analyses

4.2.1 Correlation Analysis

Table 4.2: Correlation Analysis of Construction and Materials Sector

Variables	Dependent Variables			Independent Variables					
	SDEBT	LDEBT	TDEBT	SIZE	TAN	PRO	NDTS	GRO	LIQ
SDEBT	1.000000								
LDEBT	0.519589	1.000000							
TDEBT	0.983200	0.666819	1.000000						
SIZE	0.206310	0.464753	0.279231	1.000000					
TAN	-0.082637	-0.000480	-0.072179	-0.261959	1.000000				
PRO	-0.008111	0.046103	0.002775	0.475701	-0.189174	1.000000			
NDTS	-0.077644	-0.127846	-0.095033	-0.195594	0.502059	-0.131563	1.000000		
GRO	0.978182	0.457864	0.950983	0.174573	-0.089710	0.048425	-0.062562	1.000000	
LIQ	-0.061003	-0.110963	-0.076912	-0.127202	-0.106837	0.160116	0.135452	-0.034514	1.000000

Source: Developed for the research

Output of correlation analysis above shows that short-term debt has a positive relationship with the size as well as the growth of the firms, however, has an inverse relationship with tangibility, profitability, non-debt tax shield and liquidity of the firms. Whereas for long-term debt and total debt, there is a positive relationship with size, profitability and growth of the firms but has a negative relationship with tangibility, non-debt tax shield and liquidity of the firms, respectively.

Notably, short-term debt and total debt are both highly correlated with growth of the firms respectively, which are 0.978 and 0.951. From this, we can understand that debts especially short-term debt of the firms in construction and material sector mostly depends on the growth of the firms. When the growth of the firms increases, total debt and short-term debt will increase too. This might be due to several reasons, one of them could be due to the cost of issuing debt is lower than equity and the capital market in Malaysia. Next, bond market is still underdeveloped compared to the developed countries. On top of that, Crnigoj and Mramor (2009) also found that there is a positive relationship between growth and leverage based on the Slovenian firms from year 1999 to 2006.

The results above show that short-term debt has an inverse relationship with profitability, tangibility and liquidity respectively which is aligned with the pecking order theory that firms will first rely on the internal financing then only turn to increase their debt level when they are exhausted. Therefore, it is understood that when the firms have low profitability, tangibility and most importantly liquidity, the firms will issue debt to raise funds and vice versa (Mazur, 2007).

The size of the firms has a positive correlation with profitability and growth which are 0.476 and 0.175. In the study done by Kazemi and Ansari (2012),

the correlation between the size and growth of firms is 0.099. This implies that larger firms tend to grow faster and with higher profits.

Moreover, tangibility of the firms, measured by fixed assets divided by total assets has an inverse correlation between all debt levels, profitability, growth and liquidity, -0.083, -0.0005, -0.072, -0.189, - 0.090 and -0.107. The inverse relation between tangibility and debt levels proves that higher ratio will lower the asymmetric information problems and result in lower debt ratios (Mazur, 2007). What is more, Bevan and Danbolt (2002) hypothesize that tangibility is negatively correlated with short-term debt.

As expected, the profitability of the firms is positively related to growth and liquidity which are 0.048 and 0.16. Hence, when the profit of the firms increases, the growth and liquidity of the firms will increase as well. When firm's profit increases, generally most of the firms will use the profit generated to expand and grow their business as well as increase the liquidity of the firms too. However, growth and liquidity alone, they have an inverse relationship. This might be due to firms need to use cash and other liquid assets to finance the growth of the firms, thus, when the growth is high, liquidity will be low as well.

4.2.2 Regression Analysis

Table 4.3: Panel Data Regression Analysis

Independent Variables	Types of Debt	SIZE	TAN	PRO	NDTS	GRO	LIQ	C
Regression Coefficient	Short-Term	-0.011409	-0.034184	-0.339097	-0.400961	0.000343	-0.027484	0.298504
	Long-Term	0.019240	0.196143	-0.191040	-0.860958	-0.000758	-0.008900	-0.022948
	Total	0.007831	0.161958	-0.530140	-1.261899	-0.000415	-0.036384	0.275554
T- Statistic	Short-Term	-0.763241	-0.843082	-3.210755	-0.982176	0.091726	-8.506532	3.615969
	Long-Term	1.448020	5.442145	-2.034958	-2.372566	-0.228109	-3.098958	-0.312727
	Total	0.432145	3.294659	-4.140306	-2.549592	-0.091589	-9.288447	2.753213
Probability	Short-Term	0.4457	0.3996	0.0014 ***	0.3265	0.9270	0.0000 ***	0.0003***
	Long-Term	0.1483	0.0000 ***	0.0424 **	0.0181 **	0.8197	0.0021 ***	0.7546
	Total	0.6658	0.0011 ***	0.0000 ***	0.0111 **	0.9271	0.0000 ***	0.0061 ***
R- Squared	Short-Term	0.198970						
	Long-Term	0.117397						
	Total	0.274751						

Adjusted R-Squared	Short-Term	0.188361
	Long-Term	0.105707
	Total	0.265145
F- Statistic	Short-Term	18.75370
	Long-Term	10.04240
	Total	28.60218
Probability (F-Statistic)	Short-Term	0.000000
	Long-Term	0.000000
	Total	0.000000

Source: Developed for the research

From the results of Eview software, Table 4.3 shows the regression equation for short-term, long-term and total debt in construction and material sector as below:

STDEBT = 0.2985*** - 0.3391 PRO*** - 0.0275 LIQ***

(t = -3.2108***) (t = -8.5065***)

LTDEBT = - 0.0229 + 0.1961 TAN*** -0.1910 PRO** -0.8610 NDTS**

- 0.0089LIQ***

(t= 5.4422***) (t= -2.0350**) (t= -2.3726**)

(t= -3.0990***)

TDEBT = 0.2755*** + 0.1620TAN*** - 0.5301PRO*** - 1.2619NDTS**

- 0.0364LIQ***

(t= 3.2947***) (t= -4.1403***) (t= -2.5496**)

(t= -9.2884***)

Whereby,

**	= Significant at 0.05 level
***	= Significant at 0.10 level
TAN	= Tangibility of assets
PRO	= Profitability
NDTS	= Non-debt tax shield
LIQ	= Liquidity
STDEBT	= Short-term debt
LTDEBT	= Long-term debt
TDEBT	= Total debt

R-square indicates the percentage of the independent variables can explain the variations in the dependent variables. According to the results we obtained, R-square for the three debt measurements are relatively low. The results are 19.90 percent for short-term debt, 11.74 percent for long-term debt and 27.48 percent for total debt. This means that only 19.90 percent, 11.74 percent and 27.84 percent of independent variables can explain in variation of dependent variables, short-term, long-term and total debt respectively. However, there is 80.10 percent for short-term debt, 88.26 percent for long-term debt and 72.16 percent for total debt are still left unexplained in this study. In other words, there are other additional variables that are more important in explaining the three types of debt that have not been considered in our study.

The p-values of the short-term, long-term and total debt are 0.0000, which are significant at the 1%, 5% and 10% significant level. The results also show that F-statistic is significant, 18.75, 10.04 and 28.60 respectively. The models are good descriptors of the relationships between dependent variables and independent variables.

The probability in the above Table 4.3, indicates the significance of every each independent variables (firm size, tangibility, profitability, non-debt tax shield, growth opportunity and liquidity) on dependent variables (short-term, long-term and total debt). For the short-term debt, result shows that there are only two independent variables are significant with short-term debt, that is profitability and liquidity, whereas firm size, tangibility, non-debt tax shield and growth opportunity are not significant to the short-term debt. Whereas for the long-term and total debt, shows that the tangibility, profitability, non-debt tax shield and liquidity are significant, while the firm size and growth opportunity are not significant to the regression. Profitability and liquidity has a persistent and consistent negative relationship with all three debt measurements.

Firm Size: Our results show that firm size has a consistent and persistent insignificant negative relationship with all types of debt. This result is same with Wan Mahmood et al. (2011) result that stated that firm size do not suggest any significant impact on capital structure decision and this is support by the notion that firms with larger proportion of their value accounted by growth opportunities take less debt. While this result was contrary with the result on construction sector in Malaysia by Baharuddin et al. (2011), whose explained that they have positive relationship, due to the reason of the larger the size of firms, the more debt to employ in order to sustain the firms expenses. As the firm size increases, the need for financing in the form of debt also increases (Sahudin et al., 2011). In additions, the positive relationship is aligned with the hypothesis that larger firm tends to be more diversified and less probability to bankruptcy and the direct cost of issuing debt or equity is lower, and this result is tally with the trade-off theory (Pandey, 2001).

On top of that, our result shows that there is an insignificant negative relationship, the negative relationship might be due to the larger firms will less employ debt compared to small firms, they will rely more on their own equity financing as their major source (Suhaila et al., 2008). Furthermore, Getzmann et al. (2010) also argue that firm size has a negative impact on debt based on pecking order theory, because large firms are monitored more closely by the analysts, the information asymmetry is lowered by disclosure duties.

Tangibility: We found that tangibility is insignificant negatively in short-term debt, but has a positive significant relationship with long-term and total debt. This may due to the reason that tangibility requires long-term fund to financing for the longer maturity of assets. This result was supported by researchers on construction sector (Baharuddin et al., 2011). In additions, the insignificant negative relationship with short-term debt might be due to principles of maturity matching (Pandey, 2001). Besides, Antoniou et al.

(2008) and Getzmann et al. (2010) who carried out researches in United Kingdom and Asian companies respectively suggested that tangibility is positively significant with debt. The positive relationship with long-term debt is being supported by trade-off theory that tangibility and long-term debt should have a positive relationship (Pandey, 2001). Moreover, Pandey (2001) also found another argument that there is a negative relationship between tangibility and debt where firms with higher fixed assets would employ lower financial debt in the traditional view.

Profitability: Our study shows that there is a consistent but negative relationship with all debt measurements, which is in line with the evidence found in construction sector in Malaysia (Baharuddin et al., 2011). According to Antoniou et al. (2008) and Getzmann et al. (2010), profitability has a negative impact on the debt due to the pecking order theory, stated that profitable firms will finance internally instead of acquiring debt. According to pecking order theory, profitable firms will finance internally. Hence, it will lower the firms' debt level. The negative relationship between debt and profitability can be result because of transaction costs too. Rafiq et al. (2008) and Wan Ismail (2005) found that profitability is negatively related with debt level due to the profitable firms will retain the earnings in order to invest in future projects in pecking order theory. Moreover, high profitable firms often used their earnings to pay down the debt (Titman and Wessels, 1988).

In property industry, Mohamed Yunos (2002) found that both short-term and long-term debts are inversely related to profitability. Yet, there is another argument stated that property assets intensity and profitability have significant positive impacts on capital structure decisions. The empirical suggests that the firms with higher property asset intensity employ more debt (Wan Mahmood, 2011).

Non-debt Tax Shield: Non-debt tax shield is insignificant and negatively related to short-term debt. It might due to short-term obligations have no effect on tax shield. On the other hand, there is a significant but negative relationship with long-term and total debt. This results are consistent with Mohamed Yunos (2002) and DeAngelo and Masulis (1980) researches that suggest tax rate is inversely related to short-term debt. However, studies on capital structure suggest that non-debt tax shield will reduce the need for debt in order to prevent net income from going to a higher level of tax bracket, thus non-debt tax shield should be negatively related to debt (Rafiq et al., 2008). DeAngelo and Masulis (1980) argue that tax deductions for depreciation and the investment tax credits are substitutes for the tax benefits of debt financing. Therefore, firms with larger non-debt tax shield relative to their expected cash flow will prefer less debt in their capital structures.

Yet, there is a positive relationship between non-debt tax shields with debt in pecking order theory. Wan Ismail (2005) argues that higher debt level will lead to higher on tax shield. Therefore, non-debt tax shield is positively related to debt. While Rafiq et al. (2008) suggest that the most appropriate reason for this positive relationship can be given from the relevance of non-debt tax shield to capital structure in Pakistan economy. The corporate tax rate in Pakistan is not varying with the level of income. There are three types of rate, which the first one is applicable to public limited firms, second is to commercial organizations in government ownership and the third is to financial sector organizations. Therefore, the firms in a given group faced a constant rate of taxation, thus the depreciation do not work as a substitute to debt to prevent net income from going into a higher level of tax bracket.

Growth Opportunity: The results obtain show that growth opportunity does not have any impact on all types of debt. There is an insignificant but positive relationship with short-term debt and insignificant negative relationship with long-term and total debts. Malaysian firms tend to acquire more short-term

debt to financing their growth since Malaysian firms have a higher short-term debt ratio than long-term debt (Pandey, 2001). This finding supports both the trade-off and pecking order theory. Contrary with our results, Baharuddin et al. (2011) reports that growth opportunity has significant positive relationship with long-term debt which is because of the construction firms in Malaysia are depending heavily on the debt financing for the growth and expansion.

The insignificant negative relationship with long-term and total debts are consistent with Rafiq et al. (2008), explained that growing chemical firms in Pakistan utilize more debt than equity to finance the new investment. The negative relationship does not support the simple version of pecking order theory which says that growing firms will first utilize internal funds to fulfill the financial needs. However, it supports the extended version of pecking order theory that internal funds may not be sufficient for growing firms and the next option would be using debt financing. Aside from that, there is another argument by Awan et al. (2010). He suggests that there should be a positive relationship between growth and total debt because the firms see growth opportunity to be unsustainable and risky, so they intend to shift the risk to the creditors. Whereas the insignificant result is consistent with Suhaila et al. (2008), which argues that growth opportunity does not give any significant impact on the debt. Moreover, this result is also consistent with pecking order theory (Wan Ismail, 2005).

Liquidity: From the results obtained above, liquidity has a persistent and consistent significant but negative relationship with all debt measurements. Our results are supported by Suhaila et al. (2008) who suggests that firms with higher liquidity ratio tend to use less debt, and they are able to generate high cash turnover to finance their operations and investment activities. Therefore, liquidity has a negative relationship with debt. In contrast, Sibilkov (2009) found that asset liquidity has a positive relationship with debt. This is because less liquid assets sell at higher costs, therefore increase the costs of liquidation,

bankruptcy and debt. Thus, lower asset liquidity will reduce the probability of default through low level of debt.

Further analysis also reveals that asset liquidity and secured debt are positively related (Sibilkov, 2009). When managers have no discretion over the disposition of firm assets, liquidity will has a positive impact on debt. However, the relationship between asset liquidity and unsecured debt is curvilinear. This finding is consistent with Myers and Rajan (1998), Williamson (1988) as well as Shleifer and Vishny (1992), who argue that when managers have the discretion and transformation risk exists, the relationship between asset liquidity and debt is curvilinear that means asset liquidity is positively related to debt when liquidity is low, but has a negative impact when liquidity is high. Myers and Rajan (1998) also found that the impact of asset liquidity on debt depends on manager's decisions to disposition the assets. Asset liquidity has a positively impact on debt when managers cannot dispose the assets, while it will has a curvilinear effect on debt when managers managed to dispose the assets.

4.3 Conclusion

In a nutshell, this chapter comprises the detailed analysis of the results obtained after running the tests. The results shows that firms in construction and materials sector in Malaysia prefer short-term debt financing than long-term debt financing. Besides, based on the results showed in Table 4.2, growth opportunity has the strongest positive correlation with total debt and short-term debt whereas for long-term debt, firm size has the strongest positive correlation. The results also show other relationships between dependent variables and independent variables as well as the relationship among each independent variable. Notably, we found that firm size and growth opportunity are the only two independent variables which are insignificant to all measurements of debt.

CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATIONS

5.0 Introduction

This chapter comprises summary of descriptive analysis, correlation analysis and regression analysis from previous chapter. Moreover, this chapter will also discuss about the major findings of this research, implication of the study, limitation of the research and recommendation for future research. What is more, the entire research project will be evaluated as the conclusion of this study.

5.1 Summary of Statistical Analyses

5.1.1 Descriptive Analysis

In this section, we summarize the entire descriptive analyses presented and discussed in the Chapter 4. Our study is based on 92 companies in construction and materials sector in Malaysia from year 2005 to 2009 after eliminating 14 companies due to insufficient of data.

Referring to Table 4.1, we discovered that the selected listed companies in construction and materials sector, on average, prefer short-term debt than long-term debt. Our results show that the mean of short-term debt ratio is 14.5 percent compared to the latter which is only 9.5 percent. However, the average for total debt ratio is 24 percent which means that 24 percent of the total assets of the construction and materials sector companies in Malaysia are financed by debt.

Next, the mean for the firm size is 5.224. Whereas for tangibility, it is 32.6 percent which indicates that the selected firms have an average of 32.6 percent of the total assets are total fixed assets. Apart from that, the average profitability is relatively low which shows only 2.5 percent. As for growth opportunity, on average, the firms have a growth of 14.8 percent during the 5-year period. On top of that, the average value of non-debt tax shield of the firms in our research is only 2.4 percent. Lastly, the mean liquidity of the firms is 2.35 which explain that on average, the firms are able to cover the debt using the firms' assets.

5.1.2 Correlation Analysis

Based on Table 4.2, the correlation matrix that we have constructed in Chapter 4 is to measure the relationship between all independent variables and dependent variables as well as the relationship between one another. The output shows that firm size and growth opportunity have positive relationships with short-term debt, one of the dependent variables. However, short-term debt has an inverse relationship with tangibility, profitability, non-debt tax shield and liquidity. Whereas for long-term debt and total debt which are the other two dependent variables, they have positive relationships with the firm size, profitability and growth opportunity but has a negative relationship with tangibility, non-debt tax shield and liquidity.

Among all the independent variables, growth has the strongest positive correlation with short-term debt and total debt with correlation values, r = 0.9782 and 0.9510. But, firm size has the strongest positive relationship with long-term debt with correlation value, r = 0.4648. On the other hand, profitability has the weakest positive relationship with total debt and long-term debt with correlation values, r = 0.0028 and 0.0461. However, firm size

has the weakest positive relationship with short-term debt with correlation value, r = 0.2063.

On contrast, tangibility has the strongest negative relationship with short-term debt with correlation value, r = -0.0826 whereas for profitability has the weakest negative relationship with short-debt with correlation value, r = -0.0081. Moreover, non-debt tax shield has the strongest negative relationship with long-term debt with correlation value, r = -0.1278 whereas tangibility has the weakest negative relationship with long-term debt with correlation value, r = -0.00048. Next, non-debt tax shield has the strongest negative relationship with total debt with correlation value, r = -0.0950 whereas tangibility has the weakest negative relationship with total debt with correlation value, r = -0.0722. Last but not least, the correlation value between the rest of independent variables and the dependent variables are within the range of 0.9782 and -0.1278. Finally, the correlation values between the independent variables are between the range of 0.5 and -0.3.

5.1.3 Simple Regression Analysis

Referring to Table 4.3, the results of the test on the nature of the relationship and the significance of variables are formed into the equations as below:

$$STD = 0.2985^{***} - 0.3391PRO^{***} - 0.0275LIQ^{***}$$

$$(t = -3.2108^{***}) \quad (t = -8.5065^{***})$$

$$LTD = - 0.0229 + 0.1961TAN^{***} - 0.1910PRO^{**} - 0.8610NDTS - 0.0089LIQ^{***}$$

(t = 5.4422***) (t = - 2.0350**) (t = - 2.3726**)

(t = - 3.0990***)

$$TD = 0.2755^{***} + 0.1620TAN^{***} - 0.5301PRO^{***} - 1.2619NDTS^{**} - 0.0364LIQ^{***}$$

(t= 3.2947***) (t= -4.1403***) (t= -2.5496**)

(t= -9.2884***)

Whereby,

**	= Significant at 0.05 level
***	= Significant at 0.10 level
TAN	= Tangibility of assets
PRO	= Profitability
NDTS	= Non-debt tax shield
LIQ	= Liquidity
STDEBT	= Short-term debt
LTDEBT	= Long-term debt
TDEBT	= Total debt

i. Short-term debt

Referring to Table 4.3, the results reported significant relationships between profitability and liquidity with short term debt. Therefore, the hypothesis of H_{2bc} and H_{2f} are supported. Profitability is found to be the strongest variable that appears to have relationship with short-term debt. It means that 1 percent increase in profitability will lead to a decrease of 33.91 percent in short term debt, on average, holding other independent variables constant. On the other hand, liquidity has the lowest regression coefficient which is -0.0275.

The results of the test on the strength of the relationship between independent variables and short-term debt obtained are as follows:

$R^2 = 0.1990$
Adjusted $R^2 = 0.1883$

Based on the result generated in Table 4.3, the value of R_2 is 0.1990 which means that a change in total debt can be explained by 19.90 percent of the independent variables which are significant (profitability and liquidity). Firm size, tangibility, non-debt tax shield and growth opportunity are found to have insignificant relationship with short-term debt with the coefficient of -0.0114, -0.0342, -0.4010 and 0.0003.

ii. Long-term debt

Referring to Table 4.3, the results reported there are significant relationships between tangibility, profitability, non-debt tax shield and liquidity with long-term debt. Hence, the hypothesis of H_{3b}, H_{3c}, H_{3d} and H_{3f} are supported. Non-debt tax shield has the highest regression coefficient which is -0.8610. Therefore, it indicates that 1 percent increase in non-debt tax shield will lead

to a decrease of 86.1 percent in long-term debt, on average, with other independent variables held constant. Tangibility is ranked as the second highest independent variable, 0.19610 and followed by profitability with coefficient -0.1910. Liquidity appears to have the lowest regression coefficient with only -0.0089.

The results of the test on the strength of the relationship between independent variables and long-term debt obtained are as follows:

$R^2 = 0.1174$
Adjusted $R^2 = 0.1057$

Based on the results generated in Table 4.3, the value of R_2 is 0.1174 which means that a change in total debt can be explained by 11.74 percent of the independent variables involved (tangibility, profitability, non-debt tax shield and liquidity). Firm size and growth opportunity are found to have insignificant relationships with total debt with the coefficient value of 0.0192 and -0.0008.

iii. Total debt

Referring to Table 4.3, the results reported there are significant relationships between tangibility, profitability, non-debt tax shield and liquidity with total debt. Hence, the hypotheses of H_{1b}, H_{1c}, H_{1d} and H_{1f} are supported which poses similar results with long-term debt. Non-debt tax shield is the most powerful variable that appears to have relationship with total debt which has the highest value of regression coefficient. Therefore, it indicates that 1 percent increase in non-debt tax shield will lead to a decrease of 126.19 percent in total debt, on average, with other independent variables held constant. Profitability is ranked as the second important independent variable as it has a regression coefficient of -0.5301 and followed by tangibility with

coefficient of 0.1620. Liquidity appears to have the lowest regression coefficient with only -0.0364.

The results of the test on the strength of the relationship between independent variables and total debt obtained are as follows:

$R^2 = 0.2748$
Adjusted $R^2 = 0.2651$

Based on the results generated in Table 4.3, the value of R_2 is 0.275 which means that a change in total debt can be explained by 27.5% of the independent variables involved (tangibility, profitability, non-debt tax shield and liquidity). Firm size and growth opportunity are found to have insignificant relationship with total debt with the coefficient value of 0.0078 and -0.0004.

5.2 Discussion of Major Findings

5.2.1 Summary of Hypothesis Testing

Table 5.1: Summary of the Result of Hypothesis Testing (Total Debt)

Hypothesis	Coefficient	T-value	Probability	Significant Level	Result
H_{1a}: Firm size has a positive relationship with total debt	0.0078	0.4321	0.6658	-	Reject
H_{1b}: Tangibility has a positive relationship with total debt	0.1620	3.2947	0.0011	0.10	Accept
H_{1d}: Non-debt tax shield has a negative relationship with total debt	-1.2618	-2.5496	0.0111	0.05	Accept
H_{1e}: Growth opportunity has a positive relationship with total debt	-0.0004	-0.0916	0.9271	-	Reject
H_{1f}: Liquidity has a negative relationship with total debt	-0.0364	-9.2884	0.0000	0.01	Accept

Source: Developed for the research

H_{1b}: Tangibility has a positive relationship with total debt

According to Table 5.1, there is a significant relationship between tangibility and total debt as it has the p-value which is lower than 0.10. Hence, H_{1b} is accepted in which tangibility has a positive relationship with total debt. This result is consistent with the findings of past studies of Gaud et al. (2003), Niu (2008), Baharuddin et al. (2011), Teker et al. (2009) and Getzmann et al. (2010).

H_{1c}: Profitability has a negative relationship with total debt

Result of the hypothesis testing shows that the relationship between profitability and total debt is significant since it has the p-value that less than 0.10. Therefore, H_{1c} is accepted in this research and this result is in accordance with past literatures done by researchers which had proven that profitability has a negative relationship with total debt. (Titman and Wessels, 1988; Pandey, 2001; Mohamed Yunos, 2002; Gaud et al., 2003; Wan Ismail, 2005; Rafiq et al., 2008; Getzmann et al., 2010; Baharuddin et al., 2011).

H_{1d}: Non-debt tax shield has a negative relationship with total debt

Based on the result shown in Table 5.1, there is a significant relationship between non-debt tax shield and total debt. The p-value for non-debt tax shield 0.0111 which is less than 0.10 shows that the proposed hypothesis is accepted. The findings found are supported by the results of past researches (DeAngelo and Masulis, 1980; Mohamed Yunos, 2002;Afza and Hussain, 2011).

H_{1f}: Liquidity has a negative relationship with total debt

There is a direct relationship between liquidity and total debt which can be proven by the panel data regression analysis. H_{1f} is accepted in this research since p-value less than 0.10. Hence, proposed hypothesis, H_{1f} is supported and consistent with the results of past studies (Suhaila et al., 2008; Singhania and Seth, 2010; Afza and Hussain, 2011; Najjar and Petrov, 2011).

Table 5.2: Summary of the Result of Hypothesis Testing (Short-term Debt)

Hypothesis	Coefficient	T-value	Probability	Significant Level	Result
H_{2a}: Firm size has a positive relationship with short-term debt	-0.0114	-0.7632	0.4457	-	Reject
H_{2b}: Tangibility has a positive relationship with short-term debt	-0.0342	-0.8431	0.3996	-	Reject
H_{2c}: Profitability has a negative relationship with short-term debt	-0.3391	-3.2108	0.0014	0.10	Accept
H_{2d}: Non-debt tax shield has a negative relationship with short-term debt	-0.4010	-0.9822	0.3265	-	Reject

H_{2e}: Growth opportunity has a positive relationship with short-term debt	0.0003	0.0917	0.9270	-	Reject
H_{2f}: Liquidity has a negative relationship with short-term debt	-0.0275	-0.8507	0.0000	0.10	Accept

Source: Developed for the research

H_{2c}: Profitability has a negative relationship with short-term debt

Based on Table 5.2, there is a significant relationship between profitability and short-term debt as it has p-value of 0.0014 which is lesser than 0.10. Therefore, H_{2c} is accepted in this research and this result is aligned with past literatures (Titman and Wessels, 1988; Pandey, 2001; Mohamed Yunos, 2002; Gaud et al., 2003; Wan Ismail, 2005; Rafiq et al., 2008; Getzmann et al., 2010; Baharuddin et al., 2011).

H2f: Liquidity has a negative relationship with short-term debt

Refer to Table 5.2, there is a significant relationship between liquidity and short-term debt as its p-value is lesser than 0.10. Hence, H_{2f} is accepted in this research and this result is in line with findings of past studies of Suhaila et al. (2008), Singhania and Seth (2010), Afza and Hussain (2011) and Najjar and Petrov (2011).

Table 5.3: Summary of the Result of Hypothesis Testing (Long-term Debt)

Hypothesis	Coefficient	T-value	Probability	Significant Level	Result
H_{3a}: Firm size has a positive relationship with long-term debt	0.0192	1.4480	0.1483	-	Reject
H_{3b}: Tangibility has a positive relationship with long-term debt	0.1961	5.4421	0.0000	0.10	Accept
H_{3c}: Profitability has a negative relationship with long-term debt	-0.1910	-2.0350	0.0424	0.05	Accept
H_{3d}: Non-debt tax shield has a negative relationship with long-term debt	-0.8610	-2.3726	0.0181	0.05	Accept
H_{3e}: Growth opportunity has a positive relationship with long-term debt	-0.0008	-0.2281	0.8197	-	Reject
H_{3f}: Liquidity has a negative relationship with long-term debt	-0.0089	-3.0990	0.0021	0.10	Accept

Source: Developed for the research

H_{3b}: Tangibility has a positive relationship with long-term debt

According Table 5.3, there is a significant relationship between tangibility and long-term debt since it has the p-value which is lower than 0.10. Hence, H_{3b} is accepted and this result is in accordance with the findings of past studies of Gaud et al. (2003), Niu (2008), Baharuddin et al. (2011), Teker et al. (2009) and Getzmann et al. (2010).

H_{3c}: Profitability has a negative relationship with long-term debt

There is a direct relationship between profitability and long-term debt which is significant. The p-value of profitability is 0.0424 which is lower than 0.05. Hence, H_{3c} is accepted in this research. The findings support the results of past studies of Suhaila et al. (2008), Singhania and Seth (2010), Afza and Hussain (2011) and Najjar and Petrov (2011).

H_{3d}: Non-debt tax shield has a negative relationship with long-term debt

Based on the result shown in Table 5.3, there is a significant relationship between non-debt tax shield and long-term debt. The p-value for non-debt tax shield is 0.0181 which is less than 0.05. This shows that the proposed hypothesis is accepted. The findings support the results of past researches of DeAngelo and Masulis (1980), Mohamed Yunos (2002) andAfza and Hussain (2011).

H_{3f}: Liquidity has a negative relationship with long-term debt

From Table 5.3, liquidity is found to have a significant relationship with long-term debt. H_{3f} is accepted in this research since p-value less than 0.10. Hence, proposed hypothesis, H_{3f} is supported and consistent with the results of past

studies (Suhaila et al., 2008; Singhania and Seth, 2010; Afza and Hussain, 2011; Najjar and Petrov, 2011).

5.2.2 Major Findings

Table 5.4: Summary of the Differences between the Results of Short-term Debt and Long-term Debt

Hypothesis (Short-term debt)	Result (Short-term debt)	Result (Long-term debt)	Hypothesis (Long-term debt)
H_{2a}: Firm size has a positive relationship with short-term debt	Reject	Reject	H3a: Firm size has a positive relationship with long-term debt
H_{2b}: Tangibility has a positive relationship with short-term debt	Reject	Accept	H3b: Tangibility has a positive relationship with long-term debt
H_{2c}: Profitability has a negative relationship with short-term debt	Accept	Accept	H3c: Profitability has a negative relationship with long-term debt
H_{2d}: Non-debt tax shield has a negative relationship with short-term debt	Reject	Accept	H3d: Non-debt tax shield has a negative relationship with long-term debt
H_{2e}: Growth opportunity has a positive relationship with short-term debt	Reject	Reject	H3e: Growth opportunity has a positive relationship with long-term debt

H_{2f}: Liquidity has a negative relationship with short-term debt	Accept	Accept	H3f: Liquidity has a negative relationship with long-term debt

Source: Developed for the research

In this study, we examine the determinants that influence capital structure of firms in construction and materials sector in Malaysia. We use the panel data of 92 construction and materials firms listed in Bursa Malaysia from year 2005 to 2009.

Based on this paper, we discover that tangibility, profitability, non-debt tax shield and liquidity will influence the total debt and long-term debt of the firms in construction and materials sector whereas for short-term debt, there are only two variables which are profitability and liquidity have relationship with it. Based on our results, firm size and growth opportunity did not show an impact on total debt, short-term debt and long-term debt level. Firm size has a positive relationship with total debt, long-term debt and short-term debt which is aligned with past literatures like Baharuddin et al. (2011) and Getzmann et al. (2010) but posed an insignificant relationship with total debt and long-term debt. It might be due to firms do not take firm size as consideration into their debt financing decisions. Regardless of the size of firm, they will acquire both short-term debt and long-term debt depending on other factors such as financial market conditions and firm's financial position. So it is irrelevant and insignificant to include firm size as one of the determinants to capital structure decision.

Besides, growth opportunity also shows a statistically insignificant to total debt, short-term debt and long-term debt. The positive coefficient of growth opportunity in total debt and short-term debt is consistent with the studies of Baharuddin et al. (2011) but it became inconsistent in long-term debt as it posted a negative insignificant relationship with short-term debt. It is because

of firms with greater growth potentials have more flexibility to invest sub optimally, thus, transferring the wealth from bondholders to shareholders that could cause agency costs resulted in high costs in issuing debt. Therefore, high growth potential firms tend to borrow lesser debt. The purpose of growth opportunity is to expand the business. However, we assumed that with high growth opportunity, it does not signify the firms should or should not use debt financing because they have other options such as internal and equity financing. Needless to say, with low growth opportunity there will be no financing needed. The insignificant relationship between growth opportunity with total debt, short-term debt and long-term debt indicate that firms with higher growth do not signify use of more leverage as firms might use internal funds partially or fully to finance investments.

Moreover, tangibility and non-debt tax shield has no relationship with short-term debt. Fixed assets or known as tangible assets are financed by long-term debt instead of short-term debt. This result is supported by the principle which long-term debt is used to finance tangible assets whereas intangible assets are financed by short-term debt (Bevan and Danbolt, 2002). Furthermore, non-debt tax shield is found to be significant in long-term debt but became insignificant in short-term debt. Based on our research, a non-debt tax shield affects short-term debt negatively which is consistent with DeAngelo and Masulis (1980). Thus, the insignificant result implied that when firms engaged in tax shelter schemes, they mainly consider long-term debts since non-debt tax shields are substitutes for the tax benefits of long-term debt financing to depreciation.

Based on Table 5.4, there are some differences between the results between six independent variables and both measurements of short-term debt and long-term debt. First, there is an insignificant and positive relationship between firm size and long-term debt but it entails an insignificant and negative relationship with short-term debt. Second, tangibility shows a significant and

positive relationship with long-term debt whereas a negative and insignificant relationship with long-term debt. Lastly, growth opportunity has negative insignificant relationship with long-term debt but a positive insignificant relationship with short-term debt.

Apart from that, we found that construction and materials sector companies in Malaysia prefer to use short-term debt more than long-term debt. This finding is based on the descriptive result in Table 4.1. It shows the average short-term debt is 14.52% which is higher than average long-term debt, 9.52%. It is due to few reasons. The determinants of debt maturity can be explained by using agency conflicts, information asymmetry and taxes. Firstly, the reason of firms to use short-term debt is to reduce agency costs of debt such as underinvestment (Myers, 1977) and asset substitution (Barnea et al., 1980). Myers (1977) suggested that firms can reduce the underinvestment problem by shortening the effective maturity of their debt. When debt matures before investment opportunities are exercised, there is an opportunity for debt to be reprised so that gains from new projects do not benefit to bondholders (Taleb and Shubiri, 2011). According to Barnea et al. (1980), they proposed that firms use short-term debt to mitigate the adverse risk incentives in financing debt or the asset substitution problem. It is due to short-term debt is less sensitive to changes in the assets risk levels of the firm, thus it will reduce shareholders' incentives to invest in high risk projects leading to a lower likelihood of loss of value. Secondly, in the presence of asymmetric information, the debt maturity structure can be used to send signals to the market about the quality of a firm (Teruel and Solano, 2007).Flannery (1986),Kale and Noe (1990) showed that firms with high quality investment projects used short term loans to prevent paying a high market premium on long-term debt. Lastly, firms who are facing uncertainty in their tax status prefer to use short-term debt when their tax rate is high. In this setting, short-term debt will be the least costly and easiest way to adjust debt levels

temporarily to an optimum level and avoid the potential cost of retiring outstanding debt in the future (Scholes and Wolfson, 1988).

Table 5.5: Comparison between Expected Signs of Independent Variables Based On Trade-Off Theory and Pecking Order Theory with Actual Signs of Independent Variables

	Trade-Off Theory	Pecking Order Theory	Total Debt	Short-term Debt	Long-term Debt
Firm size	Positive	Negative	Positive	Negative	Positive
Tangibility	Positive	Positive	Positive	Negative	Positive
Profitability	Positive	Negative	Negative	Negative	Negative
Non-debt Tax Shield	Negative	-	Negative	Negative	Negative
Growth Opportunity	Negative	Positive	Positive	Positive	Negative
Liquidity	Negative	Negative	Negative	Negative	Negative

Source: Developed for the research

In a nutshell, the relationship between tangibility, profitability, growth opportunity and liquidity with total debt are consistent with the prediction of sign based on pecking order theory except firm size. In addition, the relationship between firm size, profitability, growth opportunity and liquidity with short-term debt are in line with the prediction of sign based on pecking order theory except tangibility. Furthermore, the relationship between profitability, growth opportunity and liquidity with total debt are in line with the prediction of sign based on pecking order theory except firm size and growth opportunity. However, based on past studies of Shyam-Sunder and Myers (1999), Myers (2001) and Adesola (2009), we discover that the relationships of independent variables such as firm size, tangibility and growth opportunity with debt are contradicted with pecking order theory yet

consistent with trade off theory. Moreover, trade-off theory is able to explain the relationship between non-debt tax shield and debt level which is not explained in pecking order theory. According to Afza and Hussain (2011), firms with high depreciation expenses do not prefer debt financing as depreciation itself provides tax shield to firms. Thus, the non-debt tax shield is negatively related to debt according to trade-off theory. Therefore, the results indicated that it does not fully supported by pecking order theory but rather a combination of trade-off theory and pecking order theory.

5.3 Implications of Studies

5.3.1 Managerial Implications

This research provides several refined suggestions not only to the top management of the firms, but also to the external parties such as investors and students. We strongly believe that the mentioned parties especially the management of the firms in construction and materials sector will be able to identify the level of importance of the variables (firm size, tangibility, profitability, growth opportunity, non-debt tax shield and liquidity) to the respective debt measurements and the relationship between dependent variables and independent variables. Following is the proposal made to determine the priorities and ignore the insignificant determinants in making the best possible capital structure decisions.

Our research shows that most firms in construction and materials sector preferred short-term debt rather than long-term debt in Malaysia from year 2005 to 2009. However, Teruel and Solano (2007) found out there is a major downside of short-term debt which is an increase in risk. The increased of risk

is due to refinancing and interest rate risks. Refinancing risk refers to the problems a firm may face at the time of loan renewal. Jun and Jen (2003) found that the refinancing risk grows exponentially with the short-term debt. Hence, the firms will be more vulnerable during bad economic condition since firms will experience more difficulties in renewing their loans (debt). Besides, interest rate risk is due to the fluctuation of the interest rate. Higher interest rate will cause the firms to absorb higher cost of debt. However, it has advantages too. Short-term debt can be used to ensure that there is cash available to satisfy the short-term operating capital needs. On top of that, it can assist firms in dealing with emergency situation as well as using it to initiate an expansion which is a risky move (Broemmel, 2012).

As for long-term debt, there are pros and cons too. It is usually more risky to the firms as it involves longer payback periods and thus higher credit risks and higher uncertainties. Besides, it is more costly compared to short-term debt since charges of interests are higher and the firms with no track records, cash and asset base will find it hard to obtain long-term financing. These might be the reasons that push the analyzed firms to take up short-term debt rather than long-term debt. On top of that, any breach of debt covenants may result in the firms going into financial distress, secured creditors may also take actions against the firms if they are not able to make payments and if the interest rate is based on floating rate, interest rates may move adversely against the firms during bad economic condition, causing huge unplanned interest expenses and cash outflows. However, the pro is the long-term debt financing is less prone to short term shocks as it is secured by contractual terms. Hence, they are relatively more stable than short-term debt ("Debt Financing," 2012). All in all, it is up to the management of the firms which type of debt financing is best suits the needs of their firms in different economic conditions.

According to the results obtained, as for short-term debt level, only profitability and liquidity are significant. Profitability appears to have the

strongest negative influence to the short-term debt level with coefficient value of -0.3391. 1 percent increase in profitability would decrease the short-term debt by 33.91 percent. Thus, the management for the firms in this sector should direct more attention to profitability in order to achieve the targeted capital structure ratio.

Based on our study, since profitability is inversely related to short-term debt ratio, management should monitor the staff closely, especially in sales department to achieve the profits targeted by the management. In addition to that, procurement department also plays a vital role in increasing profit. It is undeniable that the cost of procurement is increasing day by day due to inflation in Malaysia, thus in order to curb this problem, sourcing from other countries at a lower cost such as China. Subsequently, these steps taken by the management to increase short-term debt will help to decrease the risks (refinancing and interest rate risks) created by short-term debt.

Besides that, the management should also concentrate on liquidity which has a significant negative relationship with the short-term debt with coefficient value of -0.0275. Although the influence is not as strong as profitability, the management should also pay heed to increase the liquidity in order to lower the risk of short-term debt financing. The firms should have ample liquid assets such as cash or other money market instruments (T-bills) to avoid facing liquidity issue when financial crisis happens. Hence, this may help firms to maintain current assets and current liabilities in an optimum range in order to keep the liquidity ratio in check all the time.

From the research conducted, there are several determinants which are significant to long-term debt and total debt such as the tangibility, profitability, non-debt tax shield and liquidity. Tangibility is the only determinant that is significantly and positively related to long-term debt and total debt with coefficient of 0.1961 and 0.1620. Since long-term debt financiers would

normally require the borrowing company to pledge some form of asset including fixed assets as collateral. For those firms who prefer to finance through long-term debt, the management should invest more on fixed assets such as lands and shops, so that they can be used as collateral in long-term debt financing. Without collateral, financiers are unwilling to take the risk to approve long-term loan to the firms especially during economy crisis. This might be also the reason why firms prefer short-term debt financing since long-term debt financing always require fixed assets as collateral which may reduce the flexibility of asset management of the firms.

Apart from that, non-debt tax shield has the strongest negative and significant influence on long-term debt and total debt with coefficient of 0.86 and -1.262. Therefore, management of the firms should put more attention in this determinant as the increase/ decrease of non-debt tax shield will significantly affect the both long-term and total debt. It has become a major trend in most of the firms by using non-debt tax shield to replace tax advantage of debt because firms used to borrow debt in order to reduce the tax payment but now they do not need to do so since with increased depreciation expenses can create tax shield as well. Therefore, firms are not advisable to take on debt to create a tax shield which may result failure in paying the obligations during unexpected financial crisis.

In addition, profitability and liquidity have inversely significant relationship with both long-term debt and total debt. When liquidity and profitability both decrease, they would affect the decisions of the management to take more long-term debt or debt financing. Therefore, firms should maintain a high level of liquidity to meet unexpected cash outflow due to unexpected financial events and plan to increase the profitability by decreasing costs and increasing sales.

What is more, external parties like investors should always monitor the significant determinants such as the profitability, liquidity, non-debt tax shield and tangibility of the firms in order to find out the debt level position of the firms now as well as for the near future. These ratios can be found through the annual report or quarterly report released by the firms. Knowing the relationships between the different debt level measurements and the significant independent variables, investors can predict the debt financing decisions of the firms and evaluate whether the firms are still in healthy financial position. Moreover, the investors can also observe the capabilities and efficiencies of the management of the firms in keeping the debt ratios at optimum level.

Finally, students can also use our research as guidelines in doing their future researches. Based on our results, they will be able to know the relationships between the analyzed determinants with the three different debt level measurements for the firms in construction and materials sector. Lastly, it will also help them to have a better understanding on the pecking order and trade-off theories which are in line with our results.

5.4 Limitations of the Research

There are several limitations in this research. The first limitation of our research is that the samples are only focus on construction and materials sector that listed on Bursa Malaysia. This limitation hampers the generalizability of the results obtained from this research. This result could not be used to generalize all the sectors in Malaysia and could not generalize construction and materials sector in Western countries too. The results could not be generalized to Western countries as there are cultural differences between Asia and Western.

The second limitation is regarding the measurements of debt level. Debt level consists of many types of measurements such as debt to firm value ratio (Kazemi and Ansari, 2012), debt to equity ratio (Ross, Westerfield and Jordan, 2003) but in this research we only focus mainly on three measurements which are total debt to total assets, long-term debt to total assets and short-term debt to total assets. Consequently, the results obtained do not reflect the whole picture of capital structure of a firm such as effect of equity on debt level.

The third limitation is the various proxy variables used in our research. Although the proxy variables used were supported by previous studies empirically and theoretically, they may not perfectly represent the theoretical propositions of our research. It is due to differences in financial market structures, government policies, economics conditions and other factors of each country. The limitations mentioned above are acknowledged but they do not detract from the significance of findings but merely provide platforms for future research.

5.5 Recommendations for Future Research

Some recommendations are drawn out for future research. First, future researches should be conducted in other sectors in Malaysia with the same research objectives in order to check the consistency of results across the various sectors. Besides, future researches could be conducted in construction and materials sectors in other Western countries, such as United States, Italy and France.

Second, other measurements of capital structure such as debt to equity ratio should be used in future research to gain further insights about the association between equity and debt. In-depth exploration process should be involved in investigating effect of equity on debt and so there could be some new findings drawn out from future researches.

Lastly, additional independent variables should be added into the research framework to test other relevant variables that constitute a direct relationship with capital structure which is beneficial for management of the firms for better financing decisions. As compared with the results of past literatures, firm size is evidenced to constitute an insignificant relationship with debt level in this research. This result contradicts with some past studies which tested in different context such as in financial service sector and different geographical area (Thian, 2012). Even though the result is inconsistent, it is interesting to discover that firm size is not recognized as the important variable in Malaysia towards debt level in the context of construction and materials sector and has to be examined in different context such as automobile sector for future studies.

5.6 Conclusion

We have come to a conclusion after analyzing 92 firms from construction and materials sector in Malaysia that the two variables, profitability and liquidity are proven to have significant negative relationship with short-term debt. However, for long-term debt and total debt, we have found that they have negative significant relationships with profitability, non-debt tax shield and liquidity, yet tangibility is the only variable that is found to have a significant positive relationship with long-term and total debt. Firm size and growth opportunity are the two variables which have found to be insignificant towards its relationship with all the three measurement of debts. Hence to conclude, the results of our studies are aligned with the combination of both pecking order theory and trade-off theory. On top of that, descriptive analysis presented that the average of firms in construction and materials sector have a relatively low profitability and prefer short-term debt than long-term debt. Correlation analysis shows that growth opportunity has the strongest correlation with both short-term and total debt which reflects that as long as the growth opportunity of the firms in this sector increases, the debt financing will increase too. Before concluding, managerial implication and limitations of our study are discussed and stated clearly

on the means to achieve the optimum debt level based on the results obtained in our research above. Lastly, recommendations are stated above to assist future researchers to achieve higher precision in obtaining results and able to make a better overall conclusion on capital structure decisions based on the determinants.

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LIST OF APPENDICES

Appendix 3.1: Names of 92 Firms in Our Sample

92 Firms in Construction and Materials Sector	
1.	AHMAD ZAKI RES
2.	AJIYA BERHAD
3.	ASTINO BERHAD
4.	ATURMAJU RESRCS BHD
5.	B.I.G. INDUSTRIES
6.	BINA DARULAMAN BHD
7.	BINA GOODYEAR BERHAD
8.	BINA PURI HOLDINGS
9.	BINTAI KINDEN CORP
10.	BREM HOLDING BERHAD
11.	BTM RESOURCES BHD
12.	CAHYA MATA SARAWAK
13.	CHUAN HUAT RESOURCES
14.	CONCRETE ENGINEERING
15.	CREST BUILDER HLDGS
16.	CYMAO HOLDINGS BHD
17.	DKLS INDUSTRIES
18.	DOLOMITE CORPORATION
19.	DOMINANT ENTERPRISE
20.	DPS RESOURCES BHD
21.	ECOFIRST CONSO BHD
22.	EKOVEST BERHAD
23.	EKOWOOD INTN'L BHD
24.	ENGTEX GROUP BHD
25.	EVERGREEN FIBREBOARD
26.	FAJARBARU BUILD
27.	FUTUTECH BERHAD

28.	GADANG HOLDINGS
29.	GAMUDA BERHAD
30.	GOH BAN HUAT BERHAD
31.	GOLDEN PHAROS BERHAD
32.	HEVEABOARD BERHAD
33.	HO HUP CONSTRUCTION
34.	HOCK SENG LEE BERHAD
35.	IJM CORPORATION BHD
36.	IREKA CORPORATION
37.	JAVA BERHAD
38.	KIA LIM BERHAD
39.	KIM HIN INDUSTRY BHD
40.	KPS CONSORTIUM BHD
41.	KUMPULAN EUROPLUS
42.	KUMPULAN JETSON BHD
43.	LAFARGE MALAYAN
44.	LEBAR DAUN BERHAD
45.	LEWEKO RESOURCES BHD
46.	LIEN HOE CORPORATION
47.	MAJOR TEAM HOLDINGS
48.	MALAYSIAN RESOURCES
49.	MERCURY INDUSTRIES
50.	MERGE ENERGY BERHAD
51.	MIECO CHIPBOARD
52.	MITHRIL BHD
53.	MITRAJAYA HOLDINGS
54.	MTD ACPI ENG BHD
55.	MUDAJAYA GROUP BHD
56.	MUHIBBAH ENGINEERING
57.	MULTI-USAGE HOLDINGS

58.	NAIM HOLDINGS BERHAD
59.	NWP HOLDINGS BERHAD
60.	OCTAGON CONSOL
61.	OKA CORPORATION BHD
62.	PAHANCO CORP BHD
63.	PINTARAS JAYA BERHAD
64.	PJ DEVELOPMENT HLDGS
65.	PJI HOLDINGS BHD
66.	PLB ENGINEERING
67.	PRICEWORTH INTERNAT
68.	PROTASCO BHD
69.	QUALITY CONCRETE
70.	ROCK CHEMICAL
71.	SARAWAK CONSOLIDATED
72.	SEACERA TILES BHD
73.	SELOGA HOLDINGS BHD
74.	SKB SHUTTERS CORP
75.	STONE MASTER CORPOR
76.	SYCAL VENTURES
77.	TASEK CORPORATION
78.	TEBRAU TEGUH BHD
79.	TRC SYNERGY BHD
80.	TRIPLC BHD
81.	TSR CAPITAL BHD
82.	UAC BERHAD
83.	UNITED U-LI CORPOR
84.	VTI VINTAGE BERHAD
85.	WCT BERHAD
86.	WHITE HORSE BERHAD
87.	WOODLANDOR HOLDINGS

88.	WTK HOLDINGS BHD
89.	YI-LAI BHD
90.	YTL CEMENT BERHAD
91.	ZECON BERHAD
92.	ZELAN BHD

Firms Eliminated	
93.	BENALEC HOLDING BHD
94.	BOILERMECH HOLD
95.	GEFUNG HOLDINGS BHD
96.	HOCK HENG STONE
97.	JMR CONGLOMERATION
98.	KIMLUN CORPORATION
99.	MALTON BHD
100.	MELATI EHSAN HOLD
101.	PANSAR BHD
102.	RESINTECH BHD
103.	SPK-SENTOSA CORP
104.	SUPERLON HOLDINGS
105.	PRINSIPTEK CORP BHD
106.	ARK RESOURCES BHD

Appendix 4.1 : Panel Data Regression Analysis of Short-term Debt from Eview

Dependent Variable: SDEBT
Method: Panel Least Squares
Date: 03/09/12 Time: 15:53
Sample: 2005 2009
Periods included: 5
Cross-sections included: 92
Total panel (balanced) observations: 460

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SIZE	-0.011409	0.014948	-0.763241	0.4457
TAN	-0.034184	0.040546	-0.843082	0.3996
PRO	-0.339097	0.105613	-3.210755	0.0014
NDTS	-0.400961	0.408238	-0.982176	0.3265
GRO	0.000343	0.003740	0.091726	0.9270
LIQ	-0.027484	0.003231	-8.506532	0.0000
C	0.298504	0.082552	3.615969	0.0003

R-squared	0.198970	Mean dependent var	0.145157
Adjusted R-squared	0.188361	S.D. dependent var	0.156461
S.E. of regression	0.140957	Akaike info criterion	-1.065622
Sum squared resid	9.000609	Schwarz criterion	-1.002756
Log likelihood	252.0932	Hannan-Quinn criter.	-1.040867
F-statistic	18.75370	Durbin-Watson stat	0.603388
Prob(F-statistic)	0.000000		

Appendix 4.2 : Panel Data Regression Analysis of Long-term Debt from Eview

Dependent Variable: LDEBT
Method: Panel Least Squares
Date: 03/09/12 Time: 15:53
Sample: 2005 2009
Periods included: 5
Cross-sections included: 92
Total panel (balanced) observations: 460

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SIZE	0.019240	0.013287	1.448020	0.1483
TAN	0.196143	0.036042	5.442145	0.0000
PRO	-0.191040	0.093879	-2.034958	0.0424
NDTS	-0.860958	0.362881	-2.372566	0.0181
GRO	-0.000758	0.003325	-0.228109	0.8197
LIQ	-0.008900	0.002872	-3.098958	0.0021
C	-0.022948	0.073380	-0.312727	0.7546

R-squared	0.117397	Mean dependent var	0.095119
Adjusted R-squared	0.105707	S.D. dependent var	0.132494
S.E. of regression	0.125296	Akaike info criterion	-1.301174
Sum squared resid	7.111694	Schwarz criterion	-1.238308
Log likelihood	306.2700	Hannan-Quinn criter.	-1.276419
F-statistic	10.04240	Durbin-Watson stat	0.615034
Prob(F-statistic)	0.000000		

Appendix 4.3 : Panel Data Regression Analysis of Total Debt from Eview

Dependent Variable: TDEBT
Method: Panel Least Squares
Date: 03/09/12 Time: 15:54
Sample: 2005 2009
Periods included: 5
Cross-sections included: 92
Total panel (balanced) observations: 460

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SIZE	0.007831	0.018122	0.432145	0.6658
TAN	0.161958	0.049158	3.294659	0.0011
PRO	-0.530140	0.128044	-4.140306	0.0000
NDTS	-1.261899	0.494942	-2.549592	0.0111
GRO	-0.000415	0.004534	-0.091589	0.9271
LIQ	-0.036384	0.003917	-9.288447	0.0000
C	0.275554	0.100084	2.753213	0.0061

R-squared	0.274751	Mean dependent var	0.240276
Adjusted R-squared	0.265145	S.D. dependent var	0.199355
S.E. of regression	0.170894	Akaike info criterion	-0.680443
Sum squared resid	13.22979	Schwarz criterion	-0.617577
Log likelihood	163.5019	Hannan-Quinn criter.	-0.655688
F-statistic	28.60218	Durbin-Watson stat	0.324420
Prob(F-statistic)	0.000000		

Appendix 4.4 : Descriptive Analysis from Eview

	SIZE	TAN	PRO	NDTS	GRO	LIQ	SDEBT	LDEBT	TDEBT
Mean	5.224118	0.326354	0.025132	0.023991	0.147522	2.346805	0.145157	0.095119	0.240276
Median	5.207883	0.296044	0.028546	0.019801	0.024350	1.642328	0.115489	0.045358	0.230888
Maximum	6.790207	0.873267	0.229855	0.126149	37.85520	16.38900	1.812475	0.981193	1.830516
Minimum	3.810971	0.008795	-0.343013	-0.000414	-0.973000	0.151405	0.000000	0.000000	0.000000
Std. Dev.	0.534461	0.196633	0.073477	0.019161	1.790311	2.194470	0.156461	0.132494	0.199355
Skewness	0.081061	0.657344	-0.658529	1.320018	20.42445	2.721763	4.671561	2.771348	2.284857
Kurtosis	3.019211	2.895541	4.846085	5.607850	429.8008	12.06647	44.99897	14.35962	16.22379
Jarque-Bera	0.510837	33.33690	98.56787	263.9380	3523361.	2143.463	35481.48	3062.115	3751.894
Probability	0.774592	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	2403.094	150.1227	11.56087	11.03565	67.86020	1079.530	66.77240	43.75468	110.5270
Sum Sq. Dev.	131.1128	17.74699	2.478083	0.168518	1471.194	2210.406	11.23630	8.057634	18.24173
Observations	460	460	460	460	460	460	460	460	460

Appendix 4.5 : Correlation Analysis from Eview

	SIZE	TAN	PRO	NDTS	GRO	LIQ	SDEBT	LDEBT	TDEBT
SIZE	1.000000	-0.261959	0.475701	-0.195594	0.174573	-0.127202	-0.044147	-0.007728	-0.039784
TAN	-0.261959	1.000000	-0.189174	0.502059	-0.089710	-0.106837	0.013552	0.244962	0.173442
PRO	0.475701	-0.189174	1.000000	-0.131563	0.048425	0.160116	-0.224730	-0.131811	-0.263980
NDTS	-0.195594	0.502059	-0.131563	1.000000	-0.062562	0.135452	-0.094559	0.001069	-0.073501
GRO	0.174573	-0.089710	0.048425	-0.062562	1.000000	-0.034514	0.009641	-0.015066	-0.002446
LIQ	-0.127202	-0.106837	0.160116	0.135452	-0.034514	1.000000	-0.408222	-0.221857	-0.467837
SDEBT	-0.044147	0.013552	-0.224730	-0.094559	0.009641	-0.408222	1.000000	-0.055290	0.748089
LDEBT	-0.007728	0.244962	-0.131811	0.001069	-0.015066	-0.221857	-0.055290	1.000000	0.621222
TDEBT	-0.039784	0.173442	-0.263980	-0.073501	-0.002446	-0.467837	0.748089	0.621222	1.000000