RESEARCH REPORT

ON

A STUDY OF FACTORS REGARDING FIRM CHARACTERISTICS THAT AFFECT FINANCING DECISIONS OF PUBLIC COMPANIES LISTED ON THE STOCK EXCHANGE OF THAILAND

BY

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ชื่อโครงการวิจัย: การศึกษาปัจจัยเกี่ยวกับลักษณะของธุรกิจที่มีผลต่อการตัดสินใจระดมเงินทุนของบริษัทมหาชนที่จดทะเบียนในตลาดหลักทรัพย์แห่งประเทศไทย

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คำสำคัญ: การตัดสินใจระดมเงินทุนของธุรกิจ คุณลักษณะของธุรกิจ ทฤษฎีกำหนดระดับที่เหมาะสมในการระดมเงินทุน ทฤษฎีกำหนดลำดับการระดมเงินทุน บริษัทจดทะเบียนไทย

บทคัดย่อ

การศึกษานี้ใช้ประโยชน์จากทฤษฎีโครงสร้างเงินทุนที่เป็นที่รู้จักกันอย่างดีสองทฤษฎีคือ ทฤษฎีกำหนดระดับที่เหมาะสมในการระดมเงินทุน (The trade – off theory) และทฤษฎีกำหนดลำดับการระดมเงินทุน (The pecking order theory) เพื่อสำรวจความสัมพันธ์ระหว่างคุณลักษณะของธุรกิจที่กำหนดกับการตัดสินใจระดมเงินทุนของบริษัทมหาชนที่จดทะเบียนในตลาดหลักทรัพย์แห่งประเทศไทย วัตถุประสงค์ของการศึกษาคือเพื่อตรวจสอบว่า คุณลักษณะของธุรกิจใดที่มีผลกระทบอย่างมีนัยสำคัญต่อการตัดสินใจระดมเงินทุนของบริษัทจดทะเบียนไทย และทฤษฎีโครงสร้างเงินทุนทฤษฎีใดในสองทฤษฎีดังกล่าว ที่สามารถอธิบายการตัดสินใจระดมเงินทุนของบริษัทจดทะเบียนไทยได้ดีกว่ากัน ข้อมูลที่ใช้ในการศึกษารวบรวมจากบริษัทจดทะเบียนที่มิใช่บริษัทด้านการเงิน จำนวนทั้งหมด 220 บริษัท ระหว่างช่วงปี พ.ศ. 2548 – 2550 โดยใช้สถิติสองประเภทคือ สถิติเชิงพรรณนาและการวิเคราะห์ถดถอยแบบพหุคูณวิธีกำลังสองน้อยที่สุดแบบธรรมดาในการวิเคราะห์ข้อมูล

ผลการวิจัยแสดงว่า คุณลักษณะของธุรกิจที่กำหนดซึ่งประกอบด้วย ขนาดของธุรกิจ สภาพคล่อง สินทรัพย์ถาวร ความสามารถทำกำไร ความเสี่ยงทางการเงิน นโยบายเงินปันผล และ การเจริญเติบโตของธุรกิจ คือตัวแปรอย่างมีนัยสำคัญต่อการตัดสินใจระดมเงินทุนของบริษัทจดทะเบียนไทย ผลลัพธ์ยังแสดงด้วยว่า การตัดสินใจระดมเงินทุนของบริษัทตัวอย่างที่ทำการศึกษาเป็นไปตามสมมติฐานของทฤษฎีกำหนดลำดับการระดมเงินทุน (The pecking order theory) มากกว่าสมมติฐานของทฤษฎีกำหนดระดับที่เหมาะสมในการระดมเงินทุน (The trade – off theory)

หลักฐานสนับสนุนว่าทฤษฎีกำหนดลำดับการระดมเงินทุน (The pecking order theory) มีความเกี่ยวพันอย่างสอดคล้องกับการอธิบายทางเลือกการระดมเงินทุนของบริษัทจดทะเบียนไทย การค้นพบเชิงประจักษ์ของการศึกษาในครั้งนี้ชี้ให้เห็นว่า หลักการของทฤษฎีโครงสร้างเงินทุนซึ่งถูกใช้อย่างกว้างขวางในการอธิบายการตัดสินใจระดมเงินทุนของประเทศแถบตะวันตก สามารถใช้อธิบายการตัดสินใจระดมเงินทุนในประเทศไทยซึ่งจัดเป็นประเทศเศรษฐกิจเกิดใหม่ในเอเชียได้เช่นเดียวกัน

Title of Research: A study of factors regarding firm characteristics that affect financing decisions of public companies listed on the Stock Exchange of Thailand

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Abstract

This study utilizes two well - known capital structure theories – The trade - off theory and the pecking order theory to examine the relationship between specific firm characteristics and financing decisions of public companies listed on the Stock Exchange of Thailand. The purposes of the study are to investigate which firm characteristics significantly affect financing decisions of Thai listed companies and which of the two capital structure theories, the trade - off or pecking order, better explains their financing decisions. A sample of 220 non – financial companies during the period 2005 – 2007 provides the data of the study. Descriptive statistics and ordinary least squares regression analysis are employed for analysis.

The results show that specific firm characteristics which include firm size, liquidity, fixed assets, profitability, financial risk, dividend policy and firm growth are significant determinants of financing decisions of Thai listed companies. The results also show that financing decisions of the sample in the study follow assumptions of the pecking order theory rather than those of the trade - off theory. The evidence supports the relevance of the pecking order theory in explaining the financing alternatives of Thai listed companies. The empirical discovery of the present study indicates that the

rules of the capital structure theories which have been widely used in explaining financing decisions of Western countries can be applied to explain financing decisions in Thailand which is classified as one of Asia's emerging economies as well.

Chapter 1
Introduction

1.1 Background to the study

Based on the optimal capital structure theory, financing decisions between debt and equity capital are crucial to value creation of the firm (Harris and Raviv, 1991). Modigliani and Miller (1958) were the pioneers who examined the optimal capital structure and found that using a mixture of debt and equity instead of using only equity is more beneficial to the firm. The reason is interest payments of debt financing can reduce corporate income taxes in terms of "tax saving or tax shield". However, using debt financing may increase bankruptcy costs if the firm cannot pay debt burdens in time and may lead managers of firms with growth opportunities to accept sub - optimal investment opportunities (Chen and Strange, 2005; Gaud, Jani, Hoesli and Bender, 2003). The financial theory merely helps the firm understand how the chosen financial leverage affects the firm's value but there is no specified rule to determine the appropriate level of debt to achieve the optimal capital structure (Eriotis, 2007). Consequently, financial managers of each firm have to make financing decisions in their own way that a firm's value is maximized.

Much research in many countries attempted to assist the management of firms by investigating important determinants of financing decisions and found that some specific firm characteristics are the critical factors of capital structure management, for example, the studies of Wald (1999), Cassar and Holmes (2003), Chen and Strange (2005), and Mazur (2007). However, the empirical evidence from prior studies showed mixed results.

Wald (1999) examined the factors that related to capital structure by using the sample in five countries – France, Germany, Japan, the UK and USA in 1993. Wald's findings showed the significant correlation between a firm's capital structure as measured by long-term debt/asset ratio and firm factors. However, the results indicated that some firm characteristics including risk, growth, firm size and inventories had

different effects on financial leverage in different countries. For example, in the United States, firms with high growth used less debt than those in other countries and firm size did not appear to be a determinant of capital structure, whereas it was positively linked to debt ratio in other countries.

Cassar and Holmes (2003) investigated the determinants of use of financing and capital structure for small and medium sized enterprises in Australia during the period 1995 - 1998. Their results showed that firm characteristics namely, asset structure, profitability and growth were important factors of financing decisions and capital structure as suggested by the trade - off and pecking order theories but firm size and risk were found to be insignificant.

Chen and Strange (2005) also studied the relationship between firm characteristics and corporate structure on the debt financing behaviour by using a sample of the Shanghai Stock Exchange and Shenzhen Stock Exchange in China in 2003. They found the different results from Cassar and Holmes's (2003) study. His results asserted that size and risk of Chinese firms in the sample were positively related to market value measure of capital structure but surprisingly, tax was not a critical factor in influencing debt ratio. Nevertheless, they found strong evidence indicating that profitability was negatively related to the choice between debt and equity as well.

Mazur (2007) endeavored to test two competing capital structure theories - the pecking order of financing choices and the traditional static trade - off model by using data from a five-year financial statement of Polish companies traded on the Warsaw Stock Exchange in years 2000 - 2004. In his analysis, the signs of coefficients for profitability, liquidity, asset structure, growth opportunities, size and uniqueness, and the insignificance of non-debt tax shield suggested that the trade - off theory was not applicable for the examined companies. The results seemed to confirm the pecking order theory although the influences of risk and dividend policy were not appearing at that time.

For Thailand, there has been very little information regarding research in this area. The present study found one research from Wiwattanakantang (1999) published in the international journal. She examined the determinants of the capital structure of Thai

listed firms in 1996. The results showed that traditional factors including profitability, tangibility, tax and growth were significant to leverage ratio but firm risk as measured by variation in sales was insignificant. Other firm characteristics such as liquidity, dividend policy and financial risk have not been investigated in his work. There remains an inconclusive question that "which firm characteristics are significant determinants of a firm's financing decisions?" Therefore, to obtain a better picture of the debt-equity choices in Thailand, the study will contribute to this investigation of the relationship between firm characteristics and financing decisions by extending and adapting the analyses of previous studies (e.g., Wiwattanakantang, 1999; Chen and Strange, 2005; Eriotis, 2007; and Mazur, 2007. Public companies listed on the Stock Exchange of Thailand during the period 2002 - 2006 will be a sample for study in this research.

1.2 Research objectives

The objectives of this research are to examine the relationship between the existing firm characteristics and financing decisions of public companies listed on the Stock Exchange of Thailand based on two capital structure theories - the trade - off and pecking order theories. The details are as follows.

1.2.1 To investigate which specific firm characteristics significantly influence financing decisions of public companies listed on the Stock Exchange of Thailand.

1.2.2 To investigate which of the two capital structure theories, the trade-off and pecking order theories, better explains the financing decisions of public companies listed on the Stock Exchange of Thailand.

1.3 Significance of the study

The following significance of the research lies in its theoretical and practical contributions.

1.3.1 In an attempt to investigate the significant factors of financing decisions based on the main capital structure theories, the results of the research will add to the

body of knowledge on capital structure management and financing decisions by providing important evidence from a sample of Thai listed companies.

1.3.2 From the practical perspective, it is expected that a clearer understanding of the relationship between firm characteristics and financing decisions will be important guidelines to assist business executives, chief executive officers (CEO) and financial manager including related persons of each firm to efficiently balance the benefits and costs of the use of debt financing.

1.3.3 In addition, since the research will be undertaken in Thailand, a significant contribution will be made to the Thai business community, which benefits from this study in terms of a greater understanding of the optimal capital structure theories in practice.

1.4 Organization of the paper

The paper contains five chapters including the introduction. This chapter has provided the background to the study and explained the research objectives. It also elaborates on the significance of the study.

Chapter 2 describes two capital structure theories which are the research framework and reviews previous research concerning the relationship between firm characteristics and financing decisions. Its objective is to seek the critical firm factors that influence corporate financing. Then, it presents the hypothesis development and research model.

Chapter 3 addresses the research methodology. It describes the sample, data collection and variable measurement of all variables of the study. It also provides data sources and statistical analysis to be undertaken.

Chapter 4 reports the empirical results of the study following the research objectives in chapter 1. It first discusses the main assumptions of univariate statistical analysis and multiple regressions. After that, it reveals the predictors of corporate

financing and their impact on a firm's financing decisions. It also discusses the hypotheses testing results with previous studies that are reviewed in Chapter 2.

Finally, Chapter 5 contains a summary of the study and the implication of the research findings. It also offers suggestions for future research.

Chapter 2
Literature review and hypothesis development

This chapter describes an importance of capital structure theories which have been becoming the theoretical framework of the study and reviews previous research based on those theories to seek the critical factors impacting on a firm's financing decisions. The objective of this chapter is to develop research hypotheses. It includes two sections. Section 2.1 explains the capital structure theories, namely, the trade off and pecking order theories and defines the relationship between firm characteristics and financing decisions theories. Section 2.2 presents hypothesis development following theoretical framework and related previous research in Section 2.1.

2.1 The important capital structure theories

Two well - known capital structure theories which have been widely used to explain strategies of financing in previous studies are the trade - off theory and the pecking order theory (e.g., Akhtar, 2005; Bevan and Danbolt, 2002; Chen and Strange, 2005; Eldomiaty, 2007). Both theories state that firms can use internal and/or external funds to invest in their operating activities and positive net present value projects. Internal funds are retained earnings whereas external funds include debt financing and the stock issue. However, each theory differently suggests financing strategies (Delcoure, 2007; Graham and Harvey, 2001). Previous researchers viewed them as competing theories (Frank and Goyal, 2003, 2004; Harris and Raviv, 1990, 1991; Mazur, 2007). The trade - off theory assumes debt financing being a crucial external source and specifies that firms which have the optimal level of leverage can maximize firm value (V) and minimize the cost of capital (K_{WACC}). On the pecking order theory, debt has been viewed as a second choice of financing and will be used when internal funds are insufficient. The theory gives the first priority to internal funds (retained earnings and profits). In this theory, firm's value will be maximized by managers because they know how much it should be and then, they can make financing decisions in the way that firm's value can be generated. Thus, it is interesting to investigate

which theory better explains financing decisions of Thai listed firms. The details of each theory are described in Sections 2.1.1 and 2.1.2 as follows.

2.1. 1 The trade - off theory

Modigliani and Miller (1958, 1963) are the first pioneers who defined the trade - off theory. They argue that under the theory, optimal corporate financing should be a mixture of debt and equity which is known in terms of leverage or debt ratio. The theory supports debt financing in that, it can generate the maximum firm value. However, using debt financing, firms need to trade off between the benefits of debt (interest tax shield) and the costs of financing with debt (default and bankruptcy costs) because interest tax shield can increase firm value whereas default and bankruptcy costs decrease firm value. The theory explains that firms can finance funds from debt more and more as long as the present value of tax shield on debt can increase firm value. When it is found that costs of debt financing are making firm value decline, firm should stop debt financing. Look at Figure 2.1: The optimal debt ratio and the maximum firm value following the trade - off theory, the point that shows the maximum firm value is the point B and the point that shows the optimal debt ratio and the highest level of debt which can maximize firm value is the point A. In Figure 2.2: The optimal debt ratio and the lowest weighted average cost of capital, the point A which can produces the lowest weighted average cost of capital (K_{WACC}) following the trade - off theory is the same point as the point A of Figure 2.1 which generates the highest firm value (V). Thus, according to the theory, firms can determine target debt ratio and calculate the firm value (V) and weighted average cost of capital (K_{WACC}) with the following formulae.

1. Firm value (V)

Firm value (V) = Value with equity + Value with debt

Value with debt = Present value (PV) of interest tax shield

- Present value (PV) of debt financing costs

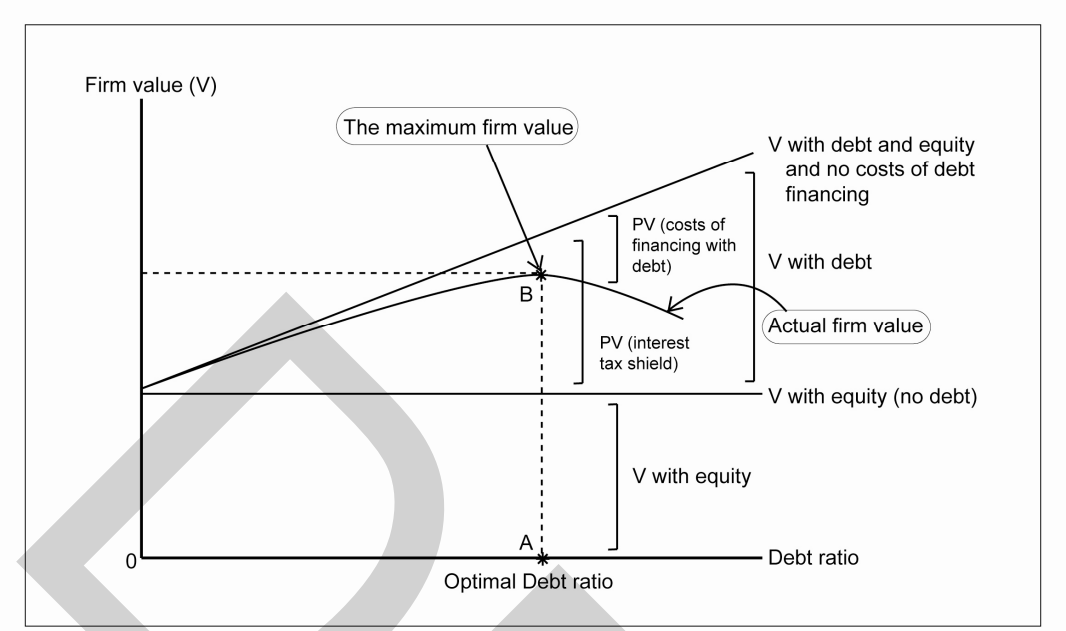
2. Weighted average cost of capital (K_{WACC})

Cost of capital (K_{WACC}) = (X_e x Cost of equity) + (X_d x Cost of debt)

Where as: X_e = Percentage of equity in total capital

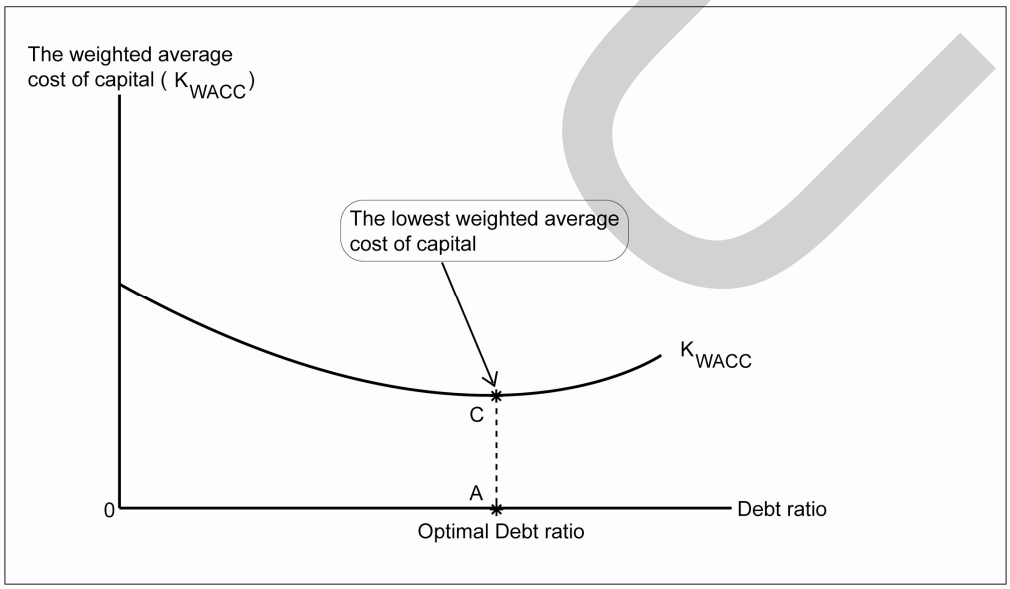
X_d = Percentage of debt in total capital

Figure 2.1: The optimal debt ratio and the maximum firm value (V) following the trade - off theory



Source: Adapted from Chitnomrath (2003:295) and Ross, Westerfield and Jaffe (2005:443).

Figure 2.2: The optimal debt ratio and the lowest weighted average cost of capital (K_{WACC}) following the trade - off theory



Source: Adapted from Chitnomrath (2003:295) and Ross, Westerfield and Jaffe (2005:443).

Many researchers support the existence of the trade - off theory (e.g., Booth, Aivazian, Demirguc-Kunt and Maksimovic, 2001; Gaud, Jani, Hoesli and Bender, 2003; Hsiao, Hsu and Hsu, 2009; Singh and Kumar, 2008). Booth et al. (2001) studied capital structure of firms in developing countries to assess whether the capital structure theories work in developing countries as well as in developed countries. In their findings, the trade - off theory explains that capital structure choices of firms in developing countries were affected by the same factors as in developed countries. Gaud et al. (2003) also suggested trade - off hypothesis in explaining the determinants of Swiss firms' capital structure. Their analysis showed that Swiss firms adjusted toward a target capital structure determined by the benefits and cost of using debt financing. Hsiao et al. (2009) studied financing decisions of corporation in Asian emerging markets (Hong Kong, Korea, Singapore and Taiwan) and found firms from these countries being in line with the trade - off theory. This means all firms in the study of Hsiao et al. having a target debt ratio to maximize firm value as well. In addition, the results of the research by Singh and Kumar (2008) were consistent with the results found by Booth et al. (2001). They found Indian firms using the advantages of debt to create firm value as well. With these previous studies, it can be said that the conceptual framework of this theory is important in explaining firms' financing decisions.

2.1.2 The pecking order theory

The first person who discovered the pecking order theory is Donaldson (1961). It was developed later by Myers and Majluf in 1984. They found that corporate financing by this theory has an order of priorities in choosing funds between internal and external sources including external sources selection between debt and equity. This can be expressed in Table 2.1. If firms are profitable enough, they will use internal funds from their retained earnings rather than external funds from debt and equity. When the internal sources run out and the additional funds are needed, they will move to external financing from debt first and choose equity financing as a last resort if they have no more debt capacity (Myers, 1984; Myers and Majluf, 1984). According to the theory (Brealey, Myers and Marcus, 2005; Ross, Westerfield and Jaffe, 2005) , there is no optimal debt of financing decisions, firms prefer debt to equity financing to avoid asymmetric information problems between insiders (mangers) and outside investors.

Investors are aware that managers know more about firm performance, risk and value than them and will avoid issuing equity when a share price is undervalued. Thus, when a new equity issue is announced, investors will interpret this as a negative signal. Then, they will wait until the equity price declines. Consequently, the cost of equity increases. Technically, costs of issuing equity are higher than costs of financing debt. In addition, there are no asymmetric information problems with investors when firms use debt financing. This is the reason why managers are unwilling to finance equity and tend to use equity financing as a last choice following the pecking order theory.

Table 2.1: Financing decisions following the pecking order theory

An order of choosing funds	**Sources of funds**
First-order choice	Internal funds from retained earnings
Second-order choice	External funds from debt when internal funds run out
Last-order choice	External funds from equity when firm has no more debt capacity

Additionally, the theory combines a firm's growth opportunities with its capital structure. The notion of information asymmetry suggests that firms with growth opportunities should use debt capacity to invest in positive net present value projects if external funds are required as this financing choice can increase value of the firm (Eriotis, 2007; Myers, 1984). Although growth opportunities help firm get high value, growth may cause high variation in firm value. As a result, increasing debt may increase firm risk. Thus, firms with growth opportunities need to consider their capital structure and use less debt if they are risky firms (Singh and Kumar, 2008).

Chaplinsky and Niehaus (1990), Fama and French (2002), Mazur (2007) and Shyam-Sunder and Myers (1999) provided strong support for the pecking order theory.

Chaplinsky and Niehaus (1990) and Shyam-Sunder and Myers (1999) tested static trade - off against pecking order models of capital structure and found that the basic pecking order model has much greater explanatory power than a static trade - off model. Fama and French (2002) studied trade - off and pecking order predictions about dividends and debt and confirmed the pecking order model that more profitable firms were less levered. This discovery is contrary to the principle of the trade - off model. Mazur (2007) also found evidence that the financing choices of Polish firms are better explained by the pecking order hypothesis than the traditional static trade - off model. Besides, the studies in many countries such as Australia, Switzerland, India and Central and Eastern European countries (e.g., Russian Federation, Czech Republic and Slovakia) also discovered the existence of a hierarchy of financing decisions (Delcoure,2007; Cassar and Homes, 2003; Gaud et al., 2003; Singh and Kumar, 2008). Hence, it can be concluded that the pecking order theory is another theory which is important in explaining firms' financing decisions.

2.1.3 Firm characteristics and financing decisions

In the literature review, much empirical research which has been conducted on firm characteristics and financing decisions following the trade - off and pecking order theories found a variety of firm characteristics affecting financing decisions (e.g., Akhtar, 2005; Bevan and Danbolt, 2002; Chen and Strange 2005; Eldomiaty 2007; Frank and Goyal, 2003, 2004; Harris and Raviv, 1990, 1991; Mazur, 2007). They are firm size, liquidity, fixed assets, profitability, financial risk, dividend yield and firm growth. The results from these studies show that some of them have positive relations with measures of financing decisions (debt ratios) but others have negative relations with those. In addition, the results confirm that firm characteristics having positive/negative relationships with debt ratios by the trade - off theory may contradict by the pecking order theory. The firm characteristics and their expected signs on financing decisions following expectations from the trade - off and pecking order theories are summarized in Table 2.2.

Table 2.2: The firm characteristics and their expected signs on financing decisions following the trade - off and pecking order theories

Firm characteristics	Expected signs on financing decisions following: The trade off theory	The pecking order theory
Firm size	Positive	Positive/Negative
Liquidity	Positive	Negative
Fixed assets	Positive	Negative
Profitability	Positive	Negative
Financial risk	Negative	Negative
Dividend policy	-	Positive
Firm growth	Negative	Positive

Source: Prior research in this area

2.2 Hypothesis development

Previous studies that investigated firm characteristics and financial leverage suggest a number of research hypotheses concerning firm size, liquidity, fixed assets, profitability, financial risk, dividend policy and firm growth, as follows.

2.2.1 Firm size

Eriotis (2007) has suggested that larger firms are usually more diversified and thus bear less risk. Other studies also suggest that firm size is an important factor to financial leverage because large size companies have better access to credit markets and can borrow at better conditions (e.g., Akhtar, 2005; Fan, Titman and Twite, 2003; Frank and Goyal, 2003; Rajan and Zingales, 1995; Scott and Martin, 1975). However, some studies found a negative relationship between firm size and debt ratio (Friend and Lang, 1988; Wald, 1999; Cassar and Holmes, 2003). Nevertheless, most empirical research

reported a positive sign for the relationship between firm size and leverage. Titman and Wessels (1988), Rajan and Zingales (1995), and Gaud, Jani, Hoesli and Bender (2003) explained that size was an inverse proxy for the probability of bankruptcy. It was found to be positively correlated with leverage (e.g., studies by Akhtar (2005), Chen and Strange (2005) and Rao and Lukose (2002). This leads to the following hypothesis.

H1: Firm size is positively related to a firm's financing decisions as measured by total debt ratio.

2.2.2 Liquidity

Harris and Raviv (1991) followed the pecking order theory and stated that firms with high liquidity maintain a relatively high amount of current assets, which means they can generate high cash inflows. As a consequence, they can use these internal inflows to finance their operating and investment activities rather than use of debt financing. Jensen (1986) argued that, according to the trade - off theory, cash-rich firms should acquire new debt to prevent managers from wasting free cash flows, which implied a positive sign for liquidity. However, the majority of empirical evidence found that firms with high liquidity tend to use less debt and supports the view of the pecking order assumption, in that, liquidity of the firm has a negative sign with its financial leverage (e.g., Rajan & Zingales 1995; Bevan and Danbolt 2002; Eriotis 2007; Mazur 2007). This leads to the following hypothesis.

H2: Liquidity is negatively related to a firm's financing decisions as measured by total debt ratio.

2.2.3 Fixed assets

According to the trade - off theory, fixed assets are served as debt collateral to protect lenders from the moral hazard problem which is caused by the conflict between shareholders and lenders (Akhtar, 2005). Chen and Strange (2005) and Delcoure (2007) also reported a significant positive relation between fixed assets and a firm's financing decisions. However, from the viewpoint of the pecking order theory, firms with high values of fixed assets are less sensitive to the problem of information asymmetric

between managers and outside investors and then tend to use less debt (e.g., Eldomiaty, 2007; Gaud, Jani, Hoesli and Bender, 2003; Mazur, 2007; Rajan and Zingales, 1995; Titman and Wessels, 1988). As can be seen, most previous studies confirmed a negative influence of fixed assets on debt ratios. This leads to the following hypothesis.

H3: Fixed assets are negatively related to a firm's financing decisions as measured by total debt ratio.

2.2.4 Profitability

The trade - off theory suggests that firms with high profits should finance external funds from debt because debt financing is a disciplining tool that can reduce the problem of information asymmetry between managers and outside investors and furthermore, an increase in debt ratio signals the quality of a firm's financial management (Delcoure, 2007; Rao and Lukose, 2002). This means that high profit firms tend to have a high debt ratio. Alternatively, according to the pecking order theory, profitable firms prefer to use first internal funds and then move to external funds (Harris and Raviv, 1991). This means high profit firms would choose to have a small number of debt ratio. Several researchers who tested the relationship between profitability and financial leverage found that profitability had a negative relation with a debt ratio (e.g., Wiwattanakantang, 1999; Gaud, Jani, Hoesli & Bender, 2003; Chen and Strange, 2005; Akhtar, 2005; Delcoure, 2007). This leads to the following hypothesis.

H4: Profitability is negatively related to a firm's financing decisions as measured by total debt ratio.

2.2.5 Financial risk

The trade - off and pecking order theories view financial risk as a negative effect on capital structure (Rao & Lukose, 2002; Mazur, 2007). The reason is that firms with higher financial risk tend to have higher probability of bankruptcy costs, thus, firms with high financial risk have incentive to reduce their level of debt within capital structure (Eriotis, 2007). The majority of prior studies found the evidence following the theory assumption and suggested a negative relationship between financial risk and debt

ratios (e.g., Harris & Raviv, 1990; Cassar and Holmes, 2003; Eriotis, 2007). This leads to the following hypothesis.

H5: Financial risk is negatively related to a firm's financing decisions as measured by total debt ratio.

2.2.6 Dividend policy

The pecking order theory suggests that dividend policy is one of important firm factors that decrease the amount of internal funds from retained earnings, but increase the need for external financing (Harris and Raviv, 1991; Mazur, 2007). As a result, it is expected that payout ratio of the policy will be likely to be a positive relationship with a firm's financing decision. However, the present study found limited empirical studies examining the relationship between the dividend policy and financial leverage. Martin and Scott (1974) and Frank and Goyal (2004) only found that it was a useful discriminator in their analysis. Eldomiaty (2007) and Mazur (2007) also included it in the model but their results did not show its significant relationship with debt ratios. Nevertheless, dividend policy of Thai listed companies should be investigated to see the results. Therefore, following the theory suggestion and prior research, it is hypothesized that:

H6: Dividend policy is positively related to a firm's financing decisions as measured by total debt ratio.

2.2.7 Firm growth

Based on the pecking order theory assumption, firms with high growth need more funds, especially external funds, to invest in their operating activities, thus it can be expected that these firms will have more financial leverage (Delcoure, 2007; Cassar and Holmes, 2003; Stulz, 1990). Myers (1984), Shyam-Sunder and Myers (1999) and Jensen (1986) argued that, following the trade - off approach, financial leverage was inversely related to growth opportunities because growing firms may invest more in risky projects and, then, may have higher risk in bankruptcy. However, Empirical evidence in support of a positive relationship between growth and debt ratios, which is

consistent with the pecking order theory, can be found in many studies (e.g., Bevan and Danbolt, 2002; Cassar and Holmes, 2003; Michaelas, Chittenden and Poutziouris, 1999; Mazur, 2007; Rao and Lukose, 2002; Stulz 1990). This leads to the following hypothesis.

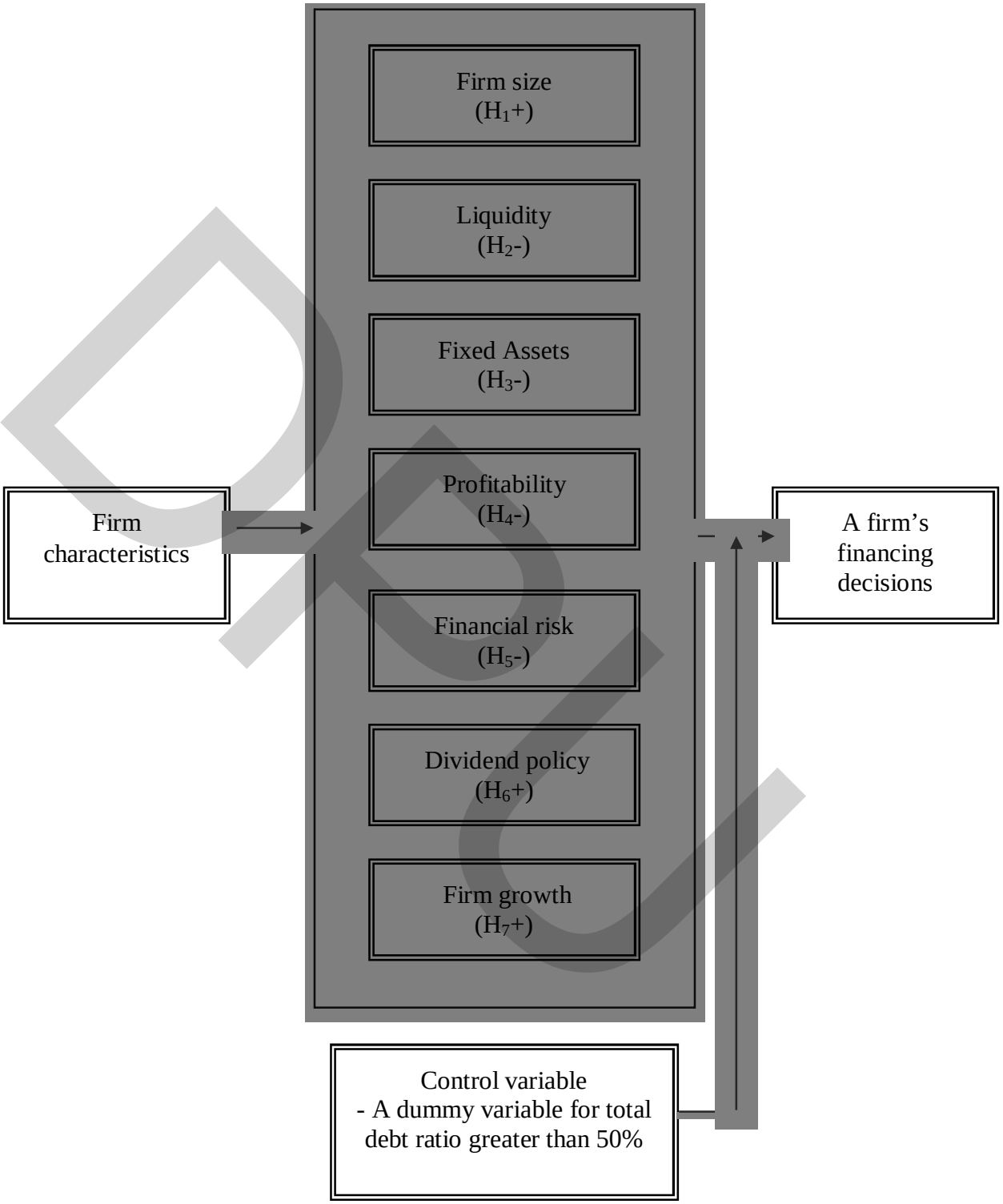
H7: Firm growth is positively related to a firm's financing decisions as measured by total debt ratio.

A list of the research hypotheses formulated is summarized in Table 2.2 and the research model of the study is shown in Figure 2.3.

Table 2.3: A list of research hypotheses of the study

Hypotheses	Items
Hypothesis 1	Firm size is positively related to a firm's financing decisions as measured by total debt ratio.
Hypothesis 2	Liquidity is negatively related to a firm's financing decisions as measured by total debt ratio.
Hypothesis 3	Fixed assets are negatively related to a firm's financing decisions as measured by total debt ratio.
Hypothesis 4	Profitability is negatively related to a firm's financing decisions as measured by total debt ratio.
Hypothesis 5	Financial risk is negatively related to a firm's financing decisions as measured by total debt ratio.
Hypothesis 6	Dividend policy is positively related to a firm's financing decisions as measured by total debt ratio.
Hypothesis 7	Firm growth is positively related to a firm's financing decisions as measured by total debt ratio.

Figure 2.3: Research model of the study



In Figure 2.3, the research model of the study focuses on an investigation of the relationship between specific firm characteristics and a firm's financing decisions. The firm characteristics which include firm size (SIZE), liquidity (LIQD), fixed assets (FASST), profitability (PROF), financial risk (FRSK), dividend policy (DIVD), and firm growth (GROW) will be independent variables and a firm's financing decisions will be a dependent variable. In addition, the model will use a dummy variable to control firms that have total debt ratios greater than 50% because these firms may have more different capital structure than the market as a whole and then they may influence the results of the study (Eriotis 2007). The dummy variable (1,0) is one for firms which debt ratio is more than 50%, and zero otherwise.

2.3 Summary

The objective of this chapter is to develop research hypotheses of the study. The chapter begins with reviewing two well - known and important capital structure theories – the trade - off theory and the pecking order theory, formulating research hypotheses based on theoretical framework and prior studies, and ends with research model of the study.

The trade - off theory supports using debt financing to maximize firm value by trading off between benefits from interest tax shield and costs of financing with debt, whereas the pecking order theory supports using internal funds from retained earnings as the first - order choice, chooses debt financing as the second - order choice if the internal funds runs out and external funds are needed, and issues stock as the last alternative to avoid the information asymmetry between insiders (managers) and outsiders (investors). Previous studies tested these theories and found that both of trade - off and pecking order models can explain a firm's financing decisions in many countries both Asian and Western around the world. They found specific firm characteristics which are firm size, liquidity, profitability, financial risk, dividend policy and firm growth are positive/negative determinants of a firm's capital structure. This discovery is summarized and shown in Table 2.1. The study develops research hypotheses from findings of empirical research (e.g., research by Akhtar (2005), Cassar & Holmes (2003), Chen and Strange (2005), Delcoure (2007), Eriotis (2007), Frank and Goyal (2003), Harris and Raviv (1991), Mazur (2007) and Rao and Lukose (2002). A

summary of research hypotheses is expressed in Table 2.2 and the research model of the study is introduced in Figure 2.3.

The next chapter presents research methodology for the study. It contains the sample selection and data collection, data source, definitions and measurement of all variables including a formal model specification.

Chapter 3
Research Methodology

This chapter outlines the research methodology used to test hypotheses formulated in Chapter 2. First, the sample selection and data collection are explained in Section 3.1. The definitions and measurements of all variables are described in Section 3.2 and finally, data analysis is discussed in Section 3.3.

3.1 The sample selection and data collection

This research aims to examine the specific firm characteristics that influence financing decisions of public companies listed on the Stock Exchange of Thailand (SET) for the time period 2005 - 2007. According to industry classification by SET, Thai listed companies as a sample of the study are non - financial firms which are in the following industries:

1. Agro & Food industry	44	(companies)
2. Consumer products	41	
3. Industrials	69	
4. Property & construction	89	
5. Resources	24	
6. Services	85	
7. Technology	37	
Total	389	

The study employs those populations (389 companies) as the sample for analysis. According to assumptions of multiple regression analysis which is used in this research, the study checks a number of sample firms (N) to predictors to avoid problems regarding a small effect size and substantial measurement error. The rule of thumb of multiple regressions requires N more or equal 50 plus 8m ($N \geq 50 + 8m$), where m is the number of independent variables (Tabachnick & Fidell 2001; Field 2005). Thus, following this rule, the number of sample firms for eight independent variables

(including one control variable) in the proposed regression model should be 114 firms (50 + (8 X 8)), that is, 389 sample firms of the study are very sufficient for testing the proposed research model.

The data for study is collected from the SETSMART database of the Stock Exchange of Thailand (SET). The data includes three - year financial statements (income statement and balance sheet) and other related reports in FM 56 – 1 of 389 sample firms during the period 2005 - 2007.

3.2 Definitions and measurements of variables

Based on the hypotheses in Chapter 2, there are 9 variables in the study, one dependent variable, seven independent variables and one control variable. The definition and measurement of each variable, which is adapted from related prior studies, is presented as follows.

3.2.1 The dependent variable

Previous studies used leverage, which is total debt ratio (TDR), as a proxy of a firm's capital structure and financing decisions (e.g., Graham & Harvey, 2001; Mackay and Philips, 2005; Mazur, 2007; Rao and Lukose, 2002; Wiwattanakantang, 1999). In line with previous studies, the measure of a firm's financing decisions in this present study is total liabilities (both short-term and long-term debt) over total assets, calculated with book and market values. The book value is defined as the book value of total liabilities divided by the book value of total assets. The market value is defined as the book value of total liabilities divided by the book value of total liabilities and the market value of total equity. The market value of total equity is defined as the number of outstanding shares multiplied by the market price per share at the last trading day of 2007. The formulae are:

$$\text{TDR – book value} = \frac{\text{Book value of total short-term and long-term liabilities}}{\text{Book value of total assets}}$$

$$\text{TDR – market value} = \frac{\text{Book value of total short-term and long-term liabilities}}{\text{Book value of total liabilities + Market value of total equity}}$$

3.2.2 Independent variables

The selection of explanatory variables in this research is based on two capital structure theories, namely the trade - off theory and the pecking order theory. The set of explanatory variables will include seven factors following the studies of prior research (e.g., Barclay, Smith and Watts, 1996; Cassar and Homes, 2003; Delcoure, 2007; Eriotis, 2007; Mazur, 2007). These firm characteristics are firm size, liquidity, fixed assets, profitability, financial risk, dividend policy, and firm growth. The following is the definition and measurement of each variable.

3.2.2.1 Firm size (SIZE)

Firm size can be defined in different ways in terms of net revenues from sales, total sales, and the book value of total assets. Mazur (2007) used those definitions (net revenues from sales and total assets) to measure firm size. Eriotis (2007) considered total sales to be a proxy of firm size whereas Delcoure (2007) employed the natural logarithm of total assets as its proxy. Gaud, Jani, Hoesli and Bender (2003), Titman and Wessels (1988) and Rajan and Zingales (1995) also employed the natural logarithm of total assets as a proxy of size. It seems the natural logarithm of total assets is the common proxy for size. Thus, in this study, firm size (SIZE) is defined as the book value of total assets in terms of the natural logarithm. The formula is:

$$SIZE = \text{Log (Book value of total assets)}$$

3.2.2.2 Liquidity (LIQD)

As mentioned before, the majority of empirical research found liquidity being negatively correlated with debt ratios by using the current ratio as a proxy to measure the firm's liquidity (LIQD) (e.g., Cassar and Homes, 2003; Eriotis, 2007; Mazur, 2007). Thus, in line with those studies, liquidity (LIQD) in this study is defined as the current ratio. The formula is:

$$LIQD = \frac{\text{Current assets}}{\text{Current liabilities}}$$

3.2.2.3 Fixed assets (FASST)

A large number of previous studies defined fixed assets (FASST) in terms of the ratio of net fixed assets or non-current assets divided by total assets (e.g., Barclay, Smith and Watts, 1996; Cassar and Homes, 2003; Chen and Strange, 2005; Rao and Lukose, 2002; Wiwattanakantang, 1999). Thus, following these studies, the ratio of net fixed assets to total assets is employed to measure fixed assets (FASST). The formula is:

$$\text{FASST} = \frac{\text{Net fixed assets}}{\text{Total assets}}$$

3.2.2.4 Profitability (PROF)

Previous studies define profitability (PROF) as the return on assets ratio (ROA). However, there are various types of the ratio. For example, Rao and Lukose chose the return on total assets which is calculated as the ratio of earnings before interest and tax to total assets, similar to the studies of Booth, Aivazian, Demirguc-Kunt and Maksimovic (2001) and Rajan and Zingales (1995), whereas Akhtar (2005), Delcoure (2007) and Eldomiaty (2007) used the ratio of earnings after taxes to total assets as a proxy for profitability. This study applies the measure of profitability from the Akhtar (2005), Delcoure (2007) and Eldomiaty (2007) approach. The formula is:

$$\text{PROF} = \frac{\text{Earnings after taxes (EAT)}}{\text{Total assets}}$$

3.2.2.5 Financial risk (FRSK)

Harris and Raviv (1990) and Eriotis (2007) used financial risk (FRSK) in terms of the interest coverage ratio as an expected determinant of capital structure. It is expressed as net income before interest and taxes divided by interest payments. In line with these empirical studies, the definition of financial risk in this study is the interest coverage ratio which is calculated as earnings before interest and taxes divided by interest payments. The formula is:

$$\text{FRSK} = \frac{\text{Earnings before interest and taxes (EBIT)}}{\text{Interest payments}}$$

3.2.2.6 Dividend policy (DIVD)

Frank and Goyal (2004) and Martin and Scott (1974) used the payout ratio as a proxy of dividend policy to study its relationship with financial leverage. Mazur (2007) also employed dividend yield to measure dividend policy in his sample firms. The payout ratio was defined as dividend payments over net income. Thus, consistent with these studies, proxy used to measure dividend policy (DIVD) in the study is the payout ratio calculated in the same way. The formula is:

$$DIVD = \frac{\text{Dividend payments}}{\text{Earnings after Taxes}}$$

3.2.2.7 Firm growth (GROW)

There are various proxies used in the literature to measure firm growth. For example, Eriotis (2007) chose the annual change on earnings as a proxy of growth measurement of sample firms as whereas Cassar and Homes (2003) used the growth rate of net sales to capture firm growth. On the contrary of them, Delcoure, (2007), Mazur (2007) and Rao and Lukose (2002) used the growth rate of total assets to measure growth opportunities. In this study, firm growth (GROW) is defined as the growth rate of earnings after taxes. It is calculated by dividing the difference between earnings after tax of the current year and earnings after tax of the year prior to the current year by earnings after tax of the year prior to the current year. The formula is:

$$GROW = \frac{(\text{Earnings after taxes at t} - \text{Earnings after taxes at t-1})}{\text{Earnings after taxes at t}}$$

All independent variable measures are summarized in Table 3.1.

Table 3.1: A summary of definitions and expected signs of independent variables

Variable	Expected sign	Definition
Firm size (SIZE)	+	The natural log of the book value of total assets
Liquidity (LIQD)	-	Current assets divided by current liabilities
Fixed assets (FASST)	-	Net fixed assets divided by total assets
Profitability (PROF)	-	EAT divided by total assets
Financial risk (FRSK)	-	EBIT divided by Interest expenses
Dividend policy (DIVD)	+	Dividends divided by EAT
Firm growth (GROW)	+	(EATt – EATt-1) divided by EATt

Notes: EAT = Earnings after taxes, EBIT = Earnings before interest and taxes, TA = Total assets, t = Time

3.2.3 The control variable

Regarding a control variable, Eriotis (2007) suggested that the capital structures of firms which have debt more than equity were different from the market as a whole and this might affect the results of the study. Thus, to control this impact, the study follows the Eriotis (2007) approach and uses a dummy variable (1,0) that equals one if firms have the percentage of the total debt ratio greater than 50%, and zero if firms have the percentage of the total debt ratio less than 50%.

3.3 Data analysis

Two types of statistics including descriptive statistics and inference statistics will be employed for analysis. Descriptive statistics is the first tool of analysis to examine the basic features of sample firms and variables. Both numerical and graphical methods will be used to present each variable and combinations of variables in many forms such as tables and graphs. It will provide a useful summary for understanding a set of data. Inferential statistics such as bivariate correlation (Pearson's product-moment correlation coefficient) and the ordinary least squares regression analysis will be the second tool to

make estimations and predictions from samples to populations. They will be used to test hypotheses and the research model of the study. The statistical package of STATA (version 11.5) will be an instrument to analyze data and find the results.

The ordinary least squares regression model to investigate the relationship between firm characteristics and a firm's financing decisions can be expressed as follows.

$$TDR = \alpha + \beta_1(SIZE) + \beta_2(LIQD) + \beta_3(FASST) + \beta_4(PROF) + \beta_5(FRSK) + \beta_6(DIVD) + \beta_7(GROW) + \beta_8(DUMYDR) + \varepsilon$$

Where as;

α = A constant term

$\beta_1 \ldots \beta_8$ = Coefficient of each variable

ε = An error term

TDR = Total debt ratio

SIZE = Firm size

LIQD = Liquidity

FASST = Fixed assets

PROF = Profitability

FRSK = Financial risk

DIVD = Dividend policy

GROW = Firm growth

DUMYDR = A dummy variable for firms which have total debt ratio greater than 50%

3.4 Summary

This chapter introduced research methodology for the study. It is designed to examine the relationship between specific firm characteristics (firm size, liquidity, fixed assets, profitability, financial risk, dividend policy and firm growth) and a firm's capital structure as measured by total debt ratio.

All sample firms (389 companies) are publicly non - financial firms listed on the Stock Exchange of Thailand (SET). The data for analysis is obtained from income statement, balance sheet and other related information in FM 56 - 1 of the companies. The study gathers the data from the SETSMART database of the Stock Exchange of Thailand (SET) at the time period 2005 - 2007. A summary of the definitions and measurements of independent variables are outlined in Table 3.1. Descriptive statistics is used to examine the basic features of sample firms and variables whereas the ordinary least squares regression model is employed to test hypotheses in chapter 2.

The next chapter presents the results of the descriptive analysis and statistical test of hypotheses. A report of the tests of the statistical assumptions is also described in this chapter.

Chapter 4
Empirical results and hypotheses testing

This chapter presents empirical results of statistical analysis for the hypotheses developed in Chapter 2. It begins with the final sample size for analysis in Section 4.1 and the results from descriptive analysis in Section 4.2. This is followed by reports on the results of the ordinary least squares regression analysis in Section 4.3. This section also includes an assumption for statistical tests. Finally, the results of the hypotheses testing are discussed in Section 4.4.

4.1 The final sample size for analysis

As discussed in Chapter 3 (Section 3.1), 389 non-financial companies listed on the Stock Exchange of Thailand (SET) are determined to be the sample of the study. The data from these companies are collected for the period 2005 – 2007. After considering any missing data, the final sample firms that have a complete data on the variables consist of 220 non - financial companies, belonging to 7 industries which include agro & food industry (29), consumer products (19), industrials (42), property & construction (42), resources (14), services (52), and technology (22). The details of the sample classified by the industry type are described in Table 4.1. This figure (220 companies) represents 56% of the 389 non-financial listed companies on the Stock Exchange of Thailand during the period 2005 – 2007. The study rechecks the sample size for analysis and finds that based on the assumptions of multiple regression analysis, the number of sample firms for eight independent variables (including one control variable) in the multiple regression model should be 114 firms (Tabachnick and Fidell 2001; Field 2005). Thus, the final sample firms of the study, 220 companies are still sufficient for testing the proposed research model.

Table 4.1: Sample firms as classified by industry type

Industry	No. of firms	Firms missing data	sample firms	Percent
1. Agro & food industry	44	15	29	13%
2. Consumer products	41	22	19	9%
3. Industrials	69	27	42	19%
4. Property & construction	89	47	42	19%
5. Resources	24	10	14	6%
6. Services	85	33	52	24%
7. Technology	37	15	22	10%
Total	**389**	**169**	**220**	**100%**

4.2 Descriptive results

4.2.1 The dependent variable

According to Table 4.2 which shows minimum, maximum, mean book and market values, and standard deviation of total debt ratio of total sample firms (220 companies), it can be seen that mean book value (38.66%) and mean market value (34.21%) of total debt ratio are not much different. Also, maximum book and market values and standard deviation of total debt ratio are nearly at the same range except minimum book and market values. The minimum of book and market values is around 0.25% - 1.57 %, their maximum is during 84% - 88% and their standard deviation is 19% approximately.

Table 4.2: Minimum, maximum, mean and standard deviation of book and market values of total debt ratio of total sample firms (220 companies)

Items	N	Minimum	Maximum	Mean	Std. Deviation
Debt ratio-book value	220	.25	87.54	38.66	19.08
Debt ratio-market value	220	1.57	84.65	34.21	19.76

In Figure 4.1 and Table 4.3, the study classifies a non - financial company's total debt ratio into each industry type following industry classification by the Stock exchange of Thailand (SET) and finds that mean value of firms in all industry types (see

figure 4.1) is less than 50%. This means that on average, sample firms in the study have low total debt ratio. However, minimum and maximum values in each industry type (see Table 4.3) show that although the majority of firms use less debt financing for their business operations, some of them have high total debt ratio. It can be seen that there is the maximum value of total debt ratio (over 50%) being in all industry types and the value of total debt ratio over 65% is found in 4 industry types – Agro & food, industrials, property, services and technology. The highest book value (87.54%) is in services industry and the highest market value (84.65%) is in agro & food industry. Additionally, its minimum value (less than 20%) is in all industry types as well and the lowest value (only .25%) is in services industry.

Figure 4.1: Mean book and market values of total debt ratio of sample firms in each industry

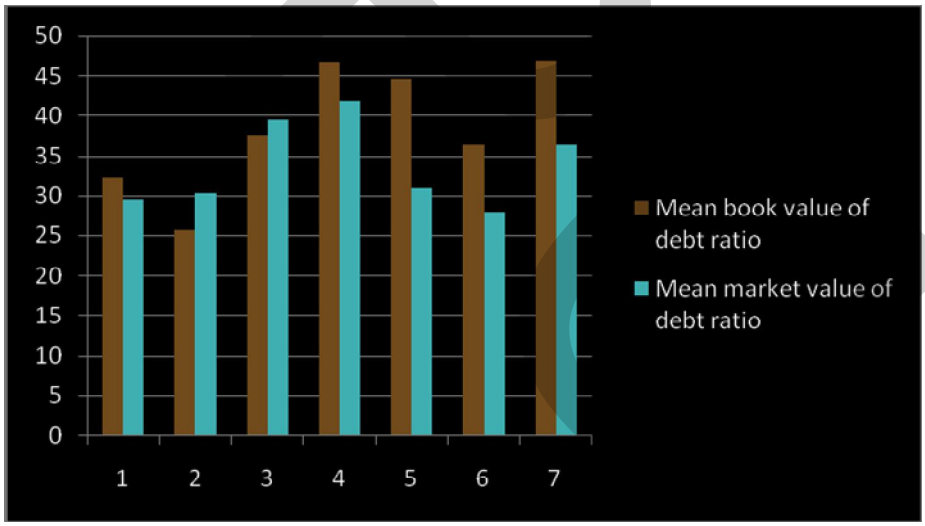


Table 4.3: Minimum, maximum, mean and standard deviation of book and market values of total debt ratio of sample firms in each industry

Items in each industry	N	Minimum	Maximum	Mean	Std. Deviation
1. Agro & food					
Debt ratio –book value	29	6.07	77.76	32.26	20.58
Debt ratio – market value	29	3.27	84.65	29.51	22.44
2. Consumer products					
Debt ratio –book value	19	8.38	48.67	25.60	12.80
Debt ratio – market value	19	7.53	63.79	30.23	19.51
3. Industrials					
Debt ratio –book value	42	6.38	71.30	37.58	16.18
Debt ratio – market value	42	6.45	75.12	39.49	18.08
4. Property					
Debt ratio –book value	42	4.88	70.15	46.60	16.19
Debt ratio – market value	42	5.56	78.69	41.88	18.59
5. Resources					
Debt ratio –book value	14	17.19	61.55	44.55	14.31
Debt ratio – market value	14	10.46	60.17	30.86	15.50
6. Services					
Debt ratio –book value	52	.25	87.54	36.43	21.68
Debt ratio – market value	52	1.57	76.14	27.85	19.24
7. Technology					
Debt ratio –book value	22	4.54	73.26	46.75	18.93
Debt ratio – market value	22	1.62	74.29	36.31	19.61

4.2.2 Independent variables

As specified in Chapter 3 (Section 3.2.2), the independent variables of the study are specific firm characteristics. They include firm size, liquidity, fixed assets, profitability, financial risk, dividend policy and firm growth. Their details are described as follows.

4.2.2.1 Firm size

Table 4.4 presents minimum, maximum and mean values including standard deviation of sample firms' size in all and each industry. According to the descriptive results in Panel A of Table 4.4, sizes of sample firms are large. The mean value of total sample firms' size is 18,621.52 million baht. The figures in Panel B of table 4.4 shows that the company having the maximum size (892,351.46 million baht) is in resources industry and the company having the minimum size (358.47 million baht) is in agro & food industry. Figure 4.2 also presents mean size of sample firms in each industry. It discloses that on average, firm size in resources industry are the largest size (115,151.06 million baht) followed by firm size in services (16,518.72 million baht), property (14,647.35 million baht) and technology (12,253.51 million baht), respectively and the smallest mean size is in consumer products (4,333.13 million baht). This can be concluded that companies in resources industry are large in size.

Table 4.4: Minimum, maximum and mean values including standard deviation of size of sample firms in all and each industry

Panel A: Minimum, maximum and mean values including standard deviation of size of sample firms in all industry

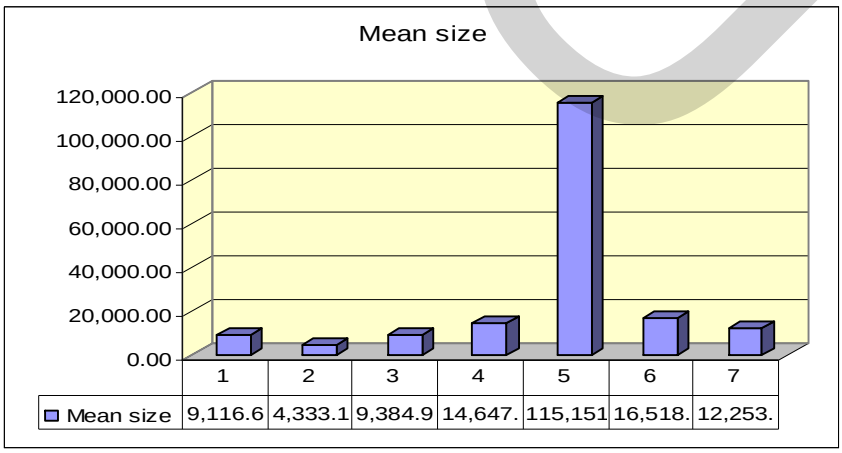
Items	N	Minimum	Maximum	Mean	Std. Deviation
Size	220	358.47	892,351.46	18,621.52	68,926.82

Table 4.4: (continued)

Panel B: Minimum, maximum and mean values including standard deviation of size of sample firms in each industry

Items in each industry	N	Minimum	Maximum	Mean	Std. Deviation
1. Agro & food	29	358.47	102,545.71	9,116.68	19,428.55
2. Consumer products	19	470.06	20,041.19	4,333.13	4,802.86
3. Industrials	42	532.51	133,513.54	9,384.96	21,658.01
4. Property	42	820.95	248,256.03	14,647.35	38,041.97
5. Resources	14	2,531.94	892,351.46	115,151.06	231,530.77
6. Services	52	378.47	280,275.32	16,518.70	43,205.14
7. Technology	22	703.28	128,941.65	12,253.51	28,024.84

Figure 4.2: Mean size of sample firms in each industry



Note: Firm size is measured by the book value of total assets in million baht.

4.2.2.2 Liquidity

Table 4.5 presents minimum, maximum and mean values including standard deviation of sample firms' liquidity in all and each industry. According to the descriptive results in Panel A of Table 4.5, the mean value of total sample firms' liquidity as measured by the current ratio is 2.59 times, the maximum value is 34.63 times and the minimum value is .08 times. Panel B of table 4.5 points that the maximum value (34.63) and the minimum value (.08) are in the same industry (service industry) and the mean value of liquidity in each industry is rather high (more than 2.00 times). As well as Panel B of table 4.5, Figure 4.3 shows that the higher mean value of liquidity (more than 2.5 times) is in agro & food (3.07), followed by its mean value in consumer products (2.96 times), property (2.71 times) and service (2.68). This indicates that companies with high liquidity in this study have the ability to pay their current obligations in time and when they become due.

Table 4.5: Minimum, maximum and mean values including standard deviation of liquidity of sample firms in all and each industry

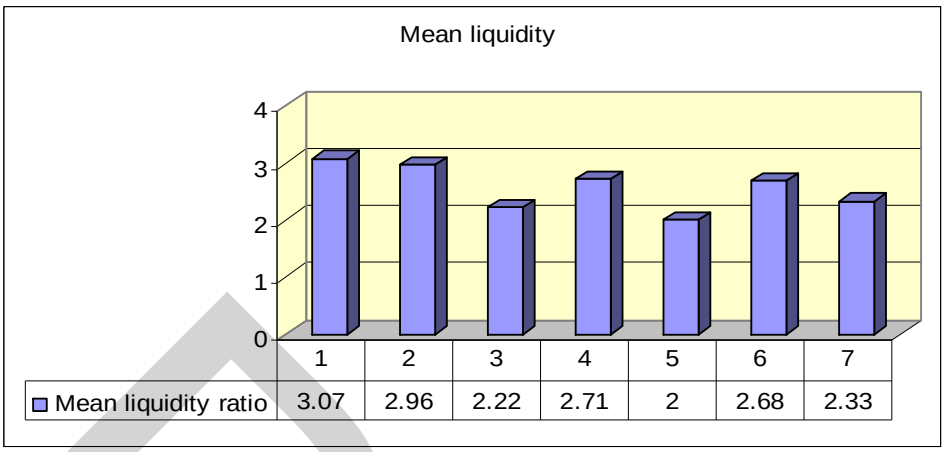
Panel A: Minimum, maximum and mean values including standard deviation of liquidity of sample firms in all industry

Items	N	Minimum	Maximum	Mean	Std. Deviation
Liquidity	220	.08	34.63	2.59	3.18

Panel B: Minimum, maximum and mean values including standard deviation of liquidity of sample firms in each industry

Items in each industry	N	Minimum	Maximum	Mean	Std. Deviation
1. Agro & food	29	.64	15.31	3.07	3.20
2. Consumer products	19	.86	6.37	2.96	1.53
3. Industrials	42	.85	9.51	2.22	1.81
4. Property	42	.52	11.14	2.71	2.38
5. Resources	14	1.09	4.22	2.00	.96
6. Services	52	.08	34.63	2.68	5.08
7. Technology	22	.73	14.29	2.33	2.81

Figure 4.3: Mean liquidity of sample firms in each industry



Note: Liquidity is measured by the current ratio.

4.2.2.3 Fixed assets

Table 4.6 presents minimum, maximum and mean values including standard deviation of the percentage of fixed assets to total assets of sample firms in all and each industry. The descriptive results in Panel A of Table 4.6 show that the mean value of fixed assets of total sample firms is 50.73% but its maximum value is very high (99.16%). However, there is still the company that has the low percentage of fixed assets. It can be seen that the lowest value is only 2.48%. In addition, Panel B of table 4.6 indicates that the mean value of fixed assets of companies in each industry is during 30% - 67%. Panel B of table 4.6 and Figure 4.4 also explain that there are three industries that have the mean value of the proportion of fixed assets more than 50% - services (66.02%), resources (60.81%) and agro & food (54.83%) and there are three industries that have the mean value of the proportion of fixed assets less than 50% but more than 40% - industrials (47.65%), consumer products (46.11%) and property (41.47%). It is surprising that companies in technologies have the mean value of the proportion of fixed assets is the lowest (only 30.35%). This means that some companies in technologies which have low values of fixed assets may choose more debt financing to avoid the information asymmetric problem when they need external funds (Frank and Goyal, 2004; Mazur, 2007).

Table 4.6: Minimum, maximum and mean values including standard deviation of the percentage of fixed assets of sample firms in all and each industry

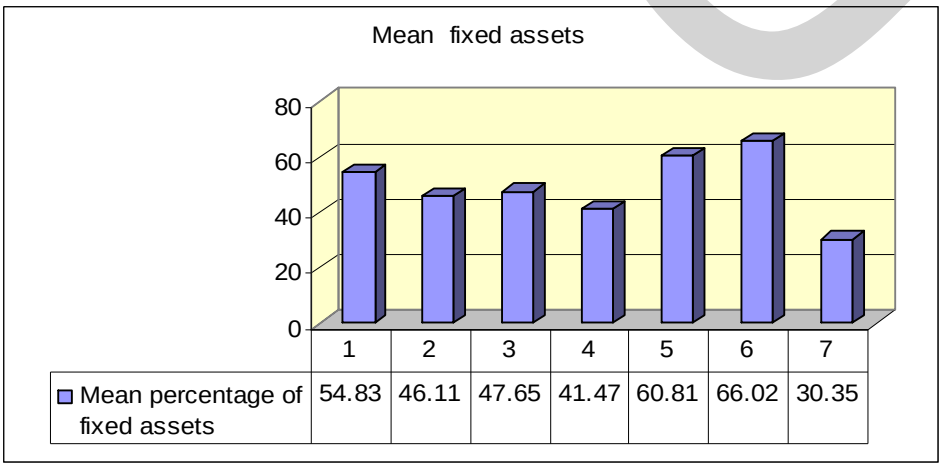
Panel A: Minimum, maximum and mean values including standard deviation of the percentage of fixed assets of sample firms in all industry

Items	N	Minimum	Maximum	Mean	Std. Deviation
Fixed assets	220	2.48	99.16	50.73	22.86

Panel B: Minimum, maximum and mean values including standard deviation of the percentage of fixed assets of sample firms in each industry

Items in each industry	N	Minimum	Maximum	Mean	Std. Deviation
1. Agro & food	29	24.18	99.16	54.83	21.08
2. Consumer products	19	5.80	71.18	46.11	17.30
3. Industrials	42	14.17	74.60	47.65	16.91
4. Property	42	2.48	93.93	41.47	25.92
5. Resources	14	30.84	83.65	60.81	15.49
6. Services	52	16.22	98.33	66.02	19.64
7. Technology	22	2.97	84.03	30.35	18.26

Figure 4.4: Mean fixed assets of sample firms in each industry



Note: Fixed assets are measured by the percentage of fixed assets to total assets.

4.2.2.4 Profitability

Table 4.7 presents minimum, maximum and mean values including standard deviation of sample firms' profitability in all and each industry type. The descriptive results in Panel A of Table 4.7 show that the mean value of total sample firms' profitability as measured by the return on assets (ROA) ratio is 11.75%. Although the maximum value of profitability rises to 42.72%, its minimum value is only 0.23%. Panel B of table 4.7 points out that the mean values of profitability of firms in each industry are during 9% - 15% and the maximum (42.72%) and minimum (0.23%) values are in the same industry (service industry). Figure 4.5 also expresses that the mean values of company profitability in three industries – resources (15.19%), agro & food (13.20%) and services (12.98%) are more than the mean value of profitability of total sample firms (11.75%) whereas its mean values of companies in industrials (10.98%), property (9.78%), consumer products (8.94%) are less than its mean value of total sample firms (11.75%). This means that the abilities of sample companies to generate profits are mixed – Some companies have high profits and others have low profits. Nevertheless, there are not any companies having negative profits found in this study.

Table 4.7: Minimum, maximum and mean values including standard deviation of profitability of sample firms in all and each industry type

Panel A: Minimum, maximum and mean values including standard deviation of profitability of sample firms in all industry

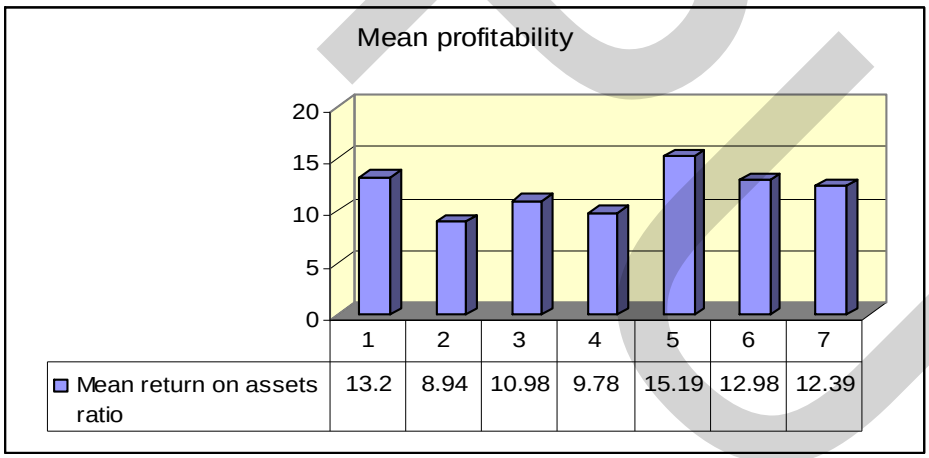
Items	N	Minimum	Maximum	Mean	Std. Deviation
Profitability	220	.23	42.72	11.75	7.10

Table 4.7: (continued)

Panel B: Minimum, maximum and mean values including standard deviation of profitability of sample firms in each industry

Items in each industry type	N	Minimum	Maximum	Mean	Std. Deviation
1. Agro & food	29	1.35	34.93	13.20	8.73
2. Consumer products	19	.74	17.55	8.94	4.86
3. Industrials	42	.79	24.37	10.98	5.83
4. Property	42	1.83	28.36	9.78	6.22
5. Resources	14	5.60	30.06	15.19	6.52
6. Services	52	.23	42.72	12.98	8.57
7. Technology	22	4.66	27.47	12.39	5.14

Figure 4.5: Mean profitability of sample firms in each industry



Note: Profitability is measured by the return on assets (ROA) ratio.

4.2.2.5 Financial risk

Table 4.8 presents minimum, maximum and mean values including standard deviation of sample firms' financial risk in all and each industry type. The descriptive results in Panel A of Table 4.8 show that in overview, its maximum value (999,999.90

times) and mean value (66,729.94 times) as measured by the interest coverage ratio are very high but its minimum value is only 0.20 times. Panel B of table 4.8 and Figure 4.6 also show that in each industry type, its mean values are very high (17.82 times – 139,006.26 times). This shows that most of sample companies in various industries in the study have high interest coverage ratio which mean that they have high abilities to pay interest on outstanding debts. However, it can be seen in Panel B of table 4.8 that there are still some companies in two industries (resources and services) having interest coverage ratio below 1 times (0.41 times and 0.20 times, respectively) which means that they have high risk for debt financing.

Table 4.8: Minimum, maximum and mean values including standard deviation of financial risk of sample firms in all and each industry type

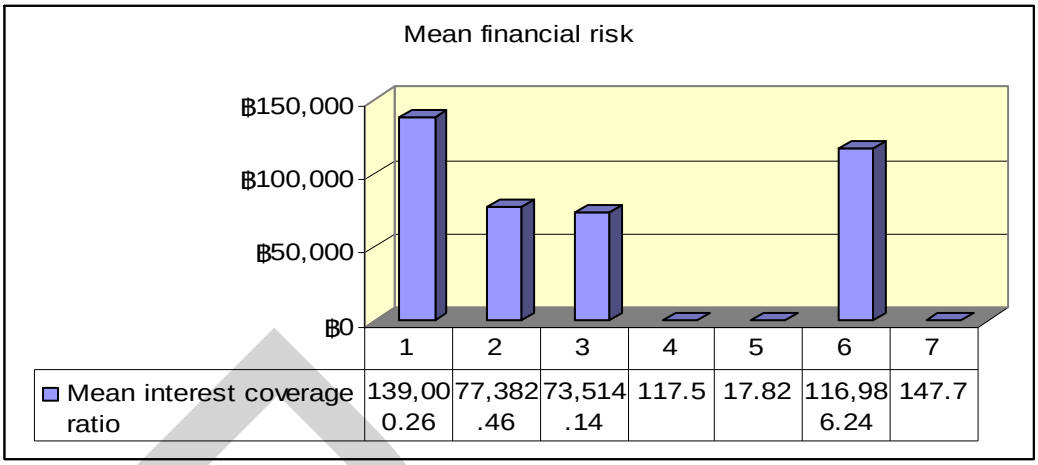
Panel A: Minimum, maximum and mean values including standard deviation of financial risk of sample firms in all industry

Items	N	Minimum	Maximum	Mean	Std. Deviation
Financial risk	220	.20	999,999.90	66,729.94	244,808.80

Panel B: Minimum, maximum and mean values including standard deviation of financial risk of sample firms in each industry

Items in each industry type	N	Minimum	Maximum	Mean	Std. Deviation
1. Agro & food	29	1.33	999,999.99	139,000.26	350510.74
2. Consumer products	19	3.85	999,999.99	77,382.46	234,019.89
3. Industrials	42	1.37	999,999.99	73,514.14	260,179.04
4. Property	42	1.23	1,979.17	117.52	362.99
5. Resources	14	.41	78.13	17.82	24.26
6. Services	52	.20	999,999.99	116,986.24	322,084.29
7. Technology	22	3.19	1,155.70	147.66	337.33

Figure 4.6: Mean financial risk of sample firms in each industry



Note: Financial risk is measured by the interest coverage ratio.

4.2.2.6 Dividend policy

Table 4.9 presents minimum, maximum and mean values including standard deviation of sample firms' dividend policy in all and each industry type. The descriptive results in Panel A of Table 4.9 show that in all industry, the maximum, mean and minimum values of dividend policy as measured by the dividend payout ratio are 20.41%, 5.50% and 0.11%, respectively. Panel B of table 4.9 and Figure 4.7 document that the mean values of dividend policy in each industry are during 4.26% - 6.46%. The lowest mean value (4.26%) is in service industry and the highest mean value (6.46%) is in technology industry. Panel B of table 4.9 also discloses that the first three ranks of maximum payout ratio are in technology (20.41%), property (16.67%) and industrials (14.12%) whereas the last three ranks of minimum payout ratio are in agro & food (0.11%), services (0.44%) and property (0.90%). It can be seen that the dividend payout ratios of sample companies are mixed between low and high ratios.

Table 4.9: Minimum, maximum and mean values including standard deviation of dividend policy of sample firms in all and each industry type

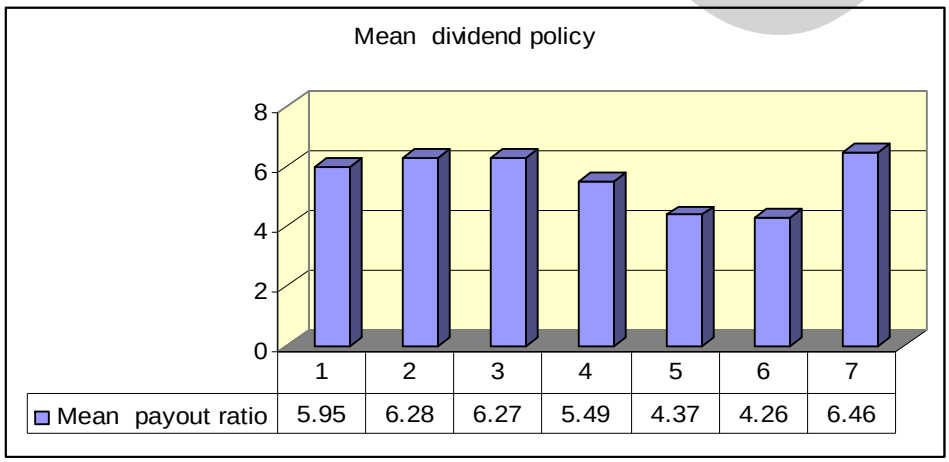
Panel A: Minimum, maximum and mean values including standard deviation of dividend policy of sample firms in all industry

Items	N	Minimum	Maximum	Mean	Std. Deviation
Dividend policy	220	.11	20.41	5.50	3.31

Panel B: Minimum, maximum and mean values including standard deviation of dividend policy of sample firms in each industry

Items in each industry type	N	Minimum	Maximum	Mean	Std. Deviation
1. Agro & food	29	.11	13.27	5.95	3.21
2. Consumer products	19	2.00	10.17	6.28	2.48
3. Industrials	42	1.53	14.12	6.27	3.41
4. Property	42	.90	16.67	5.49	3.38
5. Resources	14	1.21	13.87	4.37	3.39
6. Services	52	.44	9.01	4.26	2.09
7. Technology	22	.83	20.41	6.46	4.97

Figure 4.7: Mean dividend policy of sample firms in each industry



Note: Dividend policy is measured by the payout ratio.

4.2.2.7 Firm growth

Table 4.10 presents minimum, maximum and mean values including standard deviation of sample firms' firm growth in all and each industry type. The descriptive results in Panel A of Table 4.10 show that in all industry, the maximum, mean and minimum values of firm growth as measured by the growth rate of earnings after taxes (EAT) are 3,332.94%, 52.27% and -114.96%, respectively. It can be seen that there are difference in growth rates of sample companies - some companies are positively growing but others are negatively growing. Panel B of table 4.10 and figure 4.8 express that the company mean value in each industry is a positive growth ratio (around 13.63% - 91.01%) except the mean value of companies in consumer products shows a negative growth ratio (-14.66%). Additionally, when look at the minimum value, companies in each industry have a high number of negative ratios (-65.27% - -114.96%). It can be seen that the first three ranks of maximum growth ratio are in property (3,332.94%), industrials (2,907.85%) and agro & food (2,346.40%) and the last three ranks of minimum growth rate are in consumer products (-114.96%), industrials (-98.26%) and agro & food (-81.38%). This can be concluded that firm growth of sample companies are mixed between negative and positive ratios.

Table 4.10: Minimum, maximum and mean values including standard deviation of firm growth of sample firms in all and each industry type

Panel A: Minimum, maximum and mean values including standard deviation of firm growth of sample firms in all industry

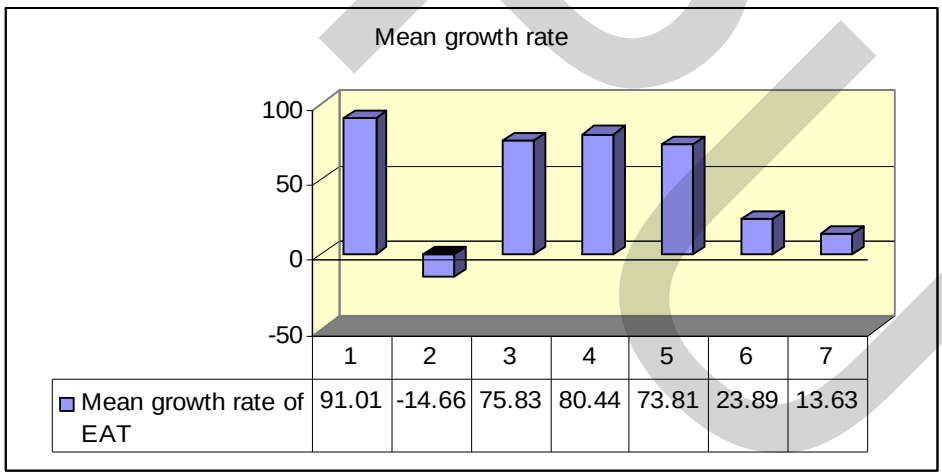
Items	N	Minimum	Maximum	Mean	Std. Deviation
Growth rate	220	-114.96	3,332.94	52.27	346.30

Table 4.10: (continued)

Panel B: Minimum, maximum and mean values including standard deviation of firm growth of sample firms in each industry

Items in each industry type	N	Minimum	Maximum	Mean	Std. Deviation
1. Agro & food	29	-81.38	2,346.40	91.01	438.57
2. Consumer products	19	-114.96	116.43	-14.66	50.91
3. Industrials	42	-98.26	2,907.85	75.83	451.20
4. Property	42	-86.02	3,332.94	80.44	517.79
5. Resources	14	-65.27	802.04	73.81	215.74
6. Services	52	-89.66	412.88	23.89	98.12
7. Technology	22	-71.17	262.64	13.63	78.56

Figure 4.8: Mean firm growth of sample firms in each industry



Note: Firm growth is measured by the growth rate of earnings after taxes (EAT).

In addition, the study examines a number of companies with criteria of each independent variable in Table 4.11 and finds that the following results of variables in the sample.

First – firm size, there are 183 companies (83.20%) having firm size below mean (18,621.52 million baht) and only 16 companies (16.80%) have firm size above mean.

Second - liquidity, 185 companies (84.10%) have appropriate liquidity ratios (more than 1) whereas 35 companies (15.90%) have low liquidity ratios (less than 1).

Third – fixed assets, 114 companies (51.80%) have high percentage of fixed assets to total assets (more than 50%) and 106 companies (48.20%) have low percentage of fixed assets to total assets (less than 50%).

Fourth - profitability, 92 companies (41.82%) have return on assets ratios more than mean value (11.75%) and 128 companies (58.18%) have return on assets ratios less than mean value.

Fifth – financial risk, 218 companies (99.10%) have low financial risk (the interest coverage ratio more than 1) and only 2 companies (0.90%) have high financial risk (the interest coverage ratio less than 1).

Sixth – dividend policy, 94 companies (42.73%) pay dividends in a high ratio (more than mean ratio, 5.50%) and 126 companies (57.27%) pay dividends in a ratio less than a mean ratio.

Seventh – growth rate, 112 companies (50.91%) have positive growth rates and 108 companies (49.09%) have negative growth rates.

Table 4.11: A number of companies with criteria of each variable

Variables	Companies with criteria of each variable		Total
Specific firm factors:			
	Value below mean	Value above mean	
1. Firm size	183 (83.20%)	37 (16.80%)	220 (100%)
	Ratio less than 1	Ratio more than 1	
2. Liquidity	35 (15.90%)	185 (84.1%)	220 (100%)
	Ratio less than 50%	Ratio more than 50%	
3. Fixed assets	106 (48.20%)	114 (51.80%)	220 (100%)
	Ratio less than mean ratio	Ratio more than mean ratio	
4. Profitability	128 (58.18%)	92 (41.82%)	220 (100%)
	Ratio less than 1	Ratio more than 1	
5. Financial risk	2 (0.90%)	218 (99.10%)	220 (100%)
	Ratio less than mean ratio	Ratio more than mean ratio	
6. Dividend policy	126 (57.27%)	94 (42.73%)	220 (100%)
	Negative growth rate	Positive growth rate	
7. Growth rate	108 (49.09%)	112 (50.91%)	220 (100%)

4.2.3 The control variable

Following Section 3.2.3 in chapter 3, the study uses the book value of total debt ratio as a dummy variable (1,0) that equals one if firms have the percentage of the total debt ratio greater than 50%, and zero if firms have the percentage of the total debt ratio less than 50%. The results in Table 4.12 show that in total (220 companies), a number of companies that have book value of total debt ratio less than 50% are 150 (68.18%) and a number of companies that have book value of total debt ratio more than 50% are 70 (31.82%). When separating into each industry, the results document that in all

industry, there are more companies with total debt ratio less than 50% than companies with total debt ratio more than 50%. In agro & food (29 companies), 19 companies have total debt ratio less than 50% and 10 companies have total debt ratio more than 50%. In consumer products (19 companies, all companies have total debt ratio less than 50%. In industrials (42 companies), 33 companies have total debt ratio less than 50% and 9 companies have total debt ratio more than 50%. In property (42 companies), 22 companies have total debt ratio less than 50% and 20 companies have total debt ratio more than 50%. In resources (14 companies), 8 companies have total debt ratio less than 50% and 6 companies have total debt ratio more than 50%. In services (52 companies), 37 companies have total debt ratio less than 50% and 15 companies have total debt ratio more than 50%. Lastly, in technology (22 companies), 12 companies have total debt ratio less than 50% and 10 companies have total debt ratio more than 50%. This can be concluded that more than 50% of listed companies in the sample have low percentage of total debt ratio.

Table 4.12: Numbers of companies in each industry having total debt ratio in book value less and more than 50%

Industry type	Total number of companies	Book value of Debt ratio	
		Less than 50%	More than 50%
Agro & food	29	19	10
Consumer product	19	19	0
Industrials	42	33	9
Property	42	22	20
Resources	14	8	6
Services	52	37	15
Technology	22	12	10
Total	220(100%)	150 (68.18%)	70 (31.82%)

4.3 The results of the ordinary least squares regression analysis

4.3.1 Assumption for statistical tests

The following section describes the main assumptions of multiple regression before analysis.

4.3.1.1 Normal distribution

To check the distribution of continuous variables (Coakes, 2005), mean, median, standard deviations and skewness of each variable are computed. As can be seen in Table 4.13, large difference between the mean and median of these continuous variables suggests that they were not normally distributed.

Table 4.13: Descriptive statistics of continuously independent variables before transformation

	N		Mean	Median	Std. Deviation	Skewness	Kurtosis
	Valid	Missing					
SIZE	220	0	18621.5285	3660.2350	68926.82057	9.995	120.072
LIQD	220	0	2.5991	1.7250	3.18170	5.742	48.696
FASST	220	0	50.7385	50.8800	22.86993	-.010	-.721
PROF	220	0	11.7539	10.0100	7.10615	1.110	1.642
FRSK	220	0	66729.9438	13.6950	244808.80420	3.558	10.842
DIV	220	0	5.5069	4.8800	3.31189	1.412	3.274
GROW	220	0	52.2757	.4050	346.30752	7.892	65.609

Where:

SIZE = The natural logarithm of the book value of total assets

LIQD = The natural logarithm of the book value of current assets divided by the book value of current liabilities

FASST = The natural logarithm of net fixed assets divided by the book value of total assets

PROF = The natural logarithm of earnings after taxes divided by the book value of total assets

FRSK = The natural logarithm of earnings before interest and taxes divided by Interest expenses

DIVD = The natural logarithm of dividend payments divided by earnings after taxes

GROW = The natural logarithm of (Earnings after taxes at t – Earnings after taxes at t-1) divided by earnings after taxes at t

To correct this problem, each independent variable is transformed to be its natural logarithm. As a result of the transformation in Table 4.14, the mean and median of variables are closer and the values of standard deviation and skewness and Kurtosis are reduced. Although there are still some minor deviations from normality, most researchers argue that if the data are not extremely non-normally distributed, the issue is not serious (Coakes 2005; Norusis 2000).

Table 4.14: Descriptive statistics of continuously independent variables after transformation

	N		Mean	Median	Std. Deviation	Skewness	Kurtosis
	Valid	Missing					
LSIZE	220	0	8.4278	8.2052	1.44800	.760	.500
LLIQD	220	0	.6102	.5452	.78319	.230	1.756
LFASST	220	0	3.7763	3.9295	.64045	-1.741	4.091
LPROF	220	0	2.2561	2.3034	.72073	-1.242	3.634
LFRSK	220	0	3.9930	2.6168	3.56940	1.536	1.602
LDIV	220	0	1.5116	1.5851	.68868	-1.198	3.827
LGROW	220	0	4.7869	4.7909	.67208	.945	8.461

For the dependent variable, the descriptive statistics in Table 4.15 indicates that the mean and median of both book and market values of total debt ratio are close. This shows that they are normally distributed.

Table 4.15: Descriptive statistics of book and market values of total debt ratio

	N		Mean	Median	Std. Deviation	Skewness	Kurtosis
	Valid	Missing					
DR-BV	220	0	38.6603	38.9050	19.08851	-.006	-.911
DR-MV	220	0	34.2167	33.8900	19.76632	.271	-.778

Note: DR-BV is book value of total debt ratio and DR-MV is market value of total debt ratio.

4.3.1.2 Check for heteroscedasticity

As the assumption of the ordinary least squares (OLS) regression model requires the absence of heteroscedasticity, thus, the study uses the normal probability (P-P) plot of regression standardized residual and the residual scatter plot of the dependent variable based on the model to test it. The results shown in Figures 4.9 and 4.10 suggest that there is no indication of the presence of significant heteroscedasticity**.**

Figure 4.9: The normal probability (P-P) and scatter plots of the dependent variable (DR-BV) based on the model

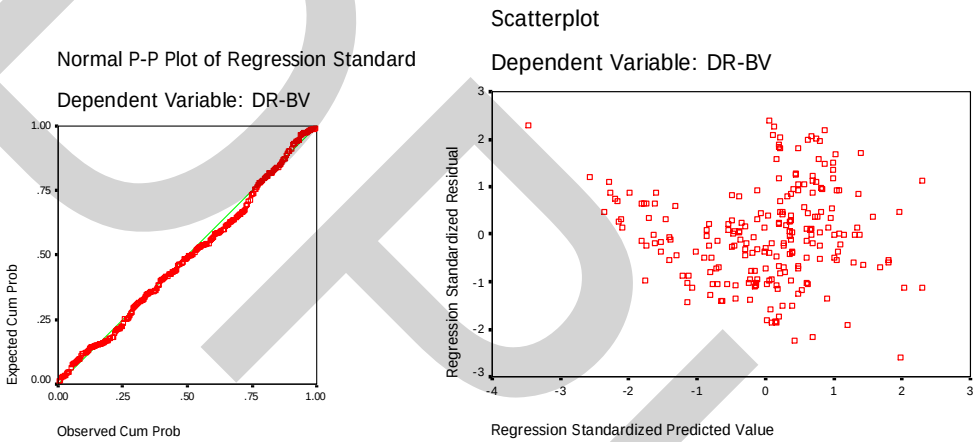
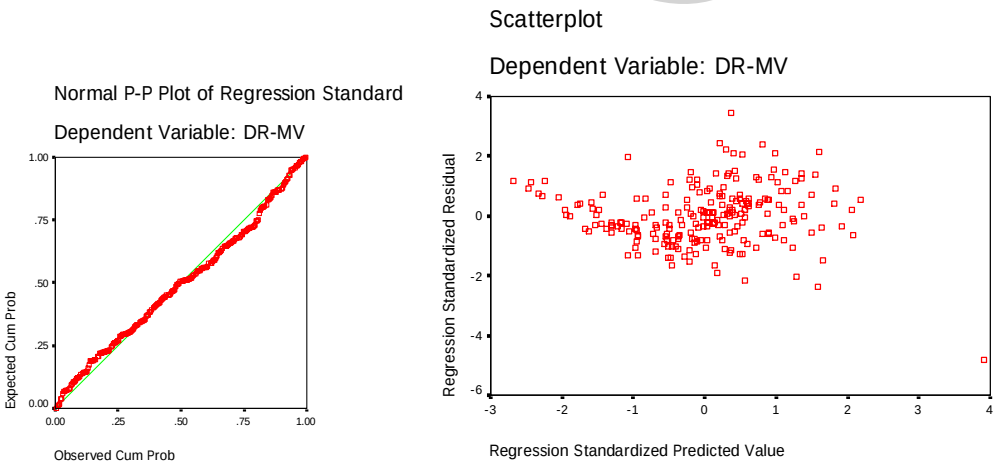


Figure 4.10: The normal probability (P-P) and scatter plots of the dependent variable (DR-MV) based on the model



4.3.1.3 Check for multicollinearity

To check multicollinearity between the independent variables, the study employs a bivariate Pearson product-moment correlation. The results show that there are not independent variables in this study having a high coefficient of variation (i.e. 0.80 and above). The highest correlation in the table is 0.466. Therefore, it can be concluded that there is no significant multicollinearity between the independent variables of the study.

Table 4.16: Pearson correlation coefficients

	1	2	3	4	5	6	7	8
DMYDR	1.000							
SIZE	0.264**	1.000						
LIQD	-0.462**	-0.281**	1.000					
FRSK	-0.406**	-0.310**	0.466**	1.000				
FASST	-0.168**	0.175**	-0.292**	0.072	1.000			
PROF	-0.200**	-0.031	0.076	0.292**	0.100	1.000		
DIVD	-0.180**	-0.219**	0.132*	0.124*	-0.195**	0.034	1.000	
GROW	0.075	-0.055	0.020	-0.010	0.106	0.313**	-0.355**	1.000

Notes: N = 220 companies

4.3.2 The regression model

As a result of the transformation in Section 4.3.1.1, the proposed research model from Chapter 3 (Section 3.3) is reviewed. The revised model for testing the dependent variable is as follows.

$$TDR = \alpha + \beta_1(LSIZE) + \beta_2(LLIQD) + \beta_3(LFASST) + \beta_4(LPROF) + \beta_5(LFRSK) + \beta_6(LDIVD) + \beta_7(LGROW) + \beta_8(DUMYDR) + \varepsilon$$

Where as;

α = A constant term

$\beta_1 \ldots \beta_8$ = Coefficient of each variable

ε = An error term

TDR = Total debt ratio

LSIZE = The natural logarithm of the book value of total assets

LLIQD = The natural logarithm of the book value of current assets divided by the book value of current liabilities

LFASST = The natural logarithm of net fixed assets divided by the book value of total assets

LPROF = The natural logarithm of earnings after taxes divided by the book value of total assets

LFRSK = The natural logarithm of earnings before interest and taxes divided by interest expenses

LDIVD = The natural logarithm of dividend payments divided by earnings after taxes

LGROW = The natural logarithm of (Earnings after taxes at t – Earnings after taxes at t-1) divided by earnings after taxes at t

DUMYDR = A dummy variable for firms which have total debt ratio greater than 50%

4.3.3 The ordinary least squares regression results

The research model in Section 4.3.2 is tested to examine the relationship between the specific firm characteristics and financing decisions of sample companies listed on the Stock Exchange of Thailand based on two capital structure theories - the trade - off and pecking order theories. The regression findings are shown in Tables 4.17 and 4.18.

In Table 4.17 which shows empirical results of specific firm characteristics on financing decisions as measured by the book value (BV) of total debt ratio, there are six firm characteristics dominating financing decisions. They including firm size (LSIZE), liquidity (LLIQD), fixed assets (LFASST), profitability (LPROF), financial risk (LFRSK) and dividend policy (LDIVD) are statistically significant and have signs as expected at $p < 0.10$ (1- tailed). There is only one firm characteristic - firm growth

(LGROW) which is not statistically significant but shows a positive relationship as hypothesized.

The regression model in Table 4.17 is significant at $p < 0.10$ level with an F-test value of 206.25. The high adjusted R-square value of the model is 0.882, suggesting that the independent variables of the estimated equation explain approximately 88.20 percent of the variation in the financing decisions. The remaining 11.80 percent is explained by other independent variables which are not in the model.

Table 4.17: Empirical results of specific firm characteristics on financing decisions as measured by the book value (BV) of total debt ratio.

Model:

$$TDR\ (BV) = \alpha + \beta_1(LSIZE) + \beta_2(LLIQD) + \beta_3(LFASST) + \beta_4(LPROF) + \beta_5(LFRSK) + \beta_6(LDIVD) + \beta_7(LGROW) + \beta_8(DUMYDR) + \varepsilon$$

Dependent Variable	Independent Variables	Hypothesis	Expected sign	Coefficient	t-value	Significance
TDR (BV)	LSIZE	H1	+	1.839	5.342	.000*
	LLIQD	H2	-	-10.840	-14.014	.000*
	LFASST	H3	-	-7.103	-8.601	.000*
	LPROF	H4	-	-0.980	-1.396	.087*
	LFRSK	H5	-	-1.133	-7.021	.000*
	LDIVD	H6	+	1.325	1.804	.036*
	LGROW	H7	+	0.712	0.919	.179
	DUMYDR			17.471	14.348	.000
	Intercept			52.425	8.771	.000
F-value	206.253*					
R-square	0.887					
Adjusted R-square	0.882					

Note: N = 220 sample companies
* is percent significance level < .10 (1-tailed)

In Table 4.18 which shows empirical results of specific firm characteristics on financing decisions as measured by the market value (MV) of total debt ratio, there are also six firm characteristics influencing financing decisions. They are liquidity (LLIQD), fixed assets (LFASST), profitability (LPROF), financial risk (LFRSK), dividend policy (LDIVD) and firm growth (LGROW) that show statistically significant and have signs as expected at $p < 0.10$ (1- tailed). Only one firm characteristic - firm size (LSIZE) is not statistically significant with the market value of total debt ratio but it shows a positive sign as hypothesized.

Table 4.18: Empirical results of specific firm characteristics on financing decisions as measured by the market value (MV) of total debt ratio.

Model:

$$TDR\ (MV) = \alpha + \beta_1(LSIZE) + \beta_2(LLIQD) + \beta_3(LFASST) + \beta_4(LPROF) + \beta_5(LFRSK) + \beta_6(LDIVD) + \beta_7(LGROW) + \beta_8(DUMYDR) + \varepsilon$$

Dependent Variable	Independent Variables	Hypothesis	Expected sign	Coefficient	t-value	Significance
TDR (MV)	LSIZE	H1	+	0.634	1.133	.129
	LLIQD	H2	-	-7.926	-6.347	.000*
	LFASST	H3	-	-5.635	-4.213	.000*
	LPROF	H4	-	-11.460	-10.074	.000*
	LFRSK	H5	-	-1.519	-5.959	.000*
	LDIVD	H6	+	6.418	5.392	.000*
	LGROW	H7	+	5.082	4.049	.000*
	DUMYDR			9.306	4.718	.000
	Intercept			49.965	5.161	.000
F-value	68.685*					
R-square	0.723					
Adjusted R-square	0.712					

Note: N = 220 sample companies
* is percent significance level < .10 (1-tailed)

The regression model in Table 4.18 is significant at $p < 0.10$ level with an F-test value of 68.69. The high adjusted R-square value of the model is 0.712, suggesting that the independent variables of the estimated equation explain approximately 71.20 percent of the variation in the financing decisions. The remaining 28.80 percent is explained by other independent variables which are not in the model.

From the regression results in Tables 4.17 and 4.18, it is noticed that firm growth (LGROW) and firm size (LSIZE) shows the different results owing to different values of total debt ratio (a proxy of financing decisions). As can be seen, firm growth (LGROW) which is not statistically significant with the book value of total debt ratio in Table 4.17 becomes significant with the market value of total debt ratio in Table 4.18 whereas firm size (LSIZE) which shows statistically significant with the book value of total debt ratio in Table 4.17 shows insignificant with the market value of total debt ratio in Table 4.18. However, it can be stated that both firm growth and firm size are important factors affecting financing decisions as measured by total debt ratio.

Table 4.19: Tolerance and Variance Inflation Factors (VIF)
based on 220 sample companies

Variables	Tolerance	VIF
LSIZE	.783	1.277
LLIQD	.537	1.862
LFASST	.700	1.429
LPROF	.764	1.308
LFRSK	.620	1.612
LDIVD	.765	1.308
LGROW	.722	1.385
DUMYDR	.611	1.638

Table 4.19 that examines tolerance and variance inflation factors (VIF) based on 220 sample companies reveals that the tolerance of variables in the model is not close to

zero (between 0.537 and 0.783) and the variance inflation factors (VIF) of variables are less than 10. These results confirm that multicollinearity between the independent variables is not significant for this model (Field, 2005; Tabachnick and Fidell, 2001).

4.4 The results of hypotheses testing

The following explains the results of hypotheses developed in Chapter 2.

4.4.1 Firm size

Based on the literature review, firm size is an important factor to financial decisions because large size companies have better access to credit markets and can borrow at better conditions (Akhtar, 2005; Fan, Titman and Twite, 2003; Frank and Goyal, 2003). Most empirical research reported a positive sign for the relationship between firm size and leverage (e.g., studies by Akhtar (2005), Chen and Strange (2005) and Rao and Lukose (2002)). Thus, it is hypothesized that:

H1: Firm size is positively related to a firm's financing decisions as measured by total debt ratio.

The results of the model in table 4.17 show that H1 is supported by the financing decisions model as the total debt ratio measured by the book value. The coefficient of firm size (+1.839) is significantly positive as expected. However, when the total debt ratio is measured by the market value in the model of table 4.18, H1 is not supported. The coefficient of firm size (+0.634) is not significant but show a positive sign as expected. Nevertheless, the sign H1 is positive in the expected direction of the pecking order assumption as measured by both of book and market values. The findings suggest that larger firms tend to use more debt financing than smaller firms. The results are in line with the prior studies such as Gaud, Jani, Hoesli and Bender (2003), Akhtar (2005), Chen and Strange (2005) and Rao and Lukose (2002) which report a significant positive correlation between firm size and debt ratios.

4.4.2 Liquidity

In the previous studies, the majority of empirical evidence found that firms with high liquidity tend to use less debt and supports the view of the pecking order assumption that liquidity of the firm has a negative sign with its financial leverage (e.g., Rajan and Zingales 1995; Bevan and Danbolt 2002; Eriotis 2007; Mazur 2007). As a result of these studies, it is hypothesized that:

H2: Liquidity is negatively related to a firm's financing decisions as measured by total debt ratio.

The results of the model in both tables 4.17 and 4.18 show that H2 is supported by the financing decisions model as the total debt ratio measured by the book and market values. The coefficient of liquidity (-10.840 in Table 4.17 and -7.926 in Table 4.18) is significantly negative as expected. The findings confirm the prediction sign of the pecking order theory. It is also consistent with Bevan and Danbolt's (2002) and Eriotis's (2007) research which explained that firms with high liquidity tend to use internal financing rather than external financing because they have a relatively high amount of current assets, which means that they have a high cash inflows, thus, they can use cash inflows as internal source for investing in the positive net present value projects.

4.4.3 Fixed assets

From the viewpoint of the pecking order theory, firms with high values of fixed assets are less sensitive to the problem of information asymmetric between managers and outside investors and then, tend to use less debt (Eldomiaty, 2007; Gaud, Jani, Hoesli and Bender, 2003; Mazur, 2007). Most previous studies confirmed a negative influence of fixed assets on debt ratios. Thus, it is hypothesized that:

H3: Fixed assets are negatively related to a firm's financing decisions as measured by total debt ratio.

The results of the model in both tables 4.17 and 4.18 show that H3 is supported by the financing decisions model as the total debt ratio measured by the book and market values. The coefficient of fixed assets (-7.103 in Table 4.17 and -5.635 in Table 4.18) is significantly negative as expected. The findings confirm the prediction sign of the pecking order theory. It is also similar to Bevan and Danbolt's (2002), Frank and Goyal's (2004) and Mazur's (2007) conclusions, in that, the problem of information asymmetric is not a subject matter for firms with high values of fixed assets, thus, they will issue equity rather than debt when they need external financing.

4.4.4 Profitability

The pecking order theory suggests that profitable firms prefer to use first their internal funds and then move to external funds. This means that high profit firms choose to have a small number of debt ratio. Several researchers tested the relationship between profitability and financial decisions and found that profitability had a negative relation with a debt ratio (Chen and Strange, 2005; Delcoure 2007; Gaud, Jani, Hoesli and Bender 2003). Thus, it is hypothesized that:

H4: Profitability is negatively related to a firm's financing decisions as measured by total debt ratio.

The results of the model in both tables 4.17 and 4.18 show that H4 is supported by the financing decisions model as the total debt ratio measured by the book and market values. The coefficient of profitability (-0.980 in Table 4.17 and -11.460 in Table 4.18) is significantly negative as expected. The findings confirm the prediction sign and assumption of the pecking order theory. This is in line with related previous studies such as the studies by Akhtar (2005), Cassar and Holmes (2003), Delcoure (2007) which stated that firms with high profitability will have sufficient internal fund to invest in their activities, thus, they will have a small debt ratio.

4.4.5 Financial risk

The capital structure theories view financial risk as a negative effect on capital structure because firms with high financial risk have incentive to reduce their level of debt within capital structure (Eriotis, 2007). The majority of prior studies found the evidence following the theory assumption and suggested a negative relationship between financial risk and debt ratios (Cassar and Holmes 2003; Eriotis, 2007). Thus, it is hypothesized that:

H5: Financial risk is negatively related to a firm's financing decisions as measured by total debt ratio.

The results of the model in both tables 4.17 and 4.18 show that H5 is supported by the financing decisions model as the total debt ratio measured by the book and market values. The coefficient of financial risk (-1.133 in Table 4.17 and -1.519 in Table 4.18) is significantly negative as expected. The findings confirm the prediction sign of the pecking order theory. The findings also supports the implication of the pecking order theory and research by Bennett and Donnelly (1993), Eriotis (2007) and Harris and Raviv (1990) which indicate that firms with high interest coverage ratio (which is a proxy of financial risk) can make high earnings. Thus, they can use their earnings to invest in their business operation and there is no need to use much debt financing.

4.4.6 Dividend policy

Following the pecking order theory suggestion, it is expected that payout ratio of the dividend policy will be likely to be a positive relationship with a firm's financing decision. The reason is that a firm pays dividend from retained earnings, consequently, when a firm needs funds for investment it will increase funds from external financing (Harris and Raviv, 1991; Mazur, 2007). Thus, it is hypothesized that:

H6: Dividend policy is positively related to a firm's financing decisions as measured by total debt ratio.

The results of the model in both tables 4.17 and 4.18 show that H6 is supported by the financing decisions model as the total debt ratio measured by the book and market values. The coefficient of dividend policy (+1.325 in Table 4.17 and +6.418 in Table 4.18) is significantly positive as expected. The findings confirm the prediction sign of the pecking order theory. The findings are also in the same direction with Mazur's (2007) work, in that, dividend-paying firms use internal funds to pay dividend and tend to use funds for investment from external financing.

4.4.7 Firm growth

Based on the pecking order theory assumption, firms with high growth need more funds to invest in their operating activities, thus it can be expected that these firms will have more debt financing (Delcoure, 2007; Cassar and Holmes, 2003; Stulz, 1990). Empirical evidence found a positive relationship between growth and debt ratios (Bevan and Danbolt, 2002; Cassar and Holmes, 2003; Michaelas, Chittenden and Poutziouris, 1999; Mazur, 2007). Thus, it is hypothesized that:

H7: Firm growth is positively related to a firm's financing decisions as measured by total debt ratio.

The results of the model in table 4.17 show that H7 is not supported by the financing decisions model as the total debt ratio measured by the book value but the coefficient of firm growth (+0.712) is positive as expected. However, when the total debt ratio is measured by the market value in the model of table 4.18, H7 is supported. The coefficient of firm growth (+5.082) is statistically significant and has a positive sign as expected. Nevertheless, the sign H7 is positive in the expected direction of the pecking order assumption as measured by both of book and market values. The findings suggest that growing firms are likely to use more debt because they have more opportunities to invest in their projects. The significant result is consistent with many prior studies such as the studies of Cassar and Holmes (2003), Michaelas et al., (1999), and Mazur (2007).

A summary of the results of hypotheses testing is exhibited in Table 4.20.

Table 4.20: Results of hypotheses testing

Hypothesis	Expected sign	Result
H1: Firm size is positively related to a firm's financing decisions as measured by total debt ratio	+	Supported and Not Supported
H2: Liquidity is negatively related to a firm's financing decisions as measured by total debt ratio.	-	Supported
H3: Fixed assets are negatively related to a firm's financing decisions as measured by total debt ratio.	-	Supported
H4: Profitability is negatively related to a firm's financing decisions as measured by total debt ratio.	-	Supported
H5: Financial risk is negatively related to a firm's financing decisions as measured by total debt ratio.	-	Supported
H6: Dividend policy is positively related to a firm's financing decisions as measured by total debt ratio.	+	Supported
H7: Firm growth is positively related to a firm's financing decisions as measured by total debt ratio.	+	Not Supported and Supported

Notes: 1. H1 is supported as the total debt ratio measured by book value but not supported as measured by market value. The sign H1 is positive in the expected direction of the pecking order assumption as measured by both of book and market values.

2. H2 – H6 is supported as the total debt ratio measured by both of book and market values and their signs are negative in the expected direction of the pecking order assumption.

3. H7 is not supported as the total debt ratio measured by book value but supported as measured by market value. The sign H7 is positive in the expected direction of the pecking order assumption as measured by both of book and market values.

4.5 Summary

This chapter reports descriptive analysis of all variables and the empirical results of the ordinary least squares (OLS) regression model used to test the research hypotheses of the study.

In descriptive analysis, the results show that 220 companies that have a complete data for analysis are classified in 7 industries - agro & food industry (29), consumer products (19), industrials (42), property & construction (42), resources (14), services (52), and technology (22). By average, their mean book and market values of total debt ratio are around 38.66% and 34.21%, respectively. Sizes of sample firms are large, especially in resources industry. The average firm size is 18,621.52 million baht and the smallest size is 358.47 million baht. The average liquidity ratio is also high. The mean value is 2.59 and the maximum value reaches 34.63. The mean value of the percentage of fixed assets to total assets is 50.73%. It is found that there are not companies in the study having negative profits. The mean value of profitability ratio (return on assets - ROA) is 11.75%. Their financial risk is low as well. The mean value of interest coverage ratio (a proxy of financial risk) is 66,729.94 times. All firms in the sample have paid dividends to stockholders. The mean value of payout ratio is 5.50%. However, their growth ratios are mixed between positive and negative ratios but the average ratio is still positive (52.27%).

For the OLS regression tests, the results of Tables 4.17, 4.18 and 4.20 indicate that specific firm characteristics – firm size, liquidity, fixed assets, profitability, dividend policy and firm growth are significant factors of a firm's financing decisions. Hypotheses of the study are supported by this model.

The final chapter will present the conclusion of the study. It contains a summary and the implication of the study including suggestions for future research.

Chapter 5
Conclusions

The final chapter presents conclusions of the study. Section 5.1 describes summary of the study following research objectives specified in Chapter 1. Section 5.2 discusses implications of the study findings and finally, Section 5.3 outlines suggestions for future research.

5.1 Summary of the study

The study utilizes the capital structure theories – The trade - off theory and the pecking order theory to examine the impact of specific firm characteristics on financing decisions of public companies listed on the Stock Exchange of Thailand. Its aim is to investigate which firm characteristics significantly affect financing decisions of Thai listed companies and which of the two capital structure theories, the trade - off or pecking order, better explains their financing decisions. The study uses the data from 389 non - financial companies listed on the Stock Exchange of Thailand (SET) during the period 2005 - 2007 as the sample for analysis. The final sample, after considering any missing data, consists of 220 companies. This figure represents the 56% of the listed companies in 2007 and maintains an appropriate volume for testing the proposed research model according to the assumptions of multiple regression analysis (Tabachnick and Fidel, 2001; Field, 2005).

From literature review in Chapter 2 and research methodology in Chapter 3, firm characteristics including firm size (SIZE), liquidity (LIQD), fixed assets (FASST), profitability (PROF), financial risk (FRSK), dividend policy (DIVD) and firm growth (GROW) are independent variables of the study. Total debt ratios (TDR) with book and market values are defined in terms of a proxy of a firm's financing decisions and the dependent variable of the study. In addition, the study employs a dummy variable (1,0) that equals one if firms have the percentage of the total debt ratio greater than 50%, and zero if firms have the percentage of the total debt ratio less than 50% to control the impact which might happen from the capital structure of the firms being different from the behavior of the market as a whole. Descriptive statistics and the ordinary least

squares regression model are used to analyze the results of the study. The following is the summary of the study.

First, to answer which firm characteristics significantly affect financing decisions of Thai listed companies, the study finds that all specific firm characteristics from literature review have a significant impact on financing decisions of Thai listed companies. However, using the different measure of financing decisions, there is a little difference in results. It can be seen that with the book value of total debt ratio as a measure of financing decisions, specific firm characteristics - firm size, liquidity, fixed assets, profitability, financial risk and dividend policy are statistically significant and have signs as expected except firm growth which also shows a positive relationship as hypothesized is not statistically significant. With the market value of total debt ratio as a measure of financing decisions, specific firm characteristics - liquidity, fixed assets, profitability, financial risk, dividend policy and firm growth are statistically significant and have signs as expected except firm size which also shows a positive sign as hypothesized is not statistically significant. Although firm size and firm growth do not show significant in both book and market values of total debt ratio, it can be concluded that all specific firm characteristics - firm size, liquidity, fixed assets, profitability, financial risk, dividend policy and firm growth are the significant determinants of financing decisions of Thai listed companies.

Second, to answer which of the two capital structure theories, the trade - off or pecking order, better explains their financing decisions, the study finds that specific firm characteristics in all analysis have signs on financing decisions as expectation by assumptions of the pecking order theory rather than those of the trade – off theory. A comparison of firm characteristics signs on financing decisions between assumptions of the trade - off and pecking order theories and the empirical results of Thai listed companies in Table 5.1 clearly shows in that way. The assumptions of the pecking order theory explain positive/negative signs on financing decisions of each firm characteristic as follows. Positive sign of firm size indicates that larger firms tend to use more debt financing than smaller firms. Negative sign of liquidity explains that firms with high liquidity tend to use internal financing rather than external financing. Negative sign of fixed assets shows that firms with high values of fixed assets do not have the information asymmetric problem and then, they can issue equity rather than debt when

they need external financing. Negative sign of profitability discloses that firms with high profitability will have sufficient internal fund to invest in their activities, thus, there is no need to use more debt financing. Negative sign of financial risk also reveals that firms with high interest coverage ratio (which is a proxy of financial risk) can make high earnings, thus, they can use their earnings to invest in their business operation and there is no need to use much debt financing. Positive sign of dividend policy suggests that dividend-paying firms use internal funds to pay dividend and tend to use funds for investment from external financing. Finally, positive sign of firm growth also expresses that firms with high growth need more external funds especially, from debt to invest in their operating activities. Obviously, the results from analysis are in line with those explanations of the pecking order theory. Thus, it can be concluded that Thai listed companies make financing decisions following the pecking order theory.

Table 5.1: A comparison of firm characteristics signs on financing decisions between assumptions of the trade - off and pecking order theories and the empirical results of Thai listed companies

	Firm characteristics signs on financing decisions following		
Firm characteristics	Trade off theory	Pecking order theory	Empirical results
Firm size	+	+/-	+
Liquidity	+	-	-
Fixed assets	+	-	-
Profitability	+	-	-
Financial risk	-	-	-
Dividend policy	N.A	+	+
Firm growth	-	+	+

5.2 Implications of the study findings

The implications in this study are divided into two parts – theoretical and practical implications. A discussion of these implications is as follow.

5.2.1 Theoretical implications

From the point of theoretical implications, the study supplements prior research by providing a unique contribution to the literature regarding the specific firm characteristics factors that influence a firm's financing decisions.

First, the study has contributed to research on the capital structure theories by testing two well - known capital structure theories - the trade - off theory and the pecking order theory which have been widely used to explain strategies of financing decisions in Western and Europe countries (Chen and Strange, 2005; Eldomiaty, 2007). The results show that financing decisions of Thai listed companies in the sample follow the rules of the pecking order theory, in that, if firms are profitable enough, they will use internal funds from their retained earnings rather than external funds from debt and equity. When the internal sources run out and the additional funds are needed, they will move to external financing from debt first and choose equity financing as a last resort.

Second, the study attempts to extend research in this area by investigating firm characteristics of public companies listed in The Stock Exchange of Thailand. The results confirm that firm characteristics - firm size, liquidity, fixed assets, profitability, financial risk, dividend policy and firm growth which have been critical factors in research of many countries such as United States, United Kingdom, China (Hong Kong), Austria, Greece, Poland, and India are important and significant factors to financing decisions of listed companies in Thailand as well.

Third, empirical evidence shows that little published research has been undertaken concerning a firm's financing decisions in Thailand. Thus, the empirical results of this study will be beneficial for public by enabling them to obtain more knowledge of the subject of financial management, particularly in the contexts of a firm's capital structure and financing choices.

5.2.2 Practical implications

From the point of practical implications, the significant factors of financing decisions in this study can help business executives, chief executive officers (CEO) and financial managers including related persons more understanding in choosing the appropriate sources for financing. For example, firm size informs them that it is easily for larger firms to use debt when they need external funds because they have better access to credit markets and can borrow at better conditions (Akhtar, 2005; Fan, Titman and Twite, 2003; Frank and Goyal, 2003). Liquidity informs them that there is no need for firms with high liquidity to use debt financing because they have a relatively high amount of current assets, which means they can generate high cash inflows (Eriotis 2007; Mazur 2007). Fixed assets inform them that firms with high amount of fixed assets can issue equity when they need more funds because they are less sensitive to the problem of information asymmetric between managers and outside investors (Eldomiaty, 2007; Gaud, Jani, Hoesli and Bender, 2003). Profitability informs them that firms with high profitability have high ability to generate their internal funds, thus, they will choose to have a small number of debt ratio (Chen and Strange, 2005; Delcoure 2007). Financial risk informs them that firms with high risk should use less debt otherwise they may go bankrupt (Cassar and Holmes, 2003; Eriotis, 2007). Dividend policy informs them that dividend-paying firms need to use external funds for investment because their internal funds are used to pay dividends to stockholders (Frank and Goyal, 2004). And the last, firm growth informs them that growing firms need much funds for investment in positive net present value projects, then they tend to use more debt (Bevan and Danbolt, 2002; Cassar and Holmes, 2003). Importantly, the study findings confirm the relevance of the pecking order theory in explaining financing decisions of listed companies in Thailand as well as those in other countries.

5.3 Suggestions for future research

In the literature review, the study found that limited research in this area has been found in Thailand. Thus, future research on factors affecting a firm's financing decisions or capital structure is needed. There are many issues which should be investigated in the future.

First, in addition to firm characteristics, the future research may choose other factors such as governance factors, business groups factors and personnel factors of business executives to examine whether they are also significant factors of a firm's financing decisions or not.

Second, this research used the data from public companies listed in the stock Exchange of Thailand for analysis. Thus, the future research may contribute to the investigation of a firm's financing decisions by using the data from unlisted companies in order to see whether the results of listed companies in the present study are applicable for unlisted companies or not.

Finally, another direction for future research is research methodology. The future research would try to classify sample firms into industry types such as manufacturing and non-manufacturing, use longer period data, and adopt new statistic tests for analysis as they may help future research discover new answers of a firm's financing decisions.

References

Akhtar, S. (2005). "The determinants of capital structure for Australian multinational and domestic corporations." **Australian Journal of Management, 30,2**. pp.321-341.

Barclay, J., Smith, W. and Watts, L. (1995). "The determinants of corporate leverage and dividend policies." **Journal of Applied Corporate Finance, 7,4.** pp.4-19.

Bennett, M. and Donnelly, R. (1993). The determinants of capital structure: some UK evidence". **British Accounting Review, 25, 1.** pp.43-59.

Bevan, A. and Danbolt, J. (2002). "Capital structure and its determinants in the United Kingdom – A decompositional analysis." **Applied Financial Economics, 12,3.** pp.159-170.

Booth, L., Aivazian, V., Demirguc-Kunt, A. and Maksimovic, V. (2001)."Capital structure in developing countries." **Journal of Finance, 56.** pp.87-130.

Brealey, R. A. and Myers, S. C. (2000). **Principle of Corporate Finance** (6th ed.). London, UK: McGraw Hill Irwin.

Brealey, R. A., Myers, S. C. and Marcus, A. J. (2005). **Fundamentals of Corporate Finance** (4th ed.). Boston: McGraw Hill Irwin.

Cassar, G. and Holmes, S. (2003). "Capital structure and financing of SMEs: Australian evidence." **Accounting and Finance, 43,2.** pp.123-147.

Chaplinsky, S. and Niehaus, G. R. (1990). "The Tax and Distributional Effects of Leveraged ESOPs." **Financial Management, 19.** pp.29-38.

Chen, J. and Strange, R. (2005). "The determinants of capital structure: Evidence from Chinese listed companies." **Economic Change and Restructuring, 38.** pp.11-35.

Chirinko, R. and Singha, A. (2000). "Testing static tradeoff against pecking order models of capital structure: A critical comment." **Journal of Financial Economics, 58,3.** pp.417-439.

Chitnomrath, Thanida (2003). **Financial Management: Theories, principles and Case studies (in Thai)** (7th edition). Bangkok: Dhurakij Pundit University Printing.

Coakes, S. J. (2005). **SPSS Version 12.0 for windows Analysis without Anguish.** Perth, WA: John Wiley & sons Australia.

Coleman, S. and Cohn, R. (1999). **Small firms' use of financial leverage: evidence from the 1993 national survey of small business finances.** Working paper. Hartford, Connecticut: University of Hartford.

DeAngelo, H. and Masulis, R. (1980). "Optimal capital structure under corporate and personal taxation." **Journal of Financial economics, 8.** pp.3-30.

Delcoure, N. (2007). "The determinants of capital structure in transitional economies." **International review of Economics and Finance, 16.** pp.400-415.

Donaldson, G. (1961). **Corporate debt capacity: A study of Corporate debt policy and the determinants of Corporate debt capacity.** Research paper. Boston: Graduate School of Business Administration, Harvard University.

Eldomiaty, I. (2007). "Determinants of corporate capital structure: evidence from an emerging economy." **International Journal of Commerce & Management, 17,1/2.** pp.25-43.

Eriotis, N. (2007). "How firm characteristics affect capital structure: an empirical study." **Managerial Finance, 33,5.** pp.321-331.

Fama, E. and French, R. (2002). "Testing trade-off and pecking order predictions about dividends and debt." **The Review of Financial Studies, 15.** pp.1-33.

Fan, H., Titman, S. and Twite, G. (2003). **An international comparison of capital structure and debt maturity choices.** Working Paper. Sydney: Australian Graduate School of Management.

Field, A. (2005). **Discovering Statistics Using SPSS** (2nd ed.). London: Sage.

Frank, M. and Goyal, V. (2003). "Testing the pecking order theory of capital structure." **Journal of Financial Economics, 67.** pp.217-48.

Frank, M. and Goyal, V. (2004). **Capital structure decisions: Which factors are reliably important?.** FA 2004 Maastricht Meetings Paper no.2464, Tuck Contemporary Corporate Finance Issues III.

Friend, I. and Lang, A. (1988)."An empirical test of the impact of managerial self-interest on corporate capital structure." **Journal of Finance, 43.** pp.271-281.

Gaud, P., Jani, E., Hoesli, M. and Bender, A. (2003). "The capital structure of Swiss firms: An empirical analysis using dynamic panel data". **European Financial Management, 11.** pp.51-69.

Graham, R. and Harvey, R. (2001). "The theory and practice of corporate finance: evidence from the field." **Journal of Financial Economics, 60.** pp.187-243.

Green, S. B. (1991). "How many subjects does it take to do a regression analysis?." **Multivariate Behavioral Research, 26.** pp.499-510.

Harris, M. and Raviv, A. (1990). "Capital structure and the informational role of debt", **Journal of Finance, 45,2.** pp.321-349.

Harris, M. and Raviv, A. (1991). “The theory of capital structure.” **Journal of Finance, 46,1.** pp.297-355.

Hsiao, J., Hsu, C. and Hsu, K. (2009). “An empirical study on capital structure and financing decision – Evidences from East Asian Tigers.” **The Business Review, Cambridge, 13,1.** pp.248-253.

Jensen, M. (1986). “Agency cost of free cash flow, corporate finance and takeovers.” **American Economic Review, .76.** pp.323-329.

Mackay, P. and Philips, M. (2005). “How does industry affect firm financial structure?.” **Review of Financial studies, 18.** pp.1433-1466.

Mackie-Mason, K. (1990). “Do taxes affect corporate financing decisions?.” **Journal of Finance, 45,5.** pp.1471-1493.

Marsh, P. (1982). “The choice between equity and debt: an empirical study.” **Journal of Finance, 37,1.** pp.121-144.

Martin, D. and Scott, F. (1974). “A discriminant analysis of the corporate debt-equity decision.” **Financial Management, 3,4.** pp.71-79.

Mazur, K. (2007). **The determinants of capital structure choice: evidence from Polish companies.** Working Paper. Gdansk: Gdansk Institute for Market Economics.

Michaelas, N., Chittenden, F. and Poutziouris, P. (1999). “Financial policy and capital Structure choice in U.K. SMEs: empirical evidence from company panel data.” **Small Business Economics, 12.** pp.113-130.

Modigliani, F. and Miller, M. (1958). “The cost of capital, corporate finance and the theory of investment.” **American Economic Review, 48.** pp.261-297.

Modigliani, F. and Miller, M. (1963). “Corporate income taxes and the cost of capital; A correction.” **American Economic Review, 53,3.** pp.433-443.

Myers, S. C. (1984). “The capital structure puzzle”. **Journal of Finance, 34, 3.** pp.575-592.

Myers, S. C. (2003). “Financing of corporations”. In G. Constantinides, M. Harris and R. Stulz (eds.). **Handbook of the economics of finance** (1A, pp.215-253). Amsterdam: elsevier.

Myers, S. C. and Majluf, N.S. (1984). “Corporate financing and investment decisions when firms have information that investors do not have”. **Journal of Financial Economics, 13.** pp.187-221.

Norusis, M. J. (2000). **SPSS 10.0 Guide to Data Analysis**. Upper Saddle River: Prentice-Hall.

Pike, R. and Neale, B. (2006). **Corporate Finance and Investment Decisions & Strategies** (5th ed.). London, UK: Prentice Hall.

Rao, S. and Lukose, J. (2002). **An empirical study on the determinants of the capital structure of listed Indian firms.** Working Paper. Powai: Shailesh J Mehta School of Management, Indian Institute of Technology Bombay.

Rajan, G. and Zingales, L. (1995). "What do we know about capital structure: some evidence from international data." **Journal of Finance, 50,5.** pp.1421-1460.

Ross, S. A., Westerfield, R. W. and Jaffe, J.F. (2005). **Corporate Finance** (7th ed.). Boston: McGraw Hill Irwin.

Scott, D. F. Jr. and Martin, J. D. (1975). "Industry influence on financial structure." **Financial Management,3.** pp.67-73.

Shyam-Sunder, L. and Myers, S. (1999). "Testing static tradeoff against pecking order models of capital structure." **Journal of Financial Economics,51,2.** pp.219-244.

Singh, P. and Kumar, B. (2008). **Trade off Theory or Pecking order Theory: What explains the Behavior of the Indian Firms?** Working Paper. Ahmedabad: Indian Institute of Management Ahmedabad.

Stulz, R. (1990). "Managerial discretion and optimal financing Policies." **Journal of financial Economics, 26.** pp.3-27.

Tabachnick, B. G. and Fidell, L. S. (2001). **Using Multivariate Statistics**, (4th ed.). New York: Allyn and Bacon, Needham Heights.

Titman, S. and Wessels, R. (1988). "The determinants of capital structure choice." **Journal of Finance, 43,1.** pp.1-19.

Wald, J. (1999). "How firm characteristics affect capital structure: an international comparison." **Journal of financial research, 22,2.** pp.161-187.

Wiwattanakantang, Y. (1999). "An empirical study on the determinants of the capital structure of Thai firms." **Pacific-Basin Finance Journal, 7.** pp.371-403.

Appendix

A list of Thai listed companies in the sample

Appendix

A list of Thai listed companies in the sample

1. SEAFRESH INDUSTRY PUBLIC COMPANY LIMITED
2. KIANG HUAT SEA GULL TRADING FROZEN FOOD PUBLIC COMPANY LIMITED
3. CHIANGMAI FROZEN FOODS PUBLIC COMPANY LIMITED
4. CHAROEN POKPHAND FOODS PUBLIC COMPANY LIMITED
5. CHUMPORN PALM OIL INDUSTRY PUBLIC COMPANY LIMITED
6. GFPT PUBLIC COMPANY LIMITED
7. LEE FEED MILL PUBLIC COMPANY LIMITED
8. PATUM RICE MILL AND GRANARY PUBLIC COMPANY LIMTED
9. BANGKOK RANCH PUBLIC COMPANY LIMITED
10. SURAPON FOODS PUBLIC COMPANY LIMITED
11. SRI TRANG AGRO-INDUSTRY PUBLIC COMPANY LIMITED
12. THAI AGRI FOODS PUBLIC COMPANY LIMITED
13. THAILUXE ENTERPRISES PUBLIC COMPANY LIMITED
14. UNITED PALM OIL INDUSTRY PUBLIC COMPANY LIMITED
15. UNIVANICH PALM OIL PUBLIC COMPANY LIMITED
16. KHON KAEN SUGAR INDUSTRY PUBLIC COMPANY LIMITED
17. LAM SOON (THAILAND) PUBLIC COMPANY LIMITED
18. MINOR CORPORATION PUBLIC COMPANY LIMITED
19. OISHI GROUP PUBLIC COMPANY LIMITED
20. PRESIDENT BAKERY PUBLIC COMPANY LIMITED
21. PRESIDENT RICE PRODUCTS PUBLIC COMPANY LIMITED
22. S & P SYNDICATE PUBLIC COMPANY LIMITED
23. THAI THEPAROS FOOD PRODUCTS PUBLIC COMPANY LIMITED
24. SERM SUK PUBLIC COMPANY LIMITED
25. THAI PRESIDENT FOODS PUBLIC COMPANY LIMITED
26. TIPCO FOODS (THAILAND) PUBLIC COMPANY LIMITED
27. THAI UNION FROZEN PRODUCTS PUBLIC COMPANY LIMITED
28. THAI VEGETABLE OIL PUBLIC COMPANY LIMITED
29. THAI WAH FOOD PRODUCTS PUBLIC COMPANY LIMITED
30. I.C.C. INTERNATIONAL PUBLIC COMPANY LIMITED
31. LUCKYTEX (THAILAND) PUBLIC COMPANY LIMITED
32. PEOPLE'S GARMENT PUBLIC COMPANY LIMITED
33. PRANDA JEWELRY PUBLIC COMPANY LIMITED
34. SAHA-UNION PUBLIC COMPANY LIMITED
35. THANULUX PUBLIC COMPANY LIMITED
36. TEXTILE PRESTIGE PUBLIC COMPANY LIMITED
37. THAI TEXTILE INDUSTRY PUBLIC COMPANY LIMITED
38. UNION PIONEER PUBLIC COMPANY LIMITED
39. THAI WACOAL PUBLIC COMPANY LIMITED
40. KANG YONG ELECTRIC PUBLIC COMPANY LIMITED
41. MODERNFORM GROUP PUBLIC COMPANY LIMITED
42. OCEAN GLASS PUBLIC COMPANY LIMITED
43. SRITHAI SUPERWARE PUBLIC COMPANY LIMITED
44. DSG INTERNATIONAL (THAILAND) PUBLIC COMPANY LIMITED
45. JACK CHIA INDUSTRIES (THAILAND) PUBLIC COMPANY LIMITED
46. O.C.C. PUBLIC COMPANY LIMITED

47. S & J INTERNATIONAL ENTERPRISES PUBLIC COMPANY LIMITED
48. THAI OPTICAL GROUP PUBLIC COMPANY LIMITED
49. AAPICO HITECH PUBLIC COMPANY LIMITED
50. THAI STORAGE BATTERY PUBLIC COMPANY LIMITED
51. EASON PAINT PUBLIC COMPANY LIMITED
52. GOODYEAR (THAILAND) PUBLIC COMPANY LIMITED
53. INOUE RUBBER (THAILAND) PUBLIC COMPANY LIMITED
54. SOMBOON ADVANCE TECHNOLOGY PUBLIC COMPANY LIMITED
55. THE SIAM PAN GROUP PUBLIC COMPANY LIMITED
56. THAI STANLEY ELECTRIC PUBLIC COMPANY LIMITED
57. T.KRUNGTHAI INDUSTRIES PUBLIC COMPANY LIMITED
58. THAI STEEL CABLE PUBLIC COMPANY LIMITED
59. CITY STEEL PUBLIC COMPANY LIMITED
60. CSP STEEL CENTER PUBLIC COMPANY LIMITED
61. CHAROONG THAI WIRE & CABLE PUBLIC COMPANY LIMITED
62. FURUKAWA METAL (THAILAND) PUBLIC COMPANY LIMITED
63. G STEEL PUBLIC COMPANY LIMITED
64. THAINOX STAINLESS PUBLIC COMPANY LIMITED
65. LOHAKIT METAL PUBLIC COMPANY LIMITED
66. SAHAMIT MACHINERY PUBLIC COMPANY LIMITED
67. SNC FORMER PUBLIC COMPANY LIMITED
68. SAHAVIRIYA STEEL INDUSTRIES PUBLIC COMPANY LIMITED
69. SIAM STEEL SERVICE CENTER PUBLIC COMPANY LIMITED
70. THAI METAL TRADE PUBLIC COMPANY LIMITED
71. VAROPAKORN PUBLIC COMPANY LIMITED
72. UNITED PAPER PUBLIC COMPANY LIMITED
73. GLOBAL CONNECTIONS PUBLIC COMPANY LIMITED
74. INDORAMA POLYMERS PUBLIC COMPANY LIMITED
75. PATO CHEMICAL INDUSTRY PUBLIC COMPANY LIMITED
76. PTT CHEMICAL PUBLIC COMPANY LIMITED
77. THAI CARBON BLACK PUBLIC COMPANY LIMITED
78. THAI CENTRAL CHEMICAL PUBLIC COMPANY LIMITED
79. THAI POLY ACRYLIC PUBLIC COMPANY LIMITED
80. THAI PLASTIC AND CHEMICALS PUBLIC COMPANY LIMITED
81. UNION PLASTIC PUBLIC COMPANY LIMITED
82. VINYTHAI PUBLIC COMPANY LIMITED
83. WHITE GROUP PUBLIC COMPANY LIMITED
84. ALUCON PUBLIC COMPANY LIMITED
85. NIPPON PACK (THAILAND) PUBLIC COMPANY LIMITED
86. POLYPLEX (THAILAND) PUBLIC COMPANY LIMITED
87. S. PACK & PRINT PUBLIC COMPANY LIMITED
88. THANTAWAN INDUSTRY PUBLIC COMPANY LIMITED
89. THAI METAL DRUM MANUFACTURING PUBLIC COMPANY LIMITED
90. THAI O.P.P. PUBLIC COMPANY LIMITED
91. BANGSAPHAN BARMILL PUBLIC COMPANY LIMITED
92. DYNASTY CERAMIC PUBLIC COMPANY LIMITED
93. DCON PRODUCTS PUBLIC COMPANY LIMITED
94. DIAMOND ROOFING TILES PUBLIC COMPANY LIMITED
95. M.C.S.STEEL PUBLIC COMPANY LIMITED
96. PACIFIC PIPE PUBLIC COMPANY LIMITED
97. THE SIAM CEMENT PUBLIC COMPANY LIMITED
98. SIAM CITY CEMENT PUBLIC COMPANY LIMITED

99. SINGHA PARATECH PUBLIC COMPANY LIMITED
100. TIPCO ASPHALT PUBLIC COMPANY LIMITED
101. TATA STEEL (THAILAND) PUBLIC COMPANY LIMITED
102. VANACHAI GROUP PUBLIC COMPANY LIMITED
103. ASIAN PROPERTY DEVELOPMENT PUBLIC COMPANY LIMITED
104. BAAN ROCK GARDEN PUBLIC COMPANY LIMITED
105. CHARN ISSARA DEVELOPMENT PUBLIC COMPANY LIMITED
106. CHRISTIANI & NIELSEN (THAI) PUBLIC COMPANY LIMITED
107. CENTRAL PATTANA PUBLIC COMPANY LIMITED
108. EMC PUBLIC COMPANY LIMITED
109. HEMARAJ LAND AND DEVELOPMENT PUBLIC COMPANY LIMITED
110. K.C. PROPERTY PUBLIC COMPANY LIMITED
111. LAND AND HOUSES PUBLIC COMPANY LIMITED
112. L.P.N. DEVELOPMENT PUBLIC COMPANY LIMITED
113. MBK PUBLIC COMPANY LIMITED
114. MAJOR DEVELOPMENT PUBLIC COMPANY LIMITED
115. M.K. REAL ESTATE DEVELOPMENT PUBLIC COMPANY LIMITED
116. NOBLE DEVELOPMENT PUBLIC COMPANY LIMITED
117. PROPERTY PERFECT PUBLIC COMPANY LIMITED
118. POWER LINE ENGINEERING PUBLIC COMPANY LIMITED
119. PRINSIRI PUBLIC COMPANY LIMITED
120. PREUKSA REAL ESTATE PUBLIC COMPANY LIMITED
121. RASA PROPERTY DEVELOPMENT PUBLIC COMPANY LIMITED
122. ROJANA INDUSTRIAL PARK PUBLIC COMPANY LIMITED
123. SAMMAKORN PUBLIC COMPANY LIMITED
124. SC ASSET CORPORATION PUBLIC COMPANY LIMITED
125. SEAFCO PUBLIC COMPANY LIMITED
126. SIAM FUTURE DEVELOPMENT PUBLIC COMPANY LIMITED
127. SANSIRI PUBLIC COMPANY LIMITED
128. SUPALAI PUBLIC COMPANY LIMITED
129. THAI FACTORY DEVELOPMENT PUBLIC COMPANY LIMITED
130. TICON INDUSTRIAL CONNECTION PUBLIC COMPANY LIMITED
131. UNIQUE ENGINEERING AND CONSTRUCTION PUBLIC COMPANY LIMITED
132. UNIVENTURES PUBLIC COMPANY LIMITED
133. EKARAT ENGINEERING PUBLIC COMPANY LIMITED
134. BANGKOK AVIATION FUEL SERVICES PUBLIC COMPANY LIMITED
135. BANPU PUBLIC COMPANY LIMITED
136. THE BANGCHAK PETROLEUM PUBLIC COMPANY LIMITED
137. ELECTRICITY GENERATING PUBLIC COMPANY LIMITED
138. IRPC PUBLIC COMPANY LIMITED
139. THE LANNA RESOURCES PUBLIC COMPANY LIMITED
140. PTT PUBLIC COMPANY LIMITED
141. PTT EXPLORATION AND PRODUCTION PUBLIC COMPANY LIMITED
142. RATCHABURI ELECTRICITY GENERATING HOLDING PUBLIC COMPANY LIMITED
143. RAYONG PURIFIER PUBLIC COMPANY LIMITED
144. SAHACOGEN (CHONBURI) PUBLIC COMPANY LIMITED
145. THAI OIL PUBLIC COMPANY LIMITED
146. PADAENG INDUSTRY PUBLIC COMPANY LIMITED
147. BIG C SUPERCENTER PUBLIC COMPANY LIMITED
148. BERLI JUCKER PUBLIC COMPANY LIMITED
149. CP ALL PUBLIC COMPANY LIMITED
150. HOME PRODUCT CENTER PUBLIC COMPANY LIMITED

151. IT CITY PUBLIC COMPANY LIMITED
152. SIAM MAKRO PUBLIC COMPANY LIMITED
153. MINOR CORPORATION PUBLIC COMPANY LIMITED
154. ROBINSON DEPARTMENT STORE PUBLIC COMPANY LIMITED
155. SAHA PATHANAPIBUL PUBLIC COMPANY LIMITED
156. AIKCHOL HOSPITAL PUBLIC COMPANY LIMITED
157. BANGKOK DUSIT MEDICAL SERVICES PUBLIC COMPANY LIMITED
158. BUMRUNGRAD HOSPITAL PUBLIC COMPANY LIMITED
159. KRUNGDHON HOSPITAL PUBLIC COMPANY LIMITED
160. BANGKOK CHAIN HOSPITAL PUBLIC COMPANY LIMITED
161. CHIANG MAI RAM MEDICAL BUSINESS PUBLIC COMPANY LIMITED
162. MAHACHAI HOSPITAL PUBLIC COMPANY LIMITED
163. WATTANA KARNPAET PUBLIC COMPANY LIMITED
164. NONTHAVEJ HOSPITAL PUBLIC COMPANY LIMITED
165. AMARIN PRINTING AND PUBLISHING PUBLIC COMPANY LIMITED
166. BEC WORLD PUBLIC COMPANY LIMITED
167. EASTERN PRINTING PUBLIC COMPANY LIMITED
168. GMM MEDIA PUBLIC COMPANY LIMITED
169. GMM GRAMMY PUBLIC COMPANY LIMITED
170. MAJOR CINEPLEX GROUP PUBLIC COMPANY LIMITED
171. MATICHON PUBLIC COMPANY LIMITED
172. MCOT PUBLIC COMPANY LIMITED
173. MEDIA OF MEDIAS PUBLIC COMPANY LIMITED
174. PRAKIT HOLDINGS PUBLIC COMPANY LIMITED
175. SE-EDUCATION PUBLIC COMPANY LIMITED
176. THAI BRITISH SECURITY PRINTING PUBLIC COMPANY LIMITED
177. WORKPOINT ENTERTAINMENT PUBLIC COMPANY LIMITED
178. GENERAL ENVIRONMENTAL CONSERVATION PUBLIC COMPANY LIMITED
179. CENTRAL PLAZA HOTEL PUBLIC COMPANY LIMITED
180. CITY SPORTS AND RECREATION PUBLIC COMPANY LIMITED
181. DUSIT THANI PUBLIC COMPANY LIMITED
182. THE ERAWAN GROUP PUBLIC COMPANY LIMITED
183. LAGUNA RESORTS & HOTELS PUBLIC COMPANY LIMITED
184. THE MANDARIN HOTEL PUBLIC COMPANY LIMITED
185. MIDA-MEDALIST ENTERTAINMENT PUBLIC COMPANY LIMITED
186. OHTL PUBLIC COMPANY LIMITED
187. ROYAL ORCHID HOTEL (THAILAND) PUBLIC COMPANY LIMITED
188. SHANGRI-LA HOTEL PUBLIC COMPANY LIMITED
189. AIRPORTS OF THAILAND PUBLIC COMPANY LIMITED
190. ASIAN MARINE SERVICES PUBLIC COMPANY LIMITED
191. BANGKOK EXPRESSWAY PUBLIC COMPANY LIMITED
192. JUTHA MARITIME PUBLIC COMPANY LIMITED
193. KRUNGDHEP SOPHON PUBLIC COMPANY LIMITED
194. PRECIOUS SHIPPING PUBLIC COMPANY LIMITED
195. REGIONAL CONTAINER LINES PUBLIC COMPANY LIMITED
196. THAI AIRWAYS INTERNATIONAL PUBLIC COMPANY LIMITED
197. THORESEN THAI AGENCIES PUBLIC COMPANY LIMITED
198. UNITED STANDARD TERMINAL PUBLIC COMPANY LIMITED
199. CAL-COMP ELECTRONICS (THAILAND) PUBLIC COMPANY LIMITED
200. DELTA ELECTRONICS (THAILAND) PUBLIC COMPANY LIMITED
201. DRACO PCB PUBLIC COMPANY LIMITED
202. ELECTRONICS INDUSTRY PUBLIC COMPANY LIMITED

203. HANA MICROELECTRONICS PUBLIC COMPANY LIMITED
204. SINGLE POINT PARTS (THAILAND) PUBLIC COMPANY LIMITED
205. SVI PUBLIC COMPANY LIMITED
206. TEAM PRECISION PUBLIC COMPANY LIMITED
207. ADVANCED INFO SERVICE PUBLIC COMPANY LIMITED
208. ADVANCED INFORMATION TECHNOLOGY PUBLIC COMPANY LIMITED
209. CS LOXINFO PUBLIC COMPANY LIMITED
210. FORTH CORPORATION PUBLIC COMPANY LIMITED
211. JASMINE INTERNATIONAL PUBLIC COMPANY LIMITED
212. MFEC PUBLIC COMPANY LIMITED
213. METRO SYSTEMS CORPORATION PUBLIC COMPANY LIMITED
214. SAMART CORPORATION PUBLIC COMPANY LIMITED
215. SAMART TELCOMS PUBLIC COMPANY LIMITED
216. SAMART I-MOBILE PUBLIC COMPANY LIMITED
217. SIS DISTRIBUTION (THAILAND) PUBLIC COMPANY LIMITED
218. SVOA PUBLIC COMPANY LIMITED
219. T.K.S. TECHNOLOGIES PUBLIC COMPANY LIMITED
220. TWZ CORPORATION PUBLIC COMPANY LIMITED

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