RELATIONSHIP BETWEEN GROWTH OPPORTUNITIES,
FINANCIAL LEVERAGE AND INDUSTRY CLASSIFICATION OF
THAI LISTED COMPANIES

By
WANG LIAN LI

A Thesis Submitted in Partial Fulfillment
of the Requirements for the Degree of

Master of Business Administration

Graduate School of Business
Assumption University
Bangkok Thailand

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ABSTRACT

This study attempts to examine the relationship between financial leverage, growth opportunities and industry classification of Thai Stock-Listed Companies. The study examines data of non-financial listed companies on the Stock Exchange of Thailand from the period of 1998 to 2001, and focuses on 68 firms. The research separates the samples into two groups based on their Tobin's Q being greater or less than 1. Then, using growth opportunities variable as a dependent variable, and financial leverage, industry dummy as independent variables, Tobin's Q is used as the intervening variable.

Based on the Pearson Correlation and Multiple Regression analyses, the empirical results reveal that industry classification does not influence the companies' growth opportunities during 1998 and 2001. In other words, the correlation between industry and growth is statistically insignificant for sample Thai companies. However, financial leverage has a positive significant relationship with corporate growth if its Tobin's Q is greater than 1, but although there is a negative relationship between financial leverage and growth opportunities when Tobin's Q is less than 1, it is insignificant.

This study can be applied into studying corporate financing behavior and conducting further research.

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TABLE OF CONTENTS

CHAPTER 2: LITERATURE REVIEW

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

1.1   BACKGROUND OF STUDY

Traditional Thai firms, as in most developing countries, are owned, managed and
controlled by individuals, families, and their partners. The main source of capital is
typically the owner-manager's capital, supplemented by bank borrowing, if necessary.
Recently, the rapid development of the Thai economy and its financial markets has
provided enough incentive for some of the privately owned firms to become public.
Founded families were willing to share the risk and profits of their companies
probably because they expected to grow faster with external financing during the
early 1990s. The number of companies that went public increased sharply over the
past 15 years, 92 companies in 1986; 159 in 1990; 347 in 1993; 454 companies in
1996; 382 companies in 2001; 365 companies in 2002. The setting up of the BIBF
(Bangkok International Banking Facilities) in 1993 made it easier for Thai companies
to access foreign sources of capital. In terms of stock price declines and currency
devaluations, the Asian financial crisis began in Thailand in mid-1997 resulting from
the absence of financial controls by the public and business sectors. Consequently,
over the past 15 years, financial practices, policies, corporate governance and the
capital structure of Thai enterprises have changed (Wiwattanakantang, Y., 1999).

1.2   EFFECTS OF ASIAN FINANCIAL CRISIS ON CAPITAL STRUCTURE POLICY

Since the Asian financial crisis, Thai companies' capital structures have changed, as most companies' financial leverage had been reduced. This change is shown in Figure 1.1 and Figure 1.2.

Figure 1.1:Debt / Equity Ratios for All Sectors, except Finance, Banking, Securities and Insurance (Stock Exchange of Thailand in 1997)
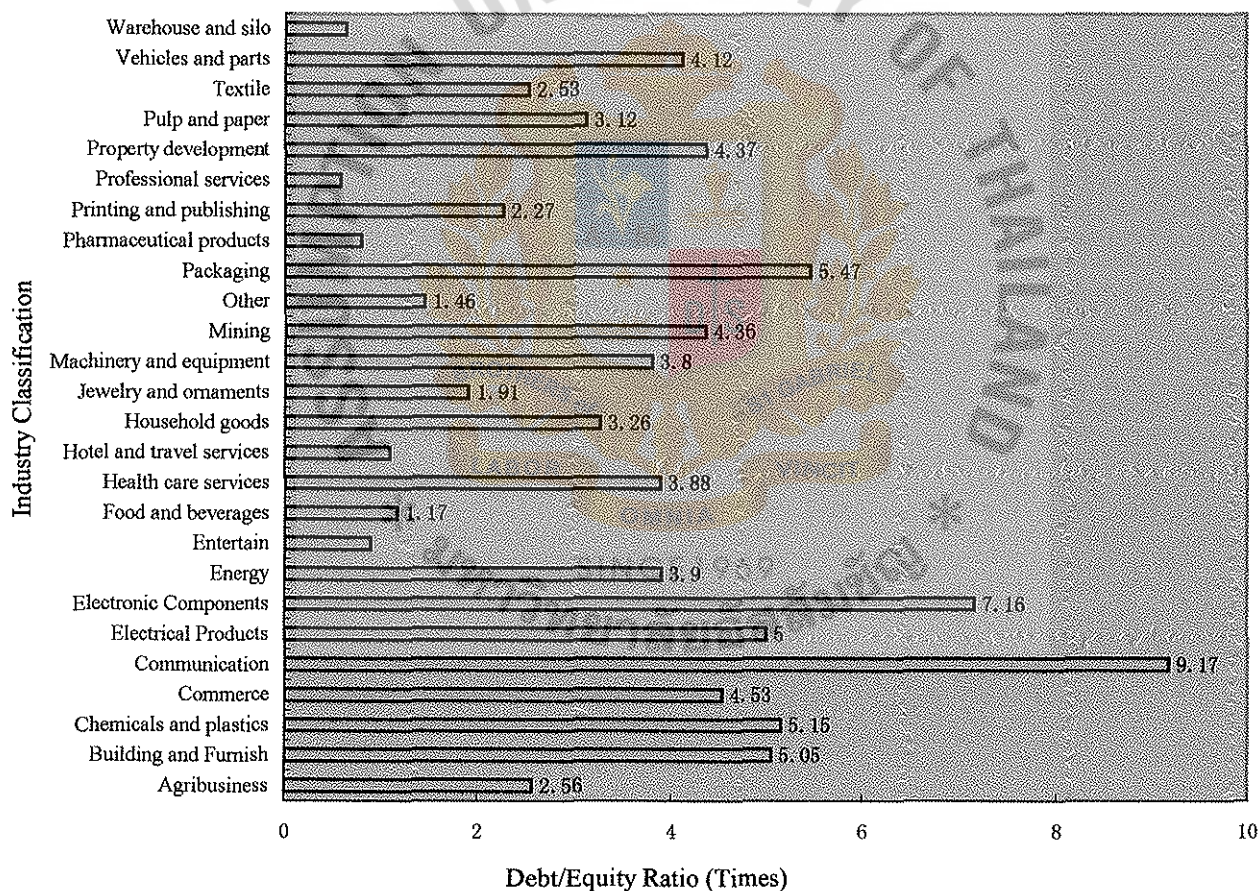
Source: Developed using data from the Stock Exchange of Thailand from Integrated-SET Information Management System (ISIMS) CD ROM Volume 2.

Figure 1.2:Debt / Equity Ratios for All Sectors, except Finance, Banking, Securities and Insurance (Stock Exchange of Thailand in 2001)
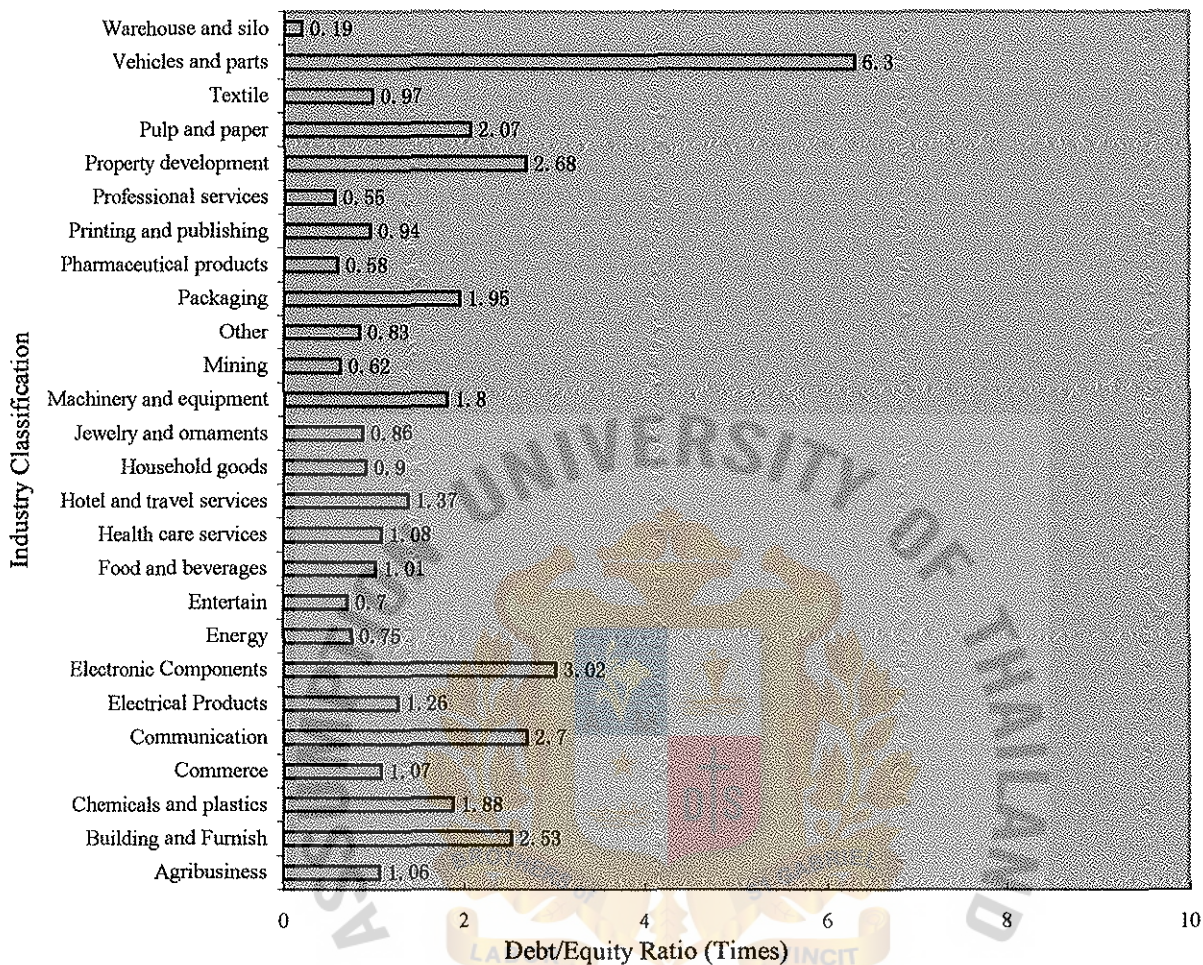
Source: Developed using data from the Stock Exchange of Thailand from Integrated-SET Information Management System (ISIMS) CD ROM Volume 2.

Figure 1.1 and Figure 1.2 show the variation of debt/equity ratios across industries except Banking, Finance, Securities, and the Insurance Sectors in the Stock Exchange of Thailand between 1997 and 2001, respectively. In 1997, the debt to equity ratio of 21 industries out of 26 industries was more than 1:1. Additionally, in 2001, the debt to equity ratio of 14 industries was more than 1:1. This indicates that many Thai companies reduced their debt to equity ratio after 1997. Nevertheless, Thai companies still tend to have high debt to equity ratios. The two figures indicate that

3

debt to equity ratios obviously vary in different industries. These high debt/equity ratios led to Thai companies adopting and maintaining the same financing hierarchy approach between the years of 1997 and 2001.

1.3   FINANCING HIERARCHY

According to mail-in questionnaires designed by Arsiraphongphisit et al. (1998), Table 1.1 shows a preference for financing hierarchy.

Table 1.1:   Preference Rankings of Long-Term Funds*

urces by Order Preference	First	Percentage of Responses Within Each Rank									Mean
		Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	Last	Not Ranked	
Internal equity (retained earnings)	66.7%	6.1%	3.0%	6.1%	3.0%	0.0%	3.0%	0.0%	6.1%	6.1%	7.36
Bank loans	18.2%	27.3%	18.2%	3.0%	0.0%	0.0%	6.1%	12.1%	3.0%	12.1%	5.73
External equity (new common shares)	0.0%	18.2%	30.3%	9.1%	15.2%	9.1%	0.0%	0.0%	6.1%	12.1%	5.30
Dividend reinvestment Plans	6.1%	24.2%	0.0%	15.2%	3.0%	3.0%	6.1%	9.1%	6.1%	27.3%	4.09
Bonds	3.0%	9.1%	21.2%	6.1%	9.1%	6.1%	6.1%	9.1%	12.1%	18.2%	4.03
Loans from affiliated companies	6.1%	6.1%	12.1%	12.1%	3.0%	6.1%	9.1%	9.1%	15.2%	21.2%	3.61
Preference shares	3.0%	3.0%	0.0%	15.2%	9.1%	12.1%	15.2%	3.0%	12.1%	27.3%	3.00
Warrants	0.0%	3.0%	0.0%	3.0%	24.2%	6.1%	18.2%	15.2%	3.0%	27.3%	2.76
Convertibles	3.0%	0.0%	3.0%	9.1%	9.1%	21.2%	0.0%	9.1%	18.2%	27.3%	2.70

* Mean ratings are calculated by multiplying the percentage in each category with assigned scores 9 through 1 for rankings from 1 through 9, respectively. A score of 0 is assigned when a score is not ranked.

* Summarized from Oraluck Arsiraphongphisit, George W. Kester, and Michael T. Skuly (1998).

4

As Table 1.1 indicates, 66.7% of firms ranked internal equity (retained earnings) as their first choice of financing. While Bank loans were ranked second. External equity (new common shares) ranked third. These results are also consistent with the pecking order hypothesis, in which firms prefer internal to external financing, and if external financing is obtained, debt is preferred to equity.

In other words, it shows that Thai firms have a preference for following a financing hierarchy in which the most advantageous sources of long-term funds are exhausted before other sources are used.

1.4   SECTORAL OVERVIEW

According to the Standard Industry Classification (SIC), there are 32 industries in the Stock Exchange of Thailand at present.

Agriculture, with sugar cane, rice and cassava being the most outstanding products, used to play an important role in the national income but has lost its importance with the economic development. Manufacturing has increased its share of GDP from 11% in 1960; to 18% in 1980 and by 1990 it has increased to 28%. Export products that gave the highest contributions to national income in 1995 are miscellaneous manufactured items (e.g. clothing, footwear) (24%), food and live animals (19%) and basic producers (11%). Most important imports are machinery and transport equipment (47%), basic producers5%) and chemicals and related products (10%) (Far East and Australasian Encyclopedias 1998).

In summary, manufacturing did not drive Thailand's growth; the driving force

was to a large extent from production of a comparatively limited range of primary products. It was not until the mid-80s when manufacturing increased its share of export earnings, that it became important for the national income.

Thailand's major urban centers have a well-developed Information & Communication Technologies (ICT) infrastructure, which require advanced technologies for continued expansion, while the countryside still has immense needs for basic telecom services. E-commerce business potential is growing. Software and IT enabled services have contributed significantly to the growth of the services sector. The software industry was one of the fastest growing sectors. Thailand's success in the software sector can be largely attributed to the availability of skilled manpower, industry's ability to cultivate superior knowledge through intensive R&D efforts and expertise in applying the knowledge for commercially viable technologies.

Oil & Gas opportunities exit for repair and maintenance services, natural gas distribution, and process control consulting services. Power Equipment & Services Opportunities include investment in new generating facilities as well as longer-term plans to privatize energy resources. There is interest in low-cost power production technology and environment protection solutions.

Moreover, Bangkok is building a world-class public transport system, and a second international airport is also planned for the capital. Sky-train and subways continue to construct. It means that there is a high growth potential in the transportation sector for the future (http://www.thaieconwatch.com,

http://www.unescap.org).

1.5 RELATIVE IMPORTANCE OF GROWTH OPPORTUNITIES

A company's value is often segregated into the value of assets in place and the value of growth opportunities (Miller and Modigliani, 1958). Assets-in-place include such tangible assets as land, buildings, machines, and inventory, plus intangible assets such as patents, customer lists, reputation, brand awareness, general know-how and goodwill. These two different types of assets produce current sales, cash flow, and also provide opportunities for new investments that will produce additional cash flow in the future.

Growth opportunities are the opportunities to expand that arise from a company's current operating knowledge, experience, and other resources. Arsiraphongphisit, et al. (1998) expolited that when presented with an attractive new growth opportunity, that could not be taken without departing from the target capital structure, financing hierarchy, cutting the dividend, or selling off other assets. 43.7% of Thai companies indicated that they would deviate from their target capital structure or financing hierarchy given the aforementioned conditions. Only 6.8% of the responding executives indicated that they would forgo the opportunity. A higher 27.3% of the responding executives indicated that they would cut dividends and 15.9% replied that they would sell off other assets. These results, summarized and shown in Table 1.2, suggest that Thai firms place significant emphasis and focus on growth opportunities. In other words, ensuring the long-term survivability of the company and identifying

7

growth opportunities are the two most important considerations affecting a firm's financing decisions.

Table 1.2:   Relative Importance of Growth Opportunities

Likely Action to Be Taken in Response to Growth Opportunity	Percentage
a) Forgo the opportunity	6.8%
b) Deviate from the target capital structure of financing hierarchy	43.2%
c) Cut common dividend	27.3%
d) Sell off other assets	15.9%
e) No response	6.8%
Total	100%

Summarized from Oraluck Arsiraphongphisit, George W. Kester, and Michael T. Skuly (1998).

Growth opportunities play a prominent role in the theory of corporate finance. It is generally believed that growth opportunities play an especially important role in determining a company's debt policy. Increasing focus, within financial economic literature, has been placed on the relationship between a company's growth opportunities and its financial policies.

There is a well-documented negative relationship between leverage and growth opportunities in U.S. firms (Jung, Kim and Stulz, 1996; Smith and Watts, 1992). This negative relationship is consistent with at least two theoretical frameworks. One argument is that agency conflicts cause companies with an abundance of positive net present value (NPV) investment opportunities to issue equity rather than debt t‹ finance their new investments. For example, Myers (1977) pointed out that

8

stockholders of companies with a high probability of bankruptcy are highly unlikely to provide new capital even to finance positive NPV projects.

A stockholder's reluctance to invest more in financially distressed companies stems from the reality that while he/she bears the entire cost of the investment, the existing debt-holders capture most of the investment's return. Thus, when facing financial distress, a company's existing large debt level provides the firm's stockholders with a reason to reject positive NPV projects. Myers concludes that companies expecting positive NPV investment opportunities prefer to maintain low levels of debt in order to avoid the possibility of under-investment.

Jensen (1976) and Stulz (1990) offered an explanation for the negative relationship between leverage and investment opportunities. They argue that managers have an incentive to invest all available funds even if it requires investing in some negative NPV projects. Debt service payments reduce the availability of funds that managers have at their discretion for unprofitable investments. Consequently, companies expecting to have positive NPV investment opportunities tend to use equity financing. Debt financing is used only after the attractive investment opportunities diminish and free cash flow increases.

Masulis (1983) explained that the second framework consistent with a negative leverage-investment opportunity relationship is based on the tax code provisions pointed out. The scholars argued that investment generally creates non-debt tax shields and because debt-related and investment-related tax shields are perfect substitutes, the expected benefits of debt financing tend to fall as positive NPV

investment opportunities increase. As a result, companies with high growth opportunities use less debt at the margin.

However, perhaps the relationship between growth and leverage is not the same as different companies. Company performance, in part, is measured by net profit and the net equity it achieves over a given period of time (http://www.investorwords.com/cgi-bin/getword.cgi?3665).

Figure 1.3 shows the variation of Market to Book ratio (Tobin's Q) across various industries in the Stock Exchange of Thailand for 2001. Among 28 industries, only Market to Book ratio (Tobin's Q) of 11 Sectors was more than 1, which means that Thai companies overall performance was less than impressive, holding external factors constant. The market to book ratio (Tobin's Q) of 3.03 of the Entertainment Sector was the highest ratio among all Sectors with the exception of Finance, Securities, Banking, and the Insurance Sectors.

**Figure 1.3 : Market to Book ratio (Tobin's Q) for all Sectors,
except Finance, Banking , Securities and Insurance
(Stock Exchange of Thailand in 2001)**
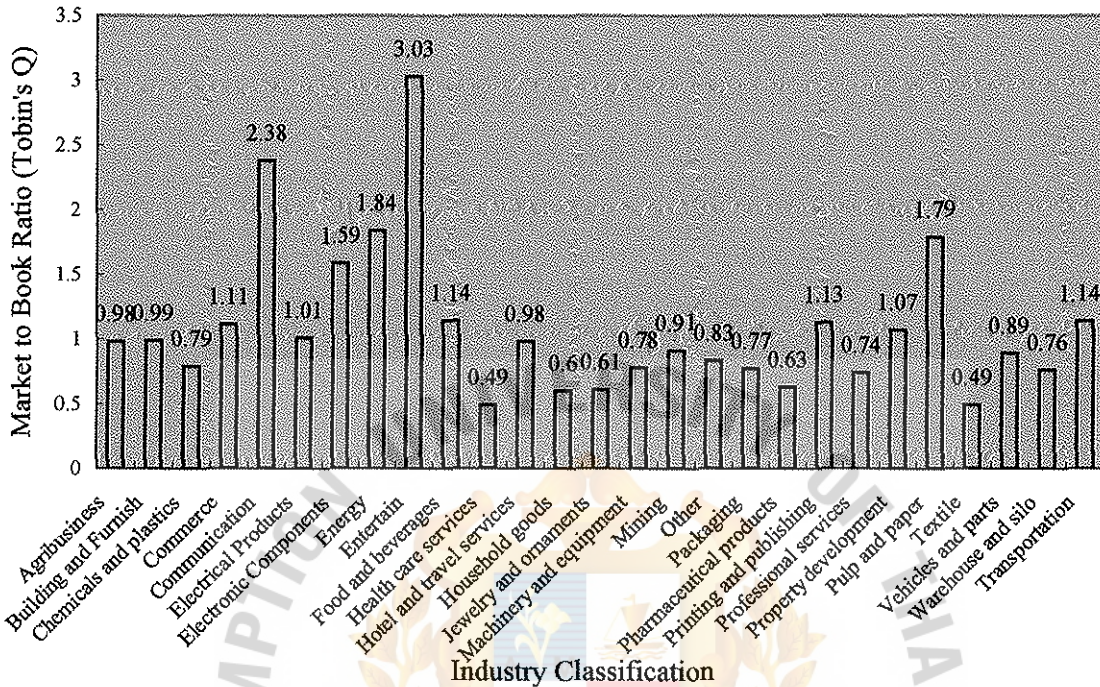
Source: Developed using data from the Stock Exchange of Thailand from Integrated-SET

Information Management System (ISIMS) CD-ROM Volume2.

**Figure 1.4 : Market to Book Ratio for Thai listed Companies
of
Entertainment Sector in 2001**
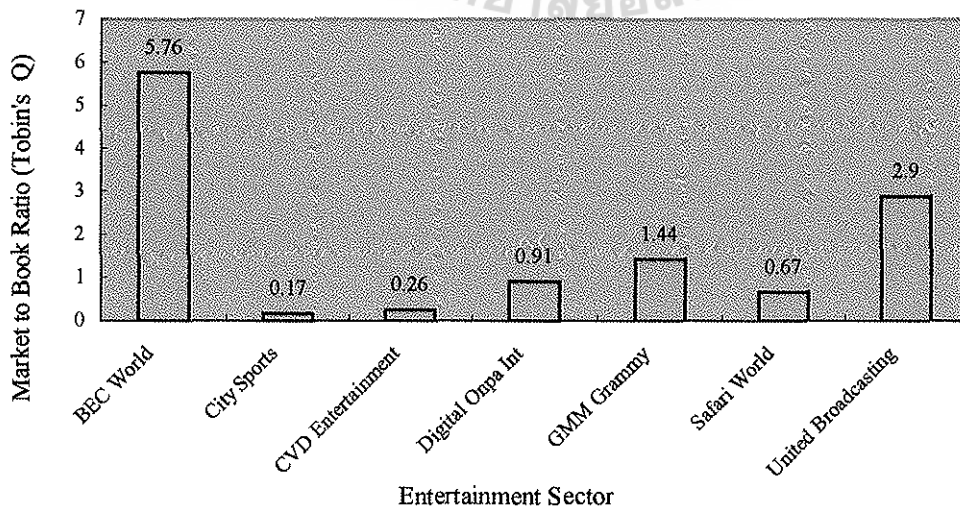
Entertainment Sector

11

Figure 1.5: Debt/Equity Ratios for Thai listed Companies of Entertainment Sector in 2001
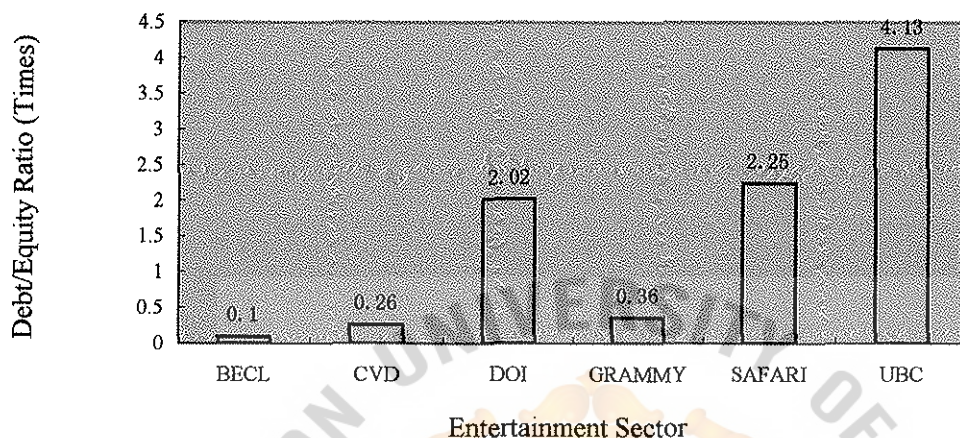
Figure 1.4 shows market to book ratio (Tobin's Q) of the Entertainment Sector, a comparison with Figure 1.5 shows the debt to equity ratio of the Entertainment Sector. We find that market to book ratio of SAFARI World public company limited was only 0.67, which, simply translated into poor company performance. However, its debt to equity ratio was 2.25, which indicates that there was a high leverage ratio regardless of their poor financial performance. In other words, the company borrowed additional capital during a period of declining revenue. One can also postulate that although the market to book ratio of BEC Company was 5.76, the company in fact performed well despite having a low debt to equity ratio of 0.10. This indicates that the company borrowed less capital during a period of good performance.

Although Figures 1.4 and 1.5 do not show all listed companies, they still imply that there is a relationship between growth and leverage when considered a company's performance. This realization has stimulated an attempt to discover the other determinants and influences on growth and leverage within Thai companies (based on non-taxes theories), including industry classification.

This study emphasizes the implications regarding the relationship between growth opportunities financial leverage. This study utilizes some of the variables that are applied into major studies (considered in literature review). However, it contains limitations to the study. First, there is no organization that provides financial data and or statistics for Thai companies like Compustat in the United States. Second, the only source of financial data on Thai companies comes from the Stock Exchange of Thailand, so only large public firms can be examined.

1.6 PROBLEM STATEMENT

In this study, we use a large sample of companies listed on the Stock Exchange of Thailand in order to identify the relationship between growth opportunities and leverage, while considering a company's performance.

The main research question of this study is:

" What is the relationship between financial leverage, growth opportunities and industry classification given differences in corporate performance of non-financial publicly traded companies in Thailand?"

1.7   THE OBJECTIVE OF THE STUDY

The purpose of this study is to examine historical financial data to make some conclusions about the corporate financial behavior of selected listed firms in Thailand. This is done by investigating whether there is any correlation between financial leverage, industry classification, and growth opportunities considering different corporate performance available for the non-financial related publicly traded companies in Thailand.

1.8   THE SIGNIFICANCE OF THE STUDY

The results, findings and conclusions of this study will be of specific benefit as follows:

- External investors should put emphasis on a given company's growth opportunity, which reflect the firm's latent potential and attempt to project a company's future market share value. A rational, risk-averse investor should closely observe a company's overall performance before making a decision whether to buy or sell shares in that entity. This study helps highlight the relationship between financial leverage and growth opportunities of corporations.

- Financial managers should consider the determinants of a company's growth opportunity in order to make an appropriate security issue determination. Additionally, they should devote themselves to the company's survival in a competitive

environment as well as to maximize shareholders' returns. The results of the study

help understand the trade-off between firm survival and performance in terms of

growth.

● Lenders or creditors will be able to examine a company' performance and growth

opportunities according to the above listed variables before extending loans. Then

they can determine how high or low the financial risk is consistent with their ability to

service new debt.

● Finally, this study is useful to the academic community at large for use in examining

corporate financing behavior and for the purpose of conducting further research.

1.9   SCOPE OF THE STUDY

The scope of this study is limited to the non-tax theories including only agency

costs and pecking order theory. This study is based on data published in the

Integrated-SET Information Management System (ISIMS) CD-ROM Volume No.2

consisting of only listed companies in the Stock Exchange of Thailand except Finance

& Security, Banking, and the Insurance Sectors during the period of January 1998 to

December 2001. Sixty-eight publicly traded corporations, classified into 25 generic

industries have been examined.

The sample is separated into two distinct groups and divided according to their

respective Tobin's Q, i.e., greater or less than 1 (which measures corporate

performance). Growth opportunities are applied as a dependent variable, financial

leverage and industry classification are considered as independent variables. Additionally, the study examines the correlation between these variables and growth opportunities.

1.10   LIMITATION OF THE STUDY

The limitation on the selection of the samples utilized are as following:

1)   Since this study uses some of the variables that are applied into major studies (considered in literature reviews) respective to independent variables, limitations of reliable data sources make it difficult to apply to an analysis of those crucial variables that are not included in available databases. For example, ownership data, tax rate, etc.

2)   From the total sample, this study excluded all the observations that did not have a complete record on the variables included in the analysis.

3)   In terms of using the secondary data that will influence the precise of the outcome of data.

4)   Due to the unavailability of data, and no established market price of debt in Thailand, the study was forced to use the book value of total debt and use the simplified version of Tobin's Q, defined as the market value of equity at the end of the accounting year, plus the book value of total debt divided by the book value of total assets.

Lindenberg and Ross (1981) mentioned that there is one caveat here related to

measures of performance. Measures of performance that are commonly used in studies in more developed economies are not appropriate or relevant to developing economies. Worldwide, accounting measures are not as accurate as they are subject to manipulate and embellish on the part of management. On the other hand, the market measure, Tobin's Q to provide an accurate measure of performance, stock prices have to reflect the true value of the company.

1.11   DEFINITION OF TERMS

In order to clarify the terminology in this thesis, the most frequently used terms we listed along with definitions to facilitate an understanding of their general meaning:

Asymmetric information: Asymmetric information refers to the notion that firm insiders, typically the managers, have better information than do market participants on the value of their firm's assets and investment opportunities. This asymmetry creates the possibility that the market will not price the firm's claims correctly, thus providing   a   positive   role   for   corporate   financing   decisions (http://www.investorwords.com/cgi-bin/getword.cgi?).

Capital Market: A market where long-term debt or equity securities are traded. In this study, the researcher does the research based on the local capital market, the

Stock   Exchange   of   Thailand

(http://www.investorwords.com/cgi-bin/getword.cgi?726).

Debt/Equity ratio (D/E ratio):   This ratio also is an indicator of financial leverage.

It compares assets provided by creditors to assets provided by shareholders and is

determined by dividing total book value of debt by common stockholder equity

(Leland & Pyle (1977) and Ross (1977)).

Debt to Equity ratio is estimated using the formula below:

Debt-equity ratio = Total book value of debt / total market value of common

stockholder equity

Total debt is bank overdrafts and loans from financial institutions, current portion

of long-term liabilities, debentures, convertible debentures, and long-term liabilities.

The market value of common stockholder equity is defined as the number of

outstanding shares multiplied by the share price of the last trading day for the year

1998 to 2001.

Remark: 1.   A company with a higher debt/equity ratio can offer greater returns

to shareholders but is riskier.

2.   For the optimal levels of capital structure for Thailand are classified

into three levels. First, debt to equity (Times) should be less than or equal to 1, and

suitable for communication, electronic components, and food and beverage sectors.

Second, debt to equity (Times) should be more than 1 but less than or equal to 2, and

suitable for printing and publishing, electronic components, and commerce sectors. Last, debt to equity (Times) should be more than 2 but less than or equal to 3 for all other industries, according to general rules of thumb.

Growth Opportunities: is one of the determinants of a company's marketvalue (Miller and Modigliani, 1961; Dixit and Pindyck, 1993). Moreover, growth opportunities is opportunities to expand that arise from a company's current operating knowledge, experience, and other resources, (Myers (1977), Arsiraphongphisit, Kester, and Skuly (1998)), define growth opportunities as follows: 'The usual interpretation is that a positive value of growth opportunity reflects future investments which are expected to yield a rate of return in excess of the opportunity cost of capital'.

ISIMS: is integrated information system (I-SIMS) CD-ROM volume No.2 that provides the complete data to the researcher to use in this study.

Leverage (Financial Leverage): The degree to which an investor business is utilizing borrowed money. Companies that are highly leveraged may be at risk of bankruptcy if they are unable to make payments on their debt; they may also be unable to find new lenders in the future. Leverage is not always bad, however; it can increase the shareholders' return on their investment and often there are tax advantages associated with borrowing. Financial leverage benefits investors as long as the borrowed funds generated a return in excess of the cost of borrowing, although the

increased risk can offset the general cost of capital (see Shim and Siegel, (1989)).

It has three important implications: (1) By raising funds through debt, stockholders can maintain control of a firm without increasing their investment. (2) Bondholders look to the equity, or owner-supplied funds, to provide a margin of safety, so the higher the proportion of total capital provided by stockholders, the less the risk faced by bondholders. (3) If the firm earns more on investments financed with borrowed funds than it pays in interest, the return on the owners' capital is magnified, or "leveraged" (see John D., and J. E. Goodman, (2001)).

Remark: Barclay, Morellec, and Smith (2001) show that leverage measured using market values has low power to detect the debt capacity of growth options, so leverage measured using book values throughout this thesis

Price/earnings ratio (P/E ratio): The most common measure of how expensive a stock is. The P/E ratio is equal to a stock's market capitalization divided by its after-tax earnings over a 12-month period. Here, it is an indicator of growth opportunities (http://www.investorwords.com/cgi-bin/getword.cgi?).

P/E ratio is calculated using the formula below:

P/E ratio   =   Market Price Per Share / Earnings Per Share

Earnings per Share (EPS) =   Net Income / No. of Common Stock Outstanding

Market Price   =   Expected Dividend / (Required Return – Growth Rate)

Remark: Companies that are not currently profitable (that is, ones which have negative earnings) don't have a P/E ratio at all.

Tobin's Q: Tobin's Q represents corporate performance or investment opportunities. The company considers it necessary to undertake capital spending if the q is larger than one and vice versa. In other words, the higher the ratio (Tobin's Q>1), signal a valuable investment opportunity or good corporate performance, and the higher the premium the market is willing to pay for the company above its hard assets, and the company is encouraged to invest in plants and equipment because the company creates a high net present value. A low ratio (Tobin's Q <1) may signal a poor investment opportunity, this means that the company is discouraged to do so.

In this study, Tobin's Q, proxied by the ratio of the firm's market value to the book value of its assets. It is calculated as the market value of equity, plus the book values of debt and preferred equity divided by the book value of total assets.

The formula is as follows,

$$\text{Tobin's Q} = (\text{MVEQ} + \text{PREF} + \text{DEBT}) / \text{BVASSETS}$$

Where:

MVEQ   =   the year-end market value of the company's common stock;

PREF   =   the year-end book value of the company's preference shares (preferred stock);

DEBT   =   the year-end book value of the company's total debt;

BVASSETS   =   the year-end book value of total assets employed by the company.

This measure is consistent with the modified version suggested by Chung (1993).

Remark: The use of $q = 1$ as the critical q value follows from the Lang and Litzenberger (1989) propositions, which in turn are derived from the standard neoclassical investment rule that investment is warranted if and only if marginal q exceeds one. Lang, Stulz and Walkling (1989) and Servaes (1991) also set the critical value of q equal to one.

Industry Classification: *Refers to the* identify industry in which the company operates according to the list of Stock Exchange of Thailand (http://finance.yahoo.com).

This study includes 25 industries with agribusiness as an example. The specification of the industries follows that of the Stock Exchange of Thailand. (See Table 4 -2)

SET: The Stock Exchange of Thailand, the Second National Economic and Social Development Plan (1967-1971) proposed for the first time that an orderly securities market be established in order to mobilize additional capital for national economic development (www.set.or.th).

1.12 THE STRUCTURE OF THE STUDY

The following study is organized as follows: Chapter 1 is the introduction of the

study. It presents the statement of the problem, objectives of the study, scope of the study, Significance of the study, limitations, and a definition of terms. Chapter 2 contains a review of the relevant literature used, and includes the variables applied in the study as empirical proxies for the conceptual variables discussed. Chapter 3 describes the research methodology and includes research design, operationalization of variables and measurements, and hypotheses testing. Chapter 4 presents the data collection and analysis methods. Chapter 5 shows the analysis extrapolated from the research findings. Descriptive and regression analyses are proposed in this chapter as well and are followed by the confirmed hypotheses testing of the study. Finally, Chapter 6 contains the conclusions and recommendations as a result of this research.
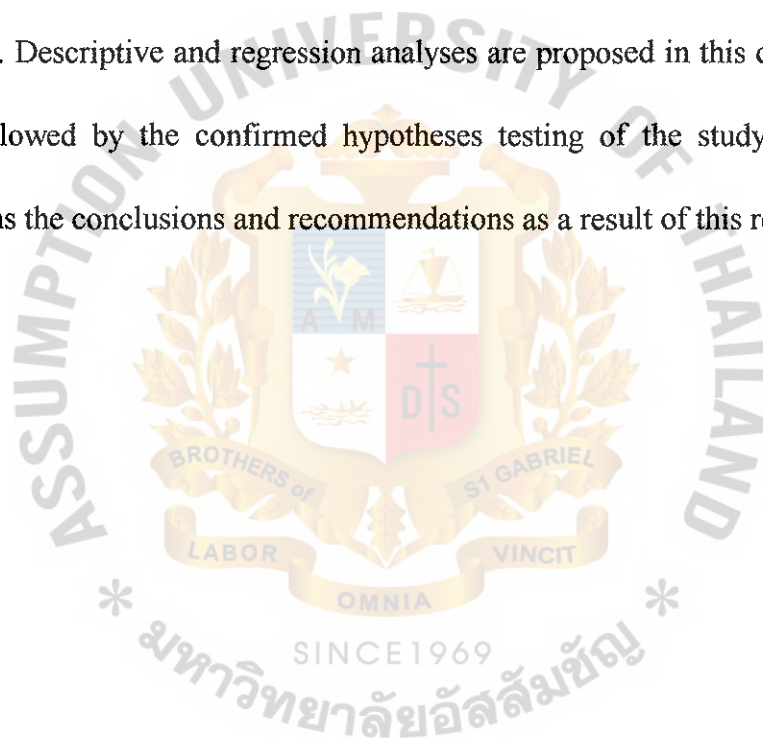
CHAPTER 2

LITERATURE   REVIEW

This chapter reviews the literature to support framework of theoretical and empirical findings. It shows the related findings in this field and previous scholars studies as well.

2.1   THEORETICAL REVIEW

2.1.1   Financial Distress, Agency Problems and Financial Leverage

There are many theoretical models attempting to discover the most important determinants of companies' financing behavior, and each single model addresses several issues. However, one approach to attain the optimal financing behavior related to debt financing that has been traditionally used is to balance the tax shield benefits of leverage against the financial distress (bankruptcy costs) and agency costs of leverage (Myers (1977)).

2.1.1.1 Financial Distress and Financial Leverage

Opler et. al., (1994) said that companies give much importance on bankruptcy

during financial distress to the debt holders or creditors. This is because, in the case of insolvency, if companies cannot repay debt, they may be sued to declare bankruptcy or liquidation. Companies' assets are taken into pieces by the debt-holders, and company has to repay the proceeds to the liabilities holders. Thus, it will be fair if the companies' assets have higher value than the market expectation. However, in the worse case, if companies do not have enough cash flows its current obligations, they may be declared to go bankrupt. Therefore, this involves additional costs on legal procedure for settlement in the court..

Ohlson, J.A.(1980) and Altman (2001) stated that on the other hand, highly leveraged firms behave differently from low-leverage firms. Bankruptcy and financial distress are costly, and this can discourage highly leveraged firms from undertaking risky new investments. If potential new investments, although risky, have positive net present values, then high levels of debt can be doubly costly—the expected financial distress and bankruptcy costs are high, and the firm loses potential value by not making some potentially profitable investments.

2.1.1.2 Agency Problems from Financial Leverage

Jensen and Meckling (1976) described the agency problem of debt financing that debt-holders have fixed claims (paid by fixed interest expenses), while stockholders have variable claims (depending on how profitable the projects are in terms of returns). Therefore, the larger the payoffs, the more the stockholders will benefit. As a

25

result, the stockholders enjoy playing other (debt-holders)' money. Since in the case that projects fail, the stockholders will lose only the fraction of their equity due to limited liability. Therefore, it allows the equity-holders to have an incentive to choose risky policies, thus leads to a decrease in companies' value. This effect generally called an agency cost of debt financing (see also Mello and Parsons (1982), Timothy J. Brailsford, Barry R. Oliver & Sandra L. H. Pua(2000)).

The conflict between equity-holders and debt-holders can be reduced by: 1) securing long term investments with collateral, and 2) shortening the maturity of debt (Kunt and Maksimovic (1994)). Another solution is given by Diamond (1989). He shows that debt-holders have another alternative to predict the outcomes of the borrower's investments by considering the reputation. He describes that reputation can be checked by the old record of repayment. The larger companies, that have long operating histories and thus establish better relationship and reputation with the lenders, could have borrow more than smaller companies. In addition, debt-holders are willing to provide lower lending rate for those companies, which finally always choose the positive or safe NPV projects, since they do not want to destroy the valuable reputation of the company that has long been established.

Another literature concerning the conflict between debt-holders and equity-holders is pointed by Myers (1977). The scholar argued that equity-holders have an incentive to reject the profitable investments in the case of when companies are encountering the financial distress. This is because they think that most benefits of such investments are carried to repay the current obligations, hence improving the

debt-holders' position. Myers called this as "Under-investment problem". The literature considers factor that reduce the under-investment costs pointed by Morck, Randall (1988), Stulz (1990), Berkovitch and Kim (1990) who showed that if a company can finance new projects with secured debt (debt with collateral), it is likely to invest some new projects instead of rejection.

Jensen and Meckling (1976) have described another agency cost of debt financing that the conflict between the managers and stockholders. They show that when managers have no shares in the equity or they have their ownership structure, so they will have no incentives to devote themselves in looking for new profitable investments or positive net present value projects (NPV) in order to pay dividends to stockholders. This is because dividend is not mandatory for use of equity. Therefore, cash flows in excess of that required to fund all projects that have positive net present value (NPVs) called "free cash flows" is often left, the managers are then likely to consume the non-cash benefits such as computers with too many options, charitable gifts and so on, when he makes operating decisions which maximize his utility. These decisions will also involve the benefits they derive from cash returns. The way to resolve this problem of inefficiency is to give managers the fractions of shares in order to assure them a feeling of ownership in the equity. Therefore, they have commitment to making companies profitable. However, in the opposite case that managers have a large fraction of shares in the companies, so they tend to borrow more debt in order to reduce the agency costs of external financing that often discounted price of shares. In the case of financial distress resulting from agency costs

of debt, Harris and Raviv (1990) and Johnson, S. (2002) argued that managers would like to run the businesses although the stockholders require a liquidation on companies' assets in the case that financial distress exists. Thus the benefit of debt financing is to allow the stockholders to liquidate companies' assets. Another benefit pointed by Williamson (1988) is that debt-holders can take over or liquidate the companies' assets, since creditors are prior claims in that case of bankruptcy.

However, the another approach is to reduce the conflicts between the debt-holders and stockholders by using debt financing to force managers to pay out cash flows, hence it will reduce free cash flows, and finally prevent managers from consuming "perquisites" (Jensen (1986)), Stulz (1990), Harvey, Karl and Roper (2001)). It is noted that the higher level of debt, the more is the probability of default, hence the more the possibility of bankruptcy that company will face. This shows that the higher level of debt financing is not always good for companies, especially for the companies with poor performance.

2.1.2   Pecking Order Theory and Asymmetric Information influence the level of debt financing

When the managers or the insiders know about the companies' value or investment opportunities, it is not fair for the existing stockholders or external investors (Narayanan (1988)). Myers and Majluf (1977) showed the reason that when companies issue new stocks actually the stock is under-priced, if in the case of

28

positive NPV losses will carry to the existing shareholders, but gains to new ones. As a result, the under-investment problem will exist, since profitable investments are rejected (Myers (1977), Kim, W. and E., Sorensen (1986)). Therefore, the appropriate approach is to issue the security that is not severely undervalued by the market. Internal financing is preferred to external one. Myers and Majluf (1984) refers this as "Pecking Order Theory" that companies use retained earning first, lower debt second, and common stock issuance as a last source.

Ross (1977) and Raymar and Steven (1993) explained that the above cited that debt financing becomes as a part of solution to the under-investment problems. But now debt financing serves as a signal of private insider information under condition in which investment is fixed. Therefore, managers know the true companies' returns, and the value of debt that are actually under-priced by the market, but investors and debt-holders do not. Managers benefit if the companies' securities are more highly valued by the market but are in troubles if the companies go bankrupt. Thus, investors and debt-holders can observe larger debt level as a signal of higher quality, hence better reputation, lower probability if defaults and vice versa.

2.1.3   The Relation Between Financial Leverage and Growth Opportunities

Modigliani, and Miller, (1958) stated that a central issue in finance is whether financial leverage affects investment policies. On one side of this issue are those who maintain that a company's capital structure is essentially irrelevant. A company with

good projects grows no matter how its balance sheet looks, because it can always find

funding. Miller (1991) argued that we should not 'waste our limited worrying

capacity on second-order and largely self-correcting problems like financial

leveraging'. For those on the other side, however, high leverage reduces a company's

ability to finance growth through a liquidity effect. Myers (1977) showed that, in

extreme cases, a company's debt overhang can be large enough to prevent it from

raising funds to finance positive net present value (NPV) projects.

A company's financial leverage is expected to vary inversely with its growth

opportunities for at least two reasons. First, the agency costs associated with the

debt-holder-stockholder conflict are likely to be increasing with a firm's growth

opportunities. One example of this is the under-investment problem identified by

Myers (1977). Myers argued that firms with risky debt have an incentive to

under-invest in value-increasing projects. This occurs because shareholders, who

control the investment decision, bear the entire cost of the projects but receive only a

fraction of the increase in firm value; part of it is shared with the debt-holders (see

also Masulis (1983)). Because the cost of the under-investment problem increases

with a firm's growth opportunities, firms with good growth opportunities have an

incentive to finance their operations with equity instead of debt.

More generally, debt-holders face higher costs of monitoring stockholders in high

growth firms than they do in lower growth firms. Because the assets of high growth

firms are largely intangible, debt-holders have more difficulty observing how

stockholders use assets in high growth firms. For example, debt-holders and

stockholders often conflict over the desirable amount of firm risk, with debt-holders generally preferring less risk. It is easier for stockholders to increase firm risk, and more costly for debt-holders to detect increases in firm risk, in high growth firms with mostly intangible assets than it is in low growth firms with more fixed assets in place. As a result, the costs of debt financing are higher in firms with more growth opportunities. Hence, a firm's debt level is expected to vary inversely with its growth opportunities (Smithand Ross, (1992), John J. McConnell, Henri Servaes, Barclay, Morellec, and Smith, (2001)).

Second, Jensen (1986) mentioned that debt can reduce the agency costs of free cash flow, which are most severe for firms with low growth opportunities. According to this argument, the interests of managers and shareholders are likely to diverge in industries that generate abundant free cash flow (i.e., operating cash flow minus cash needed to fund value-increasing investments). Managers supposedly have a stronger preference for retaining free cash flow within the firm, while shareholders have a stronger preference for using free cash flow to fund higher payouts in the form of dividends and share repurchases. Debt, according to Jensen, is one means of resolving this tension. By issuing debt, firms commit to pay out future free cash flows to investors, thereby reducing the likelihood that managers will squander free cash flow on value-reducing investments. By paying the proceeds of the debt issues to shareholders in the form of dividends and share repurchase, stockholders capture the value increase associated with the reduced agency costs of free cash flow.

Lang, Ofek and Stulz (1996) revealed that the negative relation between leverage

31

and growth holds strongly only for companies with low Tobin's Q ratios, or companies that do not have valuable investment opportunities known to outside investors. The fact that leverage lowers the growth of such companies with the agency costs of managerial discretion view that debt has a disciplinary role.

2.2   EMPIRICAL REVIEW

2.2.1   Evidence for the Relation between Growth opportunities and Financial Leverage

There are many empirical researches that found both positive and negative association between growth opportunities and leverage as following:

2.2.1.1 Negative Relation between Growth opportunities and Financial Leverage

Myers and Turnbull (1977) held that when firms face highly leveraged, the risk of bankrupt possibility will also increase, and growth will completely lose after firms go bankrupt. Therefore, when firms have more growth opportunities, they will follow conservative financial leverage policy. They expect that there is a negative relation between leverage and growth.

Bradley, Jarrel and Kim (1984) believed that the problem of under-investment

stem from advertising expenditures (AD) and research and development expenditures (RD), for these two expenses is the discretionary cost of management. They choose the sample of 851 industrial firms in 25 industries between 1962 and 1981 to analyze the relation between these two expenses and growth, leverage. They find that Advertising Expenditures (AD), Research and Development expenditures (RD) are positive to growth, but negative to leverage.

Smith and Watts (1992) also examined explanations for corporate financing, dividend, and compensation policy choices. They find that measures of the firm's investment opportunity set (such as the availability of growth options and firm size) are related to its financing, dividend, and executive compensation policies by using industry-level data from 1965 to 1985. They indicated that firms with more growth options (i.e., greater access to positive net present value projects) have lower leverage (see also Jung, Kim and Stulz (1996)), lower dividend yields, higher executive compensation, and greater use of stock option plans. It means that firms with more growth options should have lower debt in their capital structure.

Ofek (1993) found the similar evidence as previous researchers; he tests the relationship between capital structure and a firm's response to short-term financial distress. In a sample of 358 firms that perform poorly for a year, higher pre-distress leverage increases the probability of operational actions, particularly asset restructuring and employee layoffs. Higher pre-distress leverage also increases the probability of financial actions such as dividend cut, especially when the action does not generate cash inflow. Overall, their finding that highly-leveraged firms react faster

to a decline in performance that do less-leveraged companies is consistent with Jensen (1989), and suggested that a choice of high leverage during normal operations subjects the firm to the discipline that debt provides. High leverage appears to induce affirm to respond operationally and financially to adversity after a short period of poor performance, helping to avoid lengthy periods of losses with no response. The existence of debt in the capital structure may thus help to preserve the firm's going-concern value.

Consistent with the studies by Chung (1993) studied the relation between firm's asset characteristics and financing policy, he took the sample of 1,130 private industrial firms between 1980 through 1984 by using price to earnings ratio (P/E) as an indicator of growth opportunities. The results show that highly growth and highly risky firms tend to use few long term and short-term debt, and verse visa.

Rajan and Zingales (1995) thought that the costs associated with stockholder-bondholder conflicts (under-investment and asset substitution) typically increase with the amount of debt in the firm's capital structure and with the number of growth options available to the firm. It thus has been suggested that these conflicts could explain both the low amounts of debt issued by firms and the fact that high-growth-options firms tend to use lower quantities of debt (see also Hyun-Han Shin, & René M. Stulz (1995)).

Barclay, Smith and Watts (1995) examined the relationship between companies' market-to-book ratio (or growth opportunities) and their use of financial leverage. By using the Ordinary Least Square (OLS) regression analysis, they employed 6,700

companies over the 30 years (1963-1993). They found that the growth opportunities are negatively related with financial leverage. So their result is consistent with the previous research. They also reasoned that companies with high market-to-book ratios have more growth opportunities.

For the recent studies, Barclay, Morellec and Smith (2001) tested the value of growth options in the firm's investment opportunity set to the level of debt in the firm's capital structure by using a large sample of industrial firms. They proved that under-investment costs of debt increase and free cash flow benefits fall with additional growth options. Thus, if debt capacity is defined as the amount of debt the firm optimally adds for an incremental project, then the debt capacity of growth options is negative. This result implies that book leverage should fall with the addition of growth options.

After that, Goyal, Lehn and Racil (2001) found the same result as Barclay, Morellec and Smith, they examined how the level and structure of corporate debt changed for a sample of 61 defense firms and a benchmark sample of 61 manufacturing firms during 1980-95, a period spanning the changes in growth opportunities. The results supported the hypothesis that growth opportunities are an important determinant of corporate financial policies. As growth opportunities in the defense industry declined, defense firms increased their use of debt, lengthened the maturity structure of their debt, reduced their use of private debt, increased their use of public debt, and reduced their reliance on high priority debt.

Erwan Morellec (2002) showed that manager-shareholder conflicts can explain

both the low debt levels observed in practice and the fact that high growth options

firms tend to use less debt.

Pablo de Andrés Alonso, Félix J. López Iturriaga, Juan A. Rodríguez Sanz, (2002)

analyzed the influence of financial leverage decisions, dividend payout policies and

the ownership structure on the firm market value when companies either face, or do

not face, profitable growth opportunities. They used a sample of 101 large

non-financial publicly traded Spanish companies. The results confirm the relevance of

debt and dividends in terms of firm value creation by showing a negative relationship

between firm value and leverage in the presence of growth opportunities.

2.2.1.2 Negative Relation between Growth opportunities and Financial Leverage only for the companies with poor performance

Opler and Titman (1994) investigated how financial distress affects corporate

performance. On the one hand, they think that financial distress is seen as costly

because it creates a tendency for firms to do things that are harmful to debt-holders

and non-financial stakeholders (i.e., customers, suppliers, and employees), impairing

access to credit and raising costs of stakeholder relationships. These tendencies arise

because of conflicts of interest between borrowers and lenders, between firms and

their non-financial stakeholders, between shareholders and managers. On the other

hand, financial distress can improve corporate performance and advocate changes in

corporate form (e.g., leveraged buyouts) that are financed primarily with debt. They

36

point out financial distress can improve firm values by forcing managers to make difficult value-maximizing choices, which they would otherwise avoid. They examined the relation between firm-level sales growth, stock returns, and profitability growth that as a function of size and profitability controls, industry condition, and leverage. They find significant evidence that sales growth or operating income is negative to leverage in poor performance and highly leveraged firms, and leverage has a positive effect on sales growth for large, highly levered firms that are not in distressed industries.

Hai-Chin Yu and Huei-Juan Chen (1999) agreed with Opler and Titman's finding, they examined the relationship between leverage, growth and Tobin's Q in Taiwanese Stock-Listed Companies. They collect 764 effective samples between 1988 through 1993 by using Sale Growth (SR) and Equity Growth Rate (ER) as an indicator of growth opportunities. They also used Tobin's Q ratio to differentiate the sample to good performance sub-sample and poor performance sub-sample. The scholars found that leverage has positive relation relate to firm growth if its Tobin's Q greater than 1, but has a negative relation to firm growth if its Tobin's Q is less than 1.

2.2.1.3 Positive Relation between Growth opportunities and Financial Leverage

Kester (1986) found that growth opportunities was positively correlated to financial leverage when the company has good performance.

Titman and Wessels (1988) analyzed the explanatory power of some of recent

theories of optimal capital structure. They sated that equity-controlled firms have a tendency to invest sub-optimally to expropriate wealth from the firm's bondholders. The cost associated with this agency relationship is likely to be higher for firms in growing industries, which have more flexibility in their choice of future investment. So, expected future growth should thus be negatively related to long-term debt levels. They choose 469 firms as sample, using a factor-analytic technique (LISEREL system) to estimate the relation between growth and leverage. And capital expenditures over total assets (CE/TA), the growth of total assets measured by the percentage change in total assets (GTA) and research and development over sales (RD/S) are served as an indicator of growth attribute. But overall evidence is not consistent with the hypothesis that the growth should be negatively related to long-term debt levels. In other words, there is a positive relation between leverage and growth.

In conclusion, the comparisons among these empirical studies are rather difficult from the fact they used different measures, different variables, different methodologies, and different periods of investigation. Therefore, some of the results of these previous researches are in conflicts, although they referred to the same theoretical foundation of one variable.

2.2.2   Evidence for Industry Classification and Financial Leverage

The most basic stylized facts concerning industry characteristics and capital structure are that firms within an industry are more similar than those in different

industries and that industries tend to retain their relative leverage ratio rankings over time (Bradley et al. (1984), Craig M. Lewis, Richard J. Rogalski, James K. Seward (2003)). Leverage ratios of specific industries have been documented by Bradley, et al. (1984), and Kester (1986). Their results are in broad agreement and show that Drugs, Instruments, Electronics, and Food have consistently low leverage while Paper, Textile Mill Products, Steel, Airlines, and Cement have consistently high leverage. Moreover, regulated industries (Telephone, Electric and Gas Utilities and Airlines) are among the most highly levered firms according to the study by Bradley, et al. (1984).

Gupta (1969) initiated a study on a cross sectional analysis of financial structure of American manufacturing enterprises for the year 1961-1962. One hundred seventy three thousand manufacturing firms, covering twenty-one standard industrial classifications, classified into thirteen size categories, ere examined. Gupta found significant industry effects in debt ratio.

Titman & Wessels (1988), Chung (1993) also emphasized the existence of industry effects for leverage, they showed that in one same industry, each firm has the similar activities, products, customers, suppliers, etc. But in different industry, there is a different debt ratio.

However, Stonehill, et al. (1975) found that industry classification was not an important determinant of capital structure in five countries including France, Japan, Netherlands, Norway, and the United States.

According to mentioned above, this study thinks that it is important to investigate

that whether firms that grow more in an industry have higher or lower leverage than other firms in the different industry. Thus, try to explain the effects of industry on growth; this study includes 25 industry variables with agribusiness as reference industry. The specification of the industries follows that of the Stock Exchange of Thailand (See Table 4.1).

2.2.3 Evidence for Industry Classification and Growth Opportunities

Hai-Chin, Y., and Huei-Juan C., (1999) examine whether different industries would affect the companies' growth opportunities. They think that if leverage only proxies for a firm's growth opportunities, they would not expect to observe as strong a relation between growth and leverage for different industries. In general, the growth opportunities of non-core industry of one country should have less impact on leverage decisions than the growth opportunities of the core sector of a country.

In other words, we are concerned with whether firms that grow more in an industry have higher or lower leverage than other firms in the same industry in this study. Furthermore, the types of Standard Industry Classification (SIC) should be used to show that the extent to which growth opportunities is related to leverage is as important for different industry.

2.3   MAIN LITERATURE REFERENCE

The study of Lang, Ofek, and Stulz (1996) is an inspiration for this study. Lang, Ofek, and Stulz (1996) examined the relation between leverage and growth at the company level and, for diversified companies, at the business segment level for the samples of 640 companies over the years 1970 to 1989.

Throughout the study, growth opportunities are measured by net investment, the ratio of capital expenditure, the ratio of the number of employees. And book leverage, namely the ratio of the book value of short-term and long-term debt to the book value of total assets, is used. To investigate the relation between growth and leverage, Tobin's Q, the control for variables that affect the growth measures is used. Through Ordinary Least Square (OLS), which is the most used regression estimation technique, the results of the study shows that there is a negative association between growth and leverage. This negative relation between leverage and growth holds for firms with low Tobin's Q ratio, but not for high-Q firms or firms in high-Q industries. Therefore, leverage does not reduce growth for companies known to have good investment opportunities, but is negatively related to growth for firms whose growth opportunists are either not recognized by the capital markets or are not sufficiently valuable to overcome the effects of their debt overhang. Consistent with **Jensen (1986) and Stulz (1990)**, these results suggest that leverage prevents firms with poor investment opportunities from over-investing.

2.4 THE REGRESSION ANALYSIS AS THE CONTEMPORARY METHODOLOGY

The methodology used in analyzing the determinants of growth opportunities is rather important because it will reflect how much the probability of variables affects the companies' growth opportunities.

In the period of 1970 to 1989, Lang, Ofek, and Stulz (1996) employed the multiple regression model or Ordinary Least Square (OLS) as an analysis of predicted linear relationships between growth opportunities and independent variables. Hai-Chin Yu and Huei-Juan Chen (1999) also employed OLS as methodology to test the relationship between growth opportunities and financial leverage given the presence of Tobin's Q.

This is because the relationships are expected in order to constitute the linear functions, based on the theoretical results. However, the approach to select the most appropriate measure for each variable is also quite difficult because one variable may have various measures. Therefore, the true indicators of variables affecting the growth opportunities would lead to the precise predictions and conclusions.

42

CHAPTER 3

RESEARCH FRAMEWORK

This chapter includes four parts. The first part presents theoretical framework, the major theories used to conceptualize the framework are included. The second part presents the conceptual framework based on the concepts and theories of the prior theoretical and empirical studies as referred to in chapter two. The third part presents the operationalization table of dependent and independent variables. The fourth part presents the research hypotheses.

3.1 THEORETICAL FRAMEWORK

3.1.1 The proxy of growth opportunities

As a key aspect of the study is the identification of the availability of growth opportunities, it is crucial, then, to choose it adequately. This study uses the P/E ratio (price-earning ratio) as a proxy for growth opportunities. There is a general agreement that the variable is a good indicator of future growth opportunities by incorporating the market point of view about the company ability to generate cash flows in the future (Smith and Watts, 1992; Lang and Stulz, 1994). A high price-earning ratio reflects market perception of firm's growth and profit opportunities, the higher the P/E ratio, the more the

market is willing to pay for each dollar of annual earnings. In other words, P/E ratio is positively related to growth opportunities, so that the higher the P/E, the lower the equity value due to assets-in-place and, in turn, the higher the impact of growth opportunities on firm value (Chung, 1993).

3.1.2 Financial Leverage

Since the Asian Financial Crisis, Thai companies' capital structures have changed markedly, as most companies' financial leverage had been reduced as a result of the crisis. However, financial leverage is a still important way for Thai companies' financial funds raising policy. Most companies ranked internal equity (retained earnings) as their first choice of financing. While Bank loans were ranked second. Then, equity was last consideration. We can't study growth opportunities without considering financial leverage. In this study, only one measure of financial leverage is used. It is the book value of total debt divided by the market value of equity or so-called market capitalization (Debt to Equity ratio). It is more realistic to reflect the true ratio. Total debt includes only short-term and long-term borrowings. The reason to include short-term borrowings is that the financing behavior for Thai companies is to borrow short-term loans to invest in long-term projects. So this would be clearer for analysis and recommendations. The measure of financial leverage is obtained by the market value rather than the book value. Market values of equity is determined by using the number of outstanding common stocks multiplied by closing market prices on the last day of trading for each company's

fiscal year.

3.1.3   Industry Classification

Industry classification is one of the determinants of capital structure (Kunt and Maksimovic (1994). As previous mentioned, Debt to equity ratios obviously vary in different industries. Therefore, when studying the correlation between growth opportunities and leverage, the researchers are supposed to consider about industry classification as well. In this study, industry classification is measured by industry 'dummy'. For each industry, the author should compute the number of companies.

3.1.4   Tobin's Q (Market to Book ratio)

The ultimate goal of all companies is to provide maximum returns to its shareholders. Tobin's Q" or Market to Book ratio is one of many indicators of a company performance. Tobin's Q or Market to Book ratio equals the book value of total debt plus the market value of equity and preferred stocks all divided by the book value of total assets. The value is the same whether the calculation is done for the whole company or based on a per-share basis. This ratio compares the market's valuation of a company to the value of that company as indicated on its balance sheet. The higher the ratio (greater than 1), the higher the premium the market that is willing to pay for the company, above and beyond its hard assets. This means that the market value per share will be more than book value

45

per share and could result in increasing a stockholders wealth. On the other hand, with

lower ratios (ratios less than 1), the market is not willing to pay higher premiums for

that company above and beyond its hard assets. In this scenario existing stockholders will

experience a reduction of share value (Lang and Litzenberger (1989)).

3.2 CONCEPTUAL FRAMEWORK

According to the prior theoretical and empirical studies, some scholars like Lang,

Ofek, and Stulz (1996) conjectured that the correlation between growth and the level of

debt financing (leverage) would be negative for corporations with good performance

(Tobin's Q >1) and positive for poorly performing corporations (Tobin's Q <1). This

finding led the researcher to set the conceptual framework as follows:

Figure 3.1   Conceptual framework

Independent Variables   *Dependent Variable*

1. **Financial Leverage**
2. **Industry Classification**

Growth Opportunities

(Price - earning ratio)

Tobin's Q > 1 or Tobin's Q <1

Intervening variables
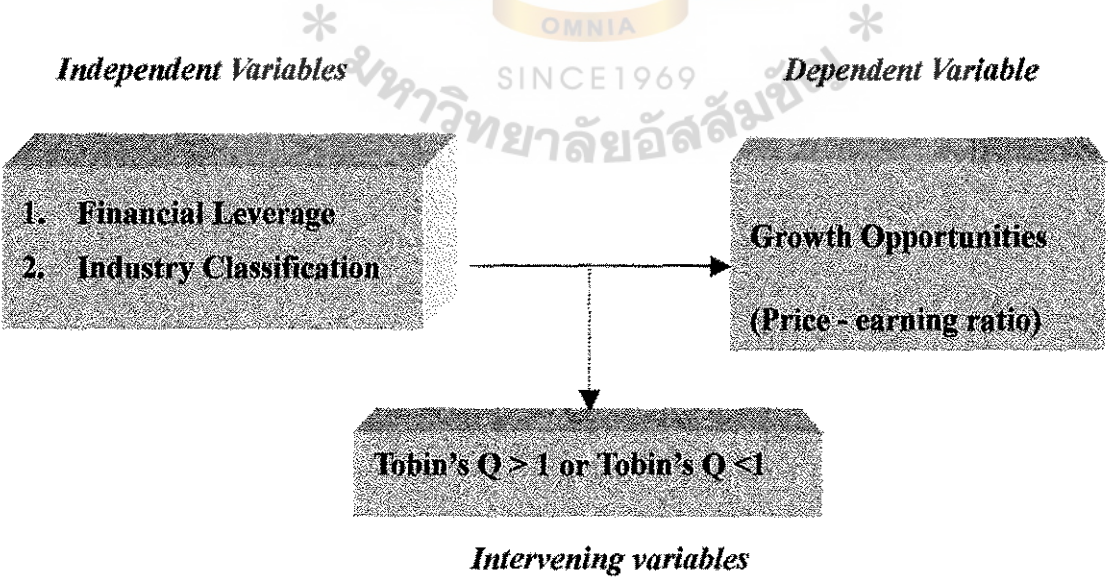
From the conceptual framework, the dependent variable is growth opportunities, which is measured by price to earning (P/E), and the independent variables are the level of debt financing (Leverage) and industry classification. The researcher also extends the scope of the study by including good corporate performance (Tobin's Q >1) and poor corporate performance (Tobin's Q <1) firms as the intervening variable. In other words, the researcher empirically study the correlation between growth opportunities and leverage, and industry classification. The study investigates how these independent variables influence a company's growth.

3.3   OPERATIONALIZATION TABLE OF THE VARIABLES

Table 3.1:

Operationalization table of the independent and dependent variables

Variables to be tested	Operationalized by	Level of measurement	Literature support
<u>Dependent variable</u> Growth opportunities	The usual interpretation is that a positive value of growth opportunities reflects future investments, which are expected to yield a rate of return in excess of the opportunity cost of capital. In this study, growth opportunities is measured by price to earning (P/E).	Ratio	- Myers (1977) - Chung (1993) - McConnell and Servaes (1995) - Lang and Stulz, (1994) - Smith and Watts, (1992) - Chung (1993)

48

Table 3.1 – (Continued)

Variables to be tested	Operationalized by	Level of measurement	Literature support
Independent variable Financial Leverage	The degree to which an investor or business is utilizing borrowed money. In this study, financial leverage is defined as the book value of long-term debt divided by the market value of common shareholders' equity (D/E), usually using the data from the previous fiscal year. A company with a higher debt/equity ratio can offer greater returns to shareholders but be riskier.	Ratio	- Friend and Lang (1988) - Jae K. Shim, (2001) - Joel G. Siegel (2001) - Titman and Wessels (1988) - Rajan and Zingales (1995)

49

Table 3.1 – (Continued)

Variables to be tested	Operationalized by	Level of measurement	Literature support
Independent variable Industry Dummy	Different industry should have different capital structure or different the lever of debt financing. This study includes 25 industry dummy variables with agribusiness as reference industry. The specification of the industries follows that of the Stock Exchange of Thailand.	Nominal	- Bradley et al. (1984) - Titman & Wessels, (1988) - Chung (1993) - Y.Wiwattanaka ntang, (2001) - Opler and Titman (1994)

Table 3.1 – (Continued)

Variables to be tested	Operationalized by	Level of measurement	Literature support
Intervening variables <u>Tobin's Q</u>	The market-to-book ratio equals the book value of total assets less the book value of equity plus the market value of equity and preferred stocks all divided by the book value of total assets.	Ratio	- Lindenberg, E.B., Ross, S., (1981) - Titman and Wessels (1988) - K. Jung et al. (1996) - Lang, Ofek, and Stulz (1996)
Valuable corporate performance (Tobin's Q>1)	The company considers it necessary to undertake capital spending if the q is larger than one. In other words, the higher the ratio (Tobin's Q>1), the higher the premium the market is willing to pay for the company above its hard assets, and the company is encouraged to invest in plants and equipment because the company creates a high net present value.	Ratio	

Table 3.1 – (Continued)

Variables to be tested	Operationlized by	Level of measurement	Literature support
<u>Intervening variables</u>			
Poor corporate performance (Tobin's Q<1)	A low ratio (Tobin's Q <1) may signal a poor investment opportunities, this means that the company is discouraged to invest in plants and equipment or to undertake capital spending because the company creates a negative net present value.	Ratio	- Barclay, Morellec, and Smith (2001)

3.4 HYPOTHESES

In light of the above theories, statistical hypotheses are tested. The way to test the statistical hypothesis is to check whether a given observation or finding compatible with some stated hypothesis. If the given observation is sufficiently close to the hypothesized value, the stated hypothesis shall not be rejected. Statistically, the stated hypothesis is known as the null hypothesis and denoted by the symbol H_0. The null hypothesis is

usually tested against an alternative hypothesis denoted by H_1. Five hypotheses are proposed and tested. Our first hypothesis concerns the correlation between leverage and growth opportunities for Tobin's Q>1 and Tobin's Q<1. The next three hypotheses explore the impact of market risk and firm size as well as industry classification factor on growth opportunities. To summarize:

H_{01}:   There is no negative significant relationship between growth opportunities and leverage for companies with Tobin's Q <1

H_{a1}:   There is a negative significant relationship between growth opportunities and leverage for companies with Tobin's Q <1

H_{02}:   There is no positive significant relationship between growth opportunities and leverage for companies with Tobin's Q >1

H_{a2}:   There is a positive significant relationship between growth opportunities and leverage for companies with Tobin's Q >1

H_{03}:   There is no significant relationship between growth opportunities and industry classification

H_{a3}:   There is a significant relationship between growth opportunities and industry classification.

CHAPTER 4

RESEARCH METHODOLOGY

This chapter discusses the methodology of data collection and analysis procedures. It includes research methods used, target population and sampling procedure and data procedure.

4.1 RESEARCH METHODS

Desk Research method is used for this study. Secondary data is defined as a research technique in which data information is gathered from the Stock Exchange of Thailand. Desk research is the name given to finding published information, which can include company financial details, analyst reports, market statistics or comments, and information about the issues in a marketplace (http://www.dobney.com/Intelligence/desk_research.htm). This research is a desk research conducted in order to clarify and define the relationship between growth opportunities, financial leverage and industry classification in all the listed firms in Thailand.

4.1.1 Data Analysis Method

To meet the objective of the study regarding the relationship between leverage and firm growth in the presence of different corporate performance (Tobin's Q > 1 or Tobin's Q < 1), this study applies Multiple Regression analysis or Ordinary Least Square (OLS), which is used to determine and model any relationship between growth

and leverage, and industry dummy. The essential advantage in using multiple regressions is that the model that it allows greater use of available information. Moreover, Multiple Regression analysis has been widely used in studies relating growth measures on leverage, the control variables: for example, Lang, Ofek and Stulz (1996), Hai-Chin Yu and Huei-Juan Chen (1999), used multiple regression to evaluate the relationship. The SPSS program is applied to do the analysis.

In this section, the multiple regression model of this study is listed as follows:

$$P/E_t = \alpha_0 + \beta_1 D/E_{t-1} + \beta_2 IC + \varepsilon_t$$

Where,

P/E_t	=	Companies growth option during period t, t = 1 ... 48.
D/E_{t-1}	=	Financial leverage.
IC	=	Industry classification or Sector classification.
α_0	=	The constant term or intercept.
$\beta_1 ... \beta_2$	=	Coefficient of each independent variable
ε_t	=	The residual error in month t.

Multiple regression analysis is employed in this study. It is the model of how a dependent variable is related to two or more independent variables (Anderson et al., 2001). In this study, there are two independent variables: one quantitative variable and one qualitative variable.

The qualitative predictor variable is the variable that cannot be measured in scale. Dummy variables could be used as dependent and independent variables. A

55

dummy variable is a variable that is quantified to the scale in order to be included in the regression equation (Neter et al., 1996). Dummy variable is very useful for making regression analysis more powerful. By using dummy variables, two or more different sets of data can be analyzed as a single data set. The results for the various data sets can be compared and statistical inference becomes more efficient. Thus, dummy or indicator variable is employed in this study. In this case, the qualitative predictor variable is industry classification.

The four assumptions of regression analysis are called the standard assumptions of regression theory, which is required to be satisfied in the regression equation. The first assumption is random sampling of cases from a population requiring that all the cases be sampled independently. The other three assumptions all concern the nature of conditional Y distributions in the population. The second assumption is that the means of Y fall in a straight line. The third assumption is that the variances of Y are equal. The last assumption is that conditional Y distributions are normal (Darlington, 1990). In addition, Mendenhall and Sincich (1996) stated that the assumptions required in the regression equation are as follows:

- The errors are normally distributed with mean 0,

- The errors have constant variance, and

- The errors are independent of each other.

There are various methods used to evaluate the multiple regression equation, consisting of the scatter diagram, the correlation matrix, and the multi-collinearity. In this study, the correlation matrix will be applied.

4.1.2 Source of Data: Secondary Sources

The secondary data collection technique used in the present investigation was gathered from the I-SIMS CD-ROM from 1998 to 2001, which contains the companies' annual reports, which are kept in the Stock Exchange of Thailand library. Secondary sources are interpretations of primary data. Textbooks, handbooks, magazine and newspaper articles, most newscasts and so on are considered secondary information sources. Indeed, nearly all reference materials fall into this category. Internally, investor annual financial reports would be examples of secondary sources as they are compiled from a variety of primary sources. To an outsider, however the annual report is viewed as a primary source, as it represent s the official position of the corporation (Cooper and Schindler, 2001). The researcher will use secondary data obtained from SET I-SIMS database and 68 firms as sample size in this study.

4.2 RESPONDENTS AND SAMPLING PROCEDURES

4.2.1 Target population

According to Cooper and Schindler (2001), population element is the individual subject on which the measurement is taken, hence population is the total collection of elements about which the researchers wish to make some inferences. Target population is the specific, complete group relevant to the research project. The target population of this study is all listed firms in SET from 1998 to 2001. The total listed companies are 365.

4.2.2 Sampling Element method

Based on the theory from Anderson (1996), the sample size is determined by estimating proportion. The previous researchers have proved a number of tables for determining the sample size. The Table 4-1 illustrates a sample size table for problems that involve sample proportions.

Table 4-1 Theoretical Sample Size for Different Size of Population

Size of Population	Required Sample for Tolerable Error			
	5%	4%	3%	2%
100	79	85	91	96
5,000	356	535	897	1,622
50,000	381	593	1,044	2,290
100,000	382	596	1,055	2,344
1,000,000	384	599	1,065	2,344
25,000,000	384	600	1,067	2,400

(Source: Anderson, G (1996), Fundamentals of Education Research (1st Ed). London: Falmer Pr., pp.202)

According to the table, the researcher is supposed to be adopted at least 79 listed firms as sample size in this study. However, there are 68 listed firms that satisfy the requirements for this study after the researcher deleted all the observations that did not have complete records for independent and dependent variables in the annual reports and I-SIMS database. Therefore, the secondary data are collected from 68

listed firms.

4.2.3 Sampling Element selection

The criteria for sample selection are as follows:

1) All the firms in the sample must be listed and publicly quoted in the Stock Exchange of Thailand.

2) All firms must have complete and available financial statements and stock price information for the full observation period.

3) All firms must have debt financing available for a four-year period from 1 January 1998 to 31 December 2001, due to this study would like to test the relation between leverage and growth under different performance.

4) Firms in the financial sector (banking, insurance companies, finance & securities) are not included in the sample because their capital structures, regulation and the nature of the activities are likely to be significantly different from the other industrial.

The target population contains 365 different firms; of these 365 firms, 68 firms satisfy our sampling criteria every year. The next sample-filtering step is to eliminate the sample, which has another concurrent firm specific event such as financial crisis, change in broad of directors, take over, merger, or acquisition.

The initial sample includes 68 Thailand's listed companies for which relevant financial data is available for the chosen sample period 1998 to 2001. Then the

number of firms in the sample was classified by industry. Table 4-2 presents the industry representation of our sample, identifying the number of firms that fall into standard industry classifications. The industry groupings are following the classification of the Stock Exchange of Thailand.

Table 4-2: Companies in the sample, classified by industries following the classification of the Stock Exchange of Thailand covering 1998-2001.

Industry	Number of companies in the sample
Agribusiness	11
Building materials	1
Chemicals and plastics	3
Commerce	4
Communication	1
Electrical products and computer	2
Electronic components	3
Energy	1
Entertainment and recreation	2
Food and beverages	7
Health care services	2
Hotel and travel services	4
Household goods	1
Jewelry and ornaments	1

Industry	Number of companies in the sample
Machinery and equipment	1
Packaging	3
Pharmaceutical products	1
Printing and publishing	3
Professional services	1
Property development	1
Pulp and paper	1
Textile	8
Vehicles and parts	3
Warehouse and silo	2
Other	1
Total	68

Source: Computed from data obtained from SET.

This table presents characteristics of 68 firms in the sample. The sample consists of non-financial companies listed in the Stock Exchange of Thailand during 1998 to 2001. Twenty-five industries, with each industry group including at least 1 company, were represented.

Based on corporate performance, the author will separate the samples into two categories corresponding to different combinations of high/low Tobin's Q *(Q greater/less than unity, or Tobin's Q > 1 / Tobin's Q < 1)*, which based on different

industry classification that following the classification of the Stock Exchange of Thailand for the period 1998-2001. This classification in 1998 – 2001 period is shown in Table 4-3.

Table 4-3:   Companies in the sample, classified by Tobin's Q >1 and Tobin's Q <1 that based on different industry classification during 1998 - 2001.

Industry	Tobin's Q > 1	Tobin's Q < 1	No. Of Sample
Agribusiness	4	7	11
Building materials	0	1	1
Chemicals and plastics	1	2	3
Commerce	2	2	4
Communication	1	0	1
Electrical products and computer	1	1	2
Electrical components	2	1	3
Energy	1	0	1
Entertainment and recreation	2	0	2
Food and beverages	5	2	7
Health care services	0	2	2
Hotel and travel services	4	0	4
Household goods	1	0	1

Industry	Tobin's Q > 1	Tobin's Q < 1	No. Of Sample
Jewelry and ornaments	0	1	1
Machinery and equipment	0	1	1
Packaging	1	2	3
Pharmaceutical products	0	1	1
Printing and publishing	1	2	3
Professional services	0	1	1
Property development	0	1	1
Pulp and paper	1	0	1
Textile, clothing and footwear	0	8	8
Vehicles and parts	1	2	3
Warehouse and silo	0	2	2
Other	0	1	1
Total	28	40	68

Source: Computed from data obtained from SET.

After applying above selection criteria, in total, the research employes 68 companies-year observations for 68 companies in the 1998-2001 period for our empirical analysis.

4.3   DATA COLLECTION

4.3.1   Data Source

This study uses firm-level data for non-financial companies listed in the Stock Exchange of Thailand from 1998 to 2001. The data were collected from multiple sources in SET. The detailed information about the data-collecting channel is listed in the Table 4-4.

4.3.2   Data-Collecting Channel

Table 4-4: The detailed data-collecting channel

Variables	Required information for variable	Data-Collecting Channel
Growth opportunities	Price to earning ratio from Jan. 1998 to Dec. 2001, monthly	- SET I-SIMS database and annual report kept in the Set library.
Financial leverage	Debt to Equity ratio from 1998 to 2001, annually.	- SET I-SIMS database.
Industry classification	Industry 'Dummy'	- SET I-SIMS database.
Tobin's Q	Monthly market value of equity Monthly book value of total debt Monthly book value of preferred stock Monthly book value of total assets.	- Calculated by the researcher with simply 'market to book' formula.

Source: Computed from data collected from SET database.

64

4.4   Statistical Treatment of Data

After collecting data, the researcher encoded all data collected from complete survey and then entered into data files by using Excel and SPSS. For data analysis, all five hypotheses were tested using Pearson Correlation Matrix and Ordinary Least Square Regression (t-test and f-test) to measure the independent variables and dependent variables. The researcher also used descriptive mean method to explain in general characteristic of variables by using percentage and tabulation table to show the explanation as well.

To accomplish the research objective, the hypothesis is tested using Ordinary Least Squares (OLS) Regression Analysis to test the relationship between independent variables and dependent variable. However, the regression coefficients of the variables are in the predicted direction, which also supports the correlation results. Pearson Correlation Method is to test the correlation among independent variables.

4.4.1   Correlation among Independent Variables

In this study, all independent variables use Pearson r, which is called linear or product-moment correlation as well.

Cooper and Schindler (2001) analyzed that the value of Pearson r (correlation coefficient) can range from −1.00 to +1.00. The value of -1.00 represents a perfect negative correlation while a value of +1.00 represents a perfect positive correlation. A

value of 0.00 represents a lack of correlation. The squared value of correlation coefficient is called the coefficient of determination (r^2) and it represents the proportion of common variation among all the variables.

In addition, Cooper and Schindler (2001) proved that the significance level calculated for each correlation indicates the reliability of the correlation. The significance of a correlation coefficient of a particular magnitude will change depending on the size of the sample from which it was computed. The test of significance is based on the assumption that the distribution of the residual value for the dependent variable y follow the normal distribution, and that the variability of the residual values is the same for all values of the independent variable x.

Pearson r can be used when the measurement scale of the variable is interval or ratio. Although Pearson r also has normality assumption, as a rule of thumb if the sample size is 50 or more then serious biases are unlikely, and if the sample size is over 100 then the normality assumptions does not have to be seriously considered. One thing that must be carefully considered is the issue of outlier. Since the results of Pearson r is relatively easily to be influenced by the existence of outliers, examining the data using scatter plot before getting analysis is necessary. The independent variables are interval data. In such a case, Pearson r can be used in this study (Cooper and Schindler, 2001).

4.4.2 Regression between Independent Variables and Dependent Variable

Cooper and Schindler (2001) mentioned that regression is an another technique for measuring the linear association between a dependent variable and independent variable. Although regression and correlation are mathematically related, regression assumes the dependent (or criterion) variable, Y, is predicatively linked to the independent (or predictor) variable, X. Regression analysis attempts to predict the values of a continuous, interval-scaled dependent variable from the specific values of the independent variable. In this study, the researcher uses the Ordinary Least Square (OLS) Regression Analysis Method to test the relationship between independent variables and dependent variable and develop an estimator.

Cooper and Schindler (2001) said that the task of the researcher is to find the best means for fitting a straight line to the data. The least-squares method is a relatively simple mathematical technique that ensures that the straight line will completely represent the relationship between X and Y. Table 4-5 shows the hypothesis and statistic treatment.

Table 4-5: shows the hypotheses and statistic treatment

Hypotheses	Testing
Hypothesis 1_0: There is no negative relationship between Growth opportunities and financial leverage for Tobin's Q <1.	- Multiple Regression Analysis.

67

Hypothesis 2_0: There is no positive relationship between Growth opportunities and financial leverage for Tobin's Q >1.	Regression Analysis
Hypothesis 3_0: There is no significant relationship between Growth opportunities and Industry classification.	Regression Analysis

(Source: the researcher's summarization)

4.4.3 Hypothesis for t-test and F-test

To test the relationship between growth, leverage, and industry dummy, this study conducts significant test for a multiple regression relationship. Test for significance will be done by t test and F test.

1. To determine whether t-test is used for each of the individual independent variables is significant or in other words we refer to each of these t test as a test for individual significance.

2. To test for overall significance of the model, we will use F test to determine whether there is a significant relationship between the dependent variable and set of all the independent variables.

4.4.3.1 Hypothesis for t test

1. In chapter 3, the study has put forward 3 hypothesizes. In this chapter, the

t-test is used to decide whether or not to reject the null hypothesis will be selected.

2. To specify the level of significance α for the test. This study uses $\alpha = 0.05$ as a level of significance or at 95% level of confidence.

3. To develop the rejection rule that compares the value of test statistic and the level of significance that will leads to the rejection of H_0. That is;

$$\text{Reject } H_0 \text{ if } t < -t_{\alpha/2} \text{ or if } t > _{\alpha/2}$$

Where $t_{\alpha/2}$ is based on a t distribution with n-p-1 degree of freedom.

4.4.3.2 Hypothesis for F test

H_0: $\beta_1 = \beta_2 = 0$

H_1: one or more of the parameters is not equal to zero

If H_0 is rejected, then we have significant statistical evidence as follows:

1. To conclude that one or more of the parameters is not equal to zero and that the overall relationship between y and independent variables x_1 and x_2 is significant. However, if H_0 cannot be rejected, then we do not have the sufficient evidence to conclude that a significant relationship is present.

2. To select the test statistic that will be used to decide whether or not to reject the null hypothesis where as this study use F-test.

3. To specify the level of significance α for the test. This study uses $\alpha = 0.05$ as a level of significance or at 95% level of confidence.

69

4. To develop the rejection rule that compares the value of test statistic and the level of significance that will leads to the rejection of H_0. That is;

$$\text{Reject } H_0 \text{ if } F > F_\alpha$$

Where F_α is based on an f distribution with p degree of freedom in the numerator and n-p-1 degree of freedom in the denominator.

In the following chapter, the multiple regression, t-test, f-test and correlation analysis are run on the five hypothesizes and the results are interpreted.

CHAPTER 5

DATA ANALYSIS

This chapter presents the analysis of the collected data from the Integrated-SET Information Management System (ISIMS) CD-ROM published by the Stock Exchange of Thailand. Analysis is the application of logic to understand and interpret the data that had been collected about the subject. For the convenience of the reader, the analysis and result are divided into two sections consisting of descriptive and regression analysis.

5.1 DESCRIPTIVE STATISTICS BASED ON AVERAGE FOUR YEARS DATA

Descriptive statistics is used to analyze and summarize the data (i.e., growth opportunities, financial leverage) in terms of frequency tables and percentage.

5.1.1 Growth Opportunities

5.1.1.1 Growth Opportunities when Tobin's Q > 1

Growth opportunities are defined as the ratio of market price per share to

71

earnings per share. The value of each item is calculated as the average of all firms

for each sample period.

Table 5-1: Growth rates of the sample firms with Tobin's Q >1.

Year	Growth	Opportunities		
	Mean	Median	Maximum	Minimum
1998	0.291319	0.120379	4.1101	0.01535
1999	0.295084	0.098538	4.5469	0.03420
2000	0.107765	0.085742	0.4103	0.02900
2001	0.099870	0.077238	0.2751	0.03570

Source: Computed from data obtained from SET database.

Figure 5-1: The Mean of Growth Opportunities from 1998 to 2001 under Tobin's Q >1
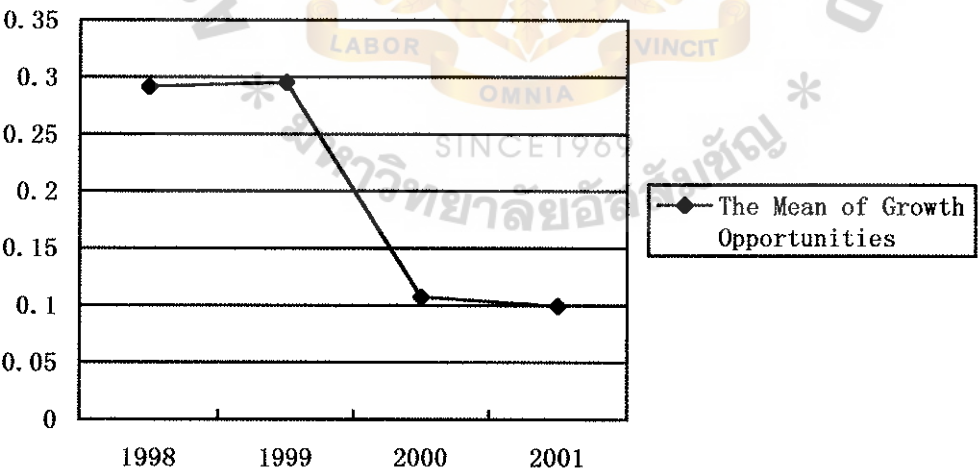
Table 5-1 and figure 5-1 show the growth opportunities of sample-listed firms

from 1998 to 2001. The mean of the greatest growth opportunities is 0.295084 in

1999 and the mean of the smallest growth opportunities is the 0.09987 in 2001.

The median growth opportunities decrease from 0.120379 in 1998 to 0.077238 in

2001. The maximum growth opportunities decline sharply from 4.5469 in 1999 to

0.2751 in 2001. On the other hand, the minimum growth opportunities changes

from 0.015350in 1998, 0.0342 in 1999, and 0.0290 in 2000, to 0.0357 in 2001. The

table and the graph illustrate that there is a great difference about the growth

opportunities change during four years, this fluctuating change shows that the

efficiency of the companies that have good performance is decreasing year by year,

and the market investors are not optimistic about perception of firm's growth and

profit opportunities.

5.1.1.2 Growth Opportunities when Tobin's Q < 1

Table 5-2: Growth rates of the sample firms with Tobin's Q <1.

Year	Growth Opportunities			
	Mean	Median	Maximum	Minimum
1998	0.119336	0.082063	0.8527	0.0129
1999	0.071717	0.051083	0.1993	0.0168
2000	0.065864	0.050530	0.3383	0.0204
2001	0.064545	0.053104	0.2159	0.0235

Source: Computed from data obtained from SET database.

Figure 5-2: The Mean of Growth Opportunities from 1998 to 2001 under Tobin's Q <1
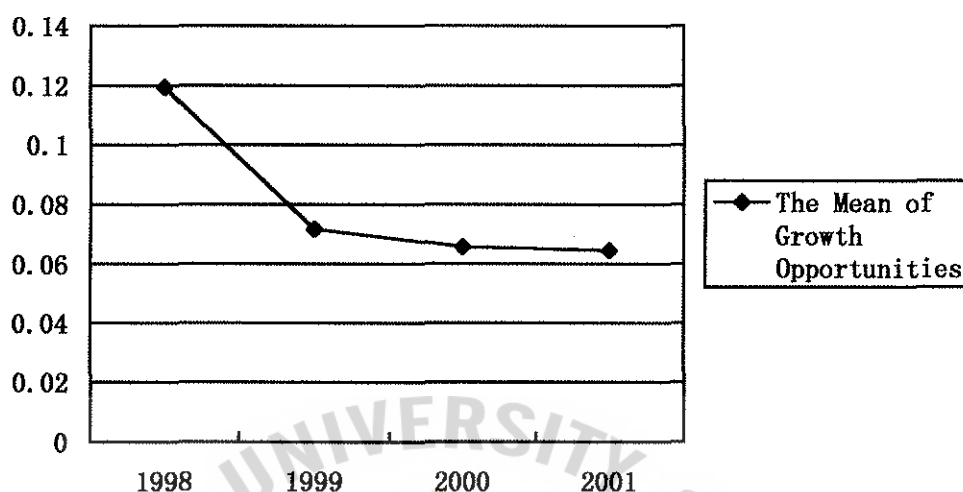
Table 5-2 and figure 5-2 show the growth opportunities of sample-listed firms from 1998 to 2001. The mean of the greatest growth opportunities is 0.119336 in 1998 and the mean of the smallest growth opportunities are the 0.064545 in 2001, which is close to 1999 and 2000's value. This means that there is a greater difference about growth opportunities between 1998 and 1999, 2000, 2001. The median growth opportunities decrease from 0.082063 in 1998 to 0.050530 in 2000, 0.053104 in 2001. The maximum growth opportunities decline from 0.8527 in 1998 to 0.1993 in 1999, 0.3383 in 2000, and 0.2159 in 2001. On the other hand, the minimum growth opportunities change from 0.0129 in 1998, 0.0168 in 1999, and 0.0204 in 2000, to 0.0235 in 2001. The results of the table and the graph are as same as table 5-1 and figure5-1. But the tendency of decreasing is more slowly than the table 5-1 and figure 5-1.

5.1.2   Financial Leverage

5.1.2.1   Financial Leverage when Tobin's Q > 1

Financial leverage is defined as the ratio of total debt to total equity. The value

of each item is calculated as the average of all firms for each sample period.

Table 5-3: Financial Leverage- Descriptive Statistics by Year under Tobin's Q>1.

Year	Financial	Leverage		
	Mean	Median	Maximum	Minimum
1998	0.8696	0.6200	4.49	0.05
1999	0.6679	0.5350	2.73	0.08
2000	0.6479	0.4450	2.14	0.06
2001	0.7171	0.5450	2.03	0.04

Source: Computed from data obtained from SET database.

Figure 5-3: The Mean of Financial Leverage from 1998 to 2001 under Tobin's Q>1
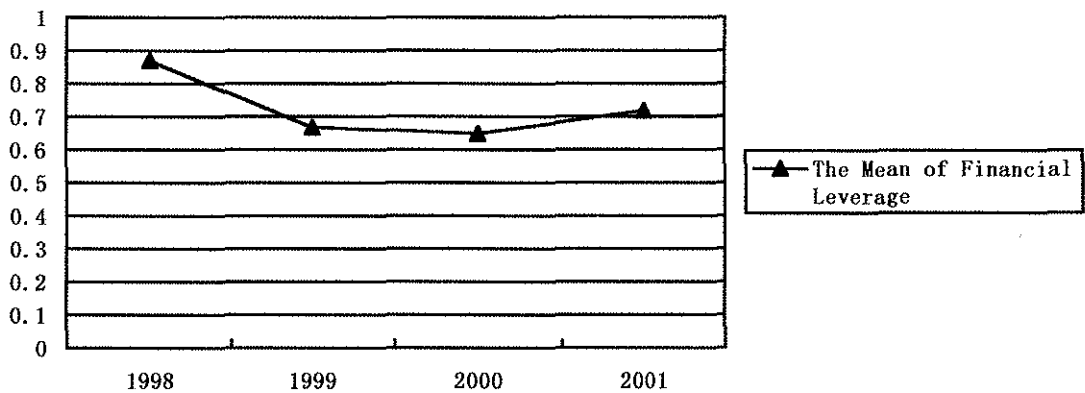
Table 5-3 and figure 5-3 show the financial leverage of sample listed firm under Tobin's Q > 1 from 1998 to 2001. The mean of the greatest financial leverage is 0.8696 in 1998 and the mean of the smallest leverage is the 0.6479 in 2000. The median financial leverage varies from 0.62 in 1997 to 0.4450 in 2000. The maximum financial leverage was different from 4.49 in 1998 to 2.03 in 2001. On the other hand, the minimum financial leverage changes from 0.08 in 1999 to 0.04 in 2001. The table and the graph describe that there is no great difference about the financial leverage change during four years. This indicates that sample companies that perform well adopting and maintaining the same financing hierarchy approach between the years 1998 and 2001, which lead to many Thai companies still kept their high debt to equity ratio after 1997, even though debt to equity is decreased during 1998 and 1999.

5.1.2.2 Financial Leverage when Tobin's Q < 1

Table 5-4: Financial Leverage- Descriptive Statistics by Year under Tobin's Q<1.

Year	Financial	Leverage		
	Mean	Median	Maximum	Minimum
1998	11.9336	8.2063	85.27	1.29
1999	0.6063	0.4050	2.55	0.08
2000	0.6045	0.4950	1.99	0.07
2001	0.4930	0.3350	1.55	0.04

Figure 5-4: The Mean of Financial Leverage from 1998 to 2001 under Tobin's Q<1
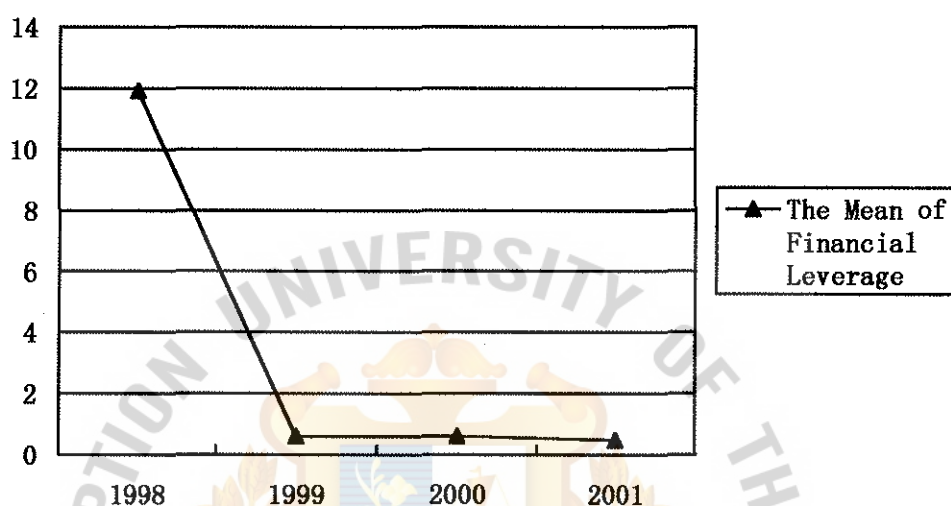
Table 5-4 and figure 5-4 show the financial leverage of sample listed firms under Tobin's Q < 1 from 1998 to 2001. The mean of the greatest financial leverage is 11.9336 in 1998 and the mean of the smallest financial leverage is the 0.4930 in 2001. The median financial leverage varies from 8.2063 in 1998 to 0.3350 in 2001. The maximum financial leverage is different from 85.27 in 1998 to 1.55 in 2001. On the other hand, the minimum financial leverage changes from 1.29 in 1998 to 0.04 in 2001. The table and the graph describe that there is a great difference about the financial leverage change between 1998 and the other three years. Thai companies perform poorly decline their debt to equity ratio significantly from 1998, but this tendency of decreasing is getting slowly during

77

1999 and 2001, in other words, it maintain a stable financial leverage construct for these companies in a period of 1999-2001.

5.1.3 Industry Dummy and Tobin's Q

Table 5-5: Industry Dummy- Descriptive Statistics according to the classification of Tobin's Q during 1998 and 2001.

Sectors Dummy	Tobin's Q		Total
	Tobin's Q < 1	Tobin's Q > 1	
1=Communication	0	1	1
2=Health	2	0	2
3=Printing and Publishing	2	1	3
4=Agribusiness	7	4	11
5=Vehicles and Parts	2	1	3
6=Entertainment and Recreation	0	2	2
7=Commerce	2	2	4
8=Electrical products and Computer	1	1	2
9=Electronic Components	1	2	3
10=Household Goods	0	1	1
11=Textiles, Clothing and Footwear	8	0	8

Sectors Dummy	Tobin's Q		Total
	Tobin's Q < 1	Tobin's Q > 1	
12=Energy	0	1	1
13=Foods and Beverages	2	5	7
14=Property development	1	0	1
15=Chemicals and Plastics	2	1	3
16=Hotels and Travel Services	0	4	4
17=Professional Services	1	0	1
18=Pharmaceutical products	1	0	1
19=Packaging	2	1	3
20=Machinery and Equipment	1	0	1
21=Warehouse and Silo	2	0	2
22=Pulp and Paper	0	1	1
23=Jewelry and Ornaments	1	0	1
24=Building and Furnishing Materials	1	0	1
25=other	1	0	1
Total	40	28	68
Percentage	58.8%	41.2%	100.0%

Note: The SPSS outputs.

Table 5-5 shows that sample listed companies that perform well are only equal to 41.2 percent of total samples, as compared to majority of companies that have poor performance which is equal to 64.7 percent of total samples. It shows that most of Thai listed companies had business problems during these four years, maybe due to the impact on the economic crisis in 1997. As for the rate of economic growth fell sharply in 1997 in relation to previous years, which lead to a lot of companies to fall into the depression state. And this brunt would remain for a several year after 1997, which it would affect the companies' operation and growth.

5.1.4 Relative variables distribution

5.1.4.1 Relative variables distribution when Tobin's Q > 1

Table 5-6:   Relative variables distribution for the companies that perform well (Tobin's Q >1)

Variables	Mean	Standard deviation	Minimum	Maximum
Growth opportunities	0.198509	0.567941	0.015350	4.546875
Financial leverage	0.725625	0.712362	0.0400	4.4900

Tobin's Q	2.005219	1.655042	0.3308	12.8319

5.1.4.2 Relative variables distribution when Tobin's Q < 1

Table 5-7: Relative variables distribution for the companies that perform poorly (Tobin's Q <1)

Variables	Mean	Standard deviation	Minimum	Maximum
Growth opportunities	0.0803656	0.0917037	0.0129	0.852692
Financial leverage	0.622625	0.656701	0.03	4.2
Tobin's Q	0.594211	0.231899	0.1972	1.5608

Table 5-6 and Table 5-7 illustrate that for the Thai companies that have good performance, their growth opportunities are greater than the companies that perform poorly, both growth opportunities are 0.1985089 and 0.0803656 respectively. Moreover, for the Thai companies that have good performance, their average debt to equity ratio is also more than the companies that perform poorly, their ratio are equal to 72.5625% and 62.2625% respectively, this shows that the

most Thai companies' capital resources come from debt financing, only few companies depended on equity financing.

The higher financial leverage for the companies that have good performance than the companies that have poor performance indicates that Thai companies, in spite of low or high quality companies, always deem leverage as a single mechanism for increasing companies' value, as well as adopting and maintaining the pecking order hypothesis during the years 1998 and 2001, in which companies prefer debt to equity because of lower information costs associated with debt issues. Equity is rarely issued. However, these high debts to equity ratio also conceal high financial crisis (Titman and Wessels, 1988).

We also find that there is a positive relationship between growth opportunities and financial leverage, it means that when growth opportunities increases or decreases, financial leverage increases or decreases correspondingly. This conclusion is opposite of our hypotheses, which we test later.

5.2   CORRELATION ANALYSIS

This study employs the price to earnings ratio as a proxy for growth opportunities and financial leverage, sector dummy and Tobin's Q proxies for measuring the independent variables. Pearson Correlation Matrix shows the expected relationship of all the independent variables with growth opportunities.

The results of using correlation analysis for four-year average values of all attributes are shown in Table 5-8 and Table 5-9. The simple correlation coefficient of the growth opportunities with each of the independent variables is consistent with the results in the multiple regression. There is one strong inter-correlation of the independent variables.

5.2.1 CORRELATION ANALYSIS UNDER TOBIN'S Q > 1

Person correlation coefficient is employed to investigate the expected relationship between dependent variable and independent variables. In addition, ** and * indicate that the coefficient is significant different from zero at 0.01 and 0.05 level respectively.

Table 5-8: Matrix of Simple Correlation Coefficient of Regression Variables when Tobin's Q > 1

Variables	Growth opportunities	Financial leverage	Sector dummy	Tobin's Q
Growth opportunities	1	0.998**	0.128	0.093
Financial leverage	0.998**	1	0.127	0.093

Sector dummy	0.128	0.127	1	-0.296
Tobin's Q	0.093	0.093	-0.296	1

Note: The SPSS outputs.

Results indicate that financial leverage is remarkably sensitive to growth opportunities. In other words, there is a significantly positive correlation between financial leverage and growth opportunities in the average period from 1998 – 2001 and is statistically significant at 0.01 level. Also, The correlations between sector dummy, and financial leverage, and Tobin's Q and financial leverage have a positive relationship of 0.127 and 0.093 but insignificant.

Overall, Table 5-8 shows that the positive correlation coefficients between growth opportunities and sector dummy, Tobin's Q are 0.128 and 0.093, it indicates that when the growth opportunities increases or decreases, the other variables would increase and decrease correspondingly. In other words, growth opportunities vary across industries.

5.2.2 CORRELATION ANALYSIS UNDER TOBIN'S Q < 1

Table 5-9: Matrix of Simple Correlation Coefficient of Regression Variables when Tobin's Q < 1

Variables	Growth opportunities	Financial leverage	Sector dummy	Tobin's Q
Growth opportunities	1	-0.208	0.044	0.179
Financial leverage	-0.208	1	-0.346*	0.208
Sector dummy	0.044	-0.346*	1	-0.235
Tobin's Q	0.179	0.208	-0.235	1

Note: The SPSS outputs.

Table 5-9 shows that the correlations between sector dummy and financial leverage have significantly relationship of –0.346 at 0.05 level of significance. The correlations between financial leverage and Tobin's Q is approximately 0.208. It shows that, there is a positive relationship between financial leverage and Tobin's Q with non-significance.

On the other hand, the table 5-9 shows growth opportunities is positively correlated with sector dummy, and Tobin's Q but insignificant, whereas there is a negative correlation between growth opportunities and financial leverage, in all four-year average value but again insignificant statistically.

From the above results, it can be reasonably concluded that there are different

correlations between growth opportunities and financial leverage under the variance of Tobin's Q. when Tobin's Q > 1, the correlations between both variables will be positive and significant, whereas there is a negative correlation when Tobin's Q <1 but insignificant. But Tobin's Q is positive correlated with financial leverage for Tobin's Q > 1 or Tobin's Q < 1 on the average during the study period. This is consistent with the theory of pecking order provide by Myers and Majluf (1984), in which the companies prefers internal to external financing and, if it obtains external funds, debt to equity.

5.3   MULTIVARIATE REGRESSION ANALYSIS

The multivariate regression analysis (Ordinary Least Square Regression) is applied to test the hypotheses and develop an estimator.

5.3.1   Assumptions required in multiple regression analysis

Basis assumption required for multiple regression analysis:

5.3.1.1 Test of normality

The most fundamental assumption in multivariate is the normality of the data, referring to the shape of the data distribution for an individual metric variable and

it does correspond to the normal distribution, the benchmark for statistical method. If the variation from the normal distribution is sufficiently large, all resulting statistics tests are invalid. The simplest diagnostic test for normality is a visual check of the histogram that compares the observed data values with a distribution approximating the normal distribution (Darlington, R.B., 1990).

Figure 5-5: Histogram of normal distribution
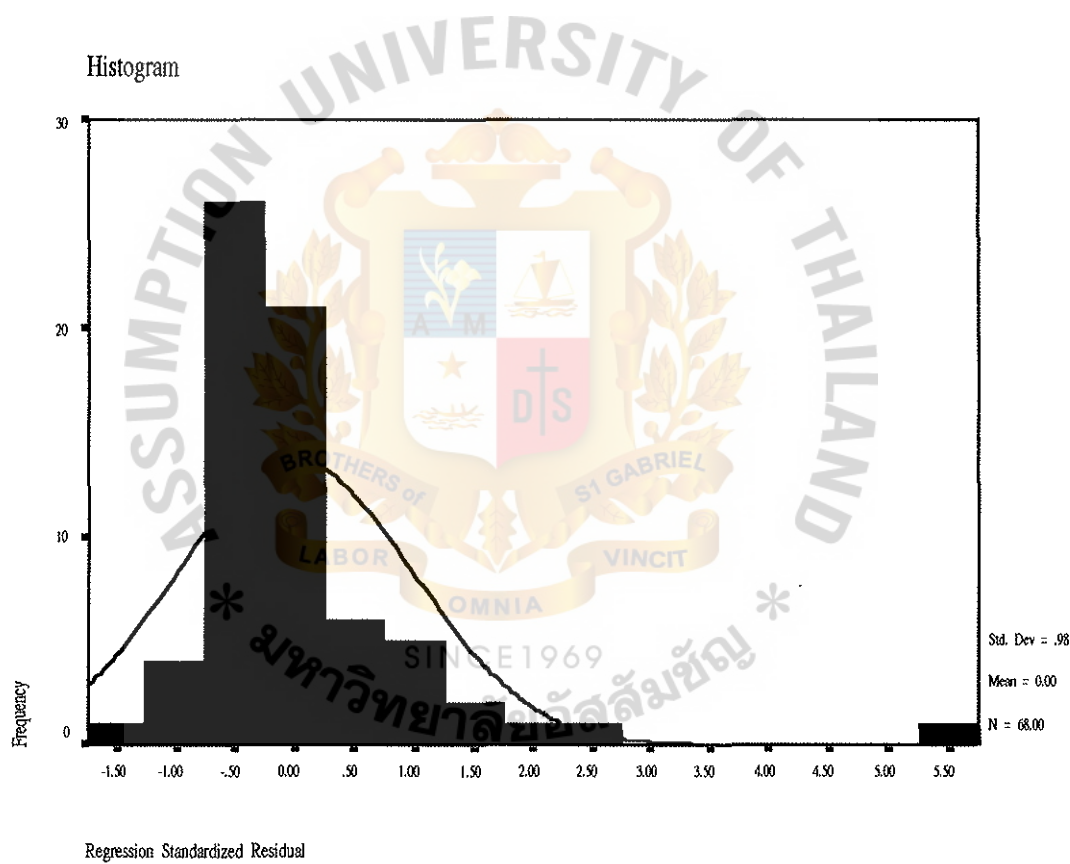
Figure 5-5 shows normal distribution. It can be determined that this meets the assumption of the multiple regression.

5.3.1.2 Test of Homoscedasticity

Homoscedasticity is an assumption related primarily to dependence relationships between variables. It refers to the assumption that dependet variable(s) exhibit equal levels of variance across the range of predictor variable(s). Homoscedasticity is desirable because the variance of the dependent variable being explained in the dependent relationship should not be concentrated in only a limited range of the independent values. The concept of Homoscedassticity is based on the spread of dependent variable variance across the range of independent variable value, which is encountered in technique like multiple regression.

The test of Homoscedasticity for two metric variables is best examined by graphical means. The most common application of this form of assessment occurs in multiple regression, which is concerned with the dispersion of the dependent variable across the value of metric independent variables. Because the focus of regression analysis is on the regress variate, the graphical plot of residuals is used to reveal the presence of homoscedasticity (Darlington, R.B., 1990).

Figure 5-6   Residual Plot

Normal P-P Plot

Normal P-P Plot of Regression Standardized Residual
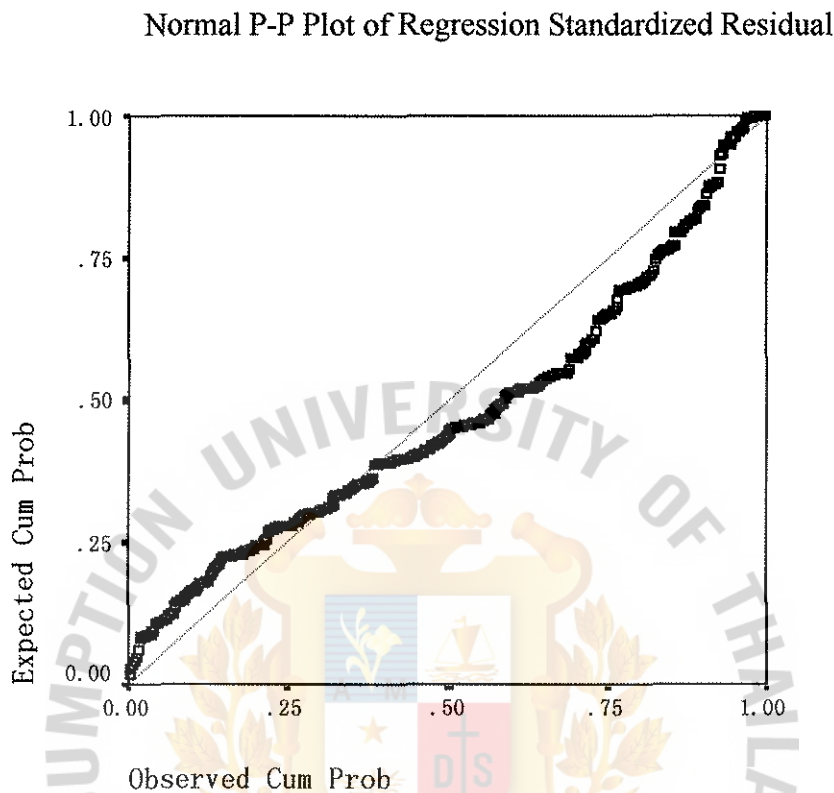
Figure 5-6 shows a constancy of residual variance, as seen plotting the residuals against the predicted values close to the diagonal line.

5.3.1.3   Test of Multicollinearity

The variance inflation factors (VIF) for any independent variable is a measure of the degree of multicollinearity contributed by that variable (Cooper, D. R., and P. S. Schindler, 2001). These measures tell us the degree to which each independent variable is explained by the other independent variables. Large VIF values denote high collinearlity. A common cut off threshold is a tolerance value of 0.1, which corresponds to VIF values above 10 (Darlington, R.B., 1990)

89

Table 5-10: VIF value of collinearity statistics for MLR model

Model	VIF
Financial leverage	1.001
Industry classification	1.001

From the table 5-10, VIF value of MLR model is equal to 1.001, which are greater than 0 and less than 2. Therefore, it has been suggested that value of VIF may not be considered large enough to suspect multicollinearity.

5.3.1.4 Test of Independent of Error

Autocorrelation may be defined as correlation between members of ordered in time. The most common test for detecting autocorrelation is that developed by Durbin and Watson, commonly known as Durbin-Watson test statistics. The Durbin-Watson test for autocorrelation assumes the first-order autoregressive error models with the value of predictor variables fixed (Cooper, D. R., and P. S. Schindler, 2001). This research will use the Durbin-Watson statistical test to detect autocorrelation, it can be considered form Durbin-Watson value that:

Interpretation of Durbin-Watson d-Statistic (Darlington, R.B., 1990)

Definition

Range of d : $0 \leqslant d \leqslant 4$

1.   if residuals are uncorrelated, $d \approx 2$

2.   if residuals are positively correlated, d < 2, and if the correlation is very strong, d≈o.

3.   if residuals are negatively correlated, d > 2, and if the correlation is very strong, d ≈4.

Table 5-11: Durbin-Watson test value for MLR model

Model	Durbin-Watson
Growth Opportunities related to financial leverage and industry classification	1.631

From table 5-11 , the results showed that the Durbin-Watson values of model is 1.631. It can be concluded that Durbin-Watson value are less than 2. therefore, there is a positively autocorrelation.

5.3.2   Test and Explanation of Hypotheses Result from1998 to 2001

The result of estimated OLS-Regression over the sample of 68 Thai listed sample firms is presented in table 5-10, table 5-11, table 5-12 and 5-13.

91

5.3.2.1 Test and Explanation of Hypotheses Result from1998 to 2001 given Tobin's Q > 1

Table 5-12: Summary of ANOVA test under Tobin's Q >1

Model		R Square change	F	Sig.
1	Regression	0.997	4134.148	0.000

Note: The SPSS outputs.

According to the Table 5-12, the value of significance is 0.000, which is less than 0.05. Therefore, it can be concluded that there is at least one independent variable that influence the dependent variable. This means that growth opportunities are influences by at least one component of factors, which may be financial leverage and/or sector dummy.

The R^2 statistic includes the degree to which statistical model explains variation in the dependent variable. In other words, R^2 includes how much fluctuation in the dependent variable is represented by the independent variable. From Table 5-10, $R^2 = 0.997$, this indicates that 99.7% of variance can be explained by its linear relationship with the predictor variables. Besides, 0.3% of the variation of dependent variable can be explained by factors other than what is accounted for by linear regression model.

Thus, the next stage will be conducted for testing to what extent can explain

growth opportunities of Thai companies that have good performance based on Tobin's Q.

Table 5-13: Summary of Multivariate Regression Analysis Result based on Four-Year Average Values and the Year from 1998 to 2001 given Tobin's Q > 1.

Variables	Coefficients	t-value	Sig.
	Beta		
(Constant)	-5.493E-02	-0.078	0.939
Financial leverage	.998	90.175	0.000
Sector dummy	8.766E-03	0.144	0.887

a. Dependent variable is growth opportunities

b. Note: The SPSS outputs.

From the table 5-13, we find that the significance value of t-value is 0.000, less than 0.05. This means that financial leverage would affect the companies' growth opportunities, there will be a statistically significant relationship between growth opportunities and financial leverage when Tobin's Q > 1. The Sector dummy has positive but insignificant relationship.

Based on the regression equation according to the four years average value, which is discussed in Chapter 4 and the SPSS, output, the equation under Tobin's Q > 1 is therefore,

$$P/E_t = -5.493E-02 + .998 \ D/E_{t-1}$$

Where:

P/E_t =   companies growth option during period t, t = 1- 48.

D/E_{t-1} =   financial leverage

From the equation, it can be concluded that growth opportunities are positively

relate to financial leverage when Tobin's Q > 1. In other words, if financial

leverage increases, growth opportunities will increase.

5.3.2.2 Test and Explanation of Hypotheses Result from1998 to 2001 given Tobin's Q < 1

Table 5-14: Summary of ANOVA test under Tobin's Q <1

Model		R Square change	F	Sig.
1	Regression	0.044	0.853	0.434

Note: The SPSS outputs.

From ANOVA Analysis, it can be concluded that the independent variables

fail to significantly explain the dependent variable when Tobin's Q <1. According

to the Table 5-14, F-value is equal to 0.853; the significant value of 0.434 is

relatively greater than 0.05 based on average four years values.

Why the results are insignificant maybe have two reasons. On one hand, the

time period in this study is after 1997. Owing to the impact on the economic crisis

in 1997, the economy could not recover sooner in 1998 and the situation went worse. A lot of companies faced bankruptcy, so based on 1998's unexpected economic condition, the growth opportunities of most of Thai companies, especially for the companies that perform poorly are getting worse. Just like what Table 5-2 and figure 5-2 illustrated, there is a big gap about growth opportunities between 1998 and 1999, 2000, 2001. Thus, the data from 1998 year generate the biases in overall data; even it would affect the final outcomes to make the results insignificant.

On the other hand, since managers always have information advantage over the outsiders, the debt structure may be considered as a signal to the market. Ross (1977) suggested that the values of companies would rise with leverage, since increasing leverage increases the market's perception of economic value. Supposed that there is no agency problem, i.e., management acts in the interest of all shareholders, the manager will maximize company value by choosing the optimal capital structures: highest possible debt ratio. High quality companies need to signal their quality to the market, while the low-quality companies' managers will try to imitate, which can be viewed from Table5-7, the debt to equity ratio with low-quality companies is equal to 62.2625 percent that is so high that hiding potential financial crisis, by the fact that high leverage implies higher bankruptcy risk (and costs) for low quality companies. So, under this disadvantageous condition, these companies would try to keep the companies' price to earnings

ratio stable in the stock market by using means, such as decreasing dividend payout, repaying debt, etc., to prevent from falling into bankruptcy. Therefore, there is maybe no significant relationship between growth opportunities and financial leverage for the low-quality companies when we use price to earnings ratio as the single proxy of growth opportunities.

From Table 5-14, $R^2 = 0.044$, this indicates that only 4.4% of variance can be explained by its linear relationship with the predictor variables. Besides, 95.4% of the variation of dependent variable can be explained by factors other than what is accounted for by linear regression model, i.e., financial leverage and industry classification.

All of the independent variables have t-statistics, which means that they are even insignificant on the 5% significant level. All variables enter the regression with the hypothesized signs, which got from the table 5-13.

Table 5-15: Summary of Multivariate Regression Analysis Result based on Four-Year Average Values and the Year from 1998 to 2001 given Tobin's Q < 1.

Variables	Coefficients	t-value	Sig.
	Beta		
(Constant)	9.864	3.675	0.001
Financial leverage	-2.393	-1.277	0.210
Sector dummy	-3.029E-02	-0.185	0.854

a. Dependent variable is growth opportunities

b. Note: The SPSS outputs.

Based on the regression equation according to the four years average value, which is discussed in Chapter 4 and the SPSS, output, the equation under Tobin's Q <1 is therefore,

$$P/E_t = 9.864 - 2.393 \, D/E_{t-1}$$

Where:

P/E_t =   companies growth option during period t, t = 1- 48.

D/E_{t-1} =   financial leverage

From the equation, it can be concluded that growth opportunities is negatively relate to financial leverage when Tobin's Q < 1. In other words, if financial leverage decreases, growth opportunities will increase.

5.3.2.3 Summary of Hypothesis test

According to the above results of regression model analysis, it can be reasonably conclude the summary of hypothesis test as follows.

Table 5-16: Summary of hypothesis testing for the predicting capacity, using OLS

multiple regression analysis.

Hypothesis	Coefficient	Test Statistics	Significant Level	Result
H_{01}: There is no negative significant relationship between growth opportunities and leverage for companies with Tobin's Q <1.	-2.393	t-statistics	0.210	Cannot reject Ho
H_{02}: There is no positive significant relationship between growth opportunities and leverage for companies with Tobin's Q >1.	.998	t-statistics	0.000	Reject Ho
H_{03}: There is no significant relationship between growth opportunities and industry classification.	8.766E-03, 3.029E-02	t-statistics	0.887, 0.854	Cannot reject Ho

Note: The SPSS outputs.

Result H_{01}: There is no negative significant relationship between growth

opportunities and leverage for companies with Tobin's Q <1

Based on the table 5-13, estimate coefficient is –2.393 with a significance value is 0.210 which is greater than 0.05. Therefore, it fails to reject the null H_{01}. In other words, there is no significant positive relationship between growth opportunities and leverage for companies with Tobin's Q <1.

Result H_{02}: There is no positive significant relationship between growth opportunities and leverage for companies with Tobin's Q >1

Financial leverage is considered to be negatively correlated with growth opportunities when Tobin's Q > 1. According to the Table 5-11, estimate coefficient is 0.998 with a significance value of 0.000 is less than 0.05. Therefore, it rejects the null H_{02}. That is, there is a positive significant relationship between growth opportunities and leverage for companies with Tobin's Q >1.

Result H_{03}: There is no significant relationship between growth opportunities and industry classification

From the table 5-11 and 5-13, the significance value is 0.887 and 0.854 respectively, under Tobin's Q > 1 or < 1, which is greater than 0.05. Therefore, it fails to reject the null H_{03}. In other words, there is no statistically significant relationship between growth opportunities and industry classification.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

Based on the data analysis in chapter 5, this chapter concludes the results both from the correlation and regression analysis where growth opportunities is the dependent variable. Then, all recommendations are proposed to the financial managers, outside investors, creditors as well as academicians.

6.1 CONCLUSIONS

Using data for four-year periods (1998 to 2001) and sample sizes (68 non-financial listed companies in Stock Exchange of Thailand), this study provides an empirical examination of how financial leverage, industry classification influence the companies' growth opportunities given Tobin's $Q > 1$ and Tobin's $Q < 1$.

The results from SPSS outputs show that there is a positive significant relationship between growth opportunities and financial leverage for the companies with Tobin's $Q > 1$, at a significant 0.000 level as expected. On other hand, for the companies with Tobin's $Q < 1$, although there is a negative relationship between growth opportunities and financial leverage, there is a statistical insignificant. However, growth opportunities are not significantly related to industry classification.

Table 6-1 shows the expected outcomes and real outcomes for the companies with
Tobin's Q > 1

Variables	Expected Outcomes	Real Outcomes
Financial leverage	Significant Positive	Significant Positive
Industry classification	Significant	Insignificant

(Source: the researcher's summarization)

Table 6-2 shows the expected outcomes and real outcomes for the companies with
Tobin's Q < 1

Variables	Expected Outcomes	Real Outcomes
Financial leverage	Significant Negative	Negative, Insignificant
Industry classification	Significant	Insignificant

(Source: the researcher's summarization)

According to Table 6-1, the outcome of financial leverage and growth
opportunities is same as the expected outcome, and the t-value is quite high. In
contrast with this result, Table 6-2 shows that even though financial leverage is
negative related to growth opportunities, it is insignificant.

Compared with the relation between financial leverage and growth opportunities,
the real correlation between industry and growth opportunities are different from

101

expected outcome, which listed in the Table 6-1 and consists with the outcome of Table 6-2. This results shows that industry did not affect the companies' growth opportunities during 1998 and 2001 period. This finding is due to the systematic macroeconomic situation in Thailand. During the 1998 to 2001 period, growth was depressed and companies were more concerned with survival rather than growth.

In summary, from statistical point of view, the results are not good enough, but they are still consistent with results supported by Lang L., Eli O., and Rene M. Stulz (1996), which shows that only low Tobin's Q companies have a significant negative relationship.

6.2   RECOMMENDATIONS

With regard to research outputs, the following recommendations are suggested.

6.2.1   Recommendation for Financial Managers

The main responsibility of managers is to maximize the shareholders' wealth or increase returns to shareholders as much as they can. They should commit to enhance the capacity to make profits for the company. Financial managers should take debt to equity ratio as a signal, by the fact that high leverage implies higher bankruptcy risk (and costs) for low growth companies.

According to previous study, economists find that there is a negative relation between leverage and growth. Documenting pertain to a relation is important, since many capital structure theories suggest that this kind of relation should exist because firms with high leverage might not be able to take advantage of growth opportunities, as well as because firms with poor growth opportunities should be prevented from dissipating cash flow on poor projects.

However, in this study, this negative relation between leverage and growth holds only for companies with low Tobin's Q ratio (Tobin's Q <1) rather than for high Tobin's Q companies (Tobin's Q >1). Therefore, this means that financial leverage is not detrimental for companies with good growth opportunities. In other words, leverage does not reduce growth for companies known to have good investment opportunities, but is negatively related to growth for companies whose growth opportunities are either not recognized by the capital markets or are not sufficiently valuable to overcome the effect of their debt overhang. In other words, leverage-increasing will raise the companies' price to earnings value for the companies with Tobin's Q > 1, whereas leverage-increasing will put the companies with Tobin's Q <1 into awkward predicament of declining price to earnings value.

Accordingly, leverage financing will be positive relation with growth opportunities only for the high growth companies (Tobin's Q >1). In other words, the financial manager of the high growth companies can apply debt financing policy as

capital resource or had adequate debt into finance their investment and improve the companies' growth. However, financial managers must also notice the potential cost of high leverage, including bankruptcy and financial distress costs. As for this point, financial manager cannot persist in high leverage financing in the companies' capital structure. But for low growth companies (Tobin's Q<1), there will be a negative relationship between growth opportunities and leverage. In other words, when these companies issue more debt in the market, the companies' growth would decline inversely, even companies failing to make interest and principal payments can be declared insolvent and can be dissolved. Therefore, the financial managers of the low growth companies should adjust their debt financing in the capital structure, seek to the other funding, avoid employing high debt or financial leverage that will decrease the companies' growth, and maintain low debt level to avoid debt overhang, or under-investment.

6.2.2 Recommendations for Outside Investors

From the point of view of an outside investor, equity is strictly riskier than debt. Especially, as the financial crisis of Thailand in 1997 revealed that the Thai stock market is suffering from lack of efficient supervised environment, including an inefficient the regulatory body governing its financial markets. As yet, the Thai stock market has not completely recovered. Hence, now for Thai securities market, an outside investor always prefers debt to equity.

This study suggests that outside investors should judge the companies' debt financing structure accurately to make correct decisions. When the companies have relative high price to earning ratio and Tobin's Q in the past record, the outside investors can consider investing bond in this type of company without industry classification. However, as for the companies that have low price to earning ratio and Tobin's Q in the past record, the investors should not be investing much capital in this low growth companies.

6.2.3 Recommendations for creditors

This study shows sample companies apply high debt to equity ratio in their capital structure. This means that Thai companies adopt debt as a control mechanism and lenders become the key constituents in the corporate governance structure as well. This can have a significant impact on both managerial discretion, and on the ability of an organization to deal effectively with its competitive environment.

This study suggests that creditors in the low growth companies (Tobin's Q <1) should institute greater control measures to prevent top managers from investing capital in riskier undertakings and make use of more debt financing. It also suggests that creditors should pay attention to the companies' financing behavior in an attempt to prevent these companies from applying more debt.

6.2.4 Recommendations for academicians and future research

Using data for a longer period should give a better picture of the relation between growth opportunities and financial leverage.

1. In addition, it is also suggested to conduct further research on both primary and secondary data. For example, the future researcher may conduct both quantitative and qualitative research, such as interviewing the listed firms' managers face to face or use questionnaire to investigate the financing behavior of Thai listed firms.

2. Referring to only price to earnings ratio is as the proxy of the dependent variable used in this study. However, it suggests that further research uses the other proxies of growth opportunities, such as past sale growth rate, or net sale growth rate, capital expenditures growth, etc.

3. Finally, the independent variables used in this study are not the only determinants related to the companies' growth opportunities. The search for these additional explanatory variables, however, is left for future research.

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APPENDIX A

THE CALCULATION OF TOBIN'S Q FROM

JAN.1998 TO DEC.2001

The calculation of Tobin's Q from Jan.1998 to Dec.2001

List No.	Securities Name	Industry	Average Tobin's Q	Tobin's Q >1	Tobin's Q <1
1	ADVANC	Communication	4.249792	1	
2	AHC	Health care services	0.371042		1
3	APRINT	Printing and Publishing	1.645000	1	
4	ASIAN	Agribusiness	0.616250		1
5	BAT-3K	Vehicles and Parts	0.791875		1
6	BEC	Entertainment and Recreation	6.515417	1	
7	BJC	Commerce	0.897083		1
8	CEI	Electrical products and Computer	2.572917	1	
9	CFRESH	Agribusiness	1.380208	1	
10	CHOTI	Agribusiness	1.083333	1	
11	CPF	Agribusiness	0.766250		1
12	CPI	Agribusiness	0.680208		1
13	CPL	Other	0.665833		1
14	DELTA	Electronic Components	2.935833	1	
15	DRACO	Electronic Components	0.547917		1
16	FANCY	Household Goods	1.636042	1	
17	GFPT	Agribusiness	0.373125		1
18	GRAMMY	Entertainment and Recreation	1.969583	1	
19	GYT	Vehicles and Parts	0.793333		1
20	HANA	Electronic Components	2.329167	1	
21	HT	Textiles, Clothing and Footwear	0.490000		1
22	HTC	Foods and Beverages	1.260417	1	
23	ICC	Commerce	0.372708		1
24	KWC	Warehouse and Silo	0.823750		1
25	LANNA	Energy	1.122917	1	
26	LST	Foods and Beverages	1.072292	1	
27	LTX	Textiles, Clothing and Footwear	0.645417		1
28	MAKRO	Commerce	1.780000	1	
29	MATI	Printing and Publishing	0.798958		1
30	MBK-PD	Property development	0.585625		1
31	METCO	Electrical products and Computer	0.806875		1

The calculation of Tobin's Q from Jan.1998 to Dec.2001

List No.	Securities Name	Industry	Average Tobin's Q	Tobin's Q >1	Tobin's Q <1
32	MINOR	Commerce	1.013125	1	
33	NPC	Chemicals and Plastics	1.089167	1	
34	NTV	Health care services	0.512083		1
35	OHTL	Hotels and Travel Services	3.574375	1	
36	P-FCB	Professional Services	0.604583		1
37	PPC	Agribusiness	4.268750	1	
38	PRG	Agribusiness	0.785417		1
39	RGR	Hotels and Travel Services	1.166458	1	
40	RHC	Hotels and Travel Services	2.724792	1	
41	ROH	Hotels and Travel Services	1.645000	1	
42	S&J	Pharmaceutical products	0.576458		1
43	SAUCE	Foods and Beverages	1.037292	1	
44	SAWANG	Jewelry and Ornaments	0.406042		1
45	SFP	Foods and Beverages	0.681875		1
46	SP	Packaging	1.835625	1	
47	SPG	Vehicles and Parts	1.564792	1	
48	SPP	Pulp and Paper	1.063125	1	
49	SSF	Agribusiness	0.626458		1
50	SST	Warehouse and Silo	0.535319		1
51	SUC	Textiles, Clothing and Footwear	0.475000		1
52	TAF	Agribusiness	0.954375		1
53	TBSP	Building and Furnishing Materials	0.503542		1
54	TC	Printing and Publishing	0.436667		1
55	TCB	Foods and Beverages	0.743750		1
56	THIP	Chemicals and Plastics	0.507083		1
57	TIW	Packaing	0.298958		1
58	TLI	Machinary and Equipment	0.420417		1
59	TOPP	Packaging	0.379792		1
60	TPCORP	Textiles, Clothing and Footwear	0.740652		1
61	TR	Textiles, Clothing and Footwear	0.298958		1
62	TUF	Foods and Beverages	1.843542	1	

The calculation of Tobin's Q from Jan.1998 to Dec.2001

List	Securities		Average		
No.	Name	Industry	Tobin's Q	Tobin's Q >1	Tobin's Q <1
63	TVO	Foods and Beverages	1.843542	1	
64	UPF	Textiles, Clothing and Footwear	0.781042		1
65	UPOIC	Agribusiness	1.485208	1	
66	UT	Textiles, Clothing and Footwear	0.371042		1
67	UV	Chemicals and Plastics	0.790625		1
68	WACOAL	Textiles, Clothing and Footwear	0.567083		1
	Total			28	40

APPENDIX B

SPSS TABLE OUTPUTS

Exhibit 5-1 Growth opportunities in 1998 when Tobin's Q > 1

N	Valid	68
	Missing	
Mean		0.2913
Median		0.1203
Minimum		0.0154
Maximum		4.1101

Exhibit 5-2 Growth opportunities in 1999 when Tobin's Q > 1

N	Valid	68
	Missing	
Mean		0.295084
Median		0.098538
Minimum		4.546900
Maximum		0.034200

Exhibit 5-3 Growth opportunities in 2000 when Tobin's Q > 1

N	Valid	68
	Missing	
Mean		0.107765
Median		0.085742
Minimum		0.410300
Maximum		0.029000

Exhibit 5-4 Growth opportunities in 2001 when Tobin's Q > 1

N	Valid	68
	Missing	
Mean		0.099870
Median		0.077238
Minimum		0.275100
Maximum		0.035700

Exhibit 5-5 Financial leverage in 1998 when Tobin's Q > 1

N	Valid	68
	Missing	
Mean		0.8696
Median		0.6200
Minimum		4.4900
Maximum		0.0500

Exhibit 5-6 Financial leverage in 1999 when Tobin's Q > 1

N	Valid	68
	Missing	
Mean		0.6679
Median		0.5350
Minimum		2.73
Maximum		0.08

Exhibit 5-7 Financial leverage in 2000 when Tobin's Q > 1

N	Valid	68
	Missing	
Mean		0.6479
Median		0.4450
Minimum		2.14
Maximum		0.06

Exhibit 5-8 Financial leverage in 2001 when Tobin's Q > 1

N	Valid	68
	Missing	
Mean		0.7171
Median		0.5450
Minimum		2.0300
Maximum		0.0400

Exhibit 5-9 Growth opportunities in 1998 when Tobin's Q < 1

N	Valid	68
	Missing	
Mean		0.119336
Median		0.082063
Minimum		0.852700
Maximum		0.012900

Exhibit 5-10 Growth opportunities in 1999 when Tobin's Q < 1

N	Valid	68
	Missing	
Mean		0.071717
Median		0.051083
Minimum		0.199300
Maximum		0.016800

Exhibit 5-11 Growth opportunities in 2000 when Tobin's Q < 1

N	Valid	68
	Missing	
Mean		0.065864
Median		0.050530
Minimum		0.338300
Maximum		0.020400

Exhibit 5-12 Growth opportunities in 2001 when Tobin's Q < 1

N	Valid	68
	Missing	
Mean		0.064545
Median		0.053104
Minimum		0.215900
Maximum		0.023500

Exhibit 5-13 Financial leverage in 1998 when Tobin's Q < 1

N	Valid	68
	Missing	
Mean		11.9336
Median		8.2063
Minimum		85.27
Maximum		1.29

Exhibit 5-14 Financial leverage in 1999 when Tobin's Q < 1

N	Valid	68
	Missing	
Mean		0.6063
Median		0.4050
Minimum		2.5500
Maximum		0.0800

Exhibit 5-15 Financial leverage in 2000 when Tobin's Q< 1

N	Valid	68
	Missing	
Mean		0.6045
Median		0.4950
Minimum		1.99
Maximum		0.07

Exhibit 5-16 Financial leverage in 2001 when Tobin's Q< 1

N	Valid	68
	Missing	
Mean		0.4930
Median		0.3350
Minimum		1.55
Maximum		0.04

Exhibit 5-17: Correlations between Dependent and Independent Variables when Tobin's Q > 1

		Growth Opportunities	Financial Leverage	Sectors Dummy	Tobin's Q
Growth Opportunities	Pearson Correlation	1.000	.998**	.128	.093
	Sig. (1-tailed)	.	.000	.257	.319
	N	28	28	28	28
Financial Leverage	Pearson Correlation	.998**	1.000	.127	.093
	Sig. (1-tailed)	.000		.260	.319
	N	28	28	28	28
Sectors Dummy	Pearson Correlation	.128	.127	1.000	-.296
	Sig. (1-tailed)	.257	.260	.	.063
	N	28	28	28	28
Tobin's Q	Pearson Correlation	.093	.093	-.296	1.000
	Sig. (1-tailed)	.319	.319	.063	.
	N	28	28	28	28

**   Correlation is significant at the 0.01 level (1-tailed).

Exhibit 5-18: Correlations between Dependent and Independent Variables when Tobin's Q < 1

		Growth Opportunities	Financial Leverage	Sectors Dummy	Tobin's q
Growth Opportunities	Pearson Correlation	1.000	-.208	.044	.179
	Sig. (1-tailed)	.	.099	.394	.135
	N	40	40	40	40
Financial Leverage	Pearson Correlation	-.208	1.000	-.346*	.208
	Sig. (1-tailed)	.099	.	.014	.099
	N	40	40	40	40
Sectors Dummy	Pearson Correlation	.044	-.346*	1.000	-.235
	Sig. (1-tailed)	.394	.014	.	.073
	N	40	40	40	40
Tobin's q	Pearson Correlation	.179	.208	-.235	1.000
	Sig. (1-tailed)	.135	.099	.073	.
	N	40	40	40	40

* Correlation is significant at the 0.05 level (1-tailed).

Exhibit 5-19: Coefficients between Dependent and Independent Variables when Tobin's Q > 1

Model		Unstandardized Coefficients	Standardized Coefficients	t-value	Sig.	95% Confidence Interval for B	
		B	Beta			Lower Bound	Upper Bound
1	(Constant)	-5.493E-02		-.078	.939	-1.510	1.400
	Financial Leverage	.998	.998	90.175	.000	.975	1.021
	Sectors Dummy	8.766E-03	.002	.144	.887	-.117	.134

Dependent Variable: Growth Opportunities

Exhibit 5-20: Coefficients between Dependent and Independent Variables when Tobin's Q < 1

Model		Unstandardized Coefficients	Standardized Coefficients	t-value	Sig.	95% Confidence Interval for B	
		B	Beta			Lower Bound	Upper Bound
1	(Constant)	9.864		3.675	.001	4.426	15.302
	Financial Leverage	-2.393	-.219	-1.277	.210	-6.192	1.405
	Sectors Dummy	-3.029E-02	-.032	-.185	.854	-.362	0.302

Dependent Variable: Growth Opportunities