A Comparison of Capital Structure between the Pre-, During-, and Post-Asian Financial Crisis: A Case Study of South Korean and Thai Companies

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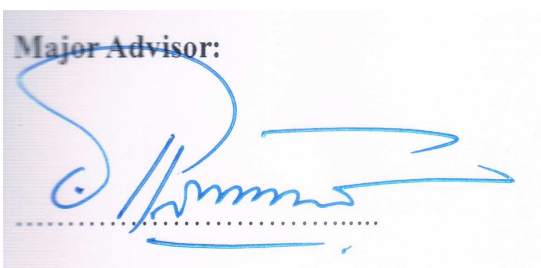
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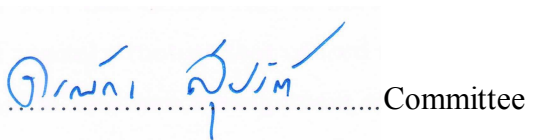|	
Title	**A Comparison of Capital Structure between the Pre-, During-, and Post-Asian Financial Crisis: A Case Study of South Korean and Thai Companies**
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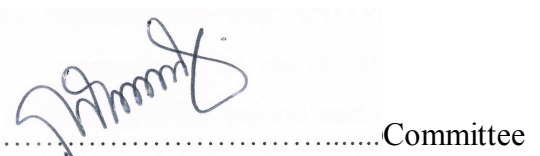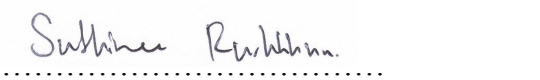| Title	A Comparison of Capital Structure between the Pre-, During-, and Post-Asian Financial Crisis: A Case Study of South Korean and Thai Companies
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ABSTRACT

Asian financial crisis had a big impact on South Korea and Thailand. In the meantime, firms in both countries with high proportion of debt had difficulties to survive. One of the lessons from the turmoil was mismanagement of capital structure that caused companies to be bankrupt. This study aimed to investigate the capital structure management of survived firms in South Korea and Thailand from the crisis. To compare the differences between the capital structure changes of companies in both countries, repeated one-way ANOVA, independent-samples t-Tests, and paired-samples t-Tests were conducted. The results showed that debt ratios of sample firms were highly increased in the during crisis period and decreased in the post-crisis period which can be explained by fluctuations of the exchange rate, high external debt rate, and economic growth. The capital structure changes of sample companies were different from the pre-, during, and post-crisis periods. Accordingly, it was indicated that both countries' sample firms aimed to reduce the proportion of liabilities to overcome the crisis.

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CHAPTER 1

INTRODUCTION

1.1 Background of the Study

What happened to countries, companies, and individuals in the world when the Asian financial crisis was occurred in 1997? At that time in South Korea (hereafter Korea), there was a music band who sang a song for cheer patriarch up during the crisis. The story of the song was that a father who hided discharge to family encountered his daughter at video arcade, he asked her not to tell anyone about the accidental meeting with a bit of pocket money (Choi, 1998). Like the story in the song, the crisis brought contagion effect of bankruptcy and led people to face high unemployment rate in the society. Also, it brought deep currency devaluation, huge debt default rate, and moral problems in economic field.

In Korea, the crisis was called IMF (International Monetary Fund) financial crisis while it was named Tom Yum Goong crisis in Thailand. During the crisis in both countries, firms which had much more debt than equity in their capital structure faced difficulties in cash conversions. Mismanagement of capital structure with too high debt rate made firms got many problems to pay operating expenses such as interest payment, purchase of goods, provision of dividends, etc. Accordingly, it caused many of the firms went bankrupt.

One of the lessons from the turmoil was mismanagement of capital structure can cause companies to be bankrupt. Capital structure is considered as the debt and equity choice of a company. Firms try to find the optimal capital structure which means the best way for balancing the debt and equity to maximize the profit and to increase the market value of the firms. In a Western, including Latin America, companies try to do the debt financing that is generally no bigger than and less than the value of their equity (Wade & Veneroso, 2004). In theory and practice, the optimal capital structure depends on many factors such as industry, sector, and business environment. Therefore, balancing capital structure is one of the important processes in business management and, it provides ways in which dealing with critical situations like economic distress and world financial crises. It is important to know how to manage and plan the debt and equity choice for companies and individuals to prepare for the uncertain future.

1.2 Problem Statement

Inappropriate management, especially in capital structure caused many of large and smaller companies went to bankruptcies in Korea and Thailand during the Asian financial crisis. Table 1.1 shows the debt to equity ratio of top 30 Korean large companies.

Table 1.1 *A Comparison of Top 30 Korean Chaebol's Financial Conditions at the End of 1996 (in Billion Won and Percentage)*

Chaebol	Total Assets	Total Liabilities	Total Equity	Debt to Equity Ratio
Hyundai	₩52,821	₩42,979	₩9,842	437
Samsung	50,711	36,897	13,814	267
LG	37,068	28,766	8,302	347
Daewoo	34,240	26,449	7,791	339
SK	22,743	18,042	4,701	384
Ssangyong	15,802	12,700	3,102	409
Hanjin	13,910	11,789	2,121	556
Kia	14,206	11,912	2,295	519
Hanhwa	10,592	9,348	1,244	751
Lotte	7,754	5,100	2,654	192
Kumho	7,390	6,119	1,270	482
Halla	6,627	6,320	306	2,065
Donga	6,289	4,906	1,383	355
Doosan	6,369	5,561	808	688
Daelim	5,849	4,731	1,118	423
Hansol	4,214	3,138	1,075	292
Hyosung	4,131	3,253	879	370
Dongguk Jaekang	3,698	2,536	1,161	218
Jinro	3,937	3,813	124	3,081
Kolon	3,840	2,922	919	318
Kohap	3,653	3,124	529	590
Dongbu	3,417	2,444	973	251
Dongyang	2,631	1,985	645	308
Haitai	3,398	2,950	448	658
New Core	2,797	2,586	211	1,224
Anam	2,638	2,182	456	478
Hanil	2,599	2,215	384	578
Kopyung	2,296	1,783	513	347
Miwon	2,233	1,801	432	417
Sinho	2,139	1,776	363	489

Note. Adapted from "Six Chaebol Groups with higher than 100 billion won deficit," by H. Choi, 1997, *Chosun Ilbo*, p. 9.

In Korea, 13,971 of large and smaller companies went bankrupt in 1997, and they sought bankruptcy-court protection with debts, total $21 billion ("Finance and Economics", 1998). According to the study by Corsetti, Pesenti, and Roubini (1999), it was observed as a series of bankruptcies of major companies occurred, the crisis in Korea deepened. They said the large conglomerates heavily borrowed debt for their new projects, and 30 conglomerates'

average debt-equity ratio was 333 percent unlike the US firms had close to 100 percent of the ratio (Corsetti, Pesenti, & Roubini, 1999).

In Thailand, Hewison (1999) conducted a research that approximately 400 billion baht of investment all around the industry cancelled or postponed at the end of 1997 due to the crisis. He described the business situations in Thailand as:

Majority stakes in a range of the giant Metro Group's companies were being offered to foreign investors to offset a 16 billion baht debt (Nation, 4 October 1998). One of the country's biggest textile plants, Thai Melon, closed, laying off 8,000 workers (Nation, 17 July 1998). Survival became the aim as bankruptcies doubled in early 1998, with some 5,000 companies closing by June 1998, and hundreds more were expected to follow (Nation & BP, 21 July 1998). The World Bank reported that more than 1,000 businesses a month were de-registering during the last quarter of 1997 and through 1998. (p. 33)

As imprudent debt financing brought contagion effect of bankruptcies and serious economic depression when the crisis hit Korea and Thailand, it would be helpful for people to study about problems and solutions of the crisis in both countries. Therefore, this study focuses on capital structure changes of firms in Korea and Thailand.

1.3 Research Question

(1) How were the changes in capital structure of top 30 companies in Korea and Thailand between the pre-, during-, and post- Asian financial crisis?

1.4 Objective of the Study

(1) To examine the differences between the capital structure changes of top 30 companies in Korea and Thailand in the duration of the pre-, during-, and post-Asian financial crisis

1.5 Scope of the Research

This study confines its object section in two countries, Korea and Thailand. In each country, top 30 firms ranked by market capitalization on the last business day of stock market in 2000 were chosen excluding banking and finance companies. The reason why companies

in financial industry are excluded is that most of banking companies have high liabilities to assets ratios, typically over 90 percent which may bring too different results when comparing together with companies in other industry (Stickney, Weil, Schipper, & Francis, 2009). These top 30 firms should exist from 1995 to examine their capital structure changes for three periods in six years: pre-crisis from 1995 to 1996, during crisis from 1997 to 1998, and post-crisis from 1999 to 2000. Therefore, survived companies from the crisis are included in the sample companies.

1.6 Significance of the Research

Korea and Thailand suffered greatly from the Asian financial crisis in the world. To break away from the economic distress, they asked IMF to send financial aid unlike some countries declared moratorium such as Malaysia and Russia during the crisis. Later, Korea and Thailand quickly recovered and after that, they are doing important roles in East and Southeast Asia nowadays. So, this study aims to identify how companies in the countries managed their capital structure to overcome the difficulties.

There are a few comparative researches about capital structure of Korean and Thai companies so far. Most of previous studies compared capital structure of companies in both countries with other developed or developing countries such as Indonesia, Japan, Malaysia, and Singapore. Accordingly, this study would be beneficial for companies or individuals who need information about the differences of Korean and Thai companies' capital structure, both countries only. They would be able to see Korean and Thai large companies' responses in capital structure management when their business was in big difficulties. Not only Korean and Thai companies but also any multinational firms may take the results into account when planning to invest or expand their business in both countries. They may use the findings of this study as reference for restructuring their capital structure as well. In addition, the results would tell companies to be aware of mismanagement of capital structure by imprudent debt financing which can lead a business to the critical bankruptcy problem.

Also, studying about the crisis is anticipated to offer benefits to governments to prevent or prepare for the critical situations in the future by enhancing economic system and financial policies. As Eun, Resnick, and Sabherwal said in their book (2012), "global effects of the Asian currency crisis and the challenges it poses for the world financial system, it would be

useful to understand its origins and causes and discuss how similar crises might be prevented in the future." (p. 77), this study provides further understanding of the crisis.

1.7 Definition of Terms

(1) Capital Structure: the debt and equity choice of a company; in this study, four debt ratios will be used as proxy of capital structure which are explained in Chapter 3.

(2) Capital Structure Theories: the theories of capital structure such as The Modigliani-Miller Theorem, The Pecking order Theory, and The Trade-Off Theory will be discussed in Chapter 2.

(3) Chaebol: a large family-owned business; especially many Korean firms have this management structure.

(4) EBIT: Earnings before Interest and Taxes

(5) The Asian Financial Crisis: the crisis which was started on 2 July, 1997 with a twenty percent devaluation of the Thai baht (Lim, S. Das, & A. Das, 2009) and stroke the world economy, especially in Korea, Thailand, and other Asian countries

(6) Top 30 Companies: top 30 non-financial listed companies ranked by market capitalization on the last trading day of stock market in 2000

CHAPTER 2

LITERATURE REVIEW

The purpose of this chapter is to discuss the concept of capital structure from previous theories and to look back on Asian financial crisis. Also, previous researches about capital structure changes of companies in Korea and Thailand by the time Asian financial crisis was occurred are discussed to review other studies. At the end of this chapter, the research framework is presented.

2.1 Capital Structure Theory

Capital structure is considered as the debt and equity choice of a company. According to Bradley, Jarrell, and Kim (1984), "the optimal capital structure involves balancing the tax advantage of debt against the present value of bankruptcy costs" (p. 857). To find the optimal capital structure, researchers studied from various points of view and published their results. Start from Modigliani and Miller's theory (hereafter MM) in 1958, there are two major theories of capital structure: Trade-off theory and Pecking Order theory. More explanations of these three theories are discussed below.

2.1.1 The Modigliani-Miller Theorem

a) Modigliani-Miller: No Taxes

In 1958, MM presented capital structure does not affect the value of a firm when six hypotheses below are satisfied in the market, and they argued there is no optimal capital structure unlike traditional studies said companies have appropriate debt for getting an optimal capital structure (Modigliani & Miller, 1958). Koh, Ang, Brigham, & Ehrhardt (2014) wrote in their book that MM argued the theory with six assumptions as following:

1. There are no brokerage costs.

2. There are no taxes.

3. There are no bankruptcy costs.

4. Investors can borrow at the same rate as corporations.

5. All investors have the same information as management about the firm's future investment opportunities.

6. EBIT is not affected by the use of debt. (p. 574)

Koh et al. (2014) summarized the theory that two portfolios were adduced by MM to prove their theory. The first portfolio is composed of equity only and the second portfolio is mixed with debt and equity. In this situation, when an investor owns whole the first firm, following by the six hypotheses, there is no tax and all the EBIT of the firm will be dividend. Therefore, when an investor owns the first firm, the cash flow equals to EBIT. Suppose when an investor owns whole the second firm, he needs to invest both debt and equity of the firm, and the cash flow will be equal to dividend except interest payment of the debt plus received interest: $r_d D + (EBIT - r_d D) = EBIT$. Same as the first portfolio, cash flow of the second portfolio is also equal to EBIT when there is no tax. Accordingly, in any circumstance of capital structure, values of the firms are same. However, they explained that this is able to be happened in the perfect market only. So, in the reality: imperfect market, MM's theory and six hypotheses cannot be applied as the theoretical limitation.

b) Modigliani-Miller II: The Effect of Corporate Taxes

In 1963, MM complemented their previous theory with corporate tax. They proposed that through the debt financing, companies are able to reduce the tax, and it helps companies to find the optimal capital structure. It is because dividend does not have tax deduction, but when firms use debt, they are able to get tax deduction by interest tax shield; interest payment of debt is considered as the cost of firms and government reduces the tax for it. Thus, MM argued that firms decide debt financing to maximize the value of the firms.

c) Miller: The Effect of Corporate and Personal Taxes

In 1977, this time without Modigliani, Miller presented his capital structure theory with the consideration of corporate tax and personal tax. Unlike MM's second proposition, he argued that capital structure does not affect the value of firms, and personal tax not completely but reduces debt financing (Koh et al., 2014). To prove his theory, he mentioned

clientele effect which assumes that investors who have high tax rate with relatively high income prefer stock dividends: capital profit without tax, on the contrary, investors who have low tax with low income prefer dividends. When the market is unbalanced, investors would invest where they prefer following by the clientele effect. However, when the market is balanced with same corporate tax and personal tax rate, there would be balanced debt in the market as well then firms lose interest tax shield by using debt financing. Therefore, Miller argued the value of the firm is not affected by capital structure.

2.1.2 The Pecking Order Theory

In 1961, Donaldson presented pecking order theory for the first time. Later, in 1984, Myers and Majluf adduced modified pecking order theory. They said in the information asymmetry circumstance, companies try to raise funds from internal funds first. Then, the companies issue the debt, and if they still need more funds, they issue new stocks. Myers and Majluf also argued that there is no target debt ratio and denied the existence of optimal capital structure.

It is because when firms use external funds, it spends more cost than internal funds, so they prefer internal funds as the first priority. Furthermore, they prefer debt financing than a stock issuing because investors would consider issuing new stocks as negative news like firms have financial distress, and firms' stock prices would be negatively affected.

2.1.3 The Trade-Off Theory

To supplement MM's modified theory, trade-off theory was developed in 1973 by Kraus and Litzenberger. They considered bankruptcy cost in their capital structure theory and presented that optimal capital structure can be occurred when the savings of corporate tax from debt financing trade off expected bankruptcy cost.

There are three types of bankruptcy cost. The first one is direct bankruptcy cost which includes legal and administration expenses for corporate liquidation or reorganization. The second one is indirect bankruptcy cost, such as lower rate of sales and funding problems by reduced credit load, and capital loss from urgent asset sale. Lastly, it is a loss of tax cut when the business was normal (Yang, 2001). This graph below explains trade-off theory.
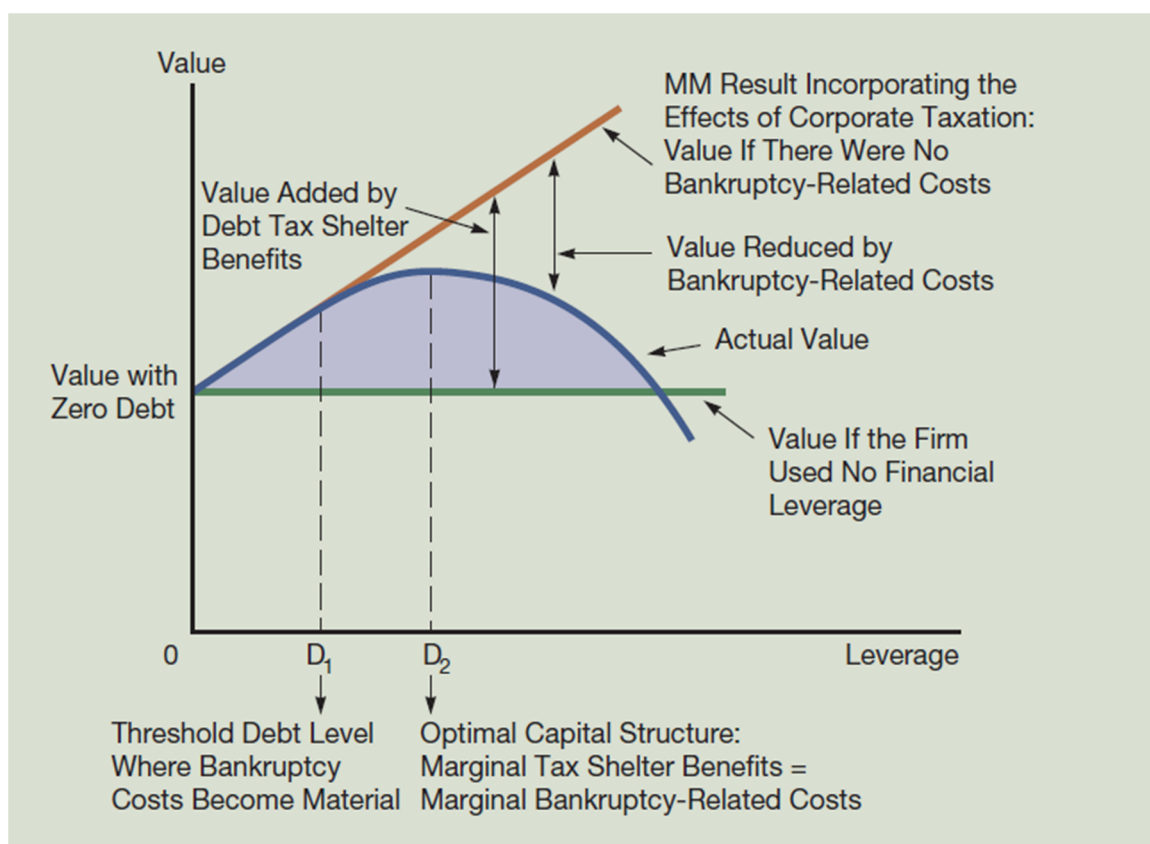
Figure 2.1. Effect of Financial Leverage on Value. Reprinted from *Financial Management: Theory and Practice (13th Edition)* (p.614), by Brigham, E. F. and Ehrhardt, M. C., 2011, Mason, OH: South-Western Cengage Learning, Inc. Copyright 2011 by South-Western Cengage Learning, Inc. Reprinted with permission.

Koh et al. (2014) summarized the theory with Figure 1 that D1 is the point with almost no bankruptcy, so unlevered firm gets only tax benefit. However, after that, unlevered firm's actual value is decreasing because its bankruptcy is increasing. From D1 to D2, bankruptcy related cost reduces tax benefit but not completely, and at the point D2, optimal capital structure for the firm appears by trade-off between tax benefit and bankruptcy cost. After that, bankruptcy cost exceeds tax benefit and, later, the firm's value will be lower than the value if the firm uses no financial leverage (Koh et al., 2014).

2.2 Asian Financial Crisis

Asian financial crisis began on 2 July, 1997, from about twenty percent decrease of the value of Thai baht which was pegged to US dollar. Then, it was spread to Asian countries first, after that, USA, Latin America, and Europe got affected (Lim et al., 2009). The crisis affected

not only economy, but also many parts of society in the world. World economy grew down, chain bankruptcy happened to a number of companies, and exchange rate of some countries became very unstable; Korean won nosedived approximately fifty percent and Indonesian Rupiah, about eighty percent (Eun et al., 2012). Lim et al. (2009) explained the business in Singapore was that "uncertainties led to a decline in corporate earnings, a downsizing of business operations, disruptions in the product and financial markets, problems with buyer and supply chains, and an increase in financial and political risks associated with doing business" (p. 580). Similar situations as the business in Singapore were also happened in many other countries which got damaged by the crisis. As Figure 2.2 shows, in the society, unemployment, divorce rate, suicide rate, and alcohol consumption were increased and marriage rate decreased during and after the crisis.

Eun et al. (2012) argued that several reasons of Asian financial crisis were "a weak domestic financial system, free international capital flows, and inconsistent economic policies" (p. 78). They also stated that in the mid-nineties, credit boom was occurred and, debt financing was encouraged in the world, so capital was easily moved from country to country. USA, Japan, and Europe lent money to especially developing countries in Asia, an emerging market, without hesitation for extra returns. Then, they reported that in 1996 alone, about $96 billion were invested in Indonesia, Korea, Malaysia, Philippines, and Thailand. However, when the crisis was occurred, net outflow was only about $12 billion in 1997.

Wee (1998) found that in Korea, industrial regulation and protection by government deepened high level of dependence on debt of companies; before they enter a particular industry, their activities were restricted however, when they entered the industry, they were able to make stable income under government's umbrella. In the study, the researcher also presented Korean government's bail-out program and the rationalization of industry prevented corporate bankruptcy then companies were not really conscious of the bankruptcy cost.

In Thailand, speculators attacks for gaining the exchange profit had been continued since 1995 because Thai baht was pegged to US dollar. When Bank of Thailand failed to defend the attacks, Chalongphob argued the official reserve depleted from $38 billion to only $2.8 billion by float of the baht on 2 July (as cited in Hewison, 1999, p. 28). It brought Asian financial crisis to be spread in Thailand and other countries in the world.
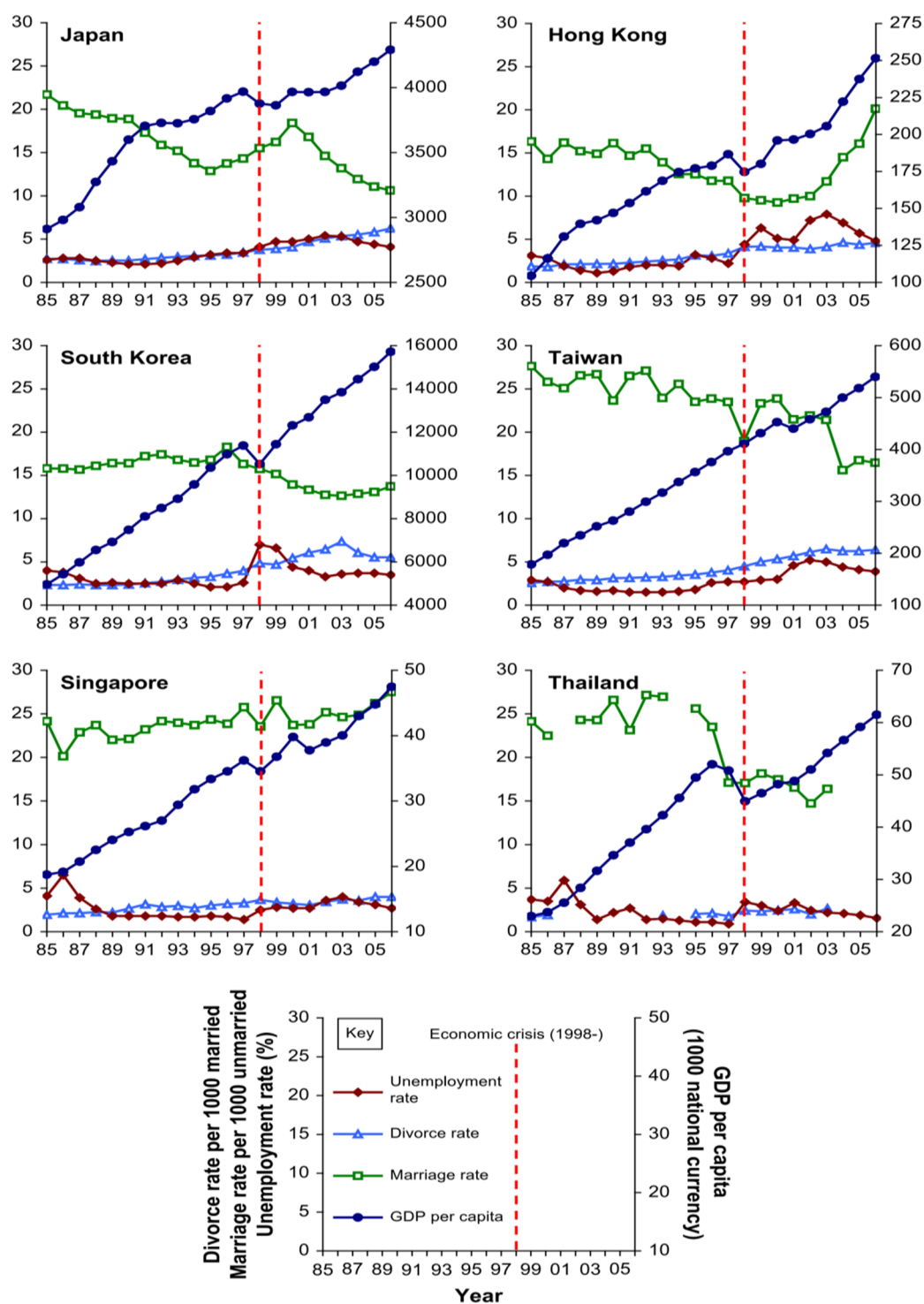
Figure 2.2. Trends in gross domestic product (GDP) per capita (1000 national currency), unemployment rate as the percent of total labour force, divorce rate per 1000 married population and marriage rate per 1000 unmarried population in Japan, Hong Kong, South Korea, Taiwan, Singapore and Thailand (1985–2006; data unavailable for divorce and marriage rates for some years in Thailand). Reprinted from "Was the economic crisis 1997–1998 responsible for rising suicide rates in East/Southeast Asia? A time–trend analysis for Japan, Hong Kong, South Korea, Taiwan, Singapore and Thailand," by Chang, Gunnell, Sterne, Lu, & Cheng, 2009, Social Science & Medicine, 68, p. 1324. Copyright 2009 by Elsevier. Reprinted with permission.

The continuous recession called IMF to intervene three countries: Indonesia, Korea, and Thailand which were suffering greatly (Eun et al., 2012). Wade & Veneroso (2004) stated, "The IMF programs for the other Asian cases differ from case to case, but they also push for capital account opening and financial sector deregulation, as well as high real interest rates and other measures to restrict domestic demand" (p. 12). In 1997, the IMF and Indonesia's agreements were approved on November 5, Korea on December 4, and Thailand on August 20 (International Monetary Fund, 2000b).

To overcome the crisis, Korean government announced a subject of target debt to equity ratio recommendation to large business groups. The target ratio was 200 percent until the end of 1999 (Lee, Lee, & Park, 2001). The government also lifted many of regulations in stock market and real estate for attracting foreign investors (U.S. Department of State, Bureau of Economic, Energy and Business Affairs, 2011). Many Korean people participated some campaigns at school or town such as "Anabada" campaign which stands for conserve, share, change, and reuse goods in Korean language. It encouraged people to exchange their used stuffs instead throwing away. They also participated gold collection movement by selling their gold with lower price than the market price or donating gold to government. Even some of Olympic gold medalists brought their medals to the movement. But later, several companies in charge of the movement were criticized because of using collected gold to improve their trade performance (Cho, 1998). After the crisis, people who were disappointed from the government and large companies changed their minds to focus more on practicality, rationality, and cost-effectiveness for consuming goods but not the patriotism.

In an effort to surmount the crisis, Hewison's (1999) study indicated that Thai government tried to overcome the crisis through maintaining close relations with IMF and western supportive countries. For these relations, government needed to satisfy diversified demands from them such as reform of alien business laws, revisions to duties, taxes and customs procedures, privatization, transparency, an end to corruption, deregulation, and a range of relaxations of rules and policies. However, Thai government's reaction was not balanced for everyone in Thailand, and it was mainly focusing on the high-class. Therefore, the late Prime Minister Chuan was compared to the captain of Titanic who helped only the first class passengers to take life boats (Hewison, 1999). Then, gap between the rich and poor was widened after the crisis.

After a few years, through the efforts of people, companies, and governments, the crisis was going to finish. Later, IMF's stand-by in Thailand expired on 19 June, 2000, in Korea on 3 December, 2000, and in Indonesia on 31 December, 2003 (International Monetary Fund, 2000a; International Monetary Fund, 2000b; Suryadinata, 2004). Ohno, Shirono, & Sisli (1999) described when the crisis went to the end:

By the spring of 1998, though, calm began to return gradually to the majority of the crisis-hit currencies (with an important exception of the Indonesian rupiah). As most Asian currencies stabilized by late 1998, interest rates also declined (or were reduced) to levels even below those prevailing in the pre-crisis period. (p. 6)

2.3 Previous Research

Kang and Park (1999) analyzed the capital structure of listed companies in Korea from the end of 1996 to 1998 year-end. Through the actual proof analysis, they investigated how the Asian financial crisis affected the capital structure of companies in top 30 chaebols and the other 549 manufacturing companies by comparing total assets, sales, debt ratio, capital ratio, market capitalization, profit, and percentage of shareholding. Then, they examined the subsidiary companies of the chaebols and the other company group's changes of total debt, short-term debt, and long-term debt ratio by using regression analysis. Also, they examined how ownership structure of the companies affected the capital structure of the firms. The results showed when the crisis was deepened, the companies in the chaebol group showed financial structure improvement and companies with the higher rate of major shareholders' equity had advantages in industrial restructuring.

Lee et al. (2001) compared capital structure of sixty large business groups in Korea and, they found the capital structure of sample business groups was significantly changed since Asian financial crisis occurred in 1997. Their study focused on leverage adjustment speed and how it proceeded from the pre-crisis to the post-crisis period. The results showed firstly, the relation between internal cash flow and capital expenditure amount turned negative after the crisis; in the pre-crisis period, it was positive. Also, unlike the pecking order theory, the equity capital clearly increased. Secondly, multiple regression analysis showed leverage and cash deficit had positive and statistically significant coefficient. Finally, firms which had relatively high sales turnover and affluent cash flow had low debt to equity ratio. In addition,

leverage adjustment speed of the post-crisis period was faster than the speed in the pre-crisis period.

Polsiri and Wiwattanakantang's (2005) empirical research of top 30 business groups in Thailand examined corporate restructuring of sample firms during the crisis period. Sample firms were divided into two groups: firms which are affiliated with the top 30 business groups in Thailand and firms which are not. They used univariate analysis and multivariate probit analysis to observe the two sample groups restructuring activities: asset downsizing, expansion, management turnover, dividend cuts, debt restructuring, and capital raising. Unlike other restructuring activities, debt restructuring was happened significantly less in business group firms than non-group firms. Hence, the results showed companies belonging to Thailand's top 30 business groups did not focus much about debt restructuring when the crisis was occurred in Thailand.

Chong and Law (2012) studied the capital structure adjustment of companies in five countries: Hong Kong, Japan, Singapore, Taiwan, and Thailand. They collected annual data from 1980 to 2003 of the countries including 261 firms in Thailand. After they estimated the adjustment models of book leverage and market leverage by partial adjustment model and their regression which is similar to Fama and MacBeth's regression. The results showed Thai sample firms gradually adjusted the leverage ratios following by their target levels. After the crisis, however, the adjustment speed of debt ratio of the firms fallen. Also, the researchers found that when the sample firms needed external financing, the firms were inclinable to use more debt than equity unlike the United States because in the States, there is more mature debt market and the cost of capital is lower than Asian countries; which was argued from He, Chong, Li and Zhang (as cited in Chong & Law, 2012, p. 16).

Previous studies showed listed Korean firms tried to improve financial structure by reducing debt ratio during and after the crisis. Especially firms in large business groups with high sales and stable cash flow showed sufficient leverage adjustment. In Thailand, firms had relatively lower debt ratio than Korean firms. Thai companies also tried to adjust leverage ratios following by their target levels. However, compare to Korean business groups, Thai large business groups focused less on debt restructuring.

2.4 Research Framework
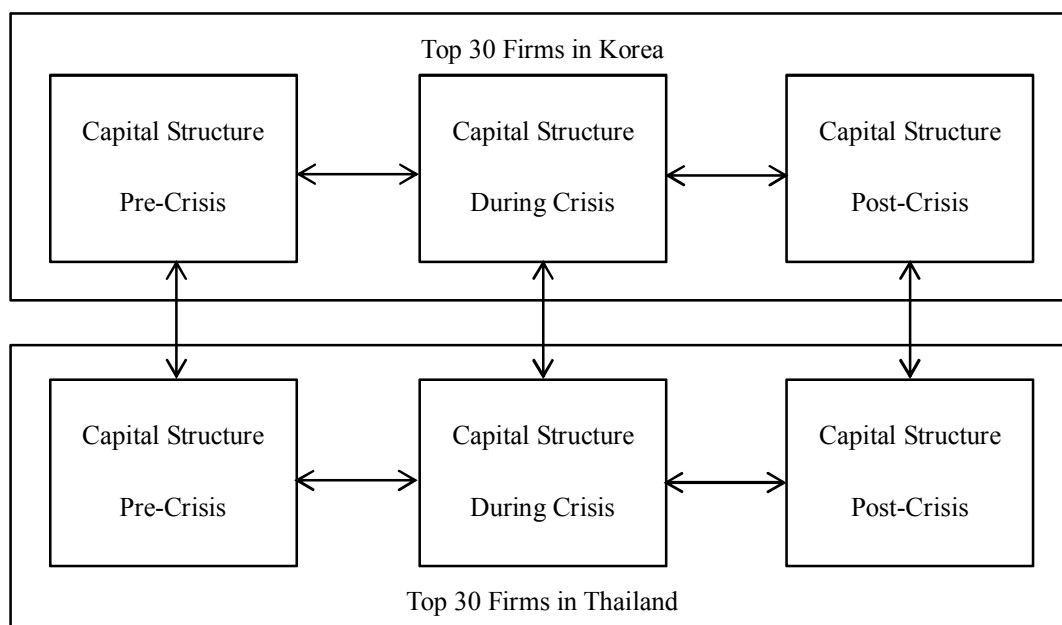
Figure 2.3. Research Framework.

To define the concept of this study, the research framework has been identified to answer the research question. As it was mentioned in this chapter, Asian financial crisis damaged Korea and Thailand greatly, both countries had similar economic and social phenomenon during the crisis. This study observes how the crisis affected top 30 companies in both countries by comparing their capital structure changes. The period is separated to three parts: pre-, during, and post-crisis.

At first, the values of variables which explain the characteristics of top 30 Korean and Thai companies' capital structure in each period are interpreted by descriptive analysis. After that, the pre-crisis values of Korean firms and Thai firms are compared by inferential statistics. Same as comparing the previous values, the values of during crisis and post-crisis are compared as well. Also, differences between the results of Korean firms and Thai firms are defined.

CHAPTER 3

RESEARCH METHODOLOGY

In this chapter, overall research methods such as population and sample, source of data, variables, and hypotheses are fixed. For the variables, study of company's capital structure choice in G-7 countries (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States) by Rajan & Zingales (1995) is referred. Also, data analysis techniques are described at the end. To compare two or three periods of capital structure changes, t-Tests and ANOVA (Analysis of variance) are applied.

3.1 Research Design

Quantitative research is considered to be employed to identify the targets of this study. For the quantitative research approach, researchers collect data on predetermined instrument which produces statistical result (Creswell, 2003). So, quantitative research would be fit for the present study to use the numerical data from financial statements and to do the statistical analysis.

Descriptive statistics are used to describe and summarize the study data such as averages and percentages (Niresh & Velnampy, 2012). Then, inferential statistics that analysis techniques for determining results from samples to infer the attribute of entire population are employed in order to interpret the findings for drawing conclusions (Fraenkel, Wallen, & Hyun, 1993).

3.2 Population and Sample

This study conducted companies in the stock markets of Korea and Thailand. In Korea's securities markets, Korea Exchange (KRX) is the main operator of the primarily two securities markets, Korea Composite Stock Price Index (KOSPI) for major companies and Korea Securities Dealers Automated Quotation (KOSDAQ) for small and medium-sized enterprises (Korea Exchange, 2011). In Thailand, The Stock Exchange of Thailand (SET) is a one-stop center for securities trading where companies and investors are able to use a full range of products, services and trading infrastructure (The Stock Exchange of Thailand,

2007).

However, different accounting standard and reporting system between both countries may cause the limitations of using data. This could not be completely reconciled in this study and some proxy variables should be set as these kinds of limitations mentioned in Kim and Berger's comparative study (2008).

Table 3.1 presents the sampling criteria of this research. According to the limitation of market capitalization database in 1995, the samples would be obtained in the year 2000. In 2000, companies listed in KOSPI are 704 and 381 in SET (Korea Exchange, n.d.; The Stock Exchange of Thailand, n.d.). In those groups, large listed companies which are in the top 30 ranked by market capitalization of each country are collected. Since the firms in financial sectors usually have more than 90% of relatively high debt rate which are not suitable for observation of capital structure changes, financial companies are excluded. Furthermore, the top 30 companies should exist during 1995-2000 and their consolidate data would be applied to observe their capital structure changes from financial statements. If a sample company had no affiliated company, its company data would be applied. If a sample firm established some subsidiary companies during the six years, mixed company and consolidate data would be used. The reasons why top 30 large listed firms are chosen in this study are; first, combined market capitalization of those 30 sample firms in Korea and Thailand shows more than 65 percent and 50 percent of total market capitalization respectively. These samples may not be able to show all the details of whole the companies' capital structure in the market, however, it would be helpful to represent the general characteristics of firms' capital structure in the market. In Rajan and Zingales' study (1995), they also chose the samples which show about 50 to 70 percent of the market in each country. Second, the large corporations by size of the capital have more reliable and consistent reports than using random sampling (Kim & Berger, 2008). They have to report financial statements following by the regulations of the market and, their information affect a number of investors and other companies not only in a nation but also in the world. So, they should provide precise and authentic financial data to avoid any legal issues and, the information would be credible. Third, in less efficient capital markets, the information asymmetries may be less severe for large companies because they have many shareholders and high interests of common investors (Kester, 1986).

Table 3.1 *Sampling Criteria*

Korean Firms

  1. The companies should be listed in KOSPI and have annual reports on DART (Data Analysis, Retrieval and Transfer System) website managed by FSS (Financial Supervisory Service) Korea.

  2. The companies should be ranked by market capitalization on the last business day of KOSPI in 2000.

  3. Banking and finance companies and preferred stocks should be excluded.

  4. All of the financial data from each company should be available for six years (1995-2000).

  5. Consolidate data of each company should be applied. If a company had no affiliated company or established affiliated companies during six years (1995-2000), only company data or mixed company and consolidate data is able to be applied.

Thai Firms

  1. The companies should be listed in SET and have financial statements on SET SMART (SET Market Analysis and Reporting Tool) and SEC (The Securities and Exchange Commission, Thailand) websites.

  2. The companies should be ranked by market capitalization on the last business day of SET in 2000.

  3. Banking and finance companies and preferred stocks should be excluded.

  4. All of the financial data from each company should be available for six years (1995-2000).

  5. Consolidate data of each company should be applied. If a company had no affiliated company or established affiliated companies during six years (1995-2000), only company data or mixed company and consolidate data is able to be applied.

3.3 Source of Data and Variables

For this research, secondary data is used which have been previously collected for former study, project, and research, for instance, financial statements, government reports, theses, books, and so on (Niresh & Velnampy, 2012). Main sources of this study are financial statements. These are obtained from online listed company information service by government and investment companies in Korea and Thailand. KRX and SET have online contents services for security markets of both countries on KRX homepage, KRX Capital Market Statistics Portal, and SET SMART websites. Also, DART Korea, SEC Thailand, and sample firms' homepages provide their annual business reports with income statements and balance sheets. Further, text books, journals, other researchers' work, and material on the Internet are collected for the reference to get numerical data and others.

This study's variables would be referred to modified Rajan and Zingales (1995) structure

using four debt ratios: book and market value of debt to total assets and debt to net assets ratios as proxy of capital structure. Moreover, book value of liabilities would be used because this study assumes that it has the close value as market value of liabilities. In the research of Rajan and Zingales (1995), they investigated capital structure choice of firms in G-7 countries which are the most industrialized group with advanced economies in the world. The researchers made a table for comparing the extent of leverage in stock market of those countries so, financial ratios they chose would be useful for this study to analyze capital structure changes of companies in Korea and Thailand as well.

The variables are selected as following:

1) Total Assets (Book Value)

TA_B

2) Total Liabilities (Book Value)

TL_B

3) Total Equity (Book Value) = Total Assets (Book Value) – Total Liabilities (Book Value)

$TE_B = TA_B - TL_B$

4) Total Assets (Market Value) = Total Liabilities (Book Value) + Equity (Market Value)

$TA_M = TL_B + E_M$

5) Debt to Total Assets (Book Value) = Total Liabilities (Book Value) / Total Assets (Book Value)

$DTA_B = TL_B \div TA_B$

6) Debt to Total Assets (Market Value) = Total Liabilities (Book Value) / Total Assets (Market Value)

$DTA_M = TL_B \div TA_M$

7) Debt to Net Assets (Book Value) = Total Liabilities (Book Value) / (Total Assets (Book Value) – Current Liabilities (Book Value))

$$DNA_B = TL_B \div (TA_B - CL_B)$$

8) Debt to Net Assets (Market Value) = Total Liabilities (Book Value) / (Total Assets (Market Value) – Current Liabilities (Book Value))

$$DNA_M = TL_B \div (TA_M - CL_B)$$

3.4 Data Analysis

3.4.1 Descriptive Analysis

Descriptive analysis is used to survey the capital structure changes of top 30 companies in Korea and Thailand. In the descriptive analysis, average, standard deviation, maximum value, and minimum value of each variable in three periods: pre-crisis, during crisis, and post-crisis are reported.

3.4.2 Inferential Statistics

Inferential statistics would be used to examine the differences between the capital structure changes of Korean and Thai companies. Firstly, ANOVA which determines whether significant differences would be found between more than two groups or populations is used to define the changes between three periods of the capital structure in each country's companies (Zikmund, Babin, Carr, & Griffin, 2012). Secondly, t-Tests which indicate two different means are applied to test whether the means of capital structure in each period are equal or unequal between the companies in both countries. For t-Tests and ANOVA, statistical calculation program is employed. Then, in accordance with the results from the tests, capital structure changes of firms in both countries are compared.

By using ANOVA for comparing three means with the hypothesis that:

H_1: Capital structure of Korean firms in the pre-, during, and post-crisis periods are all equal.

H_2: Capital structure of Thai firms in the pre-, during, and post-crisis periods are all equal.

By using t-Tests for comparing two means with the hypothesis that:

H_3: Capital structure of Korean firms in the pre-crisis period is equal to capital structure of Thai firms in the pre-crisis period.

H_4: Capital structure of Korean firms in the during crisis period is equal to capital structure of Thai firms in the during crisis period.

H_5: Capital structure of Korean firms in the post-crisis period is equal to capital structure of Thai firms in the post-crisis period.

CHAPTER 4

RESEARCH FINDINGS

This chapter contains results of ANOVA and t-Tests for eight variables of each sample company group in this paper. By descriptive analysis, defined Korean and Thai variables are explained across three periods from pre- to post-crisis. After that, for the inferential statistics, repeated one-way ANOVA and independent-samples t-Tests are performed following by objective of this study and, findings from the tests are interpreted. Then, the results of ANOVA, paired-samples t-Tests are used to examine whether capital structure changes in two different periods in each country are significant.

4.1 Analysis of Variables

In accordance with sampling criteria, top 30 companies from Korea and Thailand were chosen to be used as the sample data in this paper. The company list is in the Appendix. Some of Korean sample firms had mixed consolidate and company financial data from 1995 to 2000 because the periods included the time they did not have subsidiary companies. So the mixed data was used from a few Korean sample firms. The proportion of Korean sample companies' total market capitalization was about 65 percent among whole the KOSPI market capitalization except banking and finance companies and preferred stocks at the end of 2000; including all, it was approximately 60 percent. Thai sample companies represented about 50 percent of SET market with the same condition as Korean sample group. When all the excepted stocks were included, the proportion was about 36 percent.

For the descriptive analysis, mean, standard deviation, minimum, and maximum values of eight variables were estimated from the financial data of top 30 companies in each country and reported in Table 4.1 and Table 4.2 below. The interpretation focused on the mean values of the variables.

In Table 4.1, the variables of top 30 Korean sample firms were examined. The first variable is the book value of total assets, TA_B, represents the size of the sample firms and

Table 4.1 *Variables of Top 30 Korean Sample Firms (in Billion Won, Except Ratios)*

		Total Assets (Book Value)				Total Liabilities (Book Value)				Total Equity (Book Value)				Total Assets (Market Value)		
	N	Mean (Std Dev)	Min	Max	N	Mean (Std Dev)	Min	Max	N	Mean (Std Dev)	Min	Max	N	Mean (Std Dev)	Min	Max
Pre-crisis (1995-1996)	30	₩4,976 (6,746)	₩118	₩32,274	30	₩3,457 (3,986)	₩50	₩17,156	30	₩1,519 (3,055)	₩60	₩15,118	30	₩4,888 (6,899)	₩142	₩34,373
During crisis (1997-1998)	30	7,132 (9,909)	248	49,341	30	5,448 (6,769)	120	31,250	30	1,685 (3,481)	-1,020	18,091	30	6,795 (9,455)	316	45,542
Post-crisis (1999-2000)	30	9,200 (13,434)	403	65,343	30	5,702 (7,429)	121	34,151	30	3,498 (6,173)	282	31,192	30	9,591 (13,893)	598	54,696

Note. Except ratio values, the other variables of financial numbers were calculated by using average two years values of companies in pre-, during, and post-crisis periods. So for the Total Assets (Book Value) calculation, thirty values of sample companies' average two years Total Assets (Book Value) were used to estimate mean, standard deviation, minimum, and maximum values in each period. The rest variables of financial numbers were also calculated in the same way. For the mean of ratio values, sum of each companies' values were not divided by the number of companies (30) to avoid the weighted average. Instead, dividing mean of Total Liabilities (Book Value) by mean of Total Assets (Book Value) was used to calculate mean of Debt to Total Assets (Book Value). Like this, the rest ratio values were calculated by using mean of Total Assets (Book and Market Values), Total Liabilities (Book Value), and Current Liabilities (Book Value).

Table 4.1 *(Continued)*

		Debt to Total Assets (Book Value)				Debt to Total Assets (Market Value)				Debt to Net Assets (Book Value)				Debt to Net Assets (Market Value)		
	N	Mean (Std Dev)	Min	Max	N	Mean (Std Dev)	Min	Max	N	Mean (Std Dev)	Min	Max	N	Mean (Std Dev)	Min	Max
Pre-crisis (1995-1996)	30	0.695 (0.125)	0.423	0.969	30	0.707 (0.143)	0.354	0.942	30	1.094 (0.509)	0.544	2.557	30	1.126 (0.551)	0.435	2.601
During crisis (1997-1998)	30	0.764 (0.125)	0.494	1.176	30	0.802 (0.142)	0.395	0.974	30	1.187 (11.072)	0.714	61.993	30	1.281 (0.905)	0.527	5.506
Post-crisis (1999-2000)	30	0.620 (0.130)	0.300	0.935	30	0.595 (0.213)	0.125	0.935	30	0.943 (1.745)	0.412	10.425	30	0.886 (0.770)	0.138	3.560

Table 4.2 *Variables of Top 30 Thai Sample Firms (in Ten Million Baht, Except Ratios)*

	Total Assets (Book Value)				Total Liabilities (Book Value)				Total Equity (Book Value)				Total Assets (Market Value)			
	N	Mean (Std Dev)	Min	Max	N	Mean (Std Dev)	Min	Max	N	Mean (Std Dev)	Min	Max	N	Mean (Std Dev)	Min	Max
Pre-crisis (1995-1996)	30	฿2,217 (2,804)	฿91	฿12,961	30	฿1,369 (2,062)	฿34	฿10,128	30	฿848 (827)	฿54	฿3,557	30	฿3,956 (4,935)	฿220	฿19,616
During crisis (1997-1998)	30	2,860 (3,535)	117	14,345	30	2,252 (3,306)	29	14,046	30	608 (543)	68	2,593	30	3,530 (4,852)	328	21,081
Post-crisis (1999-2000)	30	2,631 (3,342)	160	15,627	30	1,856 (3,066)	49	14,649	30	775 (600)	88	2,483	30	3,690 (5,146)	286	20,844

Note. All of the values were obtained in the same ways as Korean variables in Table 4.1.

Table 4.2 *(Continued)*

	Debt to Total Assets (Book Value)				Debt to Total Assets (Market Value)				Debt to Net Assets (Book Value)				Debt to Net Assets (Market Value)			
	N	Mean (Std Dev)	Min	Max	N	Mean (Std Dev)	Min	Max	N	Mean (Std Dev)	Min	Max	N	Mean (Std Dev)	Min	Max
Pre-crisis (1995-1996)	30	0.618 (0.135)	0.138	0.782	30	0.346 (0.188)	0.106	0.751	30	0.838 (0.281)	0.157	1.546	30	0.406 (0.389)	0.109	1.742
During crisis (1997-1998)	30	0.787 (0.227)	0.119	0.980	30	0.638 (0.268)	0.085	0.967	30	1.244 (3.387)	0.133	19.390	30	0.908 (2.164)	0.096	10.826
Post-crisis (1999-2000)	30	0.705 (0.215)	0.096	0.937	30	0.503 (0.222)	0.076	0.893	30	1.049 (0.578)	0.106	2.780	30	0.656 (1.509)	0.083	8.655

their all kinds of investments for expected earnings. In the balance sheet of financial statements, it is calculated by sum of total liabilities (TL_B) and total equity (TE_B). Given the observed means of TA_B, the value of the pre-crisis period was nearly 5 trillion won and, about 2 trillion won was increased in each of the next two periods.

The second variable TL_B is the amount of funds from external sources of companies. It includes all the short-term: due within one year, long-term: due more than one year, and other liabilities. The findings indicated approximately 2 trillion won was increased in means of TL_B from the pre- to during crisis period. The increased value of TA_B in the same period was similar so at that time, the results showed Korean sample firms financed mainly from external funding. However, between during and post-crisis period, the amount of increase in TL_B was considerably lower than the former time, only about 300 billion won. In the same period, the increased amount of TA_B was about 2 trillion won. It reported the sample firms reduced debt financing after the crisis.

Thirdly, TE_B is the amount of shareholder's investments which includes a company's contributed capital, retain earnings except treasury stock. By subtracting TL_B from TA_B, it is available to measure the TE_B of a company. It is observed the mean of TE_B increased a few about 160 billion won from pre-crisis to during crisis period but, about 1.8 trillion won was highly increased in the next period; more than ten times than the previous value. Also, when comparing two means of pre- and during crisis period with the value of post-crisis period, the latter was about twice higher.

Next variable is the market value of total assets, TA_M. This measure offers investors' valuation of companies' total assets in a market. For estimating TA_M, TL_B are added to the market value of equity (E_M); it is equal to market capitalization which is calculated by multiplying stock price and shares outstanding. From pre- to during crisis and during to post-crisis periods, almost 2 trillion won and 2.8 trillion won were increased respectively in the mean of TA_M. When comparing TA_B and TA_M, only the value of TA_M in the post-crisis period was larger than TA_B

Now to the ratio variables of Korean sample firms. The book value of debt to total assets ratio, DTA_B, shows percentage of a company's funds financed from external sources among TA_B. The ratio is equal to divide TL_B by TA_B. It helps investors to compare the proportion of leverage in different corporations. Generally, it is considered 40 percent or lower value of

the ratio is considered a low DTA_B and 60 percent or higher value of the ratio is considered a high DTA_B from a pure risk perspective ("What is a good debt ratio," 2015). The higher degree of ratio, the higher financial risk and lower financial flexibility. From Table 4.1, results indicated DTA_B was always higher than 60 percent in every period. The highest value was in the duration of during crisis and the next one was in the pre-crisis period (0.764 and 0.695 respectively). Although it was decreased to nearly 60 percent in the post-crisis period with the lowest value among the time, the value was still high and warning the financial risk.

The market value of debt to total assets, DTA_M, reflects the percentage of liabilities from TA_M affected by stock price in the market. The value can be obtained with the calculation dividing TL_B by TA_M. It shows the sample companies' future risk of financial distress unlike DTA_B does not. The DTA_M values reported Korean sample companies had high debt ratios until the during crisis period with more than 70 percent; the highest value was even more than 80 percent in the during crisis period. Yet, it was decreased to less than 60 percent in the post-crisis period and, it showed the sample firms had moderate debt ratio though the value was very close to 60 percent.

DNA_B is the book value of debt to net assets in this study. It indicates the debt proportion out of total investment of the business to earn revenue. The value is equal to dividing TL_B by book value of net assets ($TA_B - CL_B$). Book value of net assets is also known as "capital employed". CL_B (current liabilities) is the obligation which should be paid within one year such as accounts payable, short-term notes, and other debts. Hence, because the ratio does not count non-interest-bearing debt in net assets (book value) but only the long-term liabilities, it expresses the ability of shareholders whether they are able to do the financial control of a company. The DNA_B mean values in the pre- and during crisis periods were higher than 100 percent (1.094 and 1.187 respectively). Generally, it is defined above 50 percent of the ratio demonstrates shareholders lost financial control over the company because it indicates the extent of long-term liabilities exceeded shareholders' funds (Clarke, 2002). Later, although DNA_B was decreased to less than 100 percent in the post-crisis period, the value was still higher than 90 percent (0.943). Thus, in all the periods, total amount of capital employed by Korean sample firms for the operation was close to the amount of total liabilities they were responsible. In addition, all the values higher than 50 percent indicated shareholders of sample firms had difficulties in financial control in every period.

The last variable of Korean sample firms is the market value of debt to net assets, DNA_M. It has similar concept as DNA_B, on the contrary, the value uses market value of net assets for the calculation. Then, it explains shareholders' financial control abilities over the companies which are evaluated from the market. In accordance with the results, the mean values of DNA_M were also high in the pre-, during, and post-crisis periods (1.126, 1.281, and 0.886 respectively). As the values were higher than 50 percent, the results reported sample companies had unstable financial control. When comparing DNA_B and DNA_M, market values of the ratio were higher than book values in the pre- and during crisis periods while the result was inversed in the post-crisis period.

The eight variables of Thai sample firms were reported in Table 4.2. The first Thai variable showed TA_B of the sample firms was increased about 6 billion baht from pre- to during crisis period while it was decreased about 2 billion baht between during and post-crisis period. It was shown that the main reason of increase and decrease of TA_B was TL_B.

Thai sample companies' TL_B indicated approximately 9 billion baht was increased between pre- to during crisis period. In the same period, TA_B increase was 6 billion baht and, it showed they financed obviously from external sources as the increased of TL_B exceeded the increase in TA_B. Later, they decreased nearly 4 billion baht of TL_B from during to post-crisis period.

The third variable, TE_B, investigated there was no big changes in every period compare to the changes of previous variables, TA_B and TL_B. It was decreased about 2.4 billion baht from pre- to during crisis. Then, the value was increased about 1.7 billion baht between during and post-crisis period.

Next variable is TA_M of Thai sample firms. In all the periods, TA_M was bigger than TA_B; the TA_M values were approximately 39, 35, and 36 billion baht and, the TA_B values were 22, 28, and 26 billion baht in pre-, during, and post-crisis periods respectively. When comparing both values, although the TA_B value was the lowest in the pre-crisis period, TA_M value was the highest in the same period with 17 billion baht difference. Unlike that, in during crisis period, TA_B value was the highest but TA_M value was the lowest with 7 billion baht difference. In the post-crisis period, the difference was 10 billion baht and, TA_M was slightly increased though TA_B value was decreased.

The first Thai ratio variable DTA_B indicated the sample firms' proportion of debt among their total assets were 0.618, 0.787, and 0.705 in each of the period pre-, during, and post-crisis. It was increased about 17 percent from pre- to during crisis period. Then, it was decreased about 8 percent in the post-crisis period. Compare to during and post-crisis periods, they had the lowest financial risk in the duration of pre-crisis. But DTA_B was still more than 60 percent high and, it reported the sample firms had financial risk in all the time.

Given the observed mean of DTA_M, the values in pre-, during, and post-crisis periods were 0.346, 0.638, and 0.503 respectively. Unlike DTA_B showed high debt rate in every period, DTA_M showed low rate in pre-crisis, high rate in during crisis, and moderate rate in the post-crisis period. So, using market capitalization as the equity part of total assets showed financial risk of Thai sample companies were lower than using the book value of equity.

DNA_B explained the values were above 80 percent in every period; in during and post-crisis periods, those were above 100 percent. The results observed total capital employed of Thai sample firms in each period were close to the amount of their external funds. When DNA_B is more than 50 percent, it can be explained shareholders lost financial control over the company. Hence, the values reported shareholders of the sample companies had difficulties in financial control in every period.

The last variable of Thai sample firms, DNA_M, observed the value was less than 50 percent (0.406) in the pre-crisis period. It can be indicated shareholder's financial control abilities over the companies estimated in the market were acceptable. But the value was increased twice more (0.908) in the during crisis period. Although it was improved in the post-crisis period (0.656), the values were still higher than 50 percent. Consequently, DNA_M observed Thai sample firms abilities of financial control were weaken after passing through the crisis.

When comparing Korean and Thai variables, Korean sample companies' TA_B, TL_B, TE_B, and TA_M were continuously increased from pre- to post-crisis periods. In every period, TA_B and TA_M of the companies were similar to each other. However, four ratios values observed the percentage of liabilities was increased until the during crisis period and decreased in the post-crisis period; it is the lowest in whole the periods. Unlike Korean sample companies, TA_B and TL_B of Thai sample firms were increased until during crisis period and were decreased after the crisis. Their TE_B and TA_M were decreased until during

crisis period and were slightly increased in the post-crisis period. In every period, TA_M was always higher than TA_B. Ratios values showed their proportion of obligations had similar changes as Korean sample companies; it was increased in during crisis period and then it was decreased after the crisis. But the lowest values of debt ratios were in the pre-crisis period.

4.2 Repeated One-Way ANOVA

To examine differences between the capital structure changes of top 30 companies in Korea and Thailand in the duration of pre-, during, and post-Asian financial crisis, repeated one-way ANOVA was conducted. This technique indicates whether there is a significant difference among three or more samples in a same group on the same continuous scale (Pallant, 2013).

Table 4.3 *Korean and Thai Sample Firms' Results of Repeated One-Way ANOVA*

Country	Ratio	N	F	Sig.
Korea	DTA_B	30	30.584	0.000*
	DTA_M	30	60.420	0.000*
	DNA_B	30	0.495	0.615
	DNA_M	30	7.080	0.003*
Thailand	DTA_B	30	11.205	0.000*
	DTA_M	30	13.146	0.000*
	DNA_B	30	1.555	0.229
	DNA_M	30	3.678	0.038*

Note. N = number of firms
* significant at the 5% level

From the results of repeated one-way ANOVA in Table 4.3, it was indicated Korean and Thai sample companies' changes of capital structure between pre-, during, and post-crisis periods were differed when DTA_B, DTA_M, and DNA_M were used as proxy of capital structure. On the contrary, the results of DNA_B demonstrated the changes of sample firms in both countries were equal in the three periods. Therefore, the results reported H_1 and H_2 were statistically accepted with DNA_B but were rejected with DTA_B, DTA_M, and DNA_M.

For the details, Korean sample firms' DTA_B from pre- to post-crisis periods was statistically significant, Wilks' Lambda = 0.314, F(2, 28) = 30.584, p < 0.05. The result of

DTA_M of Korean sample firms was indicated statistically significant effect for the periods as well, Wilks' Lambda = 0.188, F(2, 28) = 60.420, p < 0.05. Also, their DNA_M was obtained the result was statistically significant, Wilks' Lambda = 0.664, F(2, 28) = 7.080, p < 0.05. So, these results can be concluded when DTA_B, DTA_M, and DNA_M were used as proxy of capital structure, Korean sample firms' changes of capital structure in every period were differed.

On the other hand, when Korean sample companies' DNA_B was examined, the result was not statistically significant, Wilks' Lambda = 0.966, F(2, 28) = 0.495, p > 0.05. It reported when DNA_B was used as proxy of capital structure, the changes of Korean sample companies' capital structure were all equal in the duration of pre- to post-crisis period.

For the detailed results of Thai sample firms, DTA_B examined it was statistically significant, Wilks' Lambda = 0.555, F(2, 28) = 11.205, p < 0.05. DTA_M and DNA_M also showed the result was statistically significant, Wilks' Lambda = 0.516, F(2, 28) = 13.146, p < 0.05 and Wilks' Lambda = 0.792, F(2, 28) = 3.678, p < 0.05 respectively. The conclusion can be reported the capital structure changes of Thai sample firms were differed from pre- to post-crisis periods when DTA_B, DTA_M, and DNA_M were used as proxy of capital structure.

However, Thai sample companies' DNA_B indicated the result was not statistically significant, Wilks' Lambda = 0.900, F(2, 28) = 1.555, p > 0.05. Thus, their proxy of capital structure DNA_B explained there was a same continuous scale on the three periods which meant Thai sample firms' changes of capital structure were equal.

4.3 Analysis of t-Tests

4.3.1 Independent-Samples t-Tests

Independent-samples t-Tests can be used for comparing the two different sample groups. This study conducted the tests to observe whether the capital structure of Korean and Thai companies were equal or differed from each other in each of the pre-, during, and post-crisis periods. Table 4.4 examined the results of the tests from sample companies of both countries.

Table 4.4 *Korean and Thai Sample Firms' Results of Independent-Samples t-Tests*

Period	Ratio	Country	N	$Mean^a$	t	Sig.
Pre-Crisis	DTA_B	Korea	30	0.739	6.496	0.000*
		Thailand	30	0.521		
	DTA_M	Korea	30	0.759	8.596	0.000*
		Thailand	30	0.387		
	DNA_B	Korea	30	1.414	6.024	0.000*
		Thailand	30	0.775		
	DNA_M	Korea	30	1.509	7.682	0.000*
		Thailand	30	0.563		
During Crisis	DTA_B	Korea	30	0.779	3.242	0.002*
		Thailand	30	0.626		
	DTA_M	Korea	30	0.840	4.602	0.000*
		Thailand	30	0.585		
	DNA_B	Korea	30	3.444	0.838	0.405
		Thailand	30	1.673		
	DNA_M	Korea	30	1.798	0.528	0.601
		Thailand	30	1.572		
Post-Crisis	DTA_B	Korea	30	0.634	2.219	0.031*
		Thailand	30	0.532		
	DTA_M	Korea	30	0.691	3.836	0.000*
		Thailand	30	0.475		
	DNA_B	Korea	30	1.380	1.519	0.134
		Thailand	30	0.870		
	DNA_M	Korea	30	1.397	1.495	0.140
		Thailand	30	0.934		

Note. N = number of firms

$Mean^a$ is the weighted average value of the ratio.

* significant at the 5% level

The results demonstrated when the ratio values: DTA_B DTA_M, DNA_B, and DNA_M were used as proxy of capital structure, there were statistically significant results in the pre-crisis period. That meant capital structure of Korean and Thai sample companies in the duration of pre-crisis was not equal. In the period, the mean values of Korean sample companies were always higher than the Thai sample companies' mean values. DTA_B examined the mean value of Korean sample companies was about 22 percent higher than the Thai sample companies' value. DTA_M and DNA_B showed Korean mean values were approximately twice higher and DNA_M showed nearly thrice higher than the Thai mean values. Therefore, it can be concluded H_3 was rejected with all the four ratios and, Korean sample firms had higher debt ratios than Thai sample firms in the pre-crisis period.

In the during crisis period, DTA_B and DTA_M showed statistically significant results while DNA_B and DNA_M did not. The results observed capital structure of Korean and Thai sample companies in the period were differed with DTA_B and DTA_M and, their capital structure were equal with DNA_B and DNA_M. Same pattern of mean differences as the pre-

crisis period, the mean values of Korean sample companies were always higher than the values of Thai sample firms. But there were about 15 to 26 percent differences between DTA_B DTA_M, and DNA_M and, only the mean value of Korean sample firms' DNA_B was twice higher than the Thai sample firms' value. Thus, the conclusion is H_4 was rejected with DTA_B and DTA_M and, the hypothesis was accepted with DNA_B and DNA_M. In the period, all the ratio values of Korean sample firms were higher than the Thai companies' ratio values.

Same results as the during crisis period, the results of the post-crisis period observed DTA_B and DTA_M had statistically significant results while DNA_B and DNA_M did not. So it was indicated capital structure of Korean and Thai sample companies in the period were differed with DTA_B and DTA_M and, their capital structure were equal with DNA_B and DNA_M. In addition, all the mean values of Korean sample firms were higher than the Thai sample firms. However, the differences were about 10 to 51 percent unlike the previous periods showed twice more differences between some ratio values. Accordingly, it can be reported H_5 was rejected with DTA_B and DTA_M while the hypothesis was accepted with DNA_B and DNA_M. Moreover, all the Korean sample firms' ratios values were higher than the Thai values in the period.

4.3.2 Paired-Samples t-Tests

Repeated one-way ANOVA investigated from the results of Korean and Thai sample firms' proxy of capital structure DTA_B, DTA_M, and DNA_M, H_1 and H_2 were rejected. However, only DNA_B examined the hypotheses were accepted. It was observed except DNA_B, the other three ratios showed the capital structure of Korean and Thai sample companies were differed in the three periods. Hence, paired t-Tests which is for comparing two different means in a same group are conducted to define the details whether the capital structure in between two periods: pre- and during, during and post-, and pre- and post-crisis are statistically significant in each country (Pallant, 2013). There are six new hypotheses below.

By using paired-samples t-Tests for comparing two means with the hypothesis that:

H_6: Capital structure of Korean firms in the pre-crisis period is equal to their capital structure in the during crisis period.

H_7: Capital structure of Korean firms in the during crisis period is equal to their capital structure in the post-crisis period.

H_8: Capital structure of Korean firms in the pre-crisis period is equal to their capital structure in the post-crisis period.

H_9: Capital structure of Thai firms in the pre-crisis period is equal to their capital structure in the during crisis period.

H_{10}: Capital structure of Thai firms in the during crisis period is equal to their capital structure in the post-crisis period.

H_{11}: Capital structure of Thai firms in the pre-crisis period is equal to their capital structure in the post-crisis period.

Table 4.5 *Korean Sample Firms' Results of Paired-Samples t-Tests*

Period	Ratio	Country	N	Mean Dif.	t	Sig.
Pre- and During Crisis	DTA_B	Korea	30	-0.393	-2.542	0.017*
	DTA_M	Korea	30	-0.816	-8.446	0.000*
	DNA_B	Korea	30	-2.030	-1.012	0.320
	DNA_M	Korea	30	-0.289	-2.918	0.007*
During and Post-Crisis	DTA_B	Korea	30	0.145	7.908	0.000*
	DTA_M	Korea	30	0.150	7.207	0.000*
	DNA_B	Korea	30	2.064	1.006	0.323
	DNA_M	Korea	30	0.401	3.800	0.001*
Pre- and Post-Crisis	DTA_B	Korea	30	0.106	5.776	0.000*
	DTA_M	Korea	30	0.068	2.956	0.006*
	DNA_B	Korea	30	0.035	0.115	0.909
	DNA_M	Korea	30	0.112	1.358	0.185

Note. N = number of firms
Mean dif. is the mean difference between two periods.
* significant at the 5% level

The results of Korean sample firms' paired-samples t-Tests were reported in Table 4.5. It was defined between pre- and during crisis periods, DTA_B, DTA_M, and DNA_M had

statistically significant results, whereas DNA_B had an insignificant result. The results can be interpreted when DTA_B, DTA_M, and DNA_M were proxy of capital structure, Korean sample companies' capital structure of pre- and during crisis periods were differed. When DNA_B was used as proxy of capital structure, those were equal. In the same duration, all of the mean differences between two periods showed negative values which meant the mean values of during crisis period were higher than the values of pre-crisis period. Consequently, H_6 was accepted with only DNA_B but rejected with the other three ratios: DTA_B, DTA_M, and DNA_M.

In between the during and post-crisis periods, same results were obtained as the previous results; DTA_B, DTA_M, and DNA_M had statistically significant results unlike DNA_B had not. However, all the mean differences were positive which indicated the mean values of during crisis period were higher than the period of post-crisis values. So, the conclusion is H_7 was accepted with DNA_B while the hypothesis was rejected with DTA_B, DTA_M, and DNA_M.

Between pre- and post-crisis periods, DTA_B and DTA_M indicated the results of paired-samples t-tests were significant while DNA_B and DNA_M examined the results were not significant. It can be explained when DTA_B and DTA_M were proxy of capital structure, Korean sample firms' capital structure between pre- and post-crisis periods were differed, whereas DNA_B and DNA_M examined their capital structure were equal. The mean differences of each ratio were positive so, the mean values of post-crisis period were higher than the values in the pre-crisis period. In accordance with the results, H_8 was accepted with DNA_B and DNA_M but was rejected with DTA_B and DTA_M.

Table 4.6 reported Thai sample companies' results of paired-samples t-Tests. Between pre- and during crisis periods, DTA_B, DTA_M, and DNA_M had statistically significant results. Only DNA_B indicated the result was not significant in the same period. Thus, with proxy of capital structure DTA_B, DTA_M, and DNA_M, Thai sample firms' capital structure between pre- and during crisis periods were differed while they were equal to each other with DNA_B. All of the mean differences were negative in the duration and, it indicated the mean values of pre-crisis were lower than the during crisis values. According to the results, H_9 was accepted with DNA_B and was rejected with DTA_B, DTA_M, and DNA_M.

In between during and post-crisis periods, the results showed it was statistically

significant with DTA_B and DTA_M while it was not significant with DNA_B and DNA_M. It can be demonstrated the capital structure of Thai sample companies in during and post-crisis periods were differed with proxy of capital structure DTA_B and DTA_M but were equal with DNA_B and DNA_M. The four values of mean difference were positive which examined the mean values of during crisis period were higher than the mean values of post-crisis period. Therefore, H_{10} was accepted with DNA_B and DNA_M while the hypothesis was rejected with DTA_B and DTA_M.

Table 4.6 *Thai Sample Firms' Results of Paired-Samples t-Tests*

Period	Ratio	Country	N	Mean Dif.	t	Sig.
Pre- and During Crisis	DTA_B	Thailand	30	-0.104	-4.048	0.000*
	DTA_M	Thailand	30	-0.198	-5.104	0.000*
	DNA_B	Thailand	30	-0.897	-1.483	0.149
	DNA_M	Thailand	30	-1.009	-2.742	0.010*
During and Post-Crisis	DTA_B	Thailand	30	0.094	3.799	0.001*
	DTA_M	Thailand	30	0.110	3.327	0.002*
	DNA_B	Thailand	30	0.802	1.306	0.202
	DNA_M	Thailand	30	0.637	1.775	0.086
Pre- and Post-Crisis	DTA_B	Thailand	30	-0.011	-0.364	0.719
	DTA_M	Thailand	30	-0.088	-2.338	0.027*
	DNA_B	Thailand	30	-0.095	-0.983	0.334
	DNA_M	Thailand	30	-0.371	-1.379	0.178

Note. N = number of firms
Mean dif. is the mean difference between two periods.
* significant at the 5% level

Lastly, between pre- and post-crisis periods, the results were obtained DTA_M was statistically significant, whereas the other three ratios were not significant. That showed when DTA_M was used as proxy of capital structure, Thai sample companies' capital structure in pre- and post-crisis periods were differed while their capital structure of the two periods were equal with DTA_B, DNA_B, and DNA_M. It was also indicated the mean values of post-crisis period were higher than the pre-crisis values because all of the mean differences values were negative. The conclusion is H_{11} was accepted with DTA_B, DNA_B, and DNA_M but was

rejected with DTA_M.

CHAPTER 5

CONCLUSION AND DISCUSSION

Chapter 5 presents conclusion, final discussion, significance of the research, and recommendations for the future study. According to the research objective, eleven hypotheses are concluded with the results of ANOVA and t-Tests. Then, the conclusions are discussed with key economic indicators of Korea and Thailand and some other factors which may have affected the findings. After that, benefits of the study are discussed. Limitations and recommendations for the future study are the last topic of this chapter.

5.1 Conclusion

Given the observed overall results of this research in Table 5.1, it shows which debt ratios are superior for the hypotheses except H_8 and H_{11}. First, H_1 and H_2 were investigated by repeated one-way ANOVA and showed the results were significant with DTA_B, DTA_M, and DNA_M, whereas the result was not significant with DNA_B. Because it was not easy to demonstrate the details of the results, six more hypotheses: H_6 to H_{11} were set after the tests. When the six hypotheses were examined, the mean differences of DNA_B were more than 200 percent in Korean sample companies and more than 80 percent in Thai sample companies when comparing two means of pre- to during and during to post-crisis periods. Following by the large numbers of mean differences, it is difficult to determine DNA_B are equal in the three periods. Therefore, for the results of H_1 and H_2, DTA_B, DTA_M, and DNA_M can be superior.

Second, independent-samples t-Tests indicated H_3 that all the debt ratios were significant. However, H_4 and H_5 were examined DTA_B and DTA_M were significant while DNA_B and DNA_M were insignificant from the tests. In Table 5.2, the mean differences of DNA_B and DNA_M reported compared two means had 22.6 percent to even 177.1 percent of the differences. With this large amount of mean differences, it is difficult to define both of the ratios are superior for the results which observed the capital structure changes of Korean and Thai companies were equal. Thus, DTA_B and DTA_M would be superior for the results of H_4 and H_5.

Table 5.1 *Summary of Overall Results*

Hypothesis	Test	Sig. (Mean Dif.)			
		DTA_B	DTA_M	DNA_B	DNA_M
H_1	Repeated One-Way ANOVA	0.000*	0.000*	0.615	0.003*
H_2		0.000*	0.000*	0.229	0.038*
H_3	Independent-Samples t-Tests	0.000* (0.218)	0.000* (0.372)	0.000* (0.639)	0.000* (0.946)
H_4		0.002* (0.153)	0.000* (0.255)	0.405 (1.771)	0.601 (0.226)
H_5		0.031* (0.102)	0.000* (0.216)	0.134 (0.510)	0.140 (0.463)
H_6	Paired-Samples t-Tests	0.017* (-0.393)	0.000* (-0.816)	0.320 (-2.030)	0.007* (-0.289)
H_7		0.000* (0.145)	0.000* (0.150)	0.323 (2.064)	0.001* (0.401)
H_8		0.000* (0.106)	0.006* (0.068)	0.909 (0.035)	0.185 (0.112)
H_9		0.000* (-0.104)	0.000* (-0.198)	0.149 (-0.897)	0.010* (-1.009)
H_{10}		0.001* (0.094)	0.002* (0.110)	0.202 (0.802)	0.086 (0.637)
H_{11}		0.719 (-0.011)	0.027* (-0.088)	0.334 (-0.095)	0.178 (-0.371)

Note. * significant at the 5% level
The number enclosed in each parenthesis shows the mean difference between two compared values.
Significance value with underline means the superior ratios for the hypothesis.

Thirdly, paired-samples t-Tests examined the rest six hypotheses from H_6 to H_{11}. Except H_8 and H_{11}, insignificant results of H_6, H_7, H_9, and H_{10} showed the mean differences were high from 63.7 percent to 206.4 percent. So, it is difficult to accept the results which explained capital structure between two periods were equal with the large amount of mean differences. As a result, the superior debt ratios of H_6, H_7, and H_9 can be DTA_B, DTA_M, and DNA_M. For the H_{10}, DTA_B and DTA_M can be the superior debt ratios. However, it is difficult to define which debt ratios are superior for H_8 and H_{11}, the results of H_8 and H_{11} would depend on each of the ratios.

The overall conclusions of hypotheses are below.

H_1: Capital structure of Korean firms in the pre-, during, and post-crisis periods are all equal. (statistically rejected)

H_2: Capital structure of Thai firms in the pre-, during, and post-crisis periods are all equal. (statistically rejected)

H_3: Capital structure of Korean firms in the pre-crisis period is equal to capital structure of Thai firms in the pre-crisis period. (statistically rejected)

H_4: Capital structure of Korean firms in the during crisis period is equal to capital structure of Thai firms in the during crisis period. (statistically rejected)

H_5: Capital structure of Korean firms in the post-crisis period is equal to capital structure of Thai firms in the post-crisis period. (statistically rejected)

H_6: Capital structure of Korean firms in the pre-crisis period is equal to their capital structure in the during crisis period. (statistically rejected)

H_7: Capital structure of Korean firms in the during crisis period is equal to their capital structure in the post-crisis period. (statistically rejected)

H_8: Capital structure of Korean firms in the pre-crisis period is equal to their capital structure in the post-crisis period. (statistically accepted with DNA_B, DNA_M and rejected with DTA_B, DTA_M)

H_9: Capital structure of Thai firms in the pre-crisis period is equal to their capital structure in the during crisis period. (statistically rejected)

H_{10}: Capital structure of Thai firms in the during crisis period is equal to their capital structure in the post-crisis period. (statistically rejected)

H_{11}: Capital structure of Thai firms in the pre-crisis period is equal to their capital structure in the post-crisis period. (statistically accepted with DTA_B, DNA_B, DNA_M and rejected with DTA_M)

5.2 Discussion

5.2.1 Korean Companies

Although Korean economy had suffered a tremendous blow from the crisis, it was interesting to see the Korean top 30 sample companies' growth of TA_B was continued for the three periods. It could be looked like the sample companies gradually expanded their business but Korean economic indicators explained that because the exchange rate was

fluctuated, their external debt affected TA_B to be increased when the crisis was occurred. At that time, some large companies in Korea highly invested in IT (Information Technology) and, Korean government changed the regulations to be almost no restrictions of foreign ownership except a few specific industries in the market (U.S. Department of State, Bureau of Economic, Energy and Business Affairs, 2011). These may have let Korean economy to be recovered fast with the combination of IT development and foreign investment. It should be considered that IT boom brought "Dot-com bubble" which affected stock prices of some Internet and telecommunications companies to be highly increased in the post-crisis period (Ofek & Richardson, 2003). Further, explanations are given in the following paragraphs.

As the results of previous studies in Chapter 2 showed Korean large business groups and companies achieved financial structure improvement and fast leverage adjustment speed after the crisis, Korean sample companies also sharply lowered their debt ratios in the post-crisis period. The debt ratios of Korean sample firms: DTA_B, DTA_M, DNA_B, and DNA_M had a same pattern in the three periods. The values were the highest in the during crisis period and the lowest in the post-crisis period. That explained the financial condition of sample companies was the best in the post-crisis period with the lowest financial risk among the periods. It indicated the results of previous researches were consistent with the results of this study. However, although the financial situation was improved with lower debt ratios in the post-crisis period, the ratio values were still high and warning the financial risk in every period.

In accordance with the Korean sample companies' data, all the financial values of the companies: TA_B, TL_B, TE_B, and TA_M were subsequently increased from pre- to post-crisis periods. Their TA_B was gradually increased because the exchange rate may have highly affected TL_B in the during crisis period and Korean government's recommendation may have affected TE_B in the post-crisis period. In Table 5.2, it showed total external debt of Korea was increased with the exchange rate. In the duration of the crisis, it would be very difficult to borrow cash for Korean companies. If there was no more or a few of available money for lending, companies needed to pay the external debt reimbursement with devaluated Korean won after exchanging it to US dollar. That may have ballooned the total liabilities of sample companies. So, in the duration of the crisis, TA_B of sample firms' increase was highly affected by TL_B. Later in the post-crisis period, the sample companies' data showed the main reason of TA_B increase was TE_B. When the crisis was occurred,

Korean government recommended large business companies to reduce their debt to equity ratio to 200 percent until the end of 1999. That may have affected the sample companies to decrease liabilities and increase the equity capital. Sample firms' debt to equity ratio at the end of 1999 was nearly 150 percent which can be explained the government's recommendation was successful on the companies.

Table 5.2 *Key Economic Indicators of Korea and Thailand*

		1995	1996	1997	1998	1999	2000
Korea	Exchange Rate (Won / USD)[a]	771.00	804.00	950.00	1,401.00	1,189.00	1,130.00
	Total External Debt[a]	23.20	28.20	33.70	47.30	34.40	29.00
	Economic Growth[b]	9.60	7.60	5.90	-5.50	11.30	8.90
Thailand	Exchange Rate (Baht / USD)[c]	24.92	25.34	31.37	41.37	37.84	40.16
	Total External Debt[c]	60.00	59.70	70.10	93.20	77.50	64.90
	Economic Growth[d]	9.30	5.90	-1.40	-10.80	4.20	4.30

Note. Total external debt as percent of GDP
[a]Park, Y. C. (2005, p. 37). [b]Korean National Index System (n.d.). [c]Manprasert, S. (2004, p. 32). [d]Jitsuchon, S. (2002, p. 12-13).

When comparing Korean sample firms' TA_B and TA_M, the values were similar to each other in every period. However, TA_B was higher than TA_M for the two periods: pre- and during crisis, and in the post-crisis period, TA_M exceeded TA_B. That may explain Korean economy was revitalizing from the post-crisis period because it is often founded in the economic distress, a stock price is undervalued while the stock price has premium during the economic expansion; as two years average economic growth in the post-crisis period was about 10 percent higher than the average value of during crisis period. So in the post-crisis period, market capitalization of sample firms calculated by stock price with premium made TA_M values became higher than TA_B by the improved economy though the difference between two values was not much. However, at that time in Korea, Internet boom brought Dot-com bubble and, stock prices of some IT companies were highly increased (Joo, 2007). There is one sample company, SK Telecom, its two years average market capitalization was about 2.9 trillion won in the pre-crisis period. Surprisingly, when it skyrocketed in the post-crisis period, the value was about 28.2 trillion won. It significantly affected the sample companies' TA_M in the post-crisis period. Therefore, with this caveat in mind, the results

should be considered.

5.2.2 Thai Companies

Thailand experienced much change since it was the starting point of the Asian financial crisis. At first, its fixed currency was replaced with a floating exchange rate to defend the foreign-exchange levels in 1997 (Yoon, 2006). Then, the exchange rate was highly increased that affected the external debt rate to be ballooned. This burdened Thai firms to pay debt to foreign creditors in baht and, it may have made Thai companies' TL_B to be increased like Korean companies. Later, they reduced debt ratio but, it was worse than the debt ratio in the pre-crisis period as previous studies about Thai business groups and companies resulted that their debt restructuring and the leverage adjustment speed was fallen after the crisis. Similar to the results, their equity showed debt restructuring was not massive. In addition, Dot-com bubble was not observed from Thai sample companies.

Thai sample firms' proxy of capital structure: DTA_B, DTA_M, DNA_B, and DNA_M showed it was the highest in the during crisis period and the lowest in the pre-crisis period. That examined the sample firms had the best financial condition in the pre-crisis period. But it became worse from the time when the crisis was occurred though it was partly recovered in the post-crisis period. Except DTA_M and DNA_M in the pre-crisis period, the others with high debt ratio values showed they had financial risk. In addition, their debt ratios explained the sample firms' efforts to reduce their debt as the exchange rate in the during and post-crisis periods had no big difference but the ratios were decreased.

From the Thai sample companies' mean values of TA_B, TL_B, TE_B, and TA_M, it was indicated TA_B and TL_B had a same pattern which was the highest in the during crisis period and the lowest in the pre-crisis period. When the crisis was occurred, a sudden rise of the exchange rate to US dollars for Thai baht affected the external debt of Thai companies to be ballooning as it is reported in Table 5.2. That may have caused TL_B of the sample firms to be highly increased and, it may also have made TA_B to be increased as well. In the during crisis period, even the increase of TL_B exceeded the increase of TA_B. It explained Thai baht devaluation brought serious financial distress to the sample companies. Later, TA_B was also diminished following by the decrease of TL_B in the post-crisis period. TE_B was relatively monotonous in every period so it showed TL_B was the main factor affecting TA_B in all the

periods.

TE_B and TA_M showed another pattern which was the highest in the pre-crisis period while it was the lowest in the during crisis period. Interestingly, TA_M of Thai sample firms was always higher than TA_B. That indicated the sample companies were always appreciated by investors in the market in the three periods. However, in the during crisis period, the sample firms were underestimated in the market than the pre-crisis period and then the value of TA_M was somewhat recovered when the crisis was over. In Thai case, it is a bit difficult to define Dot-com bubble affected the stock prices of IT companies because some of IT firms in the sample, their total market capitalization values were increased in the post-crisis period but the values were similar as the pre-crisis period's values like the prices were recovered only.

5.2.3 Differences between Korean and Thai Companies

From the results of Korea and Thailand, it was available to see too much debt brings a critical financial risk. As imprudent debt financing suddenly increased sample companies' TL_B in the during crisis period by exchange rate fluctuations, it showed the importance of capital structure management, especially in debt financing. To overcome the crisis, Korea and Thailand got IMF financial assistance but made different policies on Foreign Direct Investment (FDI). Korea abolished almost all the restrictions on foreign investment in the market and property deals unlike Thailand had the regulations on stock market and real estate investment in foreign capital ("Reviving Housing Bubble", 2009). From the economic growth rate, Korea's new policies on FDI looked as if it was more effective than Thailand's closed system because in the post-crisis period, average two years growth rate in Korea (10.10 percent) was about 6 percent higher than Thailand's growth rate (4.25 percent). Korea's large IT companies such as LG, Samsung, and SK, their growth also may have affected the economic growth rate to be increased. Hence, if another crisis in the future would be occurred again, Thailand may consider about opening the market to FDI as a trump card; in September 2016, Thai government still keeps the closed policies on market and real estate to FDI.

As the sample companies were chosen from survived ones against the crisis, it can be explained their efforts were strenuous. Korean and Thai governments also put many efforts to restructure the comprehensive financial sector, raise taxes, cut spending, and keep inflations

to overcome the difficulties. But during and after the crisis, the most suffered group is common people that efforts from them were the most considerable. It should not be forgotten about ordinary people's perspiration and sacrifice as well because without them, the existence of companies and governments is secondary.

5.3 Significance of the Research

When the Asian financial crisis was occurred in Korea and Thailand, both countries decided to request IMF financial assistance to overcome the crisis. After that, Korea and Thailand quickly recovered the economic depression and now, they are doing important roles in East and Southeast Asia. The results of this study showed how Korean and Thai large listed companies managed capital structure to overcome the crisis. They tried to do the capital structure restructuring by debt reduction. Information from the results would be helpful for multinational companies and individuals to learn how to manage the capital structure in case of facing the turmoil. Moreover, government policy makers may refer the results to implement financial policies strategically as it is consistent with Kim and Berger's (2008) comparative study of capital structure.

Previous studies generally focused on capital structure changes of large business groups including their all subsidiary companies, however, this research investigated top 30 companies of Korea and Thailand only which was hardly demonstrated before; most of the comparative studies compared capital structure changes or determinants in one country or with five more countries together. If two countries were compared, it was difficult to find the study which compared companies in Korea and Thailand. Hence, the results of this study would be helpful for companies or individuals who need concentrated information about Korean and Thai companies' capital structure management, both countries only.

Lastly, studying about historical events tells us not to repeat the same mistakes which brought critical situations in the past. This study also looked backward the Asian financial crisis to understand its origins and negative effects for being concerned about the future crisis. Readers may be more careful about capital structure management especially too high debt rate could cause the bankruptcy problems to a company or a country. Consequently, they would use the findings of this study for the reference of restructuring their capital structure and preparing any kind of financial distress which can be occurred in the future.

5.4 Recommendations

5.4.1 Limitations of the Study

There are four limitations of the research. The first one is about the accounting standards in Korea and Thailand. In this study, different accounting standards of both countries were not considered and reconciled. The collected data from Korean and Thai sample companies were not able to be clearly homogeneous. Therefore, four debt ratios: DTA_B, DTA_M, DNA_B, and DNA_M were used as proxy of capital structure to compare the changes of firms in Korea and Thailand's capital structure.

Secondly, due to the data limitation, some major companies were eliminated from the sample company list such as KT (Korea Telecom), KT&G (Korea Tobacco & Ginseng) in Korea and SCC (Siam Cement), CPN(Central Pattana) in Thailand. If a company's data from 1995 to 1996 was lack, the company was eliminated although it had data from 1997 to 2000 following by the sampling criteria. This study tried to collect the data from about 20 years ago. So, it was difficult to get the clear financial data of some high ranked companies by market capitalization and, they were not able to be in the sample group.

In Rajan and Zingales' study (1995), they mentioned using the largest companies from the listed companies, it probably does not represent the average firm in a country. Following by their study, this study also used large listed firms which were top 30 ranked in the stock market of each country. So, the reader should keep this caveat in mind that the results of this study cannot be the representative of the average firm in Korea and Thailand. It would be helpful to interpret that the results show the characteristics of some parts of stock market in both countries.

The fourth limitation is outliers of the sample companies that were not dealt with any treatment. As the sample size was small with 30 numbers of companies, when a company's data was eliminated or got any treatment, it would largely affect the results. Because of this reason, each of two outliers in Korean samples: Kia Motors (6,199 percent of DNA_B in the during crisis period), Hyundai Engineering & Construction (1,043 percent of DNA_B in the post-crisis period) and Thai samples: Sahaviriya Steel Industries (1,939 percent of DNA_B and 1,083 percent of DNA_M in the during crisis period), TPI Polene (608 percent and 866 percent of DNA_M in the during and post-crisis periods respectively) were not dropped for

the comparisons.

5.4.2 Further Research

For the future research about comparing capital structure of Korean and Thai companies or companies in any other countries, there can be various approaches for the study. Such as industry to industry, sector by sector, bankrupt companies versus survived companies from an economic crisis, and so on. Also, a large number of samples and a long period of time are recommended to use. With more samples than 30 companies and more time duration than 6 years, the results would be defined clearer and more accurate than this study. Some countries have market index from fifty, a hundred, or two hundreds companies like KOSPI 50, SET 100, KOSPI 200, etc. So, researchers may use company list in the index or whole the listed companies in the market.

Next, different countries use various accounting standards. When Rajan and Zingales (1995) compared G-7 countries' capital structure choice, they agreed financial data from different countries cannot be perfectly homogeneous but they tried to adjust some parts for robustness of the results. For instance, they subtracted pension liabilities from assets of German companies because in German reporting standards, pension assets and pension liability are not netted out in the balance sheets unlike U.S. standards. Also, they considered deferred taxes as a component of shareholders' equity because U.K. firms treated it as the liability method whereas, U.S. firms treated it was determined from their income statement. Like the examples, if the different reporting standards are adjusted, the results would be more robust than without any adjustments for a comparative study in different countries.

Lastly, comparing the capital structure of firms in different countries at the time when recent economic crises were occurred. This study focused on the Asian financial crisis which was occurred about 20 years ago with limited source of information. After that, there were some more crises affected many countries in the world such as Subprime mortgage crisis (2007-2009) and Eurozone crisis (from 2009). Recent crises would be helpful for us to collect clear data and, the clearer results may lead us to understand more about origin, effects, and solutions of the crises. Moreover, the results from the recent crises would be fit for economic situations in these days because everything (e.g., technology, industry, people, trend, and so on) is changing incredibly fast over time. Thus, the last recommendation may be useful for

not only companies but also individuals to apply the results pragmatically to the present business situation.

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APPENDIX

Appendix: List of Korean and Thai Top 30 Sample Companies

Number	Korean Company	Thai Company
1	Samsung Electronics	Advanced Info Service
2	SK Telecom	PTT Exploration & Production
3	Korea Electric Power Corporation	Intouch Holdings
4	POSCO	Thai Airways International
5	Kia Motors	True Corporation
6	Hyundai Motor Company	United Communication Industry
7	Samsung Electro-Mechanics	Hana Microelectronics
8	Samsung SDI	THAICOM
9	S-Oil	Siam MAKRO
10	LG Chem	National Petrochemical
11	Samsung Heavy Industries	Land & Houses
12	SK Global	Thai Union Group
13	CheilJedang	United Broadcasting Corporation
14	Shinsegae	TPI Polene
15	KCC Corporation	Phoenix Pulp & Paper
16	Daeduck Electronics	BANPU
17	Korean Air	Saha-Union
18	Hite Beer	Shangri-la Hotel
19	Hyundai Mobis	I.C.C. International
20	Hyundai Engineering & Construction	OHTL
21	LG Cable	Saha Pathana Inter-holding
22	Samsung Techwin	The New Imperial Hotel
23	Hyundai Merchant Marine	Italian-Thai Development
24	Doosan	Advanced Connection Corporation
25	Daelim Industrial	Sermsuk
26	Hankook Tire	Padaeng Industry
27	Hanjin Shipping	The Bangchak Petroleum
28	LG Construction	KCE Electronics
29	Samsung Fine Chemicals	Sahaviriya Steel Industries
30	Hanjin Heavy Industries	Pacific Assets

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