# Dynamic Optimal Capital Structure of Family Businesses in SET


## ABSTRACT

The importance of study capital structure is to identify the determinants of optimal capital structure. This research uses dynamic model to allow adjusting of the capital structure over time. Differences between family and non-family businesses result in different capital structures. The study shows that businesses do not have optimal leverage. The businesses which adjust slowly towards target capital structure concern about costs and benefits of adjustment from cost of external capital. In conclusion, the capital structure is important for investment decisions.

# I. INTRODUCTION

The optimal capital structure and investment choices have been important issues in corporate finance. There are many theoretical frameworks focusing on these issues. Many firms have tried to adjust themselves to optimal capital structure to maximize their firms' values.

The numbers of studies focus on optimal capital structure. But it is rare to conclude that dynamic optimal capital structure is found. The empirical study conducted by Chatakool (2004) found that the consistent patterns of industry leverage ratio of Energy and Communication industries implied existence of optimal capital structure of the two industries. Whereas different patterns were found in Construction, Real Estate and Transportation industries and were supposed existence of dynamic optimal capital structure.

Phungrasamee (2004) used dynamic model on pool data methodology to capture capital structure adjustment over time. The result showed that the dynamic model of capital structure is one of efficient for measuring and explaining capital structure of firm dynamic model in Thailand. So the result supports the usage of dynamic model of capital structure.

The study from Claessnes et al. (2002) found that publicly traded companies in Thailand mostly are family firms. Wiwattanakantang (2000) also found non-financial companies traded in the Stock Exchange of Thailand are family businesses up to 80%. Therefore, these findings support high portion of family business in capital market.

Most studies focus on optimal capital structure of general firms or industries. No previous research studies about optimal capital structure of family business.

The objective of this research is to find whether family businesses and non-family businesses in Thailand share the same determinants of the capital structure. In addition, the study is to determine factors of differences in optimization of capital structure e.g. firms' size, stock price change and etc.

The remainder of this paper is organized as follows: Chapter 2 reviews previous literatures. Objectives of the study are in Chapter 3. Hypothesis and Model are presented in

Chapter 4. Chapter 5 describes data for this study. Chapter 6 reveals the empirical results. Then the paper offers concluding remarks in Chapter 7.

## II. LITERATURE REVIEW

Family businesses have been one of several factors used in the study of capital structure. The important findings about capital structure are categorized as follows:

### 1. Family Firms

Romano, Tanewski and Smyrnios (2000) studied capital structure of small-to-medium size enterprises (SMEs) to find factors that influence funding decisions of family business owners such as culture, entrepreneurial characteristics, entrepreneurs' prior experiences in capital structure; business goals, business life-cycle issues, preferred ownership structures, views regarding control, debt–equity ratios and short- vs. long-term debt, age and size of the firm, sources of funding for growth and attitudes of owners.

Claessnes et al. (2002) showed that Thailand had significantly high ownership of publicly traded companies by family and financial institutions. According to Wiwattanakantang (2000) about 80% if non-financial companies traded in the Stock Exchange of Thailand are family owned. Such high concentrated ownership coincides with a lack of investor protection because owners who are not protected from controllers will seek to protect themselves by becoming controller (Lins, 2003).

Phungrasamee (2004) pointed that most Thai firms which have a structure of Family assumed to have high corporate ownership. These firms will focus on size and market share while down playing on Return on Investment. Insiders are more likely to use debt financing as opposed to raising equity and dilute their ownership control. Therefore we can assume assumption of high cost of debt and positive relationship between leverage ratio and ownership concentration in Thailand.

### 2. Capital Structure

#### 2.1 Dynamic model of capital structure

Jalivand and Harris (1984) recognized the importance of a dynamic of capital structure of firms. They studied the financing decision by U.S. corporations examines the issuance of long term debt, short term debt and equity, the maintenance of corporate liquidity

and the payment of dividend. They characterized a firm's financial behavior as a partial adjustment to long-run financial target.

Fisher, Heinkel and Zechner (1989) developed a model of dynamic capital structure choice in the presence of re-capitalization cost. They used dynamic adjustment to study the different between the maximum and minimum debt ratios of firms over a sample period and define the factor that determined the range of capital structure.

Banerjee, Heshmati and Wihlborg (2000), are one of the first researchers to apply a dynamic adjustment model and panel data methodology in capital structure analysis. The main finding is firms typically have capital structures that are not at the target adjust very slowly toward the target. Their studies focus on the issue of adjustment costs, which has been overlooked in previous literatures.

Miguel and Pindado (2000) developed a target adjustment model in studying determinant of capital structure focusing on some new evidence about the impact of some institutional characteristics.

Kumbhakar et al. (2002), their model can be called KHH model as per this research paper. They extended the Banerjee et al. (2000) model to account for trade-off between costs and benefits of leverage which implies interior optimal debt level for a firm.

Phungrasamee (2004) applied target adjustment model of Banerjee, Heshmati and Wihlborg to study Thai firm capital structure. By adjusting some variables that are characteristics of Thai firms and compare the result with the recent study in United Kingdom and United States that would affect firm target leverage and the adjustment speed to the target leverage.

This research will focus on studying whether family businesses and non-family businesses in Thailand share the same determinants of the capital structure by using the KHH model. The model allows optimal leverage to vary across firms and over time. This model represents dynamic optimal debt ratio moving over time for an individual firm. Besides, the study is to determine factors of differences in optimization of capital structure e.g. firms' size, and etc.

### 2.2 Static Model of capital structure

Wiwattanakantang (1999) studied determinant of capital structure of non financial firms by taking tax effects, signaling effect and agency cost into account. The results showed single-family owned firms have significantly higher debt level.

Fraser, Zhang and Derashid (2005) studied relationship between political patronage and capital structure in developing economies. The findings showed positive relationship between leverage and three measurement of political patronage.

Ortiz-Molina (2006) studied how COE compensation is related to firms's capital structures. The result supported trade-off of shareholder-manager incentive.

Huang and Song (2006) studied capital structure of Chinese-listed companies. The finding showed firm size and fixed assets, non-debt tax shields, growth opportunity, managerial became increase and correlated with industries.

## 3. Measurement of leverage

From literature of Banerjee, Heshmati and Wihlborg (2000), a stock-based measurement of leverage is the ratio of market value of debt to market value of asset of the firm. When debt is issued, changes in market value of that debt do not directly affect the interest tax shield cash saving. The main cost of borrowing is the expected cost of financial distress in the event of bankruptcy. In the latter situation, the value of a distressed firm is closer to its book value.

From these points, the previous papers support usage of book value rather than market value.

Titman and Wessels (1988) and Rajan and Zingale (1995) use both book and market value to measure leverage. Moreover, Stonehill et al (1973) provides evidence that managers think in terms of book value rather than market value. Maybe because using book value is the relative ease of usage.

The choice of leverage proxy also depends on the objective of analysis. This paper is to study factors influencing availability and a leverage of debt financing as well as factors

influencing adjustment of family and non-family businesses to their target leverage. An appropriate measure of financial leverage could be the ratio of debt to total equity.

**4. Determinant of target capital structure**

Hirota (1999) found that Japanese firm's capital structure can be explained by firms real factors derived from capital structure theories same as the study in USA.

Booth et al (2000), provide the first empirical study to test the explanatory variable of capital structure models in developing countries. The recent study also provides evidence that affects the capital structure of firms in Asia or in developing country.

The study of Miguel and Pindado (2001) provides evidence of firm characteristics that determine capital structure for Spanish firms and also add the effect the institutional characteristic effect on the capital structure.

According to Wiwattanakantang (1999), ownership structure also plays important role in financing decisions. This is different point from studies in other countries.

My research will focus on the following determinant of capital structures.

### 4.1 Income variability

From the Dynamic Optimal Capital structure and Technical Change by Hans Loof (2004) shows that income variability has negative relationship with the firm's leverage. Moreover, the traditional theory of finance states that risky firms should not be in highly leverage that causes high cost to service debt of facing high bankruptcy. While firms financed by equity may not pay dividend during the period of financial difficulty. Therefore, firm with high volatility of earning borrow the least and prefer equity to debt (Jensen, Solberg and Zorn, 1992) variation in a firm's income impacts optimal leverage negatively because the more variable a firm's operating income, the greater the risk that the firm will not be able to cover its interest payment and the higher the probability of falling into financial distress and bankruptcy.

Wiwattanakantang (1999) empirical studies of Thai firms capital structure found a support high possibility to default firms should not be highly levered. Since operating income

represents the income available for interest payment which is independent from leverage. This research uses total sales change in each year to measure income variability.

### 4.2 Tangibility

Many research examines the correlation between leverage and tangibility in developed and developing countries and found positive relationship because tangible asset are easy to be debt collateral. In case of bankruptcy, intangible asset such as goodwill and structural capital will rapidly disappear, thus apparently reduce the net worth of firm and further accelerating the possibility of bankruptcy. The agency cost of equity lead to underinvestment problems, therefore the information asymmetry results in new equity being under priced. Issuing debt secured by tangible asset would reduce agency cost. Then firms with a greater percentage of tangible assets over total asset are supposed to have a higher capacity for raising debt.

Deesomsak et al. study supports the agency problem in Thailand that the problem incurred from the law of Thailand. So the level of expropriation of minority stake holders is likely to be the highest. This paper measured tangibility by the proportion of total fixed asset to total asset according to other capital structure theory.

### 4.3 Profitability

It is understood that profitability should be negatively correlate with leverage. However, the recent works on asymmetric information and signaling effects found that the result depends on assumptions of over or under valuation of existing stock.

According to Pecking order theory of Myers (1984), profitable firms prefer not to raise external equity in order to avoid potential dilution of ownership. On the other hands, Rajan and Zingales (1995) argue that creditors prefer to give loans to firms with high current cash flow. Moreover, in the presence of asymmetric information profitable firms may signal quality of the firm by leveraging up (Jensen, 1986). Therefore, positive relationship is expected. In Thailand, negative relationship is expected since the post-crisis where debts are strictly monitored, so the profitable firms tend to prefer internal financing. This is supported by empirical result of Thai firms' capital structure of Wiwattanakantang (1999) that

profitability shows negative relationship to the leverage. Profitability is presented by the ratio of EBIT(Earnings before interest and tax) to total assets (ROA).

### 4.4 Expected growth

Growth variable is defined by the percentage change in total asset from the previous to the current year. Titman and Wessels (1988) have suggested this relationship for reason that firms with greater growth opportunities have more flexibility to do an investment and thus expropriate wealth from bondholders to shareholders. Moreover ongoing growth opportunity implies a conflict between debt and equity ownership, equity–controlled firms have tendency to invest sub-optimally to expropriate wealth from bondholders in favor of shareholders. This raises the cost of borrowing, thus growth firms tend to use internal resource or equity capital rather than debt. In addition high growth firms whose value comes from intangible growth opportunities do not want use to debt servicing as their revenue instability. Therefore, negative relationship is expected.

### 4.5 Firm size

According to the Trade-off theory, Titman and Wessels (1988) argue that large firm size is typically more diversified and could have low probability of bankruptcy. Moreover, large firm size is more diversify and may able to reduce transaction cost of debt issuance. As a result larger sized firm should have a higher optimal debt capacity and positive relationship is expected. On the other hand, according to Pecking order theory, Ranjan and Zingale (1995) suggest that the larger firm will have less asymmetric information between insider within firms and other outsider in capital market. So large firms should be more capable of issuing informationlly sensitive securities such as equity and may lead to incentive to raise debt. So the relationship between firm size and leverage should be negative according to the Pecking Order Theory. My research will assume the relationship to be positive since there are assumptions that most Thai firms concern about their historical financial status which is used as criterion for loan granting. According to Deesomsak et al (2004), the family ownership

characteristic of Thai firms lead to high problem of asymmetric information even in the large-size firm. And this research uses natural logarithm[1] of total assets to represent firm size.

### 4.6 Stock price change

Deesomsak et al (2004) assume one aspect of information asymmetry between manger and outside investors from stock price performance, new shares are issued at a discount. Equity is issued when shares are overvalued, the real cost of the discount to the existing shareholders can be smaller or none. Therefore, firms prefer equity to debt when share price increases.

Therefore, this research defines stock price change at the end of each year to determine leverage ratio and expects the positive relationship to the firm leverage according to information asymmetry.

## 5. Determinant of Speed of adjustment

Speed of adjustment represents the relationship between the actual and target change of leverage ratio. Therefore, it focuses on the costs of shifting from one capital structure to another rather than on the costs associated with leverage levels. The explanatory variables are based on study of Banerjee et al (2000). Besides, some variables are added to be consistent with Thai capital market.

### 5.1 Income variability

The Dynamic Optimal Capital structure and Technical Change by Hans Loof (2004) shows that the income variability have negative relationship with the firm‘s leverage. Moreover, risky firms should not be in highly leverage which have high cost to service debt of facing high of bankruptcy. Therefore, variation in a firm’s income influences speed of adjustment negatively. The more variable a firm’s operating income, the greater the risk that the firm will be unable to cover its interest payment and the higher the probability of financial distress and then bankruptcy. The adjustment speed should be decreased when firms face high variability of income.

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[1] From http://betterexplained.com/articles/demystifying-the-natural-logarithm-ln/ , ln(X) means the amount of time to grow to X.

Since operating income represents income availability for interest payment which independent from leverage. This research uses sales change in each year to measure income variability.

### 5.2 Profitability

The profitability should be negatively correlated with leverage. But recent works on asymmetric information and signaling effects found that it depends on over or under valuation of existing stock. According to Pecking order theory of Myers (1984), firms should prefer internal to external financing and the more profitable the firm the greater the availability of internal capital. Profitable firms prefer not to raise external equity in order to avoid potential dilution of ownership. So with higher profit, firms tend to have low or no speed of adjustment. Negative relationship is expected under pecking order assumption. On the other hand, Rajan and Zingales (1995) argue that creditors prefer to give loans to firms with high current cash flow. Moreover, in the presence of asymmetric information, profitable firms may signal quality of the firm by leveraging up (Jensen, 1986). Therefore, firms with high profitability quickly adjust leverage and positive relationship is expected.

In Thailand, leveraging up cannot be performed easily due to strict banking regulation and also asymmetric information of highly concentrate ownership and family control. This conclusion is supported by Pecking order theory of Myers (1984), who points out that to minimize asymmetric information cost and other financing cost, firms have a sequence in the choice of financing the project-from internal to external and the more profitable the firm the greater the availability of internal capital.

### 5.3 Expected growth

According to Banerjee et al (2000), growing firm may find it is easier to change its capital structure by altering the composition of the new capital. A no-growth firm can only change its capital structure by issuing equity to buy back debt or vice versa. Under asymmetric information both actions can be signal and cause drop in firm value.

Titman and Wessels (1988) asuggested the relationship for reason that firms with greater growth opportunities have more flexibility to do an investment and thus expropriate wealth from bondholders to shareholders. Hence, this research expects firms with growth opportunities to adjust faster towards the optimal capital structure than no-growth firms. Furthermore, the greater the growth opportunity, the greater is the probability that the firm will require external financing. If the costs of raising external capital is fixed, then the per dollar cost of raising extra funds will be lower for high-growth firms. Based on this argument, the higher the growth opportunity, the more readily should the firm adjust towards the optimal capital structure. Therefore, a positive relationship between expected growth and speed of adjustment is expected. And Growth variable is in this research is the percentage change in total assets from the previous to the current year.

### 5.4 Firm size

From study of dynamic capital structure of Banerjee et al, if changing capital structure involves substantial fixed costs, the costs will be proportionally small for larger firms, and hence, larger firms should adjust to changes in capital structure more easily. Considering the trade-off theory, Titman and Wessels (1988) argue that large firm size is typically more diversified and assumed to face a lower probability of bankruptcy. With lower cost of leveraging up, this research expects to find firm size and speed of adjustment to be positively related and uses natural logarithm[2] of total assets to represent firm size.

### 5.5 Stock price change

Mayer and Majluf (1984) argue that well-informed management insiders will issue equity if they believe the existing stock is overvalued. If stock is undervalued, debt will be issued. Outside investor would have the information of debt financing of firms and accepts it as good news and predict that stock is undervalued resulting in increase in stock price. Therefore, stock price change at the end of each year is expected to have positive relationship with speed of adjustment.

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[2] From http://betterexplained.com/articles/demystifying-the-natural-logarithm-ln/ , ln(X) means the amount of time to grow to X.

## III. OBJECTIVES OF THE STUDY

The objective of this research is to find whether family businesses and non-family businesses in Thailand share the same determinants of the capital structure. In addition, the study is to determine factors of differences in optimization of capital structure e.g. firms' size, stock price change and etc.

# IV. HYPOTHESIS AND MODEL

## 4.1 Dynamic Models

This research applies dynamic modeling approach from model of Kumbhakar et al. and Heshmati (2002) (the KHH model) extended Benejee et al. (2000) model. The model includes trade-off between the costs and the benefits of leverage which implies interior optimal debt level for firms.

## 4.2 The optimal leverage ratio

The optimal leverage ratio for firms is as below equation:

$$L_{it}^{*} = F(Y_{it}, X_i, X_t)$$

Where:

$L_{it}^{*}$ = the optimal leverage ratio (Debt/(Debt + Equity) of firm i, at time t

$Y_{it}$ = a vector of firm and time-variant determinants of the optimal leverage

$X_i \; and \; X_t$ = unobservable firm-specific and time-specific effects represented by industries and time-dummy variables.

This model allows the optimal leverage to vary across firms and over time. The dynamic in this case means the optimal debt ratio of individual firm moves over time.

### 4.3 The adjustment process towards optimal leverage

The observed leverage of firm i at time t is equal to the optimal leverage, i.e. $L_{it} = L_{it}^{*}$. This implies change in actual leverage from the previous to the current period is equal to the change required for the firm to reach optimal leverage at time t. If adjustment to the rate of change required for the firm to reach optimal leverage at time t are costly ($L_{it}$). Then firm will adjust partially as below.

$$L_{it} - L_{it-1} = \delta_{it}(L_{it}^{*} - L_{it-1}) \quad (3)$$

Or can be written as below.

$$L_{it} = (1 - \delta_{it})L_{it-1} + \delta_{it}L_{it}^{*} + e_{it} \quad (4)$$

Where:

$\delta_{it}$ = the adjustment parameter representing the magnitude of desired adjustment between two subsequent periods

$e_{it}$ = statistical noise assumed to have the mean zero and constant variance

If $\delta_{it}$ = 1, the optimal adjustment is achieved within one period and the firm at time t is at its target leverage.

$|\delta_{it}| < 1$ is the effects of adjustment costs under condition that $L_{it} \rightarrow L_{it}^{*}$ as t goes towards infinity.

If $\delta_{it}$ > 1, the firm over-adjusts by making more adjustment than necessary. Overadjustment is a reflection of unanticipated changes in economic conditions.

### 4.4 The speed of adjustment

The speed of adjustment $\delta_{it}$ is a function of some underlying variables affecting adjustment costs:

$$\delta_{it} = \mathrm{G}(Z_{it}, M_i, M_t) \qquad (5)$$

Where:

$Z_{it}$ = vector of variables determining the speed of adjustment

$M_i \; and \; M_t$ = unobserved industry-specific and time-specific effects.

The optimal leverage may shift from period to period. The speed of adjustment is also allowed to vary across firms and over time.

The feature of the KHH model is the current and past levels of optimal leverage contain information that can be used to predict the future behavior of leverage. It does not consider the target leverage beyond time t.

### 4.5 The general functional relationships

The general functional relationships for the optimal leverage ratio, $L_{it}^*$ and the adjustment parameter $\delta_{it}$, in the model is as below.

$$L_{it}^* = \propto_0 + \sum_j \propto_j Y_{jit} + \sum_s \propto_s X_s + \sum_t \propto_t X_t \qquad (6)$$

$$\delta_{it} = \beta_0 + \sum_k \propto_j Z_{kit} + \sum_s \beta_s M_s + \sum_t \beta_t M_t \qquad (7)$$

The firm-specific and time-specific variables $X_i, X_t, M_i, and \; M_t$ are replaced by industry and time-dummy variables.

## V. DATA

### Data description

This research uses annual data from the listed firmed in the Stock Exchange of Thailand from year 1997 to 2007 from the SETSMART. The data are divided into two groups. One group comprises selected firms having family business properties (See **Table VI**). Another group is for non-family businesses **(**See **Table VII)**. Both samples data from family business and non-family businesses have the same group of industries with the total number of 16 industries. The number of each industry is the same in both family and non-family businesses. In the view of research by Romano, Tanewski, and Smyrnios (2000), they broadly defined a family firm as one in which any of the following three criteria holds true: 50% or more of the ownership is held by a single family or by multiple members of a number of families; a single family group is effectively controlling the business; and a significant proportion of senior management is drawn from the same family. Therefore, this research adopted their criteria for selecting data of family businesses from the SET.

### Empirical Tests

Explanatory variables include the vector of determinants of optimal capital structure Y (income variability, tangibility, profitability, expected growth, firm size and stock price change). And vector of determinants of the speed of adjustment Z (income variability, profitability, expected growth, firm size and stock price change). Besides, it includes vectors of unobservable X and M (time and industries) effects.

## VI. EMPIRICAL RESULT

This research is done analysis in two aspects.

- Target Leverage Estimation.
- Speed of Adjustment Estimation

**Target Leverage Estimation**

The regression results of dynamic model are shown in **Table I.** The results can be summarized as below.

**Income variability**

The result shows that income variability and optimal leverage has positive relationship but insignificant for family businesses. As for non-family businesses, income variability shows positive (1.71E-08) and statistically significant at 1% level of significance. This implies that non-family businesses do not concern about bankruptcy cost which has high probability to bear when businesses have high income-volatility. So the result is inconsistent with Bankruptcy cost of Trade-off theory.

**Tangibility**

The result shows negative and insignificant tangibility for family and non-family businesses. This cannot support that family and non-family businesses have high tangible assets and have high capacity for raising debt. This was consistent with reason that most businesses in Thailand after Asian Financial Crisis (after year 1998), debt covenants were under strictly monitors. As a result, tangibility cannot explain debt level for most businesses in Thailand after financial crisis.

**Profitability**

The result shows negative and statistically significant (at 1% level of significance) of both family businesses (-0.8910721) and non-family businesses (-0.656507).

The result of negative relationship between profitability and optimal leverage is consistent with Pecking Order theory of Myers (1984) that firm prefers internal financing to

external financing and more profitable firms will have greater availability of internal fund. Therefore, high profit firms have a smaller debt ratio.

**Expected Growth**

Expected growth is not a significant factor for determining optimal leverage for family businesses. The parameter estimate is 0.0003645 but it does not significantly differ from zero.

From the empirical result, the change in total asset cannot explain the optimal leverage. Whereas the expected growth of non-family businesses is negative and significant at 5% level of significance. This can explain that high expected growth of non-family businesses has less impact to debt ratio and non-family business prefers internal funding to external funding.

**Size**

The size of family businesses is positive and significant at 1% level of significance According to Trade-off theory, large firms tend to have ability to borrow more than small firms and large firms are expected to have low probability of bankruptcy. This implies that family businesses concern about their survival and bankruptcy risk. Moreover, Agency cost theory of Jensen (1986) states that large firms issue more long term debt because they use debt to better control manager behaviors due to more dilute ownership. The result is also consistent with Banerjee et al.'s study that there is asymmetric information of Thai's firms that firms have more incentive to issue debt than equity financing. As for non-family business, size is not statistically significant.

**Stock Price change**

The stock price change is negative and insignificant for both family and non-family businesses. This implies debt-financing decision for family businesses and non-family businesses is not based in stock price information. During the study periods (from year 1997 to 2007), stock prices of family and non-family businesses were fluctuated and could not represent firm's value realized by outside investors. According to Pecking Order theory, stock

price change may not affect firms' debt financing within one period then this variable cannot explain the leverage ratio of businesses.

**Speed of Adjustment Estimation**

**The Optimality Ratio**

Optimality ratio (Table III) is relationship of mean value of optimal leverage ($L_{it}^{*}$) over mean value of observed leverage ($L_{it}$). Table IV shows Observed Leverage and Optimal Leverage of family and non-family businesses during year 1997 – 2007 depicted in graphs. Table V shows Optimality ratio[3] and speed of adjustment (δ) towards optimal leverage of family and non-family businesses during year 1997 – 2007**.**

Table III shows the optimality ratio by periods (yearly). The speed of adjustment toward optimal capital structure of family businesses varied between -0.58 and 0.82 between 1997 and 2007. Whereas the values of non-family businesses varied between -0.10 and 0.40. The overshooting of the optimal debt level of family businesses in year 1999 reflected economic recovery from Asian Financial Crisis (during year 1997 to 1998) resulted in low demand and overcapacity in production. As for non-family businesses, the overshooting was not found during the study period. In year 2002, Thai economy grew at a rate of 5.2% which was the highest growth rate of Thailand since the 1997. The economic growth in 2002 was boosted by both domestic and external demand[4]. This resulted in increasing optimality, need for expansion and overshooting of the optimal debt level in year 2002 of family business. GDP growth slowed to 6.6% in the first quarter of 2004 and decelerated further to 6.3% in the second quarter. The deceleration was largely attributable to a prolonged drought, avian flu,

3 From Dynamic optimal capital structure and technical change of Hans Loof, page 461, Optimality ratio is calculated by optimal leverage ($L_{it}^{*}$) over observed leverage ($L_{it}$).

4 From http://www.apec.info/asia/Thailand.pdf.

increasing oil prices, and unrest in the southern provinces. This hurt consumer and investor confidence[5]. As a result, the overshooting was found in year 2004 for family businesses.

Economic growth slowed to 4.5% in 2005 which was the lowest rate since 2001 (Growth had averaged 6.2% over 2002–2004.). There were several adverse factors affected the economy in the first half of the year 2005. The tsunami on December 26, 2004 battered the tourism industry in the southwest of the country; a severe drought affected output from agriculture (still an important export sector); sporadic political unrest continued in the southern provinces; and high oil prices hurt the economy[6]. From these reasons, these caused overshooting of optimal debt level in year 2005 for family businesses.

In year 2006, driven by strong exports and a slowing in imports, net exports of goods and services contributed nearly the overall GDP expansion. Domestic demand weakened, hurt by the rise in global oil prices, inflation and rising interest rates, flooding, and political uncertainty in year 2006[7]. These resulted in the overshooting of optimal debt level in year 2006 for family businesses.

With two-year political uncertainty since 2006 to 2007, the consumption and investment decreased and economy grew by 4.8% in 2007, or nearly one percentage point below the average for the five years (2002–2006). Domestic demand contributed less than 2 percentage points to GDP growth while net exports contributed 3 percentage points. Despite stronger farm incomes due to higher prices of agricultural products and increases in salaries for government and state-enterprise employees, the private consumption increased only 1.4%

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[5] http://www.adb.org/Documents/Books/ADO/2005/tha.asp

[6] http://www.adb.org/Documents/Books/ADO/2006/tha.asp

[7] http://www.adb.org/Documents/Books/ADO/2007/tha.asp

in year 2007[8]. These resulted in the overshooting of optimal debt level in year 2007 for family businesses.

**Speed of adjustment**

From Table II, it shows speed of adjustment towards optimal capital structure. The speed of adjustment is determined by Income variability, Profitability, Expected growth, Firm size and Stock price change.

The speed of adjustment towards optimal leverage increased in year 1998 (the end of Asian Financial Crisis (during year 1997 to 1998)). The overshooting of optimal debt was found in recovery period. The results are summarized as below.

**Income variability**

The coefficient of income variability is negative and statistically significant at 10% level of significance for family businesses . This can explain that family businesses' income has influence to adjust to optimal leverage negatively. Family businesses tend to concern about bankruptcy cost, which has high probability to bear when businesses have high income-volatility. The result is consistent with Bankruptcy cost of Trade-off theory. But the result is different from Target Leverage Estimation of family business and Speed of Adjustment of non-family business that they show insignificance of income variability. And it is also different from Target Leverage Estimation of non-family which shows positive and significant at 1% level of significance.

**Tangibility**

The result shows negative (-0.0160539) and insignificant tangibility of family business. Whereas non-family business shows negative and statistically significant at 1% level of significance. Tangibility of family businesses cannot explain speed of adjustment of optimal debt level. As for non-family business, high tangibility causes business to adjust slowly toward optimal debt level. The result family businesses is consistent with Target Leverage Estimation that it shows negative and insignificance of tangibility. As for the result

8 http://www.adb.org/Documents/Books/ADO/2008/tha.asp

of non-family businesses, it shows inconsistent result with the Target Leverage Estimation which shows insignificant of tangibility.

**Profitability**

Profitability is positive and statistically significant at 1% level of significance for family businesses. As for non-family businesses, it shows insignificant of profitability. The result of positive relationship between profitability and speed of adjustment to optimal leverage is consistent with trade-off theory which was found that a more profitable firm will demand more debt to serve as a tax shield. This results in a positive relationship between profitability and target leverage. Therefore, from the result, it implies that the family businesses with high profitability tend to have fast speed of adjustment to optimal leverage. The result is inconsistent with Target Leverage Estimation of family businesses and result of non-family businesses which shows negative and statistically significant of profitability. Because the result seems to affect by Asymmetric Information and Pecking Order behavior.

**Expected growth**

Unlike the Target Leverage Estimation which shows positive and insignificant of expected growth, the variable of expected growth is negative and statistically significant at 1% level of significance. The growth family businesses adjust slowly towards the optimal capital structure. This implies that family businesses considered expected growth of the firm as a cost for changing leverage towards the target. As for the result of non-family businesses, it also shows negative and statistically significant at 5% level of significance. The result is consistent with Target Leverage Estimation of non-family business which shows negative and statistically significant at 5% level of significance. This implies that non-family businesses with high growth adjust slowly towards the optimal leverage. This supports the reason that businesses with higher growth tend to pay down debt to reduce the leverage.

**Firm size**

Firm size is positive and statistically significant at 1% level of significant for both family and non-family businesses. The result is consistent with Target Leverage Estimation of family business. As for Target Level Estimation of non-family business, it shows

insignificant of firm size. According to trade-off theory, larger firm has lower probability of bankruptcy. Therefore, large firms have less concern about the cost debt financing so they have higher capacity to adjust themselves towards the optimal leverage.

**Stock price change**

The stock price change is insignificant in both Target Leverage Estimation and Speed of Adjustment Estimation for family businesses and non-family businesses.

Owing to high conflict of interest of most Thai's businesses, Agency theory suggest that debt provides positive signal to outside investor (Mayer and Majluf, 1984). The well-informed management insiders will issue equity if they believe the existing stock is overvalued. And debt will be issued if they believe that stock is undervalued. After Asian financial crisis, capital market recovered with increasing volume of market capitalization. Stock price increased consecutively so most businesses preferred equity to debt. During the study periods (from year 1997 to 2007), stock prices of family businesses and non-family businesses were fluctuated and could not represent firm's value realized by outside investors. According to Pecking Order theory, stock price change may not affect firms' debt financing within one period. So this variable cannot explain the adjustment towards the target leverage for both family and non-family businesses.

## VII. CONCLUSION

The purpose of this paper is to study whether family businesses and non-family businesses listed in the Stock Exchange of Thailand share the same determinants of capital structure. The dynamic model is used to allow adjustment of the capital structure over time.

The analysis result shows differences in determinants of the capital structure between family businesses and non-family businesses listed in the Stock Exchange of Thailand. As for the Target Leverage Estimation, the factors which impact the leverage of family businesses are profitability and firm size. The factors which impact the leverage of non-family businesses are income variability, profitability and expected growth. The family businesses and non-family businesses with high profitability preferred internal financing to external financing. The large family business size had high optimal leverage. Non-family businesses with high income variability did not concern about bankruptcy cost which had high probability to bear when businesses had high income-volatility. High expected growth of non-family businesses had less impact to debt ratio and vice versa because non-family businesses prefer internal funding to external funding.

As for the Speed of Adjustment Estimation, there are four factors which determined speed of adjustment of family businesses. The income variability influenced family businesses to concern about bankruptcy cost. Therefore, high income volatility caused family businesses to move slowly towards target optimal level. But income variability could not explain speed of adjustment of non-family businesses. Non-family businesses which had high percentage of tangible assets moved slowly towards optimal capital structure. Profitability had impact on debt financing. According to the result, family businesses and non-family businesses with high profitability were likely to demand more debt for tax shield advantage and moved fast towards optimal capital structure. The growth family businesses and non-family businesses adjusted slowly towards the optimal capital structure. This could imply that family businesses and non-family businesses considered expected growth of the firms as a cost for changing leverage towards the target. Firm size implied positive speed adjustment to

the target leverage for both family and non-family businesses. Large firms had less concern about the cost debt financing so they have higher capacity to adjust themselves towards the optimal leverage.

In conclusion, Thailand businesses concern about cost of debt financing in adjusting their leverages especially cost of adjusting from one debt level to another which can see clearly from Speed of Adjustment Estimation. The concerned costs are bankruptcy cost, transaction cost, agency cost financing in adjusting leverage ratio.

**REFERENCES**


Altman, E., 1984. A Further Empirical Investigation of the Bankruptcy Cost Question, *Journal of Finance* 39, 1067-1089.

Banerjee Heshmati and Wihlborg, 2000. The Dynamics of Capital Structure. *Stockholm School of Economics Working Paper Series in Economics and Finance* No. 333.

Barclay, M. and C. W. Smith, Jr., 1995. The Maturity Structure of Corporate Debt, *Journal of Finance* 50, 609-631.

Booth L., Aivazian V., Demiruguc-Kunt A., Maksimovic V., 2001. Capital structure in developing countries, *Journal of Finance*.

Charoenseang J. and Manakit P., 2002. Financial Crisis and Restructuring in Thailand, *Journal of Asian Economic*.

Chatakool D., 2004. The existence of the Industry Optimal Capital Structure: Empirical Cases in Thai Market, *Master in Finance (International Program), Faculty of Commerce and Accountancy, Thammasat University*.

Claessens, S., Djankov, S., Fan, J.P.H., Lang, L.H.P., 2002. Disentangling the incentive and Entrenchment effects of large shareholdings. *Journal of Finance* 57, 2741–2772.

Deesomsak R., Paudyal K., Peseetto G., 2004. The Determinants of Capital Structure: Evidence from the Asia Pacific region, *Journal of Multinational Financial Management.*

Fischer, Heinkel and Zechner, 1989. Dynamic Capital Structure Choice: Theory And Tests, *Journal of Finance*.

Fraser, Zhang and Derashid, 2006. Capital structure and political patronage:The case of Malaysia, *Journal of Banking and Finance* 30.

Hirota S., 1999. Are Corporate Financing Decision Different in Japan? An Empirical Study on Capital Structure, *Journal of the Japanese and International Economies*.

Huang and Song, 2006. *The determinants of capital structure: Evidence from China, China Economic Review* 17, 14-36.

Jalivand and Harris, 1984. Corporate Behavior in Adjusting to Capital Structure and Dividend Targets: An Econometric Study, *Journal of Finance,* 39(1).

Jensen M., 1986 Agency Costs Of Free Cash Flow, Corporate Finance And Takeovers, *American Economic Review*, 76.

Jensen. G.R., Solberg. D.P. and Zorn, T.S., 1992. Simultaneous Determinants of Insider Ownership, Debt and Dividend policies, *Journal of Financial and Quantitative Analysis*.

Kancharatn P., 2001, An Empirical Examination of Domestic and Multinational Corporate Capital Structure in Thailand, *Master in Finance (International Program), Faculty of Commerce and Accountancy, Thammasat University.*

Kumbhakar, S.C., Heshmati, A., Hjalmarsson, L., 2002. How fast do bank adjust? A dynamic model of labor-use with application to Swedish banks, *Journal of Productivity Analysis* 18 (1), 79-102.

Lins K., 2003. Equity Ownership and Firm Vale in Emerging Markets, *Journal of Financial and Quantitative Analysis*.

Loof H., 2004, Dynamic Optimal Capital Structure and Technical Change, *Journal of Finance* 15, 449-468.

Miguel A., Pindado J., 2000. Determinants of Capital Structure: New Evidence from Spanish Panel Data, *Journal of Corporate Finance*.

Mitton T., 2002. Across-firm analysis of the impact of corporate governance on the East Asian financial crisis, *Journal of Financial Economic*.

Modigliani F., and Miller M., 1958. The Cost of Capital, Corporate Finance and the Theory of Investment, *American Economic Review* 48, 267-279.

Modigliani F., and Miller M., 1963. Taxes and The Cost of Capital : A Correction, *American Economic Review* 53, 433-443.

Myers S.C., 1977. Determinants of Corporate Borrowing, *Journal of Financial Economics* 5, 147-175.

Myers S.C., 1984. The Capital Structure Puzzle, *Journal of Finance* (Jul.) 575-592.

Nittayagasetwat A. and Withisuphakorn P., 1997. The Structure of Thai Capital Market, *CAS Discussion Paper* 13.

Myers and Majluf, 1984. Corporate Financing And Investment Decisions When Firms Have Information That Investors Do Not Have. *Journal of Financial Economics*.

Ortiz-Molina, 2007. Executive compensation and capital structure: The effects of convertible debt and straight debt on CEO pay, *Journal of Accounting and Economics* 43, 69-93.

Phungrasamee P., 2004. Speed of Adjustment and Target Capital Structure : Empirical Study from Thai Firms after Financial Crisis, *Master in Finance (International Program), Faculty of Commerce and Accountancy, Thammasat University*.

Rajan R.G., Zingales L., 1995. What Do We Know about Capital Structure?, *Journal of Finance* 50, 1421-1460.

Romano A.C., Tanewski A.G., Symyrnios X.K., 2000. Capital Structure Decision Making: A Model for Family Business, *Journal of Business Venturing* 16, 286-300.

Siriwattanakul D., 2002. A Comparative Study of Capital Structure of Listed and Non-Listed Firms in Thailand, *Kasetsart University, Thailand*.

Stonehill, Beekhuisen, Wright, Remmers, Toy, A Pares, A. Shapiro, D. Egan, and T. Bates (1975), Financial Goals And Debt Ratio Determinants: A Survey Of Practice In Five Countries, *Financial Management*, 4(3).

Titman S. and Wessels R., 1988. The Determinants of Capital Structure Choice, *Journal of Finance* 43, 1-19.

Wangvisavavit R., 2003. An Empirical Examination of Changes in the Effect of Capital Structure Determinants before and after Thailand Financial Crisis , *Master in*

*Finance (International Program), Faculty of Commerce and Accountancy, Thammasat University*.

Wiwattanakantang Y., 1999. An Empirical Study on the Determinants of the Capital Structure of Thai Firms, *Pacific-Basin Journal of Finance*.

**Table I**

## The determinants of target leverage

| Explanatory Variables | Expected correlation | Family Businesses | | | Non-family Businesses | | |
|---|---|---|---|---|---|---|---|
| | | Coefficient | S.E. | Sign | Coefficient | S.E. | Sign |
| Income variability | (-) | 3.36E-09 | 5.45E-09 | | 1.71E-08 | 3.77E-09 | *** |
| Tangibility | (+) | -0.1027022 | 0.1172806 | | -0.1295419 | 0.1390071 | |
| Profitability | (+,-) | -0.8910721 | 0.1073280 | *** | -0.6565070 | 0.1290048 | *** |
| Expected growth | (-) | 0.0003645 | 0.0004247 | | -0.0010028 | 0.0003951 | ** |
| Firm size | (+) | 0.2196238 | 0.0520363 | *** | 0.0596514 | 0.0488386 | |
| Stock price change | (+) | -0.0000370 | 0.0000485 | | -0.0003025 | 0.0059896 | |
| Dummies | | | | | | | |
| Industries[1] | | Yes | | | Yes | | |
| Time[2] | | Yes | | | Yes | | |
| AR(2) test (p-value) | | 0.8927 | | | 0.0199 | | |
| Sargan test (p-value) | | 0.0000 | | | 0.0000 | | |

*** and ** denote significance at 1 percent and 5 percent respectively.

1. Thirty nine family companies are selected for this analysis. Total number of industries is 16 industries.
2. Thirty nine non-family companies are selected for this analysis. Total number of industries is 16 industries
3. The time is based from year 1997 to 2007. The total time is eleven years.

The estimation is done by Arellano-Bond dynamic panel-data estimation.

$L_{it}^{*} = \propto_0 + \sum_j \propto_j Y_{jit} + \sum_s \propto_s X_s + \sum_t \propto_t X_t$ t = 1997 to 2007 periods (yearly data)

$L_{it}^{*}$ represents leverage ratio, $Y_{jit}$ is a vector of company and time-variant determinants of the optimal leverage of company i at time t. $X_s$ and $X_t$ are industry and time dummy variables.

Leverage Ratio = (Debt/Debt + Equity)

Explanatory variables are Income variability is calculated from change in total revenues in each period. Tangibility is total net fixed assets to total assets. Profitability is profit(loss) before interest and income to total assets. Expected growth is percentage change in total assets. Firm size is calculated from natural logarithm of total assets. Stock price change is percentage price change at the end of current period and previous period.

## Table II

## Determinants of the speed of adjustment

| Explanatory Variables | Expected correlation | Family Businesses | | | Non-family Businesses | | |
|---|---|---|---|---|---|---|---|
| | | Coefficient | S.E. | Sign | Coefficient | S.E. | Sign |
| Income variability | (-) | -4.29E-09 | 2.53E-09 | * | 8.93E-10 | 9.64E-10 | |
| Tangibility | (+) | -0.0160539 | 0.0143390 | | -0.2070274 | 0.0150743 | *** |
| Profitability | (+,-) | 0.0523609 | 0.0116548 | *** | 0.0184668 | 0.0163487 | |
| Expected growth | (-) | -0.0003414 | 0.0000844 | *** | -0.0002487 | 0.0001157 | ** |
| Firm size | (+) | 0.0648169 | 0.0004852 | *** | 0.0707546 | 0.0007390 | *** |
| Stock price change | (+) | -0.0000038 | 0.0000128 | | -0.0000003 | 0.0000272 | |
| Dummies | | | | | | | |
| Industries[1] | | Yes | | | Yes | | |
| Time[2] | | Yes | | | Yes | | |
| AR(2) test (p-value) | | 0.0109 | | | 0.0916 | | |
| Sargan test (p-value) | | 0.0000 | | | 0.0015 | | |

***, ** and * denote significance at 1 percent, 5 percent and 10 percent respectively.

1. Thirty nine family companies are selected for this analysis. Total number of industries is 16 industries.
2. Thirty nine non-family companies are selected for this analysis. Total number of industries is 16 industries
3. The time is based from year 1997 to 2007. The total time is eleven years.

The estimation is done by Arellano-Bond dynamic panel-data estimation.

$\delta_{it} = \beta_0 + \sum_k \propto_j Z_{kit} + \sum_s \beta_s M_s + \sum_t \beta_t M_t$ t = 1997 to 2007 periods (yearly data)

$\delta_{it} = (L_{it} - L_{it-1})/(L^*_{it} - L_{it-1})$

$\delta_{it}$ represents speed of adjustment, $Z_{jit}$ is a vector of variables determining the speed of adjustment of company i at time t. $M_s$ and $M_t$ are industry and time dummy variables.

Explanatory variables are Income variability calculated from change in total revenues in each period. Profitability is profit(loss) before interest and income to total assets. Expected growth is percentage change in total assets. Firm size is calculated from natural logarithm of total assets. Stock price change is percentage price change at the end of current period and previous period.

**Table III**

**Optimality ratio[9] and speed of adjustment (δ) towards optimal leverage**

| | Observed Leverage $L$ | | Optimal Leverage $L^*$ | | Optimality ratio $L^* / L$ | | Speed of adjustment $\delta$ | |
|---|---|---|---|---|---|---|---|---|
| Type / Time | Family | Non-family | Family | Non-family | Family | Non-family | Family | Non-family |
| 1997 | 0.553810 | 0.634019 | 1.350248 | 2.257491 | 2.656883 | 3.574954 | 0.393652 | 0.279788 |
| 1998 | 0.489348 | 0.574813 | 0.436232 | 0.645199 | 1.071754 | -3.144291 | 0.821541 | 0.304960 |
| 1999 | 0.500592 | 0.546773 | 0.571279 | 0.502048 | 1.277157 | 0.167276 | 0.264949 | 0.249415 |
| 2000 | 0.474037 | 0.532995 | 0.473009 | 0.488402 | 1.207432 | 0.424326 | 0.367874 | 0.252022 |
| 2001 | 0.463747 | 0.514408 | 0.485069 | 0.527166 | 0.774596 | 0.703658 | -0.554118 | 0.289481 |
| 2002 | 0.393995 | 0.476865 | 0.333611 | 0.408192 | 1.237729 | 0.134339 | -0.584213 | 0.096743 |
| 2003 | 0.382806 | 0.398169 | 0.432968 | 0.261146 | 1.434840 | -0.028930 | 0.631367 | 0.358672 |
| 2004 | 0.420124 | 0.395162 | 0.534548 | 0.488869 | 1.426779 | 0.993762 | 0.335607 | 0.289296 |
| 2005 | 0.402841 | 0.402638 | 0.429355 | 0.501223 | 1.292814 | 0.468144 | 0.283860 | 0.268504 |
| 2006 | 0.398716 | 0.392586 | 0.428508 | 0.419884 | 1.166233 | 0.179828 | 0.477405 | 0.398638 |
| 2007 | 0.412710 | 0.392396 | 0.467400 | 0.414725 | 1.294024 | 0.420556 | 0.674867 | -0.102541 |

[9] From Dynamic optimal capital structure and technical change of Hans Loof, page 461, Optimality ratio is calculated by optimal leverage ($L_{it}^*$) over observed leverage ($L_{it}$).

**Table IV**

**Observed Leverage and Optimal Leverage of family and non-family businesses from year 1997 to 2007**

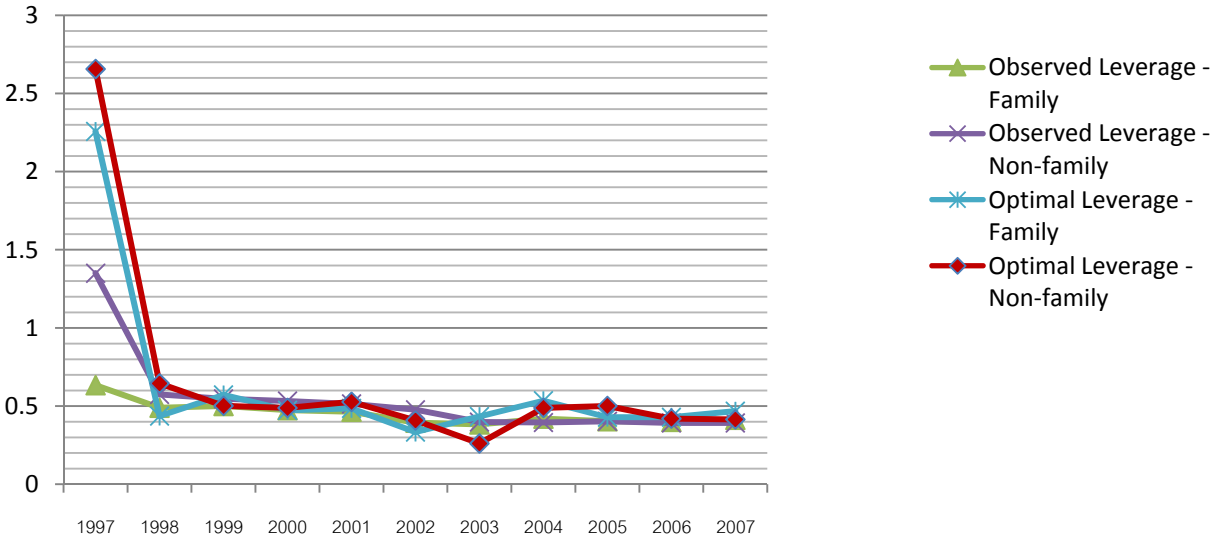
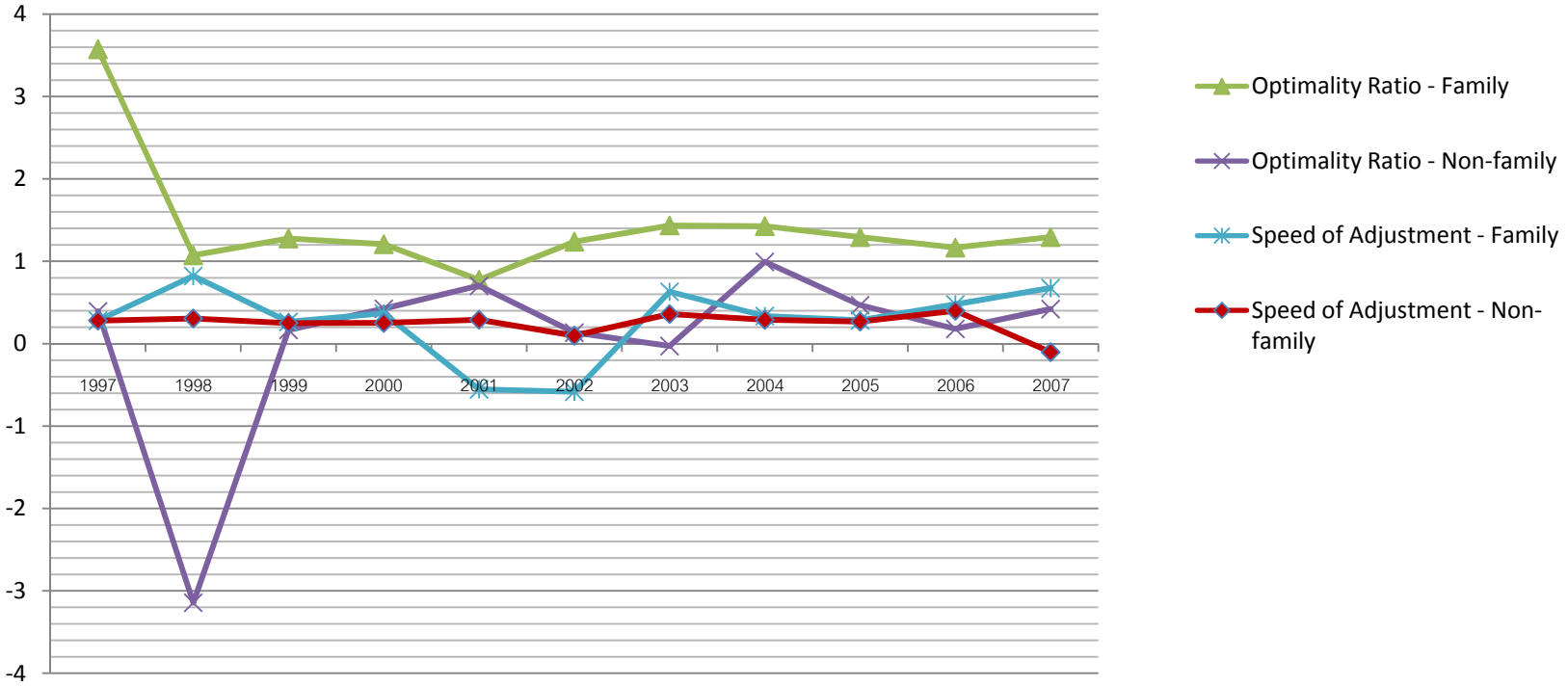


**Table V**

**Optimality ratio[10] and speed of adjustment (δ) towards optimal leverage of family and non-family businesses from year 1997 to 2007**




10 From Dynamic optimal capital structure and technical change of Hans Loof, page 461, Optimality ratio is calculated by optimal leverage $(L_{it}^{*})$ over observed leverage $(L_{it})$.

## Table VI

### List of samples of family businesses listed in the Stock Exchange of Thailand[11]

| Company | Name | Group | Families/Relatives | A[12] | B[13] | C[14] | Comment |
|---|---|---|---|---|---|---|---|
| ASIAN | ASIAN SEAFOODS COLDSTORAGE | AGRI | AMORNRATTANACHAI KUL | 59.66% | 4 out of 8 | 50.00% | |
| CFRESH | SEAFRESH INDUSTRY | AGRI | CHIA-APAR, YONGMEEVIDHYA and CHIARAWONGVANIT | 65.40% | 3 out of 5 | 60.00% | Mrs. TASSANEE YONGMEEVIDHYA is a wife of Mr. NARIT CHIA-APAR. Mr. NARONGRIT CHIARAWONGVANIT is a brother of Mr. NARIT CHIA-APAR. |
| CHOTI | KIANG HUAT SEA GULL TRADING FROZEN FOOD | AGRI | CHOTIWATTANAPHAN and LAOTEPPITAKS | 59.17% | 10 out of 10 | 100.00% | |
| GFPT | GFPT | AGRI | SIRIMONGKOLKASEM | 56.91% | 7 out of 9 | 77.78% | |
| PPC | PAKFOOD | AGRI | AREECHAROENLERT and KANOKWATANAWAN | 88.86% | 6 out of 7 | 85.71% | |
| TAF | THAI AGRI FOODS | AGRI | WONGMALASITH, CHAN and RATANAVANH | 61.75% | 5 out of 9 | 55.56% | MR.STEVEN CHAN and MR.THAO PHONEPRADIT RATANAVANN are sons of Mr. SACKCHAI WONGMALASITH. |
| SPG | THE SIAM PAN GROUP | AUTO | ROTRAKARN and THIPAYABOONTHONG | 50.51% | 5 out of 6 | 83.33% | ORASRI THIPAYABOONTHONG is a daughter of MUK ROTRAKARN. PRANGSIRI THIPAYABOONTHONG is daughter of ORASRI THIPAYABOONTHONG. |
| TRU | THAI RUNG UNION CAR | AUTO | PHAOENCHOKE | 68.96% | 5 out of 7 | 71.43% | |
| BJC | BERLI JUCKER | COMM | SIRIVADHANABHAKDI | 75.04% | 7 out of 13 | 53.85% | |
| ROBINS | ROBINSON DEPARTMENT STORE | COMM | CHIRATHIVAT | 53.83% | 4 out of 7 | 57.14% | |
| SPC | SAHA PATHANAPIBUL | COMM | CHOKWATANA and DHANASARNSILP | 52.40% | 7 out of 13 | 53.85% | SPI does not pass criteria B and C. Only 5 out of 13. |
| CCP | CHONBURI CONCRETE PRODUCT | CONS | THEEPAKORNSUKKASEM | 63.38% | 3 out of 5 | 60.00% | |
| TPIPL | TPI POLENE | CONS | LIEWPHAIRATANA | 52.40% | 6 out of 12 | 50.00% | |
| METCO | MURAMOTO ELECTRON (THAILAND) | ETRON | MURAMOTO | 66.27% | 5 out of 9 | 55.56% | |
| SAWANG | SAWANG EXPORT | FASHION | MANEEPAIROJ | 76.57% | 5 out of 8 | 62.50% | |
| TK | THITIKORN | FIN | PHORNPRAPHA | 66.62% | 5 out of 7 | 71.43% | |
| SAUCE | THAI THEPAROS FOOD PRODUCTS | FOOD | WINYARAT | 67.71% | 5 out of 6 | 83.33% | |

[11] In the view of research by Romano, Tanewski, and Smyrnios (2000), they broadly defined a family firm as one in which any of the following three criteria holds true: 50% or more of the ownership is held by a single family or by multiple members of a number of families; a single family group is effectively controlling the business; and a significant proportion of senior management is drawn from the same family.
[12] A is 50% or more of the ownership is held by a single family or by multiple members of a number of families.
[13] B is a single family group is effectively controlling the business (proportion of family over senior management).
[14] C is a significant proportion of senior management is drawn from the same family (percentage of family over senior management).

## Table VI

## List of samples of family businesses listed in the Stock Exchange of Thailand[15]

| Company | Name | Group | Families/Relatives | A[16] | B[17] | C[18] | Comment |
|---|---|---|---|---|---|---|---|
| TIPCO | TIPCO FOODS (THAILAND) | FOOD | TIAMTAN and SUPSAKORN | 62.64% | 5 out of 10 | 50.00% | Mrs. ANURAT TIAMTAN is a daughter of PRASIT SUPSAKORN |
| NTV | NONTHAVEJ HOSPITAL | HELTH | KEANRATANA and PROMMAS | 63.78% | 3 out of 5 | 60.00% | |
| OGC | OCEAN GLASS | HOME | ASSAKUL | 59.92% | 3 out of 5 | 60.00% | |
| ROCK | ROCKWORTH | HOME | PONGSUTHIMANUS | 56.09% | 4 out of 7 | 57.14% | |
| SUN | SUN WOOD INDUSTRIES | HOME | VAYAKORNVICHITR | 51.47% | 3 out of 4 | 75.00% | |
| CSP | CSP STEEL CENTER | IMM | CHAISUPAT | 74.02% | 4 out of 7 | 57.14% | |
| PERM | PERMSIN STEEL WORKS | IMM | YONGVONGPAIBUL | 59.99% | 4 out of 6 | 66.67% | |
| TMT | THAI METAL TRADE | IMM | TARASARNSOMBAT | 68.17% | 4 out of 6 | 66.67% | |
| CHARAN | CHARAN INSURANCE | INSUR | CHARANVAS | 62.40% | 3 out of 6 | 50.00% | |
| SMK | SYN MUN KONG INSURANCE | INSUR | DUSDEESURAPOT, CHAYAVORAPRAPA and KHUNWIBUL | 52.14% | 5 out of 7 | 71.43% | |
| APRINT | AMARIN PRINTING AND PUBLISHING | MEDIA | UTAKAPAN | 55.17% | 3 out of 6 | 50.00% | |
| BEC | BEC WORLD | MEDIA | MALEENONT | 56.61% | 7 out of 9 | 77.78% | |
| AJ | A.J. PLAST | PKG | SUTHISAMPHAT | 62.81% | 3 out of 6 | 50.00% | |
| TCOAT | THAI COATING INDUSTRIAL | PKG | CHAROENAPORNWATANA | 59.26% | 5 out of 5 | 100.00% | |
| TFI | THAI FILM INDUSTRIES | PKG | MAHAGITSIRI | 69.94% | 3 out of 6 | 50.00% | |
| TOPP | THAI O.P.P. | PKG | LIMATIBUL | 59.28% | 4 out of 5 | 80.00% | |
| ASIA | ASIA HOTEL | TOURISM | TECHARUVICHIT | 60.98% | 7 out of 8 | 87.50% | |
| CSR | CITY SPORTS AND RECREATION | TOURISM | NAVAPAN and GUNA-KASEM | 70.91% | 4 out of 7 | 57.14% | |
| ERAWAN | THE ERAWAN GROUP | TOURISM | VONGKUSOLKIT, WATTANAVEKIN and THEPKANJANA | 50.10% | 5 out of 9 | 55.56% | |
| MANRIN | THE MANDARIN HOTEL | TOURISM | HARNPANICH and ASAVABHOKHIN | 52.35% | 3 out of 6 | 50.00% | |

[15] In the view of research by Romano, Tanewski, and Smyrnios (2000), they broadly defined a family firm as one in which any of the following three criteria holds true: 50% or more of the ownership is held by a single family or by multiple members of a number of families; a single family group is effectively controlling the business; and a significant proportion of senior management is drawn from the same family.
[16] A is 50% or more of the ownership is held by a single family or by multiple members of a number of families.
[17] B is a single family group is effectively controlling the business (proportion of family over senior management).
[18] C is a significant proportion of senior management is drawn from the same family (percentage of family over senior management).

## Table VI

## List of samples of family businesses listed in the Stock Exchange of Thailand[19]

| Company | Name | Group | Families/Relatives | A[20] | B[21] | C[22] | Comment |
|---|---|---|---|---|---|---|---|
| SST | SUB SRI THAI WAREHOUSE | TRANS | SUKHANINDR and CHINTHAMMIT | 64.79% | 5 out of 10 | 50.00% | |
| UST | UNITED STANDARD TERMINAL | TRANS | VONGKUSOLKIT | 66.59% | 5 out of 7 | 71.43% | |

[19] In the view of research by Romano, Tanewski, and Smyrnios (2000), they broadly defined a family firm as one in which any of the following three criteria holds true: 50% or more of the ownership is held by a single family or by multiple members of a number of families; a single family group is effectively controlling the business; and a significant proportion of senior management is drawn from the same family.
[20] A is 50% or more of the ownership is held by a single family or by multiple members of a number of families.
[21] B is a single family group is effectively controlling the business (proportion of family over senior management).
[22] C is a significant proportion of senior management is drawn from the same family (percentage of family over senior management).

**Table VII**

**List of samples of Non-family businesses listed in the Stock Exchange of Thailand**

| Company | Name | Group |
|---|---|---|
| CM | CHIANGMAI FROZEN FOODS | AGRI |
| LEE | LEE FEED MILL | AGRI |
| SH | SEA HORSE | AGRI |
| TLUXE | THAILUXE ENTERPRISES | AGRI |
| TRS | TRANG SEAFOOD PRODUCTS | AGRI |
| TUF | THAI UNION FROZEN PRODUCTS | AGRI |
| BAT-3K | THAI STORAGE BATTERY | AUTO |
| SAT | SOMBOON ADVANCE TECHNOLOGY | AUTO |
| MAKRO | SIAM MAKRO | COMM |
| MINOR | MINOR CORPORATION | COMM |
| SINGER | SINGER THAILAND | COMM |
| SCCC | SIAM CITY CEMENT | CONS |
| SCP | SOUTHERN CONCRETE PILE | CONS |
| HANA | HANA MICROELECTRONICS | ETRON |
| PRANDA | PRANDA JEWELRY | FASHION |
| ASK | ASIA SERMKIJ LEASING | FIN |
| MALEE | MALEE SAMPRAN | FOOD |
| UFC | UNIVERSAL FOOD | FOOD |
| RAM | RAMKHAMHAENG HOSPITAL | HELTH |
| FANCY | FANCY WOOD INDUSTRIES | HOME |
| MODERN | MODERNFORM GROUP | HOME |
| SITHAI | SRITHAI SUPERWARE | HOME |
| GJS | G J STEEL | IMM |
| SSSC | SIAM STEEL SERVICE CENTER | IMM |
| TYCN | TYCOONS WORLDWIDE GROUP (THAILAND) | IMM |
| BKI | BANGKOK INSURANCE | INSUR |
| TIP | DHIPAYA INSURANCE | INSUR |
| SE-ED | SE-EDUCATION | MEDIA |
| WORK | WORKPOINT ENTERTAINMENT | MEDIA |
| NEP | NEP REALTY AND INDUSTRY | PKG |
| NIPPON | NIPPON PACK (THAILAND) | PKG |
| PTL | POLYPLEX (THAILAND) | PKG |
| THIP | THANTAWAN INDUSTRY | PKG |
| PA | PACIFIC ASSETS | TOURISM |
| RHC | RAJADAMRI HOTEL | TOURISM |
| ROH | ROYAL ORCHID HOTEL (THAILAND) | TOURISM |
| SHANG | SHANGRI-LA HOTEL | TOURISM |
| RCL | REGIONAL CONTAINER LINES | TRANS |
| THAI | THAI AIRWAYS INTERNATIONAL | TRANS |