Competitiveness of Banks and Finance Companies in Thailand: An Investigation

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Abstract

This paper investigates the competitiveness of the Thai Banks and Finance companies during 1990-1996 using the Tobin's Q ratio as the surrogate. The evidence indicates that Finance companies are more competitive than Banks as their Q ratios are significantly higher. The evidence also indicates that the efficiency of assets and liabilities management as measured by the funding gap has a significant impact on the competitiveness of both Banks and Finance companies. Moreover, the attribute of liquidity represented by the loans to deposits, and the current assets to total loans ratios are also significant in explaining the competitiveness. Interestingly, business options [e.g. securities and leasing businesses, foreign exchanges, and branching] stipulated by regulatory authorities do not contribute to the competitiveness of Banks and Finance companies in Thailand.

I. Introduction

The Thai banking industry was established about 100 years ago along with the social and economics modernization of Thailand. The Finance industry was introduced, a half century later to share the financial market of the country. Though established at different periods, Banks and Financ companies in Thailand are similar as they do financial intermediation. They both mobilize funds from various sources and allocate them to different industries. However, Banks and Finance companies are different in several aspects.

In particular, Banks perform full financial services including accepting deposits, providing loans and financial advice, trading foreign exchanges and offerring off-balance sheet services such as letters of credit and bank's gaurantee. For Finance companies, they issue promissory notes as a mean of raising funds instead of accepting deposits. They also offer full investment banking, securities and leasing businesses. However, Finance companies are not allowed to

engage in foreign exchange trading and to open letters of credit. Moreover, Banks are allowed to open branches throughout the country while Finance companies are not.

Though offering different service types, Banks and Finance companies have grown rapidly during the galloping growth of the Thai economy during the last decades. The sharing and co-existing of these two industries in Thailand's financial intermediation reflects their competitive capability. We investigate and compare the competitiveness of the Thai Banking and Finance industries. The competitiveness can be defined as the efficiency and effectiveness valued by the financial markets. Various attributes may influence such competitiveness of the two financial institutions. Understanding those attributes may provide a better insight of the 'financial intermediation' industry in Thailand.

The Tobin's Q ratio will be used in this paper to measure the competitiveness of Banks and Finance companies. In the seminal paper of Tobin (1969), the Q ratio is defined as the ratio of the firm's market value to the replacement costs of its assets. Mork, Shleifer, and Vishny (1989) describe the Tobin's Q ratio as "measuring of the intangible assets of the firms, such as future growth opportunities, monopoly power, rents appropriated away from unions, as well as the quality of management." Lindenberg and Ross (1981) use the Tobin's Q ratio in measuring the monopoly rent of various industries. Some previous studies [e.g. Aliber (1984) and McCormick (1987)] use the Tobin's Q ratio to evaluate how banks compete and perform in the market. In our paper, the Tobin's Q ratio will also be used to measure the efficiency and effectiveness valued by the financial markets.

In this study, the attributes such as performance, liquidity, leverage, and size which may influence the competitiveness will be determined. In addition, the effects of some different business peripherals stipulated by regulatory authority, the Bank of Thailand, that affect competitiveness will be investigated. The results of this study may be used as guidelines for the better management of financial institutions in Thailand.

This paper is organized as follows. Section II discussess the brief history of

Banks and Finance companies in Thailand. Section III provides summa relevant studies. Section IV describes the methodologies employed hypotheses to be tested and the sample data used in this study. Section V provides empirical results. The last section concludes the study.

II. Brief History of Banks and Finance Companies in Thailand

Thailand's banking system was established in 1888 during the reign of King Rama IV. Initially, only foreign banks existed in the Thai financial system. The first commercial bank to operate in Thailand was Hong Kong and Shanghai Banking Corporation. In 1906, the first Thai commercial bank, Siam Commercial Bank, was established. During the beginning period of banking operations in Thailand, the role of foreign banks was much greater than that of the Thai banks. The reason is that Thai banks only focused on facilitating import and export finance. Until after World War II, the Thai banks have taken more important role of financial intermediary. In 1990s that marked the beginning of financial liberalization, the Thai banks are allowed to expand their businesses to debt underwriting. They are also permitted to perform financial advisory services, and to act as selling agents for mutual funds and securities registrars.

Finance companies, established in 1969, are not allowed to accept deposits. They, instead, acquire funds through the issuance of promissory notes which normally provide higher yield than the interest given by Banks. In 1990s, Finance companies are allowed to do leasing businesses. And, they are permitted to perform financial advisory services, custodial service and securities brokerage.

As reported in Jayapani (1997), by 1996, Banks hold about 70 percent of financial institutions assets in Thailand while Finance companies hold about 20 percent. The remaining assets are held by specialized financial institutions such as Government Savings Bank (GSB), the Bank for Agriculture and Agricultural Cooperative (BAAC), the Government Housing Bank (GHB), and the Industrial Finance Corporation of Thailand (IFCT).

The Bank of Thailand Act 1942 established the Bank of Thailand (BOT), the regulatory body for Banks and Finance companies. The BOT is responsible for monitoring and supervising Banks and Finance companies so that they operate in line with regulations and international standards. Following the wave of financial liberalization throughout the world, the BOT, during 1990s, tried to standardize the Thai financial institutions expecting for higher competitiveness.

In 1992, Bangkok International Banking Facilities (BIBFs) were introduced. Through the BIBFs, licenses to operate offshore banking services are granted to the qualified Thai banks and foreign bank branches. BIBF units can accept deposits and provide loans in foreign currencies to both Thai and Non-Thai residents and corporations at competitive rates. With the establishment of BIBFs, substantial foreign capital entered the Thai economy.[1] As a consequence, total assets of Banks and Finance companies had been growing. Before the mid of 1997, competition between Banks and Finance companies in fund mobilizing has been severe.[2]

III. Literature Review

The Competitiveness of financial intermediary has been one of the important research areas in finance for a few decades. The competitiveness of financial intermediaries cannot be easily measured, since many of their products and services are intangible nature such as potential growth and managerial performance. Many researches have attempted to measure productivity and efficiency of banking industry using outputs, costs, efficiency and performance.

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[1] Net Capital inflows to Thailand during the years 1993-1996 are 10.5, 12.2, 21.9, and 19.5 billions of U.S. dollars,respectively, as reported in the IMF's International Financial Statistics, September 1998.

[2] In the mid of 1997, the economic boom in Thailand has come to a bust. A large portion of assets in Thai financial institutions became non-performing loans. Shortly after, a large number of finance companies had been closed due to liquidity crisis and high portion of bad assets.

Benston (1965) measures outputs by using bank's number of deposit and loan accounts, and transactions per account. This approach treats banks as firms that use capital and labor to produce output and measures such output as a flow per unit of time. Total costs are all operating costs used in producing the outputs except interest costs. Greenbaum (1967) uses the weighted indexes to measure unit costs for banks that hold a wider range of assets than traditional intermediaries. This approach does not treat banks as producers of loans and deposits. The bank output is measured by the value of bank assets such as loans and investments. And, total cost includes all operating and investment costs. Nevertheless, the production nor the intermediation approach considers the multi-product nature of banking.

Economies of scale and scope in banking have been investigated extensively. Murray and White (1983), recognizing the multi-product nature of financial intermediaries, use a translog cost function to evaluate the scale and scope economies of credit unions in Canada. They find that large multi-product credit unions are more cost efficient than small single-product credit unions. Gilligan, Smirlok, and Marshall (1984) also utilize the translog cost function to examine scale and scope economies in the U.S. banking firms. They find economies of scope but not economies of scale among the U.S. banks in their sample. Hunter, Timme and Yang (1990) analyze U.S. bank production using an intermediation approach and multi-cost production function. They find no evidence of the cost complementaries, *i.e.*, no sub-additive cost functions.

The Structure-Conduct-Performance (hereafter SCP) model has been used to measure the degree of competition in banking. In general, SCP says that the structure or concentration of banking market has effects on the banking behavior and performance. The SCP hypothesis is that bank profitability rises when bank holds monopoly power which enable it to charge more on its products and services. The SCP studies are mainly empirical and lack theoretical model behind them. There are many studies that test the SCP hypothesis and find supporting evidence. Those studies include Berger and Hannan (1989) and Jackson (1992).

Additionally, there are variations of bank performance measurement. Revell (1980) uses interest margin as a performance measure for U.S. commercial banks. He defines interest margin as difference of interest income and expense divided by total assets. Arshadi and Lawrence (1987) measure bank performance using canonical correlation analysis. Their multidimensional indexes include indexes of profitability, pricing of bank services and loan market share. However, those measures of bank competitiveness are not the ones evaluated by the financial market. Some studies use Tobin's Q ratio to evaluate how banks compete and perform in the market. Aliber (1984) compares Tobin's Q ratios of bank and non-bank sectors in five industrial countries. He finds that in Japan, Switzerland and Canada, Q ratios of banking sector are higher than those of industrial sectors. However, in the U.S. and U.K., Q ratios of banking sector are found to be lower. Moreover, McCormick (1987) also finds that Tobin's Q ratios of banks in U.S. are lower than those of non-bank industries.

In Thailand, several studies look at the efficiency of financial intermediaries. Koomsup(1972) investigates the scale economies of the Thai commercial banks using Cobb-Douglas cost function. He finds evidence of economies of scale among the Thai banks during period of his study. Nidhiprapa and Arya (1987) measure the efficiency of commercial banks and finance companies using the profitability ratios, and spread defined as lending less deposit rates. They find that the efficiency of financial institutions increased over the years. Dhanwattanachai (1990) studies the scale and scope economies of 15 Thai banks during the year 1984-1988 using both the Cobb-Douglas and translog cost function. She finds the scale economies of the Thai banks by both models. However, the scope economies are found to be prominent only in lending and investment activities.

Somnuk, Pongpalee, and Charoonphipatkul (1997) measure the technical efficiency of finance companies during 1991-1995 using linear programming in which the outputs [e.g. loan, securities investment, interest income and other income] are compared with inputs [e.g. borrowing, interest expense and other

operating expense]. They assume that output is increasing at a constant return to scale. In addition, regression is used to identify factors that affect the performance of finance companies. They find that total assets, market share, ROA, market share on commercial loans, and market share of deposits are significant factors.

IV. Hypotheses, Methodology and Data

A. Estimated Q Ratio

According to Tobin (1969), the Q ratio is defined as the ratio of the firm's market value to the replacement cost of its assets. To estimate the Tobin's Q in this study, we follow the method of Lang, Stulz and Walking (1989) that is developed from Lindenberg and Ross (1981). First, the firm's market value is the sum of the market values of common stock, preferred stock and debt. The value of common stock is the product of the firm's market price of stock and the number of common share. The book value of preferred stock will be used as the proxy for its market value because of its relatively small portion. In fact, most of financial institutions in Thailand do not issue preferred stock. For the market value of debts, the book value of short- and long-term debts is used as its proxy. This method of calculating Q is similar to that used in Perfect and Wiles (1994), and Agrawal and Knoeber (1996).

In our paper, financial institution's book value will be used as a proxy for its market value. This is because the Bank of Thailand (BOT) requires that all Banks and Finance companies mark down the value of non-performing and substandard loans. The allowances for those low quality assets will be made periodically basing on its interest overdue. In addition, the BOT also requires that Banks and Finance companies establish the reserves for depreciation in value of their securities portfolio. Therefore, the book value net of those allowances and reserves should be used as the proxy of replacement costs of the firm's assets.

B. Methodology

The first objective of this paper is to test the differences between the competitiveness of Banks and Finance companies. In other words, we investigate whether Banks or Finance companies have higher efficiency and effectiveness as valued by the market. The following hypotheses are formulated:

H_o : There is no difference in Q between Banks and Finance companies. ($Q_B = Q_F$)

H_1 : There is difference in Q between Banks and Finance companies. ($Q_B \neq Q_F$)

To test the hypothesis, we employ paired-t test to investigate whether Banks' Q ratios significantly differ from those of Finance companies.

The second objective is to investigate the factors that may contribute to the competitiveness of the Thai Banks and Finance companies. Those factors include the attributes of performance, liquidity, leverage, size and other specific factors.[3] Therefore, the competitiveness as measured by the Tobin's Q will be formulated as follows:

Tobin's Q ratio = f (Performance, Liquidity, Leverage, Size, Specific Factors)

Performance of Banks and Finance companies will be measured by their profitabilities which include the following:

MARG = The net interest margin is the net interest income (interest income - interest expense) divided by

[3] The factors being investigated in this paper are similar to the factors included in the performance rating scheme called CARMEL (Capital, Asset, Interest-rate Risk, Management, Earnings, Liquidity) by the U.S. regulatory bodies.

earning assets

ROE = The return on equity is the net profit after tax divided by shareholders' equity

The net interest margin (MARG) of Banks and Finance companies indicates the rate of return on earning assets such as loans and other securities in generating net interest income. The higher net interest margin implies the better performance. The return on equity (ROE) represents the earning performance of the firm basing on shareholders' stake.

To investigate the liquidity attribute, we use the following ratios:

FGAP = Interest-rate-sensitive assets – Interest-rate-sensitive liabilities

L/D = The ratio of loans to deposits

CA/TL = The ratio of current assets divided by total loans

The funding gap (FGAP) measures the financial institution's strategy and ability in matching its assets and liabilities that sensitive to interest rate changes.[4] In fact, the FGAP will be the trade-off between profitability, liquidity, and interest rate risk.[5] Under the relatively stable interest rate level, the near zero FGAP may be the most optimal and desirable matching for assets and liabilities management. The positive FGAP implies that the amount of rate-sensitive loans is greater than that of deposits. This results in a higher chance of getting the higher interest income when interest rates are rising, and vice versa. However, the positive FGAP implies to a certain extent the low liquidity since rate-sensitive loans are greater than rate-sensitive deposits, *ceteris paribus*. On the other hands, the negative FGAP implies that the amount of rate-sensitive loans is less than that of deposits. This results in a higher chance

[4] The assets (loans) and liabilities (deposits) will be defined as rate-sensitive when their corresponding interest rates are readjusted within one-year period.

[5] Interest rate risk is the potential impact of changes in interest rate on a financial institution's earnings and net asset values.

of having the higher funding cost or lower interest income when interest rates are rising, and vice versa. The negative FGAP implies to a certain extent the high liquidity.

The loans to deposits ratio (L/D) shows the extent to which financial institution deposits have been lent out. The higher L/D ratio implies the lower liquidity since financial institution has lower safety margin in case of bank run. The current assets to total loans ratio (CA/TL) also reflects the liquidity of financial institution. The higher the CA/TL ratio means the larger proportion of short-term investments to total loans which implies the higher liquidity.

Regarding leverage position, the ratio of total assets to total equity (TA/TE) is employed to measure the extent to which equity has been used in financing total assets. The higher TA/TE ratio means that financial institution has relatively low equity base. Although it is not the BIS ratio, the ratio of total assets to total equity provides a useful picture of a bank's capital adequacy.[6] For size (SIZE), we use the log of the total assets as a controlling factor expecting that it may explain the size effect. In Thailand, the sizes of Banks and Finance companies varies quite noticeably. Therefore, we expect that various asset sizes should have different influence on competitiveness.

In this study, specific factors are included in the formulated models to explain the effects of different business operations between Banks and Finance companies. Those factors are the affiliation of finance company with bank, and the existence of securities, leasing and foreign exchange businesses.

The relationship between competitiveness using estimated Q and the variables of different attributes are tested by a multivariate regression system of equations with one equation for each model as follows.

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[6] BIS ratio is the ratio of capital to risk-asset ratio defined by Bank for International Settlement. It measures the level ofbank's insolvency risk. It is now required by the Bank of Thailand for financial institutions to maintain a minimum level of 8.5 %. Since this ratio is not available for public and cannot be computed from financial statements, we therefore cannot use this ratio as our variable in the models testing.

Model 1

For Banks, we test the relationships of the following equation:

Estimated Q = f(MARG, ROE, FGAP, L/D, CA/TL, TA/TE,SIZE) (1.1)

$$Q_{it} = \alpha_i + \beta_{1t} MARG_{it} + \beta_{2t} ROE_{it} + \beta_{3t} FGAP_{it} + \beta_{4t} L/D_{it} + \beta_{5t} CA/TL_{it} + \beta_{6t} TA/TE_{it} + \beta_{7t} SIZE_{it} + \varepsilon_{it}$$

for i = 1,Ö, n, and t = 1,Ö, T (1.2)

The definitions of MARG, ROE, FGAP, L/D, CA/TL, TA/TE and SIZE are as stated above.

α_i = The intercept term

β_i = The regression coefficients of independent variables

ε_i = The residual value

Model 2

For Finance companies, we test the relationships of the following equation:

Estimated Q SIZE, = f (MARG, ROE, FGAP, L/D, CA/TL, TA/TE, D1, D2, D3) (2.1)

$$Q_{it} = \alpha_i + \beta_{1t} MARG_{it} + \beta_{2t} ROE_{it} + \beta_{3t} FGAP_{it} + \beta_{4t} L/D_{it} + \beta_{5t} CA/TL_{it} + \beta_{6t} TA/TE_{it} + \beta_{7t} SIZE_{it} + \Sigma \gamma_{ikt} D_{ikt} + \varepsilon_{it}$$

for i = 1,Ö, n, t = 1,Ö, T and k = 1,Ö3 (2.2)

The definitions of MARG, ROE, FGAP, L/D, CA/TL, TA/TE and SIZE are as stated above. However, the promissory notes are used to replace the deposits

as applicable.

$D1_i$ = The dummy variable to represent securities business; 0 means Finance company has no securities business whereas 1 has securities business

$D2_i$ = The dummy variable to represent bank affiliation; 0 means Finance company has no affiliation with bank whereas 1 has the affiliation

$D3_i$ = The dummy variable to represent leasing business; 0 means Finance company has no leasing business whereas 1 has leasing business

α_i = The intercept term

β_i = The regression coefficients of independent variables

γ_i = The regression coefficients of dummy variables

ε_i = The residual value

In general, the securities business of Finance companies enhances firm's revenue that comes from interest on margin loans, and fees from brokerage and investment banking. This may enrich the competitiveness of Finance companies. Thus, D1 is included in the model to see whether such competitiveness is affected by the securities business. In addition, the affiliation of Finance companies with Banks may bring in the additional funding source and other related businesses. Thus, some Finance companies affiliated with Banks may gain competitive advantages over those unaffiliated. Therefore, D2 is included in the model to capture the effect of being bank affiliation on the competitiveness. Finally, D3 as representative of leasing business is included in the model to measure the value that is contributed by income relating to leasing.

Model 3

We jointly test the data set of both Banks and Finance companies in respect to the relationships between the competitiveness and the attributes of performance, liquidity, leverage and size. Banks and Finance companies in

Thailand compete highly in both fund mobilizing and financial services. Including the data set of Banks and Finance companies in the relationship tested may tell us what factors significantly influence the competitiveness of the financial industry as a whole. We therefore formulate the following equation:

Estimated Q = f (MARG, ROE, FGAP, L/D, CA/TL, TA/TE, SIZE, D1)
(3.1)

$$Q_{it} = \alpha_i + \beta_{1t} MARG_{it} + \beta_{2t} ROE_{it} + \beta_{3t} FGAP_{it} + \beta_{4t} L/D_{it} + \beta_{5t} CA/TL_{it} + \beta_{6t} TA/TE_{it} + \beta_{7t} SIZE_{it} + \gamma_{it} D_{it} + \varepsilon_{it}$$

for i = 1,Ö, n, t = 1,Ö, T
(3.2)

The definitions of MARG, ROE, FGAP, L/D, CA/TL, TA/TE and SIZE are as stated above.

$D1_i$ = The dummy variable to differentiate Bank from Finance company; 0 represents Finance company whereas 1 represents Bank

α_i = The intercept term

β_i = The regression coefficients of independent variables

γ_i = The regression coefficients of dummy variables

ε_i = The residual value

The dummy variable D1 represents the uniqueness of Banks and Finance companies that may contribute to the competitiveness of these two industries. The distinct characteristics are that Banks in Thailand can have branches and engage in foreign exchange businesses. Only Finance companies are permitted to involve in securities and leasing businesses.

To test model 1, the standard multiple regression is employed. For models 2 and 3, we apply the method similar to the Multivariate Regression Model

(MVRM) of Binder (1985), and Cornett and Tehranian (1989, 1990). The MVRM used in this paper incorporates dummy variables which represent the specific factors of Banks and Finance companies as mentioned earlier. The model also incorporates heteroscedasticity across firms and industries, and contemporaneous dependence of the disturbances into the hypothesis testing. The residuals in the MVRM applied will not be identically and independently distributed as required in the standard regression.

The models 2 and 3 in this paper append zero-one to dummy variables in the equation when applicable. The variable is equal to one if it is relevant and zero otherwise. The coefficient of the dummy variable shows the impact of that variable on the Tobin's Q ratio.

To see whether there exists the relationship between competitiveness and various attributes, we formulate the hypotheses as follows:

Hypothesis 1:

$\beta_j = 0$; the attributes of performance, liquidity, leverage, and size have no relationship with competitiveness.

Hypothesis 2:

$\gamma_k = 0$; the dummy variables have no impact on the competitiveness.

C. Data

In this study, we use the accounting data that are publicly available to all investors. In our sample all Banks and Finance companies listed on the Stock Exchange of Thailand are included. The foreign banks are excluded since none of them is listed. Therefore, the 15 Thai Banks and 15 Finance companies are included in the data set. We collect annual figures from the financial statements during the year 1990 to 1996.[7] In determining Tobin's Q, we use the year-end

[7] We do not use the date after 1996 since the financial crisis has emerged in Thailand around the mid of 1997. Therefore, the data from 1997 onward will not represent the normal operations of Banks and Finance companies in Thailand.

closing stock prices when the market values of equity are computed.

V. Empirical Results

a. Descriptive Statistics

Tables 1 and 2 report preliminary statistics of variables for the Thai Banks and Finance companies respectively. The Tobin's Q ratio on average for Finance companies is higher than that of Banks , *i.e.*, the means of Q ratios for Finance companies is 1.3496 and for Banks is 0.9716. Interestingly, the Q ratios of the Thai Banks are relatively stable across the industry and less than one except for that of Union Bank (UB). On the other hand, the Q ratios of Finance companies vary significantly and range from 0.9329 to 2.2215. The lowest Q ratio is of IFCT Finance (IFCTF) and the highest belongs to Phatra Finance and Securities (PHATRA). This suggests that Finance companies are operating at relatively higher variability of competitiveness when compared to Banks.

In testing the difference between the average Q ratios of Banks and Finance companies we used the paired-t test. The evidence indicates that there is a statistically significant difference between those Q ratios at the 95%. The average Q ratio of Finance companies is higher than that of Banks. This implies that Finance companies are more competitive than Banks. The difference in those competitiveness may be related to various attributes of business environment. It is, therefore, interesting to further investigate the factors that may explain the competitiveness of those financial institutions.

The average net interest margin (MARG) of Banks is about 0.6% higher than that of Finance companies which implies that Banks can generate higher net interest income on their earning assets. However, the return on equity (ROE) of Banks turns out to be approximately half of that of Finance companies. These conflicting profitability ratios may be resulted from higher operating expenses of Banks comparing with those of Finance companies. The lower

ROE of Banks should not be the consequence of their lower leverage ratios since we find that the mean Debt/Equity ratio of Banks is 13.67 while that of Finance companies is 8.21.[8]

The mean funding gap (FGAP) of Thai Banks is negative at 136.15 million baht which implies that the Thai Banks are relatively less aggressive in asset/ liability management, i.e., rate-sensitive lending is overly matched by rate-sensitive borrowing. In this regard, Finance companies have opposite matching strategy. On average, the FGAP of Finance companies is positive at 36.31 million baht. This relatively more aggressive lending behavior is two-edge sword for Finance companies since it brings both the profit opportunity and the interest rate risks.

The loans to deposits (L/D) ratios of Banks and Finance companies are 1.0875 and 1.2619 respectively. This shows that Finance companies are relatively less liquid than Banks in this matter. This evidence seems to be consistent with the funding gap positions of Banks and Finance companies. For the current assets to total loans (CA/TL) ratio, which represents the proportion of short-term investment and total loans, it is shown that Banks and Finance companies have these ratios of 1.0519 and 1.1247 respectively. This implies that on average Banks have lent out relatively more in long-lived loans.

The ratio of total assets to total equity (TA/TE) of Banks on average is surprisingly higher when compared with Finance companies (14.6741 and 9.0973 respectively). This means that Banks maintain lower capital adequacy than that of Finance companies. In other words, Banks have generally higher bankruptcy risk. Regarding the size, the average asset size of Banks is 220.04 billion baht whereas that of Finance companies is 24.89 billion baht. However, the smallest bank (Leamthong Bank) with the average total assets of 21

[8] The Debt/Equity ratios of Banks and Finance companies are calculated to compare the difference in capital structure of the two industries. However, it is not included as a variable in our models since we already have the ratio of Total Assets to Total Equity as the proxy of the leverage.

billions Baht is smaller than many Finance companies. Meanwhile, the largest finance company (Dhana Siam) with the average total assets of 47.6 billions Baht is larger than the three smallest Banks.

b. Regression Results

Three models have been used to test the relationships between competitiveness and various attributes of Banks and Finance companies. In the implies the narrower safety margin for the solvency and therefore the lower competitiveness. The positive and significant relationship between Q ratio and the ratio of total assets to total equity (TA/TE) implies that the relatively higher leverage in total assets financing will result in the higher competitiveness for Banks. In other words, the lower equity position of Banks will provide the better profits and therefore the higher competitiveness. This result also implies that the higher bankruptcy risk from the higher ratio of total assets to total equity is a driving force for the high competitiveness of Banks.

The relationship between the Q ratio and size is found to be negative and significant at 95% level. This suggests that smaller banks in Thailand can utilize their assets more efficiently than larger banks i.e., the smaller the asset size the higher the competitiveness. Overall, this study finds that the competitiveness of Banks has significant relationships with their profitability, liquidity, leverage, and size. In particular, the higher competitiveness of Banks is attributable to their higher profitability, higher liquidity, higher leverage, and the smaller asset size.

To investigate the competitiveness of Finance companies, the relationships as formulated in the equation (2.1) of the model II are tested. The results in Table 4 show significant relationships between the Q ratio and the FGAP, L/D and CA/TL ratios. The negative relationship between the FGAP and the Q ratio which is significant at 95% level implies that the narrower the FGAP (the smaller the absolute FGAP) the higher the competitiveness. In fact, the most desirable

funding gap is zero. The near zero FGAP means the higher efficiency in matching assets and liabilities of Finance companies. However, the FGAP also implies the risk of financial institutions. The higher positive FGAP means the higher interest rate risk since the interest-sensitive loans are larger than the interest-sensitive funding sources. However, the higher positive FGAP results in the higher chance of getting the higher interest income when the interest rates are rising. During our testing periods, from 1990-1996, the trend of the interest rates in Thailand was on the rise.[9] The rising interest rates during those periods would have positive impact on the value of Finance companies which hold positive FGAP positions. As a result, the competitiveness of Finance companies was valued highly as measured by the Q ratio. Simultaneously, the positive FGAP position also entails the high interest rate risk. Conversely, Finance companies gamble on the interest rate risk for the higher competitiveness.

The relationship between the L/D ratio and the Q ratio for Finance companies is significantly negative. Similar to that of Banks, the lower L/D ratio of Finance companies results in the higher competitiveness. The CA/TL ratio is positively and significantly related to the Q ratio. The higher the CA/TL ratio implies that Finance companies have the greater proportion of short-term comparing to long-term loans. Particularly, the higher of this ratio that results in the higher competitiveness should be the effect of the rising interest rates. Thus, the larger short-term loans and the rollover effects resulted in the higher value of Finance companies in the market perspective.

Interestingly, all the dummy variables [e.g. securities business, bank affiliation, and leasing business] have no significant impact on the Q ratio, i.e., the special attributes of Finance companies do not contribute to their competitiveness. In general, the higher competitiveness of the Thai Finance companies is attributable to the higher efficiency in funding gap management and the higher liquidity as measured by the L/D and CA/TL ratios.

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[9] From the Economic Focus issued by the Bank of Thailand, the average minimum loan rates (MLR) in Thailand during 1990-1997 are 16.5, 14.0, 11.5, 10.5, 11.75, 13.75, 13.25, and 15.25 percents consecutively.

To investigate the competitiveness among Banks and Finance companies, the relationships as stated in the equation (3.1) of the model III are tested. The results in Table 5 show that only the FGAP, L/D and CA/TL ratios have significant impacts on the competitiveness of the Thai financial institutions. The directions of the relationships between these variables and the Q ratio are as hypothesized and similar to those found in the model II for Finance companies. These findings strongly support the argument that the strategic capability to match rate-sensitive assets and liabilities significantly influences the competitiveness of Banks and Finance companies. The other variables are found to have no significant impacts on the competitiveness. In addition, the uniqueness of Banks and Finance companies as represented by the dummy variable in the model III has no significant relationship with the Q ratio. This implies that the difference in business options allowed by the regulatory authority have no impacts on the competitiveness of Banks and Finance companies. In summary, the competitiveness of the financial industry in Thailand depends on the efficiency of the funding gap management, and its liquidity.

c. Future Research

After 1996 which is the ending period of this study, the bubble economy in Thailand has burst. Many Finance companies failed to survive the crisis that has begun in 1997. Despite our findings that Finance companies have higher competitiveness than Banks, it is a puzzle why such phenomena occurred. It is, therefore, interesting to further investigate the causes of the failures of those institutions in our future research. We anticipate that one attribute which may make these two industries differ in their tolerance to the financial crisis is the different risk behavior of Banks and Finance companies, i.e., high bankruptcy risk for Banks and high interest rate risk among Finance companies. There may be other measures of competitiveness that can better incorporate those risks.

VI. Conclusions

This study compares the competitiveness measured by the Tobin's Q ratio between the Thai Banks and Finance companies during the periods 1990-1996. The evidence indicates that the Q ratios of Finance companies are significantly higher than those of Banks. This implies that Finance companies are more competitive when compared to Banks.

We also found that Banks and Finance companies adopted different strategies regarding the funding gap management, and the leverage structure. On average, Banks have negative funding gap which means that they are less aggressive in asset/liability management. In contrast, Finance companies have average positive funding gap. This also means that they have relatively high interest rate risk. Additionally, Banks are found to have much higher leverage as their average debt/equity ratio is 13.67 whereas that of Finance companies is 8.21. This implies that Banks have higher bankruptcy risk. The finding seems to contradict the general perception that Banks have on average larger capital bases than those of Finance companies. Conversely, Banks in Thailand bet on the bankruptcy risk while Finance companies risk on the interest rate.

To test the relationships between competitiveness of Banks and their attributes, the evidence suggests that the higher competitiveness of Banks are due to their higher profitability, liquidity and leverage, and smaller size of asset. For Finance companies, the results show that the higher competitiveness is attributable to their higher efficiency in the funding gap management, and the higher liquidity as measured by the loans to deposits and the current assets to total loans ratios.

In investigating the competitiveness of Banks and Finance companies as a whole, the evidence indicates that the competitiveness of the Thai financial institutions depends on their efficiency in funding gap management, and their liquidity as measured by the loans to deposits as well as the current assets to total loans ratios. The result also suggests that the uniqueness of Banks and Finance companies in their business options allowed by the regulatory authorities has no effects on the competitiveness.

Table 1 Preliminary Statistics of Variables for the Thai Banks (1990-1996)

Bank	Q ratio	MARG	ROE	FGAP[1]	L/D	CA/TL	TA/TE	SIZE[2]
BAY	0.9604	3.2345	16.7083	418.13	0.9992	1.0522	13.2462	245.94
BBC	0.9532	1.3160	-21.5886	-495.96	1.0882	1.0470	18.0440	122.67
BBL	0.9549	4.0791	20.5248	-1057.96	1.1291	1.0631	13.5779	809.98
BMB	0.9435	2.1132	7.2708	-421.29	1.1105	1.0616	13.6976	120.07
BOA	0.9597	2.9428	9.2419	-250.08	1.1904	1.0592	13.8874	77.70
FBCB	0.9164	2.7868	12.4884	871.86	1.1422	1.0935	11.2726	157.51
KTB	0.9818	3.4251	16.7611	-389.82	0.9919	1.0464	17.9608	471.48
LTB	0.9995	2.3252	7.9641	-29.88	0.9891	1.0498	13.0221	21.01
NTB	0.9930	2.4209	14.9008	16.04	1.1190	1.0349	16.3203	39.27
SCB	0.9840	3.6992	19.7872	131.27	1.0563	1.0464	13.3839	339.54
SCIB	0.9494	3.0707	18.7873	-678.36	1.1690	1.0570	14.7615	146.46
TDB	0.9794	3.4409	13.3113	-283.12	1.1151	1.0322	14.9420	61.08
TFB	0.9775	3.7025	18.6305	880.40	1.0294	1.0638	12.5835	445.73
TMB	0.9736	3.3351	18.0872	-666.82	1.0528	1.0459	14.8383	203.86
UB	1.0475	3.1888	11.8785	-86.73	1.1308	1.0256	18.5739	38.25

Bank	Q ratio	MARG	ROE	FGAP[1]	L/D	CA/TL	TA/TE	SIZE[2]
Average	0.9716	3.0054	12.3169	-136.15	1.0875	1.0519	14.6741	220.04
Min.	0.9164	1.3160	-21.5886	-1057.96	0.9891	1.0256	11.2726	21.01
Max.	1.0475	4.0791	20.5248	880.40	1.1904	1.0935	18.5739	809.98

[1] The funding gap (FGAP) is reported in million of Baht.

[2] Total asset (TA) is reported in billion of Baht.

Table 2 Preliminary Statistics of Variables for the Thai Finance Companies (1990-1996)

Bank	Q ratio	MARG	ROE	FGAP[1]	L/D	CA/TL	TA/TE	SIZE[2]
ACL	1.2018	2.7417	17.8583	87.96	1.0803	1.0796	9.9156	45.83
AITCO	1.2810	2.8372	16.9135	36.65	0.9140	1.1745	8.3794	8.57
BC	0.9471	1.6134	14.4462	43.08	1.5110	1.0934	11.0071	10.58
BFIT	1.4471	2.5775	26.8885	81.71	1.1317	1.1744	6.5168	7.19
DS	1.3012	2.6116	19.0888	-56.10	1.5022	1.1454	8.2365	47.56
EFS	1.3427	2.7968	14.5873	-73.88	0.8961	1.0718	7.6291	11.78
FCI	1.4436	2.5278	9.4826	140.24	1.3846	1.2018	8.4598	12.67
IFCTF	0.9329	2.2116	13.9458	44.12	1.8271	1.1000	11.0386	5.21
KTT	1.0049	2.2661	15.5450	42.15	1.0889	1.1746	7.1607	22.46
NAVA	1.2727	2.4326	18.5378	133.65	1.5006	1.1110	8.5510	31.53
NFS	1.3448	2.4980	26.9723	9.03	1.0171	1.1107	10.3142	40.82
PHATRA	2.2215	2.8580	78.0563	-29.14	0.8148	1.1349	8.8848	43.60
SICCO	1.5472	1.8098	18.0440	82.19	1.0082	1.0770	13.4111	15.26
TISCO	1.4819	2.5026	21.4560	142.35	2.3886	1.1525	7.2892	37.14
UAF	1.4730	1.8745	16.7249	-139.35	1.3690	1.0690	9.6655	33.21

Bank	Q ratio	MARG	ROE	FGAP[1]	L/D	CA/TL	TA/TE	SIZE[2]
Average	1.3496	2.4106	21.9032	36.31	1.2956	1.1247	9.0973	24.89
Min.	0.9329	1.6134	9.4826	-139.35	0.8148	1.0690	6.5168	5.21
Max.	2.2215	2.8580	78.0563	142.35	2.3886	1.2018	13.4111	47.56

[1] The funding gap (FGAP) is reported in million of Baht.
[2] Total asset (TA) is reported in billion of Baht.

Table 3 The Coefficient Estimates from the Regression of the Competitiveness (Tobin's Q) on Various Attributes of the Thai Banks

$$Q_{it} = \alpha_i + \beta_{1t} MARG_{it} + \beta_{2t} ROE_{it} + \beta_{3t} FGAP_{it} + \beta_{4t} L/D_{it} + \beta_{5t} CA/TL_{it} + \beta_{6t} TA/TE_{it} + \beta_{7t} SIZE_{it} + \varepsilon_{it}$$

for i = 1,..., n, and t = 1,Ö, T

Variable	Coefficient Estimated*	t-statistics	p-value
Constant	1.510	4.536	.000
Net Interest Margin (MARG)	0.582	1.631	.106
Return on Equity (ROE)	-0.008	-0.620	.703
Funding Gap (FGAP)	0.106	0.986	.328
Loans to Deposit Ratio (L/D)	-0.195	-4.255	.000
Current Assets to Total Loans	-0.076	0.262	.794
Ratio (CA/TL)			
Total Assets to Total Equity			
Ratio (TA/TE)	0.002	3.148	.002
Total Assets (SIZE)	-0.016	-3.884	.000

* The regression was run on 150 observations.

Table 4 The Coefficient Estimates from the Regression of the Competitiveness (Tobin's Q) on Various Attributes of the Thai Finance Companies

$$Q_{it} = \alpha_i + \beta_{1t} MARG_{it} + \beta_{2t} ROE_{it} + \beta_{3t} FGAP_{it} + \beta_{4t} L/D_{it} + \beta_{5t} CA/TL_{it} + \beta_{6t} TA/TE_{it} + \beta_{7t} SIZE_{it} + \Sigma \gamma_{ik} D_k + \varepsilon_{it}$$

for i = 1,..., n, t = 1,Ö, T and k = 1,...3

Variable	Coefficient Estimated*	t-statistics	p-value
Constant	-2.271	0.956	.342
Interest Margin (MARG)	-2.551	-0.674	.502
Return on Equity (ROE)	0.138	-0.717	.478
Funding Gap (FGAP)	-3.738	-2.053	.043
Loans to Deposit Ratio (L/D)	-0.314	-1.709	.091
Current Assets to Total Loans Ratio (CA/TL)	3.063	1.909	.060
Total Assets to Total Equity Ratio (TA/TE)	0.049	1.371	.174
Total Assets (SIZE)	0.057	0.519	.605
Securities Business (D1)	0.300	1.008	.316
Bank Affiliation (D2)	0.261	-0.593	.555
Leasing Business (D3)	-0.381	-1.125	.264

* The regression was run on 150 observations including dummy variables.

Table 5 The Coefficient Estimates from the Regression of the Competitiveness (Tobin's Q) on Various Attributes of the Thai Banks and Finance Companies

$$Q_{it} = \alpha_i + \beta_{1t} MARG_{it} + \beta_{2t} ROE_{it} + \beta_{3t} FGAP_{it} + \beta_{4t} L/D_{it} + \beta_{5t} CA/TL_{it} + \beta_{6t} TA/TE_{it} + \beta_{6t} SIZE_{it} + \gamma_{it} D_{it} + \varepsilon_{it}$$

for i = 1,..., n, and t = 1,..., T

Variable	Coefficient Estimated*	t-statistics	p-value
Constant	-0.594	-0.429	.668
Net Interest Margin (MARG)	2.016	-0.926	.358
Return on Equity (ROE)	-0.077	-0.668	.505
Funding Gap (FGAP)	-1.836	-2.237	.028
Loans to Deposit Ratio (L/D)	-0.339	-2.825	.005
Current Assets to Total Loans Ratio (CA/TL)	1.270	1.634	.104
Total Assets to Total Equity Ratio (TA/TE)	0.013	0.948	.344
Total Assets (TA)	0.024	0.528	.531
Bank/Finance (D1)	0.179	1.174	.242

* The regression was run on 225 observations including dummy variables.

References

Agrawal, A. and C.R. Knoeber, "Firm Performance and Mechanisms to Control Agency Problems between Managers and Shareholders," *Journal of Financial and Quantitative Analysis*, Vol. 31 No. 3, September 1996, pp: 377-397.

Aliber, R.Z., "International Banking: A Survey," *Journal of Money, Credit, and Banking*, Vol. 16 No. 4, Part 2, November 1984, pp: 661-695.

Arshadi, N. and E.C. Lawrence, "An Empirical Investigation of New Bank Performance," *Journal of Banking and Finance*, Vol. 11 1987, pp: 33-48.

Benston, G.J., "Branch Banking and Economies of Scale," *Journal of Finance*, Vol. 20 1965, pp: 312-331.

Berger, A.N. and T.H. Hannan, "The Price-Concentration Relationship in Banking," *Review of Economics and Statistics*, Vol. 74, May 1989, pp: 291-299.

Binder, J.J., "Measuring the effects of regulation with stock price data," *Rand Journal of Economics*, Vol. 16 (1985), pp:167-183.

Cornett, M.M. and H. Tehranian, "Stock Market Reactions to the Depository Institutions Deregulation and Monetary Control Act of 1980," *Journal of Banking and Finance*, Vol. 13 (1989), pp: 81-100.

Cornett, M.M. and H. Tehranian, "An Examination of the Impact of the Garn-St. Germain Depository Institutions Act of 1982 on Commercial Banks and Savings and Loans," *Journal of Finance*, March (1990), pp: 95-111.

Dhanwattanachai, Chularat, "The Economic of Scale and The Economies of Scope of Thai Commercial Banks," the Master Thesis, Thammasat University, 1990.
Fama, E.F., *Foundations of Finance* (Basic Books, New York, 1976)

Gilligan, T., M. Smirlock and W. Marshall, "Scale and Scope Economies in the Multi-Product Banking Firm," *Journal of Monetary Economics*, Vol. 13 1984, pp: 393-405.
Greenbaum, S.I., "Competition and Efficiency in Banking System – Empirical Research and Its Policy Implication," *Journal of Political Economy*, Vol. 75, 1967, pp: 461-481.

Hunter, W.C., S.G. Timme and W.K. Yang, "An Examination of Cost Subadditivity and Multiproduct Production in Large U.S. Commercial Banks," *Journal of Money, Credit and Banking*, Vol. 22 1990, pp: 504-525.

Jackson, W.E., "The Price-Concentration Relationship in Banking: A Comment," *Review of Economics and Statistics*, Vol. 74, 1992, pp: 291-299.

Jayapani, P., çImpacts of Financial Development on Economic Growth: A Case Study of Thailand,é Unpublished Doctoral Dissertation, The JDBA Program, Chulalongkorn University 1997.

Koomsup, P, "Economies of Scale of Commercial Banks in Thailand," *Economic Outlook*, January 1972, pp: 66-71.

Lang, L.H.P., R.M. Stulz, and R.A. Walking, "Managerial Performance, Tobin's Q, and the Gains from Successful Tender Offers," *Journal of Financial Economics*, 24 (1989), pp: 137-154.

Lindenberg, E.B., and S.A. Ross, "Tobin's q Ratio and Industrial Organization," *Journal of Business*, Vol. 54, no.1, 1981, pp: 1-32.

McCormick, J.M., "The Role of Securitization in Transforming Banks into More Efficient Financial Intermediaries," *Midland Corporate Finance Journal*, Vol. 5 No. 3, Fall 1987, pp: 50-63.

Morck, R., A. Shleifer, and R.W. Vishny, "Alternative Mechanisms for Corporate Control," *American Economic Review*, Vol. 79 (September 1989), pp: 842-852.

Murray, J.D., and R.W. White, "Economies of Scale and Economics of Scope in Multiproduct Financial Institutions: A Study of British Columbia Credit Unions," *Journal of Finance*, Vol. 38, June 1983, pp: 887-902.

Nidhiprapha, D. and G. Arya, "Efficiency in the Thai Financial Sector," Working paper presented at the TDRI 1987 Conference, November 1987.

Pefect, S.B., and K.W. Wiles, "Alternative Constructions of Tobin's q: An Empirical Comparison." *Journal of Empirical Finance*, 1 (July 1994), pp: 313-341.

Revell, J., "Costs and Margins in Banking: An International Survey," Paris, 1980, OECD.

Somnuk V., M. Pongpalee, and P. Charoonphipatkul, " The measurement of the Efficiency of the Thai Finance Companies," Unpublished Master Thesis, Thammasat University, 1997.

Tobin, J., "A General Equilibrium Approach to Monetary Theory," *Journal of Money, Credit, And Banking*, (February 1969), pp: 15-29.