

Mitigating of Financing Constraints in the Thai Banking System*

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* The research team would like to thank Dr. Piti Disyatat and the Bank of Thailand for their recommendations that are valuable to this research work, and for granting us the opportunity to present our paper during the Bank of Thailand Symposium 2014. Special thanks also go to Khun Saithip Konggiatnarong, Khun Wanwisa Sriratana and Khun Nat Banditwattanawong for their assistance. The opinions expressed herein are solely those of the research team and not necessarily those of KASIKORNBANK, KASIKORN RESEARCH CENTER and Bank of Thailand.

ABSTRACT

The objective of this article is to analyze the development in mitigation of “financing constraints” in Thai banking system for both corporate and household sectors since the Asian Financial Crisis in 1997, which was a great turning point for the economic and banking system. The issue concerning financing constraints for business firms and households is considered as one of the most significant financial problems, causing the economy to be in a sub-optimal equilibrium. This study found that the issues pertaining to financing constraints for business firms and household have been eased owing to several reasons. Banking innovations have been boosted due to changing competition landscape, and transformation of business goals under the restructuring of Thai laws and new economic conditions. Emergence of such innovations reflects right puzzles between risk management, operational procedures and IT, marketing and communications, as well as sales and service channels putting together, thereby assisting small and medium-sized enterprises (SMEs) and the household sector to gain better access to financing, either in dimension of quality, quantity and pricing. This is in line with the empirical evidence indicating that the changing cost of borrowing for entrepreneurs during the recent period was partly due to the development of financial system, competition among Thai banks and development of business banking innovations. All these factors assisted small firms which have enhanced their potential to access financial capital, closing the gap between them and bigger firms. Nevertheless, the different economic and financial conditions leave the issue open-ended for all the concerned institutions in determining the “appropriate” policy design to encourage the corporate and household sectors to access credits from banks under appropriate terms and conditions without affecting the long-term economic stability for the future challenges.

Keywords: Thai banking system, financial constraints, SMEs

JEL Classification: G20, G21, G28

1. Introduction

Finance is considered as one of the important factors which impact economic growth through consumption by household sector and investment by corporate sector. Therefore, distributing the opportunity of accessing financial capital for the household and business sectors is a crucial aspect of long-term economic development. However, in the past, household and business sectors, especially the base of the Population Pyramid which includes low-income households and small and medium enterprises or SMEs, often encounter limitations in accessing suitable source of finance; the effect of which suppresses consumption, investment and the growth of the business sector (Ayyagari, Demirguc-Kunt and Maksimovic, 2006). All these have raised a question for all concerned institutions as to “how can low-income households and SMEs, which are of the large portion of the country’s population, access suitable source of finance with the level of capital that corresponds to the true borrowing power of the credit seekers”. Nevertheless, many studies, both in Thailand and also abroad, indicate that if the aforementioned financing constraints are mitigated, corporate and household sectors will be the propelling force in boosting the economy considerably which will eventually bring about economic growth.

If one considers the development of the issue regarding financing constraints in the context of Thai Financial Market, it can be seen that after Thai financial system went through the Asian Financial Crisis in 1997, there occurred tremendous transformation in the Thai banking system. The change owes not only to the adjustment efforts made by banks themselves in order to restore their performance and create profit but also to the adjustment of rules and regulations by the officials in order to encourage competition

and reinforce the robustness for the banking system. All these are important factors that may improve the situation of the financing constraints in the Thai banking system for the corporate and household sectors. Thus, this study aims at analyzing the development of measures to mitigate “financing constraints” in the Thai banking system, for both business enterprises and households since the Asian Financial Crisis in 1997 until now. By analyzing the literature related to financing constraints in the case of Thailand, there has been no research concerning the role of banking innovations and the development of banking system in mitigating financing constraints which is the main objective of this article.

The rest of this article consists of 4 main sections: 2) Financing constraint: statement of the problem, causes and impacts, 3) Development of the credit constraint in Thailand and the link with banking innovations, 4) Quantitative analysis to measure the relaxation of the financing constraints and 5) challenges in the future.

2. Financing constraint: statement of the problem, causes and impacts

To understand the problem and the evolution of financing constraint for entrepreneurs and households in the context of Thai financial system, one has to first understand the meaning of “financing constraints” according to the economic theory so to limit the scope of the study. Upon gathering various definitions of financing constraints from other widely accepted and cited studies in the past (For example, see Stiglitz and Weiss 1981; Fazzari, Hubbard and Petersen, 1988; Beck, Demirguc-Kunt and Maksimovic, 2005), it can be concluded that “financing constraints” imply the condition in which financial product users, both

entrepreneurs and households, cannot acquire the financial capital in a suitable manner. This condition is reflected in different variables such as price, quantity and quality received by the consumers as a result of market imperfection in the forms of asymmetric information between lenders and borrowers, market power of the lender, agency problem, transaction cost, and laws and regulations

The presence of market imperfection requires the lenders to consider granting loan to a group of trustable borrowers who are able to prove that they possess the ability to repay or low risk of default, which is linked with financial proof or collateral. This is done to reduce the possibility of default later on. Due to this, financial product users are treated quite differently and, in a few cases, some groups may not receive any service at all if compared to the case of market perfection in which lenders have perfect information about the borrowers.

Nevertheless, the definition of “financing constraints” is quite varied and diverse among different studies because it covers sources of finance of all aspects, ranging from money market, capital market to bank and non-bank financial institutions, both public and private. Thus, the focus of this study is to portray the significance of the role of banking system in mitigating financing constraints for corporate and household sectors since the end of Asian Financial Crisis in 1997 until now because banks are financial intermediaries that play a significant role in Thai financial system. The objective is to provide an overview of how financing constraints for the corporate and household sectors have evolved through the past 20 years after the financial crisis which eventually led to the change in Thai banking system in a critical way; from the development of the whole banking system to the supervision and regulation by the authorities.

2.1. Literatures related to financing constraints for corporate and household sectors and their impacts

Considering related studies in the past, it is interesting to point out that market imperfection, especially asymmetric information between lenders and borrowers, creates financing constraints for entrepreneurs and households. However, the impact received by them varies, depending on the severity of market imperfection and specific factors corresponding to the nature of each business and household.

As for the studies concerning financing constraints for the business sector, Fazzari, Hubbard and Petersen (1988), which is one of the empirical analyzes in the early period, considered external financing constraint. They found that investment by the firm having external financing constraints is highly sensitive to cash flow or internal fund. This seminal paper became the model for empirical studies related to the problem of financing constraints for business sector.

Nevertheless, Kaplan and Zingales (1997, 2000) found that the problem of financing constraints depends on financial status of the business sector which is reflected in various financial ratios such as the ability to pay interest, accumulated debt, the ability to earn income and profit of the firm. All of these have impact on the accessibility of financial capital for the business firms. Likewise, Cleary (1999, 2006) found that firm's financial performance, which is mirrored in the important financial ratios (firm's liquidity, debt, profitability and growth rate), can reflect the problem of financing constraints for business firms. Firms with robust financial status can access sources of finance with greater ease compared to those with weak financial status. Apart from the studies mentioned above, it should be noted that there is a large number of research that try to show the causes of financing constraints for entrepreneurs in the same way

that Fazzari, Hubbard and Petersen (1988) and Kaplan and Zingales (1997) did.

In addition, certain studies found that market imperfection indeed affects financial variables or other factors that reflect the firm's robustness and profitability and eventually creates financing constraints. For instance, Berger and Udell (1995) found that the relationship with commercial banks and collateral are the factors that affect the accessibility to financial capital provided by commercial banks and the interest rate which is lower (especially when the borrower is SME). Likewise, Cole, Goldberg and White (2004) who found that the size of property, share of capital and year of operation have impact on loan approval for entrepreneurs. Business firms which possess large property and share of capital, and long period of operation have higher chance of receiving loan from commercial banks compared to those with small property and share of capital, and short period of operation. In line with this, Beck et al. (2006) found that the size, age and ownership of the enterprise matter too.

With further analysis of the impact of financing constraints on business enterprises, Hubbard (1998) found other impacts on the entrepreneurs besides the direct impact on new investment of the firm; for instance, expenditure on R&D in order to create new innovations and improve productivity, hiring process of employees and investment in stocks, etc. Other studies also indicate that the problem of external financing constraints affects the growth and survivability of the firm in a critical way. For example, Ayyagari, Demircuc-Kunt and Maksimovic (2006) found that obstacles pertaining to financing constraints affect growth of the business sector, especially SMEs who have to bear high cost of borrowing, which is the greatest factor suppressing growth and expansion of business firms. The next factor is inaccessibility of long-term loan and lack of collateral. In

addition to this, Musso and Schiavo (2008) found that entrepreneurs who are facing financing constraints are more likely to close down the business firm compared to those who can access external finance. In the contrary, if business firms can avail external finance, this impacts positively on the growth of sales, accumulation of capital and increased hiring of labors in a significant way.

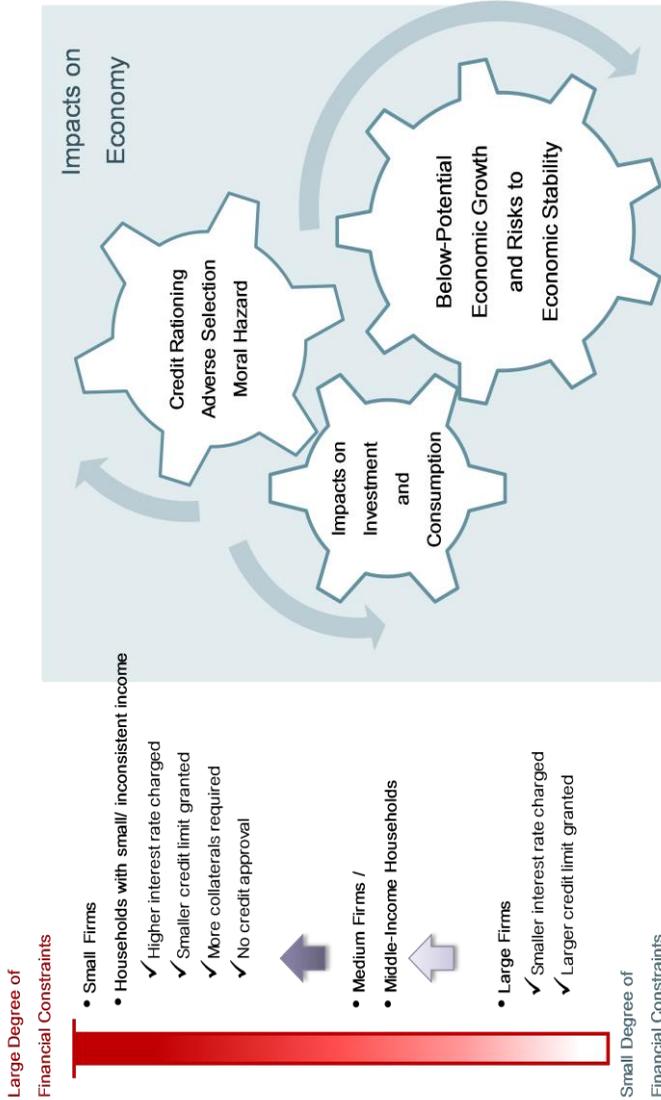
Thus, from the overview of related studies above, it may be concluded that financing constraints is the result of market imperfection, especially asymmetric information. Commercial banks or money lenders cannot access full information of the borrowers, making risk management a more difficult task. This further brings about the use of some variables that reflect the risk of default of the borrowers such as entrepreneurship and profitability to calculate the price of financial product in an appropriate manner and to serve as the basis in decision-making in loan approval process. Herewith, the problem of financing constraints for corporate firms and households is spawned which creates a downward pressure on investment and consumption, eventually causing economic growth to be in a sub-optimal equilibrium.

2.2. Development of the financial system to mitigate financing constraints

While entrepreneurs and households are encountering financing constraints as a result of market imperfection, some studies found that the development of financial system, financial intermediary and institution significantly contributes to the mitigation of financing constraints and assists them in accessing external finance.¹ Demirguc-Kunt

¹ For more detail about financial development in mitigating financing constraints for entrepreneurs and households, see Levine (2005).

Figure 1. Impact summary of households and economy's financing constraints



Source: The research team's summary from related working papers and studies.

and Maksimovic (1998) found that entrepreneurs in countries with effective law and regulations, and large banking system are able to acquire long-term loan easier. Beck, Demirguc-Kunt, and Martinez Peria (2008) analyzed the development of banking system through various indicators like number of branches, ATM, saving accounts and loan accounts and found that they are significant in mitigating financing constraints for SMEs and entrepreneurs.

In addition, Clarke et al. (2001) found that countries that allow foreign banks to influence the banking system by a large extent will have lesser financing constraints, especially for low-income customers. This result is in line with those of Gelos and Werner ((2002 and Haas and Naaborg (2005(who found that the issue of financing constraints is likely to reduce after financial liberalization, notably for small enterprises. By examining the role of financial innovations, it is found that innovations developed by commercial banks reduce financing constraints for business enterprises and households. For instance, Frame, Srinivasan and Woosley (2001) found that the development of “Credit Scoring” in commercial banks assists SMEs in acquiring loans. In the same direction, Berger, Frame and Miller (2005) added that the use of Credit Scoring mitigates the financing constraints for SMEs, especially by increasing Credit Ability.

From the overview above, it can be said that the trend of obstacles and financing constraints for the corporate and household sectors seems to have been eased by the development of financial institution, financial liberalization, law and regulations and banking innovations in the country.

2.3. The issue of financing constraints for the corporate and household sectors in Thailand

The research body related to mitigation of financing constraints for SMEs in Thailand is still somewhat limited.

However, most of the studies focus on surveying for opinions of households and entrepreneurs and studies using econometric analysis often consider only factors that determine financing constraints for business enterprises. Theerawongseri (2003) examined financing constraints for Thai entrepreneurs during 1990-2001 by using the data of companies listed on the Stock Exchange of Thailand (SET). It was found that the financial crisis in 1997 exerted additional pressure on the business sector by increasing the severity of external financing constraints. Moreover, small enterprises had a higher chance of facing financing constraints more than large enterprises. The result is line with the entrepreneur survey conducted by Kaufmann ,Batra and Stone (2003) during 1999-2000. Thai entrepreneurs paid more importance on the issue of financing constraints, in relation to the other countries within the same region, which is also higher than the average level of 80 countries surveyed. In addition, the issue of financing constraints is the important obstacle to conduct business for Thai entrepreneurs, especially interest rate which is still very high.

Paulson and Townsend (2004, 2005) investigated financing constraints for Thai households and business owners through a household level survey. The study found that 2 out of 3 small firms in Thailand raise initial capital through own saving, borrowing within family network or acquaintances, rather than borrowing from financial intermediary like commercial banks. Due to constraints on credit, households with high level of wealth accumulation are more likely to become entrepreneurs compared to those with low level of wealth accumulation. Also, the survey found that small firms in Thailand lack capital for expansion of business. All of these reflect the problem of financing constraints for small entrepreneurs and households. Nevertheless, this issue shows a positive trend as it has been

eased owing to the development financial intermediary after the crisis in 1997.

The above discussion is close to the study conducted by The Office of SMEs Promotion (OSMEP) in 2008. It was found that Thai SMEs are indeed facing financing constraints, thereby forcing them to use own or family saving in establishing business enterprises. 10.8% of entrepreneurs seeking loans from financial institutions were rejected. However, the constraint issue has become somewhat relaxed since the survey in 2011 found that only 7.6% of SMEs were rejected by financial institutions but 40.6% of SMEs who acquired loans from financial institutions still faced with obstacles from such service. The three foremost problems are limited quantity of loan being granted, delay in the decision-making process and lack of collateral.

The household survey on financial service conducted by Bank of Thailand (2011, 2014) found that the number of Thai households that acquired loan service from commercial banks has increased to about 8.7% of total number of households in 2013, compared to 7.6% in 2010. However, the remaining 91.3% of total number of households, which did not acquire loan from commercial banks, including those that could not access bank loan (13.5%) because of poor financial status, unavailability of collateral, lack of courage to contact banks and complicated loan application process.

From the overview of documents and literatures related to financing constraints for the corporate and household sectors in Thailand, it can be concluded that in the past, Thai business firms and households indeed face with financing constraints in accessing credit provided by commercial banks. In spite of the fact that various studies have indicated that the constraint issue has been relaxed to some extent, some enterprises and households are still facing the issue from different aspects. Nevertheless, there has been no study

to evaluate the development of banking system in mitigating financing constraints for the corporate and household sectors, especially after the drastic development of Thai banking system and regulations of commercial banks that took place during a decade following the financial crisis in 1997. This gap is addressed in the next section.

3. Development of the financing constraints in Thailand and the linkage with banking innovations

This research considers the major causes that influence the aforementioned financing constraints and their linkage with banking innovations through the discussion of some important innovations and related empirical evidence. Regarding the methodology used in this section, the research committee refers to the data acquired from interviews conducted with business personnel in commercial banks and other related data. The timeline for this study is divided into 2 major periods namely; the period after the financial crisis in 1997 by comparing with the pre-crisis period which is considered to be a significant turning point in the economic and financial history of Thailand in order to clearly indicate the development of various related variables, and the recent period in which the environment and driving force for commercial bank business have changed in the way that tends to mitigate financing constraints for the corporate and household sectors.

3.1. Period 1: After the financial crisis in 1997 in comparison to the pre-crisis period.

By looking back two decades ago, it is found that there are three main factors inducing the mitigation of financing constraints namely; 1) recovery state of the economy, 2)

changes in the law and regulations of Thai financial institutions and 3) attempts on the part of commercial banks to improve and reshape business planning and agenda so to conform to the new business objective in the aftermath of the 1997 financial crisis.

Having faced with the catastrophic loss of confidence among foreign investors on the economic infrastructure for being vulnerable prior to the year 1997, Thai government had amended this weakness at its roots by floating the exchange rate on 2nd July 1997 which helped in reviving the export sector as the main engine of the economy which also generated a positive impact on FDI. In addition, the government also employed monetary and fiscal policy mechanisms to stimulate the economy, all of which would bring Thailand onto the recovery path within 1-2 year, from the time exchange rate was floated. The economic mechanism which was brought back to normal can be thought of as laying a robust foundation for the reform of regulations and business in the financial sector, contributing to the success thereafter. This move gradually improved economic status of the corporate and household sectors. This is evident in the direction of the financial status of listed companies which has become more stable. This is in line with recovering credit growth, which was a main business of commercial banks.

With regards to the changes in the rules and regulations governing Thai financial institutions, Ministry of Finance and Bank of Thailand (BOT) had continuously engaged in the amendment of regulations concerning financial institutions, which contributed to creating greater efficiency among banks as financial intermediaries after taking both direct and indirect impacts of the 1997 crisis into account. Nevertheless, measures taken after the year 1997 began with the reform of financial infrastructure; closing down financial institutes with

surmounting debt, measures to augment capital, measures to tackle low-quality debt, increase the readiness of regulations concerning resolution of debt issue which includes, for example, the Bankruptcy Act B.E. 2541 (1998), the Credit Information Business Act B.E. 2545 (2002) and establishment of the Central Bankruptcy Court and 2 Credit Bureaus in 1999. All of the aforementioned procedures helped in restoring the mechanism of the commercial banks to its normalcy thereafter.

Impact of the reforms on the development of financial system became vivid after the year 2005 onwards or after the first phase (2004-08) of the Financial Sector Master Plan (FSMP I) which was followed with the implementation of various rule and regulations such as raising standard and reorganization of financial institutes, expansion of business under the Universal Banking Concept and regulations under Consolidated Supervision, and relaxation of some limitations imposed on the opening and closing of commercial bank branches.

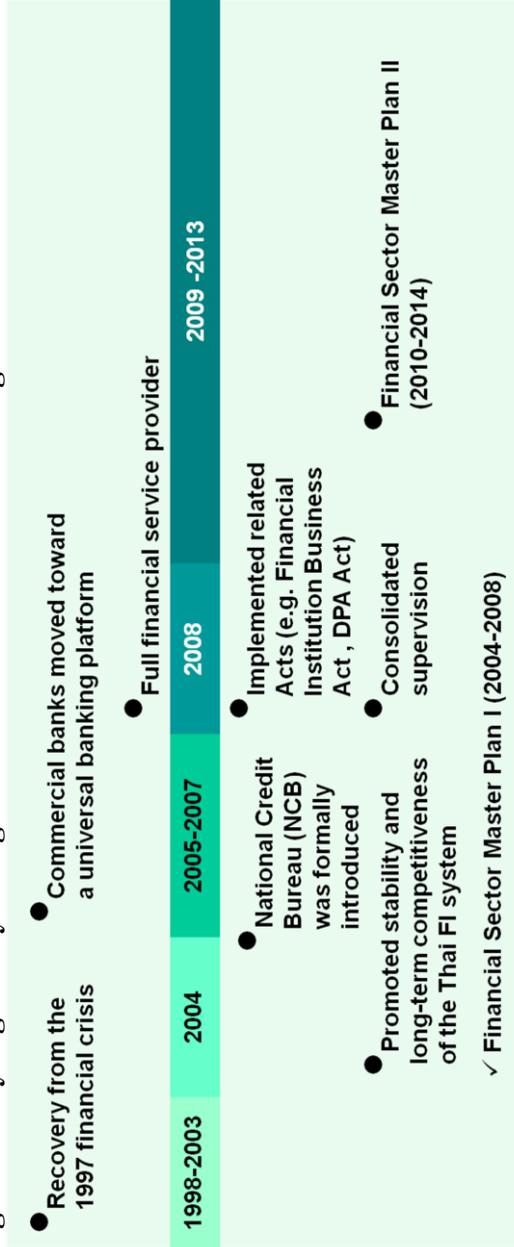
The consequences discussed above, which are also evident in the macroeconomic analysis of the Financial Development Ranking by World Economic Forum indicating the gradual improvement of Thai financial sector from the past, are also clear from the commercial banks' effort to create flexibility in business performance and conform with the new competitive environment. In addition, another important development of the financial system was to merge the two Credit Bureaus into a Nation Credit Bureau Co., Ltd. in 2005 which brought about the improved supervision and collection of complete credit information. Nevertheless, the restructuring of various dimensions discussed have both direct and indirect impacts in supporting commercial banks in developing innovations to mitigate financing constraints or

augment the access to credit for business enterprises and households.

As for the reform of business plan and working procedure of commercial banks, it is found that the aftermath of the 1997 crisis had imposed tremendous pressure on banks by forcibly requiring them to manage large amount of low-quality debts. This included an increase in the provision for both bad and doubtful debts and the robustness of fund, which had to be expanded by the size of 8 hundred thousand Baht during 1998-2000. Apart from making commercial banks learn from some lessons in the past in order to improve the weaknesses in the working procedure prior to the crisis, the restructuring process put pressure on commercial banks to provide greater returns for the shareholders.

Under the commercial banks' new business concept that requires balance between greater return for shareholders and a more efficient risk management, Thai banks must restructure their working procedure or develop new innovations in various aspects. However, after evaluating return according to Risk-Adjusted Returns on Capital (RAROC), it has been found that granting credit for SMEs and small enterprises can generate high level of return, compared to the pre-crisis period during which large quantity of credit was granted for large enterprises and small personal credit was concentrated for housing purpose as it was backed with collateral. With this notion, commercial banks, during the post-crisis period, have paid much attention on SMEs and small customers.

Figure 2. Key regulatory changes related to commercial banking business



Source: Bank of Thailand, compiled by the research team

3.1.1. Role of banking innovations in mitigating financing constraints for the corporate and household sectors

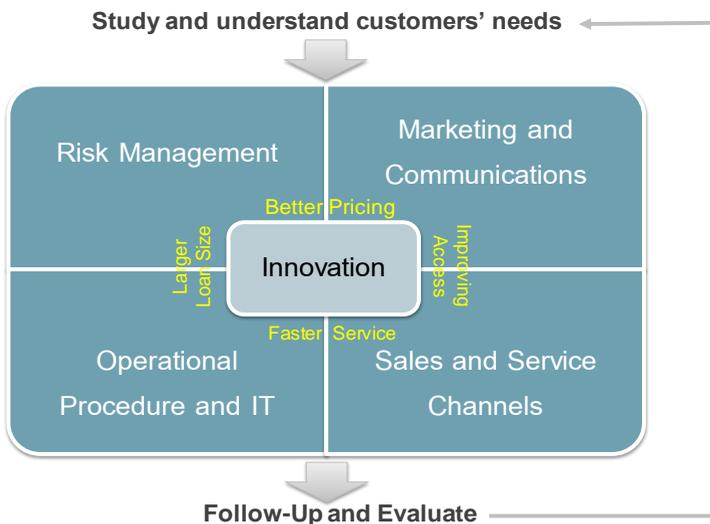
This section of the article will further examine the mechanism of banking innovations and various factors that support such mechanism; all of which are important in explaining reforms in the working procedure and different innovations that have been undertaken after 1997 onwards. Special attention has been paid for the case of credit innovations for SMEs and retail customers facing financing constraints prior to the 1997 crisis.

1. Mechanism creating financial products innovations

In order to renovate credit business for the new group of customers that comprises of SMEs and small individual borrowers whose information was not available sufficiently prior to the crisis in 1997 while maintaining the aggregated risk management within acceptable risk appetite, it is necessary for commercial banks to 1) analyze and understand customers' demand from every dimension so to collect more information about them, apart from the financial documents required for loan application. In case of SMEs, commercial banks gradually increase the depth of the analysis, starting from the obstacle at each stage in the life cycle of SMEs to the features of some specific business that create financing constraints. In case of small individual borrowers, commercial banks pay more attention on income behavior, spending and consumption pattern, and saving and investing behavior. All of these variables change throughout the lifetime of the borrowers, depending on their occupation, social and economic conditions so that product and service innovations benefit commercial banks, where profit is concerned, as well as customers' demand.

Step 2) requires commercial banks to adjust 4 aspects of working procedure in a suitable manner. This includes measures to ease risk for customers which will help in increasing the size of credit, restructuring of the working procedure and related technologies, improvement in marketing and communication techniques so to convey various features of financial products and tailor to any specific requirements of the customers, and creation of new ways through which customers can efficiently avail services from the bank. These product and service innovations lead to lower price, larger quantity of credit and better quality of service such as shorter approval period and better access to credit.

Figure 3. Commercial banks’ innovation origination dynamics



Source: The research team’s summary from information and interviews with commercial banks

In addition, to develop products and services with the

aim of improving the profitability of commercial banks so to meet shareholders' expectations, banks need to 3) track and evaluate customers' responses such as credit growth, customer satisfaction, market share, product holding and main-bank status.

Under the changing business environment, competition and customer's needs, development of innovations becomes a dynamic process, so as to ensure that commercial banks can sustainably secure their business position over time.

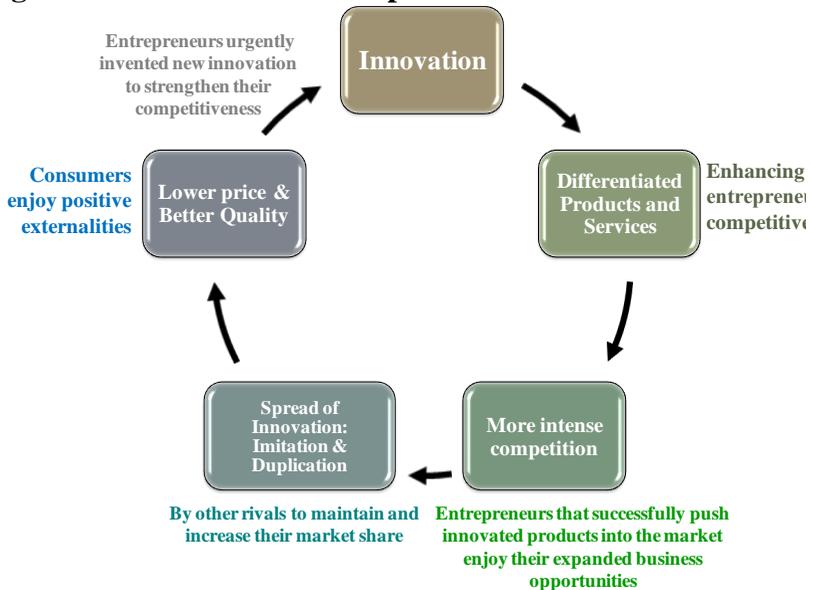
2. Relationship between innovation and competition

Many academic research studies have addressed the relationship between 'innovation' and 'competition' or the increase in productivity of banks (See Blundell, Griffith, and Van Reenen, 1995). It was also found that competition pressurizes banks to create innovations for survival, followed by growth in business (See Porter, 1990). Even though the intensity of competition will affect profitability of banks that have succeeded in developing innovations but severity of the aforementioned impact is much more pronounced for those that cannot develop innovations. Thus, competition has a positive impact on the frequency in development of innovations because banks are forced to create new innovations in order to compete efficiently (See Howitt, 2007).

As for banking business, relationship between competition and innovation in the recent time is based on the same notion described above. This includes changes in various dimensions of the working procedure which eventually result in the production of new product and service innovations that are different from their competitors. The development of new innovations increases commercial banks' ability to compete in the market in several ways; increase in market share which leads to a more intense

competition because other competitors are likely to imitate and come up with similar kind of products in order to retrieve the market share. The whole thing results in an increase in the supply of similar products in the market which creates positive externality for consumers who can avail products and services at cheaper price or of higher quality. Therefore, the situation forces both existing and new banks to produce new innovations in a shorter span of time so to maintain or retrieve the market share.

Figure 4. Innovation and competition mechanics



Source: The research team

Boosting the intensity of competition is considered the key to stimulating and hastening the development process of banking innovations. After the 1997 crisis, many factors led to a more intense competition among commercial banking business. This ranges from reforms in banking regulations

(helping in achieving a level-playing-field competition landscape and expansion of business) to a driving force emanating from the return-oriented goal as expected by the shareholders, after massive recapitalization following the 1997 crisis aftermath. Under such situation, there was immense pressure on banks to undertake reforms to bring about innovations which eventually benefit the corporate and household sectors who can better access credit.

3.1.2. Some examples of reforms in the operational procedure of commercial banks and notable innovations

For more than a decade, commercial banks have continuously tried to use the greater understanding of customers' needs in restructuring of the operational procedure in various aspects which can be categorized into 4 elements; 1) risk management, 2) operational procedure and technology, 3) marketing and communication and 4) sales and service channels to reach and serve customers. Reforms in these 4 areas lead to the creation of related innovations, out of which some have been selected for the discussion in this article. Empirical linkages that reflect the impact of innovations in mitigating financing constraints through price, quantity and quality or the extent of accessibility to financial service will also be discussed.

Table 1. Important reforms in the operational procedure of banks; pre and post-crisis in 1997

	Pre-crisis	Post-crisis
I. Credit risk management	<ul style="list-style-type: none"> • Lack of clearly defined structure of risk management. Policies are broadly defined, mostly focusing on quantitative goal. • Approval of credit is decentralized which resulted in granting decision based on discretion of managers of different levels. With this, price is highly relationship-based. • Lack effective risk approval tools. 	<ul style="list-style-type: none"> • Structure of risk management and its principles have been clearly defined. Policies cover risk of all aspects. • Approval procedure became centralized, making it more transparent and standardized. • Automatic/semi automatic credit approval tools such as Credit Scoring have been used. • Storage of credit information was made more efficient. Information from Credit Bureau has been used.

Table 1. Important reforms in the operational procedure of banks; pre and post-crisis in 1997 (Continued)

	Pre-crisis	Post-crisis
II. Working procedure and technology	<ul style="list-style-type: none"> • Most of credit processing (finding borrowers and approval of loans) and other financial transactions are conducted within the branch. 	<ul style="list-style-type: none"> • Working procedures are made more efficient by setting up service/customer support centers, especially for credit processing and making loan application less complicated • Technological development such as Core Banking System by making it more efficient and automatic. This includes security system to support electronic banking. Also, Imaging Technology has been implemented to support a faster courier of important documents. Digital Signature is used for approval of loan in case authorized person is out of area.

Table 1. Important reforms in the operational procedure of banks; pre and post-crisis in 1997 (Continued)

	Pre-crisis	Post-crisis
III. Marketing and communication *	<ul style="list-style-type: none"> Market five main products for business enterprises; OD, PN, Term Loan, Trade Finance and LI. 	<ul style="list-style-type: none"> Market financial products that are more customized and tailored to specific firm borrowers, which is different from the pre-crisis period in which banks focused majorly on marketing credit products.
IV. Channels to reach and serve customers	<ul style="list-style-type: none"> Number of branches is the indicator of trust worthiness and stability. Opening of new branches is governed by regulations of BOT, which requires simultaneous branch-openings in both urban and rural area. 	<ul style="list-style-type: none"> Branch-opening serves multi purposes at the same time, i.e., reaching more customers and serving targeted groups, helping cost management in providing service and strengthening banks' brand image as well. Various modes of services have been developed so to suit customers' needs. For examples, Sale Hubs, direct selling team, alliance business firms, and electronic channels

Source: Interviews with commercial banks by the research team

Note: * Focused on methods of presentation of products and services through development of various products or parts of products.

The reforms in the operational procedure in Table 1 are some examples of innovation and empirical evidence to be discussed below.

I. Risk Management

With mechanism that allows banks to manage greater risk, they can adjust the conditions required for the approval of loan which benefit the enterprises and households. Important innovations are:

SME borrowers-

Increase in the flexibility of collateral mechanism in the forms of loan amortization by Thai Credit Guarantee Corporation (TCG) or an individual third party. Also, allowances are made for large variety of properties to be used as collateral which cover saving deposit, bonds and machinery. In case of machinery, many commercial banks own a subsidiary firm for the purpose of managing machinery collateral which allows them to approve more kinds of machinery as collateral. As machinery is perceived to be secondary collateral in practice because of its inability to substitute land and property, it is mostly used for additional portion of loan or short-term loan rather than medium or long-term loan.

By taking into account the recent information of business enterprise such as inflows and outflows in the statement of bank account, banks are informed about cash transactions which help in ensuring them about the ability to repay loan in the future. This can lead to the credit offer that exceeds the value of the collateral. Understanding other related business along the borrower's supply chain further aids banks to see the movements of cash transactions, trade documents and products and to control the inflows and outflows through borrower's bank account. All these give clearer information

about the ability to repay loan and help in minimizing risk of default. Commercial banks have created such kind of credit scheme under the concept “Supply-Chain Financing”. A good example of this is credit scheme for gas station enterprises. In addition, giving importance to franchise business owners by looking at the quality of franchisee and other components required for the success of the business urges new SME borrowers to start similar franchise business because loan conditions are better than those offered in other credit scheme.

In addition, banks also pay greater attention on the collection of borrower information in the future. This includes information about feasibility of the project, partnership, and/or the right to receiving money. This information will be useful at the time of seeking loan for those enterprises which does not have any cash flows owing to their specific nature of the business. One example of this would be construction companies. Such enterprise can access credit more easily and receive better loan conditions. At the same time, for specialized business such as doctor, dentist, veterinarian, pharmacist and physical therapist, commercial banks emphasize on certificate of occupancy as proof of ability and the established location which help this group of borrowers to access loan without any collateral.

Individual borrowers

Banks have replaced emphasis on pay slip with statement of bank account in approving loan. If credit seekers can deposit minimum amount of money every month for a pre-specified period, then they can be considered as potential borrowers. An example of credit scheme is household loan. This serves a proof of healthy financial behavior and availability of sufficient cash flow for repayment of the loan. Such kind of consideration increases access to financing for

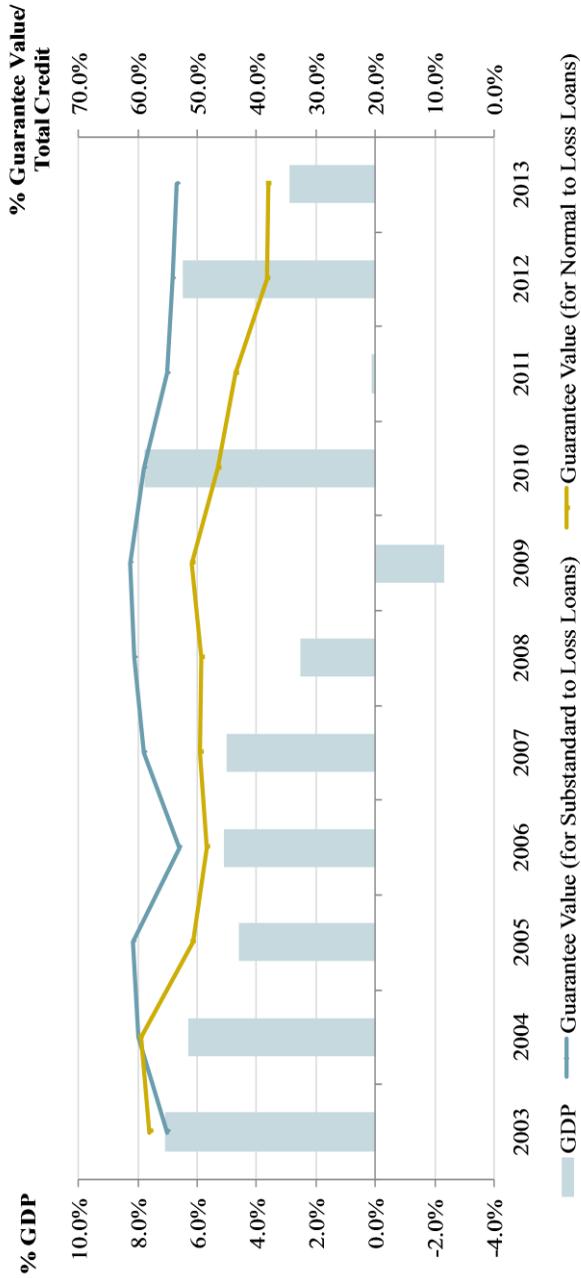
households who are self-employed and do not receive monthly compensation which has also become a prominent trend in society during the recent time.

In addition, banks have relaxed minimum wage condition in seeking personal loan. This credit scheme, also known as “Clean Loans”, occurred after the crisis in 1997 and does not require any collateral. Moreover, potential borrowers of this credit scheme do not have very high income which makes this kind of scheme more prone to default when compared to other schemes for small individual borrowers. However, this risk is compensated with returns from loans for high-income group. Nevertheless, under intense competition which results in the new risk management system, commercial banks have reduced the minimum wage requirement from the average of 15,000 Baht per month in 2002 to 10,000 Baht per month now (calculated from the values of mode announced by commercial banks during the said period). This measure increases the options for household borrowers and replaces other rigid credit schemes which are provided by informal moneylenders.

From the above discussion about reforms in risk management system, linkage with mitigation of financing constraints for SMEs and small individual borrowers is reflected in the empirical evidence discussed below:

Approval process for loans by commercial banks has become less dependent on collateral. However, if we consider the guarantee value to total credit of ten Thai commercial banks which is a unit of measurement reflecting the role of collateral in determining the amount of finance, it is found to have decreased. The proportion of debt in level 1-5 was around 38.1% in 2013 compared to 58-60% in 2003-04. The proportion of debt in level 3-5, which has no technical impact on debt in level 1, was found to be around 53.4% which has decreased from the average value of

Figure 5. Proportion of guarantee value to total credit of Thai banks

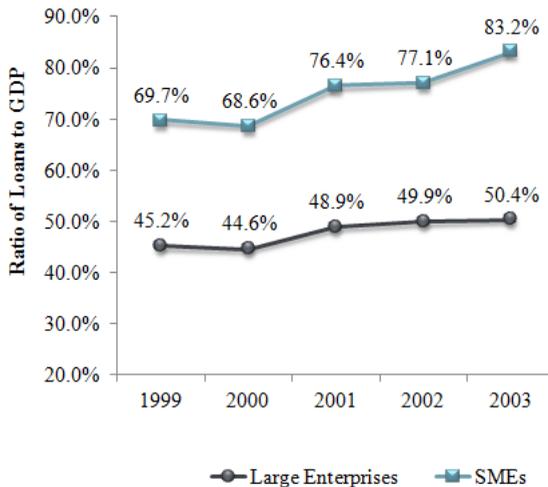


Source: Notes to Financial Statement of 10 Thai banks

60-61% during 2004-05 and also during the economic slowdown in 2009. Despite the fact that economic conditions in 2013 were not very inductive, there were possibilities that the decreased guarantee value to total credit might be explained by other factors such as restructuring of credit portfolio to credit that requires low-value collateral.

Interest spread of commercial banks has been reduced from a high level by 3.9% in the 4th quarter of 2005 (the average during 2004 to 2010 was around 3.6%) to around 3% in 2013. This partly reflects the improvement in credit price conditions for the corporate and household sectors.

Figure 6. Ratio of SME loans to GDP of SMEs



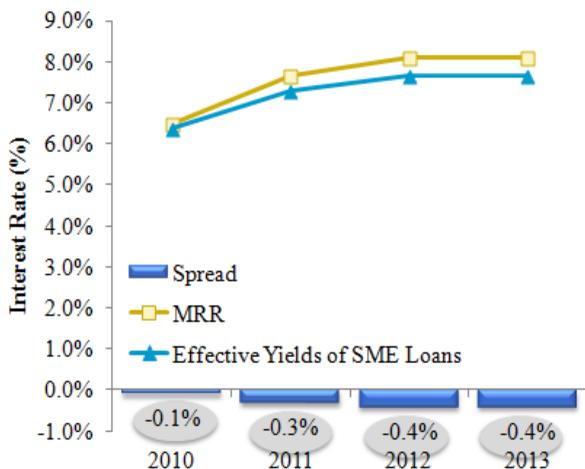
Source: OSMEP and Bank of Thailand

Quantity and price of credit for SMEs have exhibited a positive trend which is evident from the SME's credit to GDP ratio. This indicates that in order to produce an additional unit of product, SMEs employ greater portion of loaned finance compared to that in the past which serves as

an indirect signal that financing constraints for SMEs have been mitigated. It should be noted that the change is more pronounced when compared to the case of large business enterprises whose credit to GDP ratio increases at a slower rate as a result of increased dependency on financing through stock market.

Apart from this, the difference between rates of return from interest collected from loan portfolio for SMEs from two Thai commercial banks, whose information is revealed, and the interest that is used to be referred for determining the price of loan for SMEs (MRR rate) show a negative trend which indicates that SMEs can access loans with better price conditions.

Figure 7. Spread between effective yields of SME loan portfolio and MRR



Source: The research team’s calculation based on returns of each customer segments as stated in Kasikornbank and Siam Commercial Bank’s publicly-released information.

In summary, the empirical evidence above can be used to imply that efforts to restructure risk management in various

dimensions after the crisis in 1997 which led to the development of innovations concerning the loan approval process. This amendment made the approval procedure more flexible which partly mitigated financing constraints for the corporate and household sectors compared to the past. The dimension includes quantity aspect (collateral to loan value ratio has decreased and credit to GDP ratio has increased) and price aspect (difference in banks' rates of interest has decreased and difference between returns from SME portfolio and MRR rate has become prominent). Nevertheless, one fact should be accepted that this empirical evidence discussed has been caused by other factors as well. Factors on the demand side of loan are, for example, the ability to repay loan by firms and households which has improved according to economic conditions and a more intense competition among service providers.

II. Operational procedure and technology

Reforms in the working procedure and technology not only brought about more efficient products and services but also partly mitigated financing constraints qualitatively. This includes reduced difficulties in documentation and other paper works, and faster processing of service which SMEs and small individual borrowers consider as an important factor when seeking financial service from banks.

Empirical evidence supporting the development of operational procedure and technology is clearly reflected through the reduction in the time period for loan approval, especially for the case of credit for SMEs.

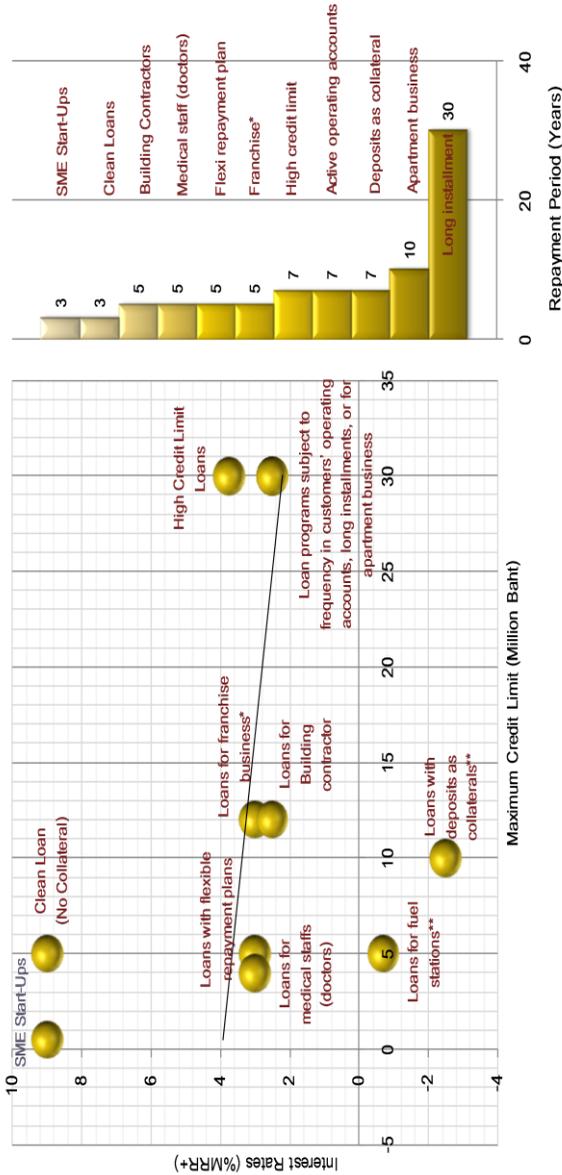
Table 2. Comparison of time period for loan approval under different kinds of credit scheme in past and present.

Types of Credit	Past	Present
Loan for SMEs (Medium)	Long period * (typically last for many months depending on the size of loan and borrower's collateral **)	Around 30 days (in general cases, which can be extended depending on the size of loan and borrower's collateral)
Loan for SMEs (Small)	Short period *(in case such loan is under the authority of branch manager with sufficient collateral)	Around 5-10 days (receive preliminary approval decision within 2-3 days)
Housing loan	15-30 days ***	Less than 7 days
Credit card loan	7-20 days ***	Less than 5 days
Personal loan	3-7 days ***	Less than 1 day (unit in hours)

Source: Interviews with commercial banks by the research team

Note: Time period starts from the date of application until the date when loan is approved (Unit: Day). * Before 1997 crisis, ** If the size of loan is within the authority, the manager will investigate credit information, evaluate the value of collateral, file credit application, process with mortgaging and approve credit. Thus, the approval process is quite long., *** Before 2002.

Figure 8. Current SME credit campaigns by interest rates, borrowing period and maximum credit limits



Source: Commercial banks' data compiled by the research team
 Note: * Loans for franchise business provide maximum credit limit of 70-80% of investment needs with repayment period up to 5-7 years depending on commercial banks, ** Loans for fuel stations and with deposits as collateral are subject to MOR and MLR rates with are lower than MRR (based on data as of September 2004)

III. Marketing and communications

Notable examples of innovative marketing and communication strategies have been seen in SME credit products, with more customized features to better fit specific nature of each business. After the 1997 crisis, credit products have become more varied and the number of credit campaign of large Thai banks now exceeds 10 campaigns, versus only 5 key products (over draft loans, promissory notes, term loans, trade finance and letter of indemnity) offered during the pre-crisis period. In addition, current credit campaigns are equipped with more variety of features dependent upon specific nature of customers' business, thereby allowing them to gain access of better credit conditions in the dimension of interest rates, credit limits and repayment terms.

IV. Channels to reach and serve customers

After the crisis in 1997, commercial banks have restructured the channels for sales and services which can be summarized below:

In case of SMEs, one measure was to increase the variety of ways to match the nature of borrower's consumption as SMEs are usually located across locality and face problems in understanding financial products. Thus, banks need to improve their understanding about the product. This has caused banks to start employing direct sales team so to reach this specific group of borrowers; compared to the time before reform when customers had to approach commercial bank by themselves to enquire about financial product. In addition, Sales Hubs have been established in various economic regions and any potential areas across the country with the objective of providing customer care.

In case of small individual borrowers, banks have also employed direct sales teams in all forms; ranging from

telesales and direct mails to sale exhibitions at various community areas and other channels through business partners (property development company, car dealers and other non-bank financial institutions which deal in personal loan and hire purchase).

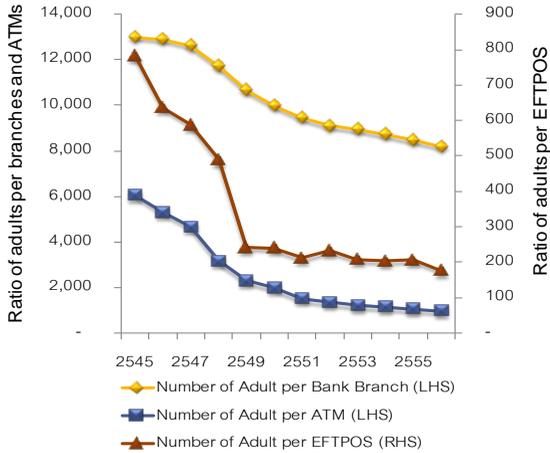
Moreover, there has been some development in the electronic channel such as Automatic Telling Machine (ATM), Cash Deposit Machine (CDM), mobile banking, internet banking and Electronic Funds Transfer at Point of Sales (EFTPOS) in order to respond to the increasing behavioral trend in using electronics. At the same time, this reduced the cost of transaction per unit for commercial banks which has positive impact on the economy owing to the aggregate reduction in transaction cost. Although the expansion of electronic channels does not directly contribute to the mitigation of financing constraints, banks are able to collect more information about their customers such as saving and inflows and outflows of cash transaction which further makes customer database more complete. This database will be useful in presenting and marketing of loan in the future.

Efforts have been made to increase service channels so to better reach SMEs and small individual borrowers which are scattered across the country. This is because banks consider ease of accessing financial service to have a great role in determining consumption decision of these two groups of borrowers.

Reforms taken to increase sales and service channels, which also include expansion of the network as a whole, to expand area of coverage have resulted in the increase in financial access for corporate and household sectors. This is evident from the ratio of bank branches and automated machines to old age population which has been declining

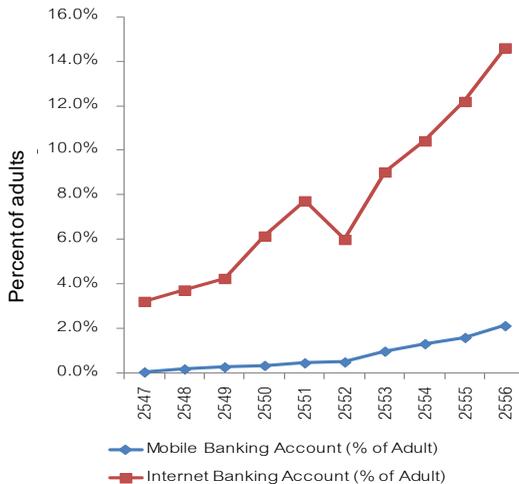
continuously, and the popularity of internet and mobile banking.

Figure 9. Number of adults per selected channels



Source: Bank of Thailand, based of Thai banking system’s data

Figure 10. Number of mobile banking and internet banking accounts per adults



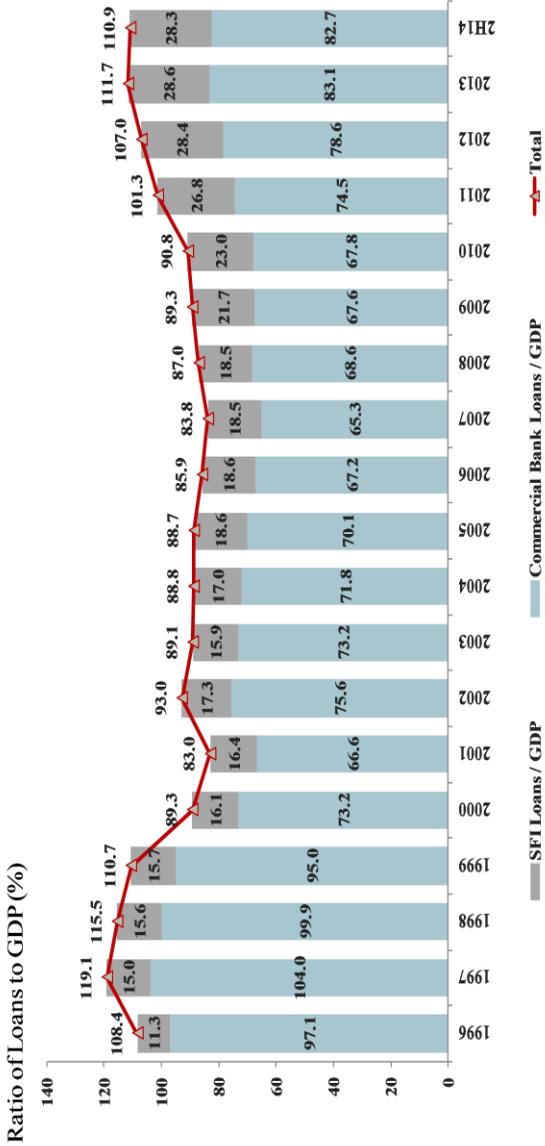
Source: Bank of Thailand, based of Thai banking system’s data

3.2. Second phase: New conditions for business firms in the present have caused a significant shift in mitigation of financing constraints

Owing to the economic pressure, financial regulations, banks' new business objective, commercial banks have devoted major portion of resources for the purpose of restructuring the working procedure and creating innovations, leading to realization of goals by increasing profitability and returns for shareholders despite the fact that the role of credit on GDP is decreasing as it is being replaced with market capitalization whose role is becoming more prominent in the business world. Nevertheless, development in banks' working procedure and banking innovations discussed so far has led to the improved conditions for loan and/or a more relaxed financial access. In other words, it can be said that financing constraints have been gradually mitigated for SMEs and small individual borrowers since 1997.

However, with new economic conditions, especially after Thai economy was affected by the global financial crisis which stemmed from the mortgage sector in the United States in 2008, Thai government had to resort to expansionary monetary policy, together with fiscal policy, in stimulating consumption and investment in the period following the crisis. Even though this measure put the overall performance of the economy on the recovery path, it is quite interesting to point out that the role of bank loans on GDP has become prominent again, which rose from 65.3% in 2007 to 82.7% in the first half of 2014. Moreover, commercial banks could expand credit with greater return like credit scheme for SMEs and small individual borrowers which led to an increase in the role of such segments on overall credit portfolio.

Figure 11. Credits of commercial banks and specialized financial institutions (SFIs) to GDP



Source: Bank of Thailand and NESDB, compiled by the research team
 Note: SFI loans are mainly based on credits extended to household and business sectors, wherein 2H14 GDP is annualized.

The research team has noted that the overall picture of this discussion partly reflects commercial banks' ability to rely on the robustness of development of the operational procedure and risk management, during the period of economic fluctuations with gradual reduction in liquidity and higher openness of Thai bank market, by creating more innovations to stimulate the loan consumption among groups which would yield great return. This includes borrowers who are facing financing constraints and also those whose constraint is not too extreme. These factors strengthened the ability of commercial banks to maintain profitability. Nevertheless, even though certain business enterprises and households are able to access capital with better price, quantity and quality conditions, this might be the result of trade-off with risk concerning overall stability, especially the issue of household debt which is on an increasing trend.

The said situation raises one further question- *Is mechanism that creates an appropriate balance between growth of credit and economic conditions sufficient during the recent period?* In other words, measures taken through interest rate policy or provision for bad and doubtful debts are not sufficient which eventually caused commercial banks to over-lend credit or not. Amidst circumstances in which risk management system and other tools, that banks have developed, have not yet encountered 'a real test' under the new economic context after the 1997 crisis onwards.

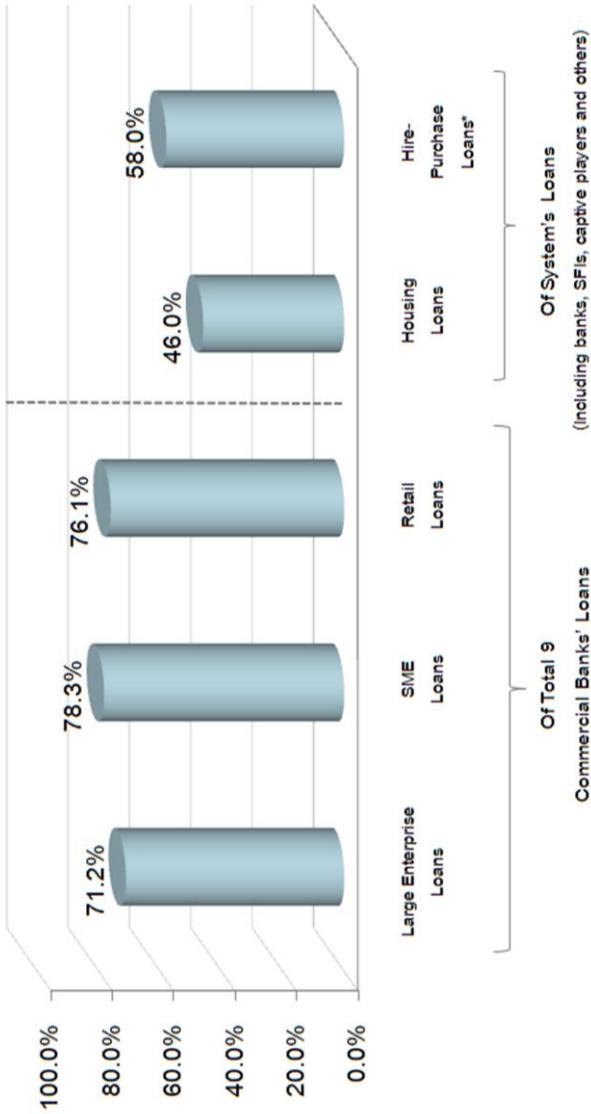
Even though finding a complete answer to this question is beyond the scope of this article, our research team wishes to point out that implementing policy concerning provision for bad debts which depends on economic conditions (also known as Dynamic Provisioning) is one of the ways to mitigate the problem. Provision for bad debts can be made more proactive during economic boom with the aim of preventing excessive growth of innovations and competition

in the loan market which can move the economy out of equilibrium. In contrary, provision for bad debts can be made more reactive during economic slumps with the aim of reducing expenditure for commercial banks which eventually incentivizes them to lend out more loans to the corporate and household sectors. Such kind of provision for bad debts is in line with the principle of Counter Cyclical Provisioning in accordance with Basel III which will be enforced by BOT in 2016.

Nevertheless, the achievement of dynamic provisioning of bad debts depends on the accuracy of the Expected Losses estimation model (See Tantitaemit et al., 2009) which awaits further proof with new data and environment in the future as the implementation of provision for bad debts alone may not be sufficient in finding a stability-oriented solution in an integrated manner. Thus, this leaves the problem open-ended for Thai government in weighing the pros and cons of various choices available which would eventually results in suitable and sufficient agenda to mitigate financing constraints in the future without exposing stability to additional risk.

Another interesting issue concerns banks' ability to restructure which have led to the accumulation of large players in high-end loan market. For instance, in case of housing loan, both hire purchase and leasing, the market shared among 4 main banks accounts for 46% and 58% per bank in the system (this includes specialized financial institutions) respectively as of Quarter 2 in 2014. In case of SME loans, the market share of 4 large banks, as of Quarter 1 in 2014 accounts for 78% when compared to other 9 banks in the study. This spawned a new question- *Is the degree of competition sufficient?*

Figure 12. Credit market share of four largest players



Source: 9 commercial banks, Bank of Thailand, other credit providers, compiled by the research team and based on data as of 1Q14-2Q14

Note: * Including only commercial banks, except the case of hire-purchase loans wherein four largest players include those, such as bank subsidiaries.

In addition, it can be explained from the fact that each bank starts from different levels of endowment (for example capital, liquidity and infrastructure) under different business conditions, their ability to create new innovation is not uniform. In the recent time, banks with greater resource can adapt better and generate more innovations at a faster pace which, as a result, creates gap between them and their competitors. Thus, owing to the difference in sizes and abilities, imitation of products and services is slower than what it is supposed to be. At the same time, pressure from competition is not intense enough and thereby does not stimulate certain banks to break the business constraints which would lead to the creation or imitation of innovations and provision of attractive loan for existing group of borrowers or for new borrowers with greater risk.

4. Quantitative analysis to estimate the mitigation of financing constraints

In section 3, data pertaining to macroeconomics and business performance of commercial bank indicate that financing constraints for business enterprises and households are being mitigated as a result of structural transformation of the Thai economy, the development of banking regulations, presence of competition and creation of financial innovations since the aftermath of the crisis in 1997. In this section, the research team has conducted quantitative analysis with aim of examining the mitigation of financing constraints with focus on the business sector.

The objective of the empirical study with econometric tools in this section is to examine dynamic changes that took place during the period in which financing constraints for the business sector have been mitigated. From the literature review discussed in the earlier section, it is evident that

previous studies about mitigation of financing constraints for business enterprises have focused on both causes and impacts. On one hand, the analysis of firm-level factors seeks to spell the relationship between financing constraints and the nature of firms such as size of the firm, year of operation, type of business and their linkages in order to pinpoint the factor that leads to the problem of financing constraints for business enterprises. However, on the other hand, there are also other studies which aimed to analyze the impact of financing constraints for the business sector in various dimensions such as growth of business, investment, R&D, creation of innovations and financial management, etc.

At the same time, studies using macro-level factors usually examine the impact of economic environment, structure of financial system and other types of infrastructure on the issue of mitigating financing constraints for business enterprises. The structural-level factors that have been used in the analysis are development of financial system, financial liberalization, relaxation of financial regulations and degree of competition among banks which is very crucial in easing the constraints for all sectors.

The research team has collated and analyzed the concept of previous related studies in adapting with the Thai financial system in order to design the theoretical framework to analyze the changing conditions of mitigation of financing constraints for Thai business sector after the Thai banking system underwent transformations in the post-crisis period and succeeded in developing efficient business structure and system. Thus, what makes this study different from others is the analysis of dynamic changes of financing constraints through time, instead analysis of changes at constant time period.

4.1. Methodology

The study focuses on 2 aspects which are expected to possess certain linkages with the mitigation of financing constraints namely:

1. Structural changes of Thai banking system whose turning point was around 2005
2. Changes in firm characteristics

In addition, this study also focuses on the dynamic changes in the mitigation of financing constraints for small firms which usually face such limitations compared to large firms.

4.2. Data

Since this study aims to evaluate the development of financing constraints through time and the factors responsible for the limitation, there were some problems with sources of the data because transaction-based data have been used. Ideally, the best data that can indicate financing constraints and firm status is borrower's data collected by commercial banks. Being financial service provider, banks own the most detailed source of data about their customers. However, the use of such data from commercial banks faces issue of confidentiality and the lack of appropriate time series data, therefore cannot be used for the purpose of comparing financing constraints through time. As for the database of companies in Thailand that are registered with Ministry of Commerce, it covers data of small firms but faces some limitations in the 10-year historical data which requires high data cost. For the survey-based data, there are advantages in designing questionnaires according to our needs but the answers may be biased based on customer's perspective, which can be different from the real transaction in the banking system. There is also another limitation in the

collection of data that can reflect development process within short period of time.

Owing to these notions, the research team has employed the data of firms listed on the Stock Exchange of Thailand (SET) and Market for Alternative Investment (MAI) from 1998-2012 as they contain a complete and reliable financial dataset which have been prepared according to the accounting standards. In addition, the period of dataset is long enough for the analysis of changes in the conditions of financing constraints for Thai business sector. Nevertheless, the research team accepts the fact that data of listed firms with SET may not be the true representative of financing constraints for Thai firms, especially small firms as most of the listed firms are of medium size and above which can be seen as a drawback of this study.

In order to compare changes in the conditions of financing constraints for small and large firms, it is assumed that small firms encounter financing constraints more often when compared to large firms. The research team has set all the firms listed in MAI, which majorly comprises SMEs, together with those firms listed on SET whose sales volume does not exceed 400 million Baht as representatives of small firms. This is because commercial banks consider entrepreneurs with sales volume below 400 million Baht are considered as medium-size SMEs. Firms listed on SET with sales volume above 400 million Baht are made representatives of large firms.

4.3. Variables and assumptions

4.3.1. Dependent variables

Regarding the measurement of financing constraints, it should be noted that the concept of financing constraints is difficult to be quantified as its meaning may vary across time.

Thus, indicators used in this study are just variables that indirectly denote only some dimensions of the conditions of financing constraints. They do not reflect every aspect of the constraints that firms face in reality.

This study employs price indicators or cost of borrowing as variables for the financing constraints because:

- I. Cost of borrowing or rate of interest is perceived by business sector as the foremost obstacle to access finance (Beck, Demirguc-Kunt, Laeven and Maksimovic, 2006; OSMEP, 2012).
- II. Cost of borrowing for each entrepreneur reflects different degrees of risk they face which depends on bank's evaluation process. Due to this, small firms are more likely to face financing constraints and bear higher cost of borrowing, when compared to large firms)Beck, Demirguc-Kunt and Martinez Peria, (2008.
- III. An increase or decrease in cost of borrowing reflects the ability of firms in accessing loan at a high or low price. This also reflects an increase or decrease in opportunity in accessing loan.
- IV. Quantitative analysis of financing constraints for entrepreneurs is limited due to the difference in amount of loan received (per collateral value) by each entrepreneur which depends on various factors apart from risk such as urgency of need, type of loan, duration of loan, etc.

With these notions, interest expense per total debt is used as dependent variable which reflects the cost of borrowing for business enterprises. In addition, external factors such as business cycle which may affect cost of borrowing have been eliminated. The research team then uses interest rate policy to adjust for the effect of external factors by using 2 methods. The first method considers policy rates as a control variable

in the equation. The second method considers cost of borrowing net of policy rates as dependent variable by deducting the average policy rates from interest expense per total debt.

4.3.2. *Independent variables*

The independent variables which are the determinants of financing constraints consist of 2 dimensional factors. The first dimension reflects financial status of the business firms which comprises of 1) percentage change in total assets which reflects financial robustness, 2) net profit margin which reflects overall performance of the firm and 3) coverage ratio which reflects the ability to repay the loan. The research team acknowledges the fact that under market imperfection with asymmetric information, financial figures are tools in building firm's credibility and trustworthiness that the loan will be repaid. Nevertheless, lenders usually get hold of these figures from financial reports which render information used in loan application outdated. Owing to this reason, the research team assumes that financial ratios in the previous year (year $t-1$) have impact on the price conditions for loan to borrowers in the following year (year t).

The second dimension includes variables that represent structural changes in the banking system. This is done by using dummy variables to reflect the impact of structural changes. The value of this dummy is 1 for the period 2005 – 2012 as other time periods are considered as the transition phase through which structural changes in the banking system took place.

Nevertheless, the research team also concludes that one factor alone cannot be used to reflect structural changes and development of banking system. Different factors that are often used as measuring scale of development in the banking system have been tested. One example is the number of times

structural changes took place in 6 commercial banks (cumulative) which indicates structural development in the business of banks and domestic credit to private sector (percentage to GDP). Other factors are those that reflect development of the financial capital market which includes market capitalization and amount of private bonds (both in % of GDP).

According to the hypothesis, coefficients of all the variables (both financial variables and structural change variables) should have negative relationship with cost of borrowing. In addition, it is also expected that the value of coefficients for the small firms will be lesser (more negative value) than that of large firms. However, small firms usually have a relatively higher cost of borrowing as they are perceived to be more risky despite the fact that some of them are stable with good performance and hence deserve better loan conditions. Therefore, after commercial banks underwent structural transformations, coupled with new innovations that help in tailoring financial products according to the borrower's needs and managing risk more efficiently, commercial banks had to compete more intensely by offering loan conditions based on the risk of that borrower. However, large firms usually have bargaining power which, in turn, leads to good loan offers by banks already. Thus, development of financial figures may reflect the impact of bargaining power to lower interest rates not as much as for small firms. The same applies to the structural changes in the banking system which helps in reducing the interest rate for large firms but not as much as for small firms which faced high cost of borrowing in the past.

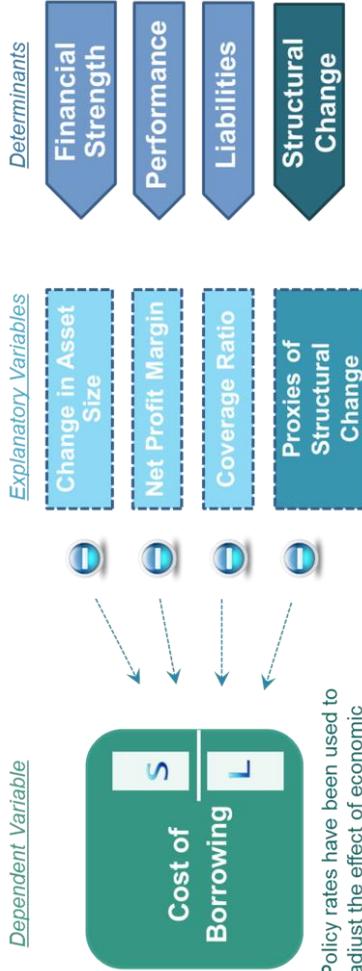
Figure 13. Data used in the study

Sample separated by size	Indicator	Large	Small
No. of firms	No. of firms	304	63
Total sales (THB Mn)*	Total sales (THB Mn)*	14,405	730
Total assets (THB Mn)*	Total assets (THB Mn)*	15,947	1,141

Note: * Data during 1998-2012

Source: SET, compiled by the research team

Figure 14. Variables and assumption



* Policy rates have been used to adjust the effect of economic cycles on cost of borrowing

Source: Research team

4.4. Results of the study

The regression analysis of relationship between cost of borrowing and factors that ease borrowing constraints for business firm yields result that is in line with the hypothesis. Some results to be highlighted are:

Table 3. Relationship between cost of borrowing and factors that ease borrowing constraints

	Cost of Borrowing		Cost of Borrowing Net of Policy Rates	
	Small	Large	Small	Large
% Change in Total Assets (-1)	- 0.0002	- 0.0041 **	-0.0003	- 0.0040 ***
Net Profit Margin (-1)	- 0.0022**	2.10E- 06	- 0.0024 **	3.92E- 06
Coverage ratio (-1)	-4.27E- 05***	-1.94E- 07***	-4.01E- 05**	-1.92E- 07***
Policy Rates	0.3334** *	0.2922 ***		
Structural Change (Dummy)	- 2.3341** *	- 1.4325 ***	- 3.0976 ***	- 2.3071 ***
C	4.1845** *	3.3135 ***	3.0913 ***	2.0903 ***
Adjusted R-squared	0.1747	0.1089	0.2983	0.2609

Note: structural change in the banking system is a dummy variable. ***, **, * denote statistical significance at 1%, 5% and 10% respectively.

- I. Cost of borrowing is higher for small firms as hypothesized. This is evident from the value of the coefficients. While the value of the coefficient reflects the fact that profitability of small firms is more

negative when compared to large firms. However, if small firms are able to improve their profitability which is again reflected in the improvement in the financial ratio, they will be able to avail interest rate offer or cost of borrowing that is much lower than large firms whose cost of borrowing is already low. Profitability is the variable that affects cost of borrowing for small firms the most, followed by factors determining loan repayment. Nevertheless, a change in the size of property which reflects financial strength is not significant.

- II. Structural changes in the commercial banks mitigate financing constraints for small firms to a greater extent when compared to large firms. This can be seen from the coefficient of the dummy variable which is in line with the hypothesis.

As for the other variables that are used to reflect the development of the financial system, it is found that the number of business reforms that 6 commercial banks in this study underwent (cumulative) has coefficient whose value is significantly more negative for small firms. This is in line with the dummy variable and the hypothesis. Even though the domestic credit to private sector (% of GDP) of small firms is negative and significant, value of the coefficient is lower than that of large firms. The coefficient of market capitalization (% of GDP) is significant and more negative for small firms. This also corresponds to the hypothesis. However, it has been interpreted that development of capital market may have contributed to the mitigation of financing constraints for firms with opportunity and potential to access finance in the market. This conforms with the characteristics of firms in this study which are listed on the stock market. Nevertheless, it cannot be proved that development of the

capital market affects mitigation of financing constraints for small firms in general.

Overall, the result of this study is in line with other studies conducted abroad which have indicated that development of the financial system contributes to the easing of financial limitations for entrepreneurs and helps in mitigating the financing constraints caused by commercial banks. For instance, Rajan and Zingales ((1998 and Love ((2003 found that development in the banking system helps entrepreneurs in accessing external finance more easily by relaxing constraints for them which results in reduction in cost of borrowing. With similar notions, Demircuc-Kunt and Maksimovic ((1998 and Beck, Demircuc-Kunt, and Maksimovic (2005(found that growth and competition in the banking system also contributes to mitigation of such constraints. However, there are also some studies which found that development in the banking system, such as Universal Banking, may create imperfection in information according to the Information Hypothesis which would eventually limit small entrepreneurs in accessing bank loans (For an example, see Berger and Udell, 1995).

Regardless of the contrary view, the result of this study indicates that cost of borrowing changes in the recent period. This change can be the result of development in the financial system, creation of new innovations and competition among banks which helped in uplifting the potential of small firms in accessing finance with cost of borrowing which is being moved closer to that of large firms. This result corresponds with the data and does not contradict the hypothesis. Hence, this can be considered to be a piece of empirical evidence that indicates relaxation of financing constraints for the business firms. Apart from this, it also implies that entrepreneurs can mitigate financing constraints if their

accounting system signals healthy financial status which would, in turn, lead to a better financial offer by banks.

Apart from understanding the relationship between conditions of the financing constraints and the impact on investment for the business sector, together with the dynamic changes after structural reforms in the banking system took place, the research team has determined the equation to examine the impact of firm financial status and structural reforms in the banking system on investment. This is done by setting changes in fixed assets to total assets as a variable reflecting level of investment undertaken by firms. Net profit margin is used to reflect both business turnover and cash flow which are internal source of finance. In addition, growth of GDP of the year t-1 is used as a control variable to reflect business cycle and opportunity for investment. The result of this regression analysis is shown below:

Table 4. Relationship between investment in fixed assets and determinants of investment (with growth of GDP in the previous year as control variable)

	Investment	
	Small	Large
% Change in Total Assets (-1)	0.0296***	0.0588***
Net Profit Margin (-1)	0.0175***	0.0002
Coverage ratio (-1)	0.0001***	1.45E-07*
GDP (-1)	0.1294**	0.1377***
Structural Change (Dummy)	3.1045***	0.4273**
C	-3.5405***	-0.2660
Adjusted R-squared	0.0819	0.0526

Note: ***, **, * denote statistical significance at 1%, 5% and 10% respectively.

- I. Investment in fixed asset by small firms still depends on internal source of finance. This is evident from the coefficient of net profit margin is significant and

positive. On the other hand, profitability of large firms does not influence investment in a significant way. This implies that small enterprises are still facing external financing constraints when compared to large firms, which in turn gives internal finance a major role in firm's investment. Because large firms can access external finance with relatively more relaxed loan conditions, their investment does not depend on internal source of finance.

- II. Structural development of banking system impacts investment of entrepreneurs, which is more pronounced for small firms. This is reflected in the coefficient of the dummy variable which is significant and higher for small firms. This implies that small firms can access external source of finance better which is also in line with the result discussed earlier that cost of borrowing for small firms decreased after structural reforms in the banking system took place. In addition, this result corresponds with the credit statistics collected by commercial banks which found that the portion of credit for SMEs has increased.

The results discussed above indicate that during the recent period financing constraints for business enterprises have been eased through cost of borrowing and investment in fixed asset. This partly owes to the development of banking system. However, this study is merely a preliminary analysis of certain dimensions about the progress to mitigate financing constraints. There are various limitations regarding the data used in this study namely; 1) variables that measure financing constraints do not cover all aspects, both quantitative and qualitative, 2) analysis of financing constraints has not been categorized into different types (commercial banks, capital market or bond market), 3) data

used are from SET and MAI which only include medium business firms, leaving micro and small business firms out of the analysis and 4) medium business firms that are listed on SET are considered to have efficient accounting system with good status, and more choices to finance the company which then implies that they face less financial constraints than those which are not listed on the stock market. In addition, this study also faced with limitation concerning household level data in order to measure the extent of financing constraints mitigation for household sector. With these limitations, future research can further the in-depth analysis by using micro level data which explain the mitigation of financing constraints for individual business firm or individual household. Such study will be beneficial in policy making process and development of Thai financial system in the future.

5. Challenges in the future

For more than a decade, Thai government and commercial banks had been encouraging actions in various dimensions to mitigate financing constraints to some extent. However, if we look forward, it has to be accepted that various environmental factors are changing rapidly which adds further complexity in evaluating risk of firm borrowers in the banking system. Hence, it is necessary for all concerned parties to realize and come up with the development plan for financial infrastructure and other mechanisms essential in making business and household robust in order to adapt and survive in difficult situation. This will eventually bring about sustainable growth in economic and financial system. Nevertheless, the research team acknowledges that the future outlook in the context of economics, society and Thai demographics, especially issues

pertaining to the structure and competitive ability of Thailand amidst trade and investment liberalization under different agreements, is a major factor that shapes environmental factors at a macro-level which further impacts other concerned sectors at a micro-level; from business sector, household sector to commercial banks. The details are as follow:

5.1. Competitive ability and changing landscape due to AEC

Changes in the economic fundamentals will affect Thailand's competitive ability when compared with other countries in the region amidst a more intense competition brought about economic liberalization under AEC (ASEAN Economic Community), which can also be extended to other agreements in the future. As of now, Thailand's competitive ability has been reduced owing to high cost of production, shortage of labor force, both skilled and unskilled, and lower potential of economic growth in relation to others in the region which is suppressed by political issue. Moreover, Thailand is becoming an aging society and will be turned into an aged society within less than 10 years in the future which further hastens changes in Thailand's competitive ability. These trends create more challenges for Thailand in escaping the middle-income trap.

Amidst the overwhelming pressures, Thailand needs to adapt her economic structure. For almost 3 decades, Thailand relied on exports and foreign investment in boosting economic growth but now it is evident that dependence on export sector has decreased with more foreign investment being dispersed to neighboring countries within ASEAN. Nevertheless, within the time period in which competitive environment transits to a new landscape, business enterprises encounter different opportunities and impacts. The research

team has categorized this into 4 groups according to the nature of impact, reform and financing constraint conditions.

- I. Thai conglomerate MNCs are firms whose competitive ability is at par with firms at global or regional level. Being well-established, such firms are able to compete in foreign market for having firm-specific advantages in various aspects such as production, technology, brand, management system, etc. which make their product and service at par with competitors in the global market. More importantly, this group of firms has already overcome structural issues within the country (for instance, high cost of borrowing, inelastic supply of labor, limited trade privileges) by investing in or acquiring business abroad in order to access a new market while maintaining existing market share. Moreover, they have expanded their business empire throughout the production chain under vertical and horizontal integration. Also, they have diversified their business, both domestic as well as abroad in order to gain advantages in becoming regional leaders. Some examples of business firms in this category are leading companies producing food and drinks, construction materials, power and logistic firms. These firms do not have any financing constraints owing to their sufficient internal source of finance with many alternatives for external finance which includes finance from abroad.
- II. The second group of firm is Start-up MNCs, which includes large and medium enterprises that aim to expand abroad. This category also includes market-seeking FDI or firms which originally operate mainly in domestic market but expand beyond the border to avail benefits from economic liberalization. On the other hand, there are also some firms that wish to access better resources

with a more efficient cost of production (Resource-seeking or Efficiency-seeking FDI). For this category, if firms have many alternatives in source of financing, they may not be financially constrained. However, if they primarily rely on loan or internal source of finance, they may face with financing constraint in the early phase because such firms need to own sufficient domestic property as collateral in acquiring credit to be used abroad. At the same time, risk status of foreign investment project may not be the same as when it operates in the domestic market. Nevertheless, if firms show potential to grow in the foreign market, they will be offered with good loan conditions owing to the competition among lenders in the market.

- III. The third category includes the suppliers of MNCs that had established production base in Thailand. These suppliers produce components for MNCs who are OEMs (Original Equipment Manufacturer) under contract-base production. This also includes industries and business firms providing various support service. Such firms may encounter more pressure in the future. On one hand, foreign SMEs that are under foreign MNCs will be entering domestic market. On the other hand, it is also possible that MNCs will expand their production base network to the neighboring countries within ASEAN which would reduce investment in Thailand. In case these MNCs which are customers still purchase product components from Thailand despite having shifted to other countries, Thai suppliers may be able to maintain their business operation. On the contrary, if MNC customers purchase components abroad itself, this will cause an inevitable impact on the production chain in Thailand. Only a small number of Thai suppliers are strong enough to follow the MNCs and establish production base at a

new location and those that do so are usually direct suppliers with close relation with MNCs. However, major medium and small suppliers at lower-tier, including firms providing supporting services, do not have enough potential to expand investment abroad. This may also owe to lack of firm-specific advantage in production and technology that would help in competing in a foreign market. In short run, suppliers and service providers in this category may be able to maintain revenue earned from existing customers with production base in Thailand. However, their growth will be constrained with chance of fluctuation in risk that varies according to trend in business and their potential to adapt. Eventually, financing constraints will occur.

- IV. The last category includes SMEs and Micro business firms that are under competitive pressure. Majority of them are exporters in the industry in which Thailand has started losing her competitive ability. Others are firms primarily serving domestic market who find it difficult to adapt in the face of intense competition. This owes to the fact that firms in this category are not financially established, thereby are inflexible and unable to adapt promptly to the changing environment that affects business performance. Especially when trade and investment are liberalized, foreign firms will invade the market which further intensifies the degree of competition. Higher risk involved may cause entrepreneurs to face more financing constraints. Therefore, entrepreneurs in this group are in need of support from all concerned parties. However, at the same time, entrepreneurs should attempt to adjust themselves to tackle various problems that are expected to increase, which impose difficulties and challenges for them in the future.

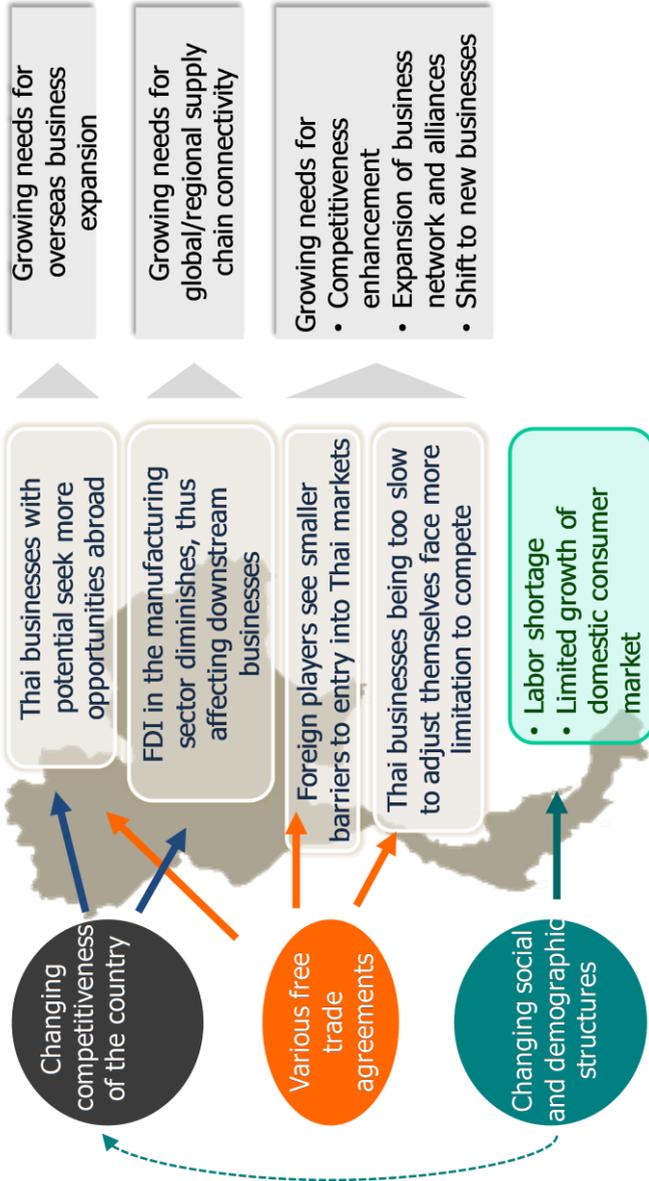
5.2. Implications of financing constraints

As discussed in this article, it is evident that changes in the competitive ability of the country may affect competitive position as well as risk profile of the private sector, including business firms and households. This is due to the fact that economic fundamentals of Thailand as a whole determine opportunities and potentials of the Thai business sector. The revenue of each business enterprise is then linked with the issue of financing constraints that it faces.

For instance, firm with good financial history may be re-categorized as high risk if that firm is perceived to be in a particular industry which needs to become cautious or unable to maintain its competitiveness as foreign firms compete for the market share. In such scenario, firm's bargaining power with banks decreases which then affects the conditions of loan offered by banks.

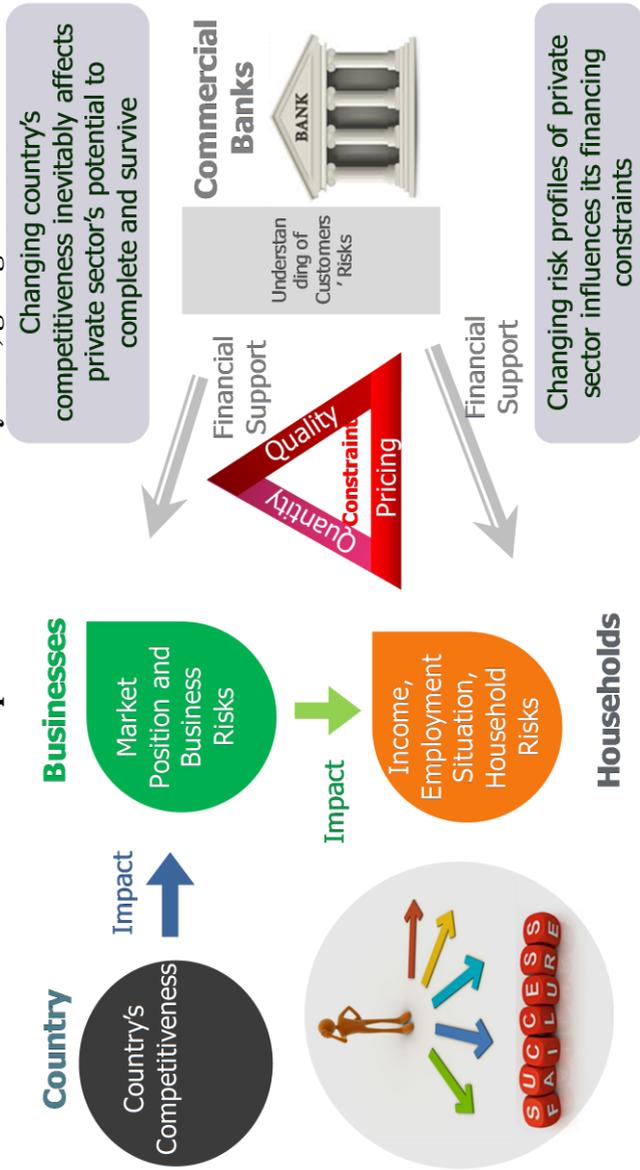
Moreover, in the environment of a new landscape where Thai entrepreneurs enter foreign market, the issue of financing constraints will be more complex in the future. On one hand, constraints may occur due to low potential of the business or insufficient collateral for loan to be used abroad which fails to build trustworthiness with banks. On the other hand, constraints may occur from the side of financial service providers owing to evaluation of risk in conducting business abroad. This includes expansion of service channels for Thai entrepreneurs abroad. Having realized this limitation, banks are trying to develop new business model to mitigate this constraint in order to develop their service according to the new situation more efficiently. As for the household sector, if Thai business enterprises lose their competitiveness and cannot maintain their market share, there will be a negative impact of their employees. Since employment status and household income have changed, these households will face more constraints on finance. The issue ranges from access to

Figure 15. Changes in economic, social and demographic landscape that could impact Thai financial system, going forward



Source: Research team

Figure 16. Changes in economic, social and demographic landscape that could impact Thai financial system, going forward



Source: Research team

new finance in which they may be perceived to be financially unstable to repay current debt. Nevertheless, household debt in Thailand during the recent period has increased at an alarming rate which has caused concern about vulnerability of households and financial institutions despite banks, which are main financial institutions, assessing that quality of asset is still healthy.

At the same time, Thailand's slow economic growth inevitably causes the uplifting of income for households to slow down which can cause further issues pertaining to accessing finance from suitable financial institutions for low-income households. Nevertheless, issues of accessing finance from suitable financial institutions for low-income households occur due to many reasons namely; 1) ability to incur debt is limited owing to insufficient income and most of them have large accumulated debt which cause them to resort to informal moneylenders and 2) inability for banks to provide loan to low-income household or those with income lower than 8,000 Baht as return cannot be reconciled with risk to be born. If government and other concerned agencies can increase the competitiveness of Thailand and encourage the economy as a whole to achieve stable growth, low-income households will receive indirect benefits and such attempts will mitigate financing constraints for them.

5.3. Conclusion

This study has found empirical evidence in various aspects which indicate the direction of financing constraints for the corporate and household sectors which have been gradually eased ever since the aftermath of 1997 crisis in terms of price, quality and quantity. These evidences are present in the data of business firms such as lower collateral to loan ratio, lower difference in interest rates offered by banks, higher SME credit to SME GDP ratio and shorter loan

approval process. In addition, econometric analysis examines financing constraints for business firms with result which confirms lower cost of borrowing for business firms, especially small firms. The research team thinks that the progress of mitigating financing constraints is largely caused by creation of new banking innovations, improvement in working procedures in the forms of risk management, technology, marketing and service channels with the aim of increasing business opportunities and maintaining profitability according to shareholders' expectation, together with discretionary risk management. In addition, economic mechanism which has been fixed to its normalcy together with improvement in the rules governing working procedures of banks which forced them to adapt under a more intense competition are factors that contribute to mitigation of financing constraints for business enterprises as well as households.

Financing constraints is a critical issue that impacts the economy at all levels. This article is a preliminary analysis that reflects certain dimensions of the progress in easing the constraints but does not cover all dimensions of the constraints for all levels of firms and households owing to limitations on dataset and time. The research team hopefully anticipates further in-depth study to analyze the issue at micro-level such as analysis of financing constraints of the sample firms or households individually for certain period of time in order to understand the existing constraints, changes in constraints during the period and factors that ease or worsen the constraints. Such kind of study which uses firms or households that face constraints in real situation will lead to a better understanding compared to the study which uses different indicators based on aggregate data to represent constraints. The research team believes that results of such

studies will yield greater benefit in policy making and development of financial system in Thailand.

Despite the attempts from all sides for more than a decade in the past which have led to the mitigation of financing constraints to some extent, the research team has concluded on some challenges in the future which may add further complexity to the problem. Major concerns at macro-level are as follow:

- I. Amidst the changing business landscape, despite firms, government and banks having realized the need for means to tackle challenges that will come along the liberalization under AEC, it has to be noted that most of the business firms still lack knowledge and understanding about AEC. They also lack strategies and clear agenda which may impose an additional constraint in the time to come.
- II. Issues pertaining to the structure of the country, especially the progress in improving competitive ability of the Thai business sector. Many issues are beyond the work and control of banks. Thus, it is necessary for every party to support in improving competitive ability in an urgent manner. Commercial banks have tried to engage in improving competitive ability of the business sector. As of now, many concerned parties have joined hands to boost the potential of business firms which is perceived as a good sign in supporting SMEs in availing more opportunities that come with liberalization in the future.
- III. Interest rate cycle, which is about to revert back on an upward trend, amidst economic conditions in which Thailand faces challenges regarding competitive ability and household debts should be looked after cautiously as households' ability to repay loans may be decreased as a result of an increase in interest rate. However, the ability to generate income and employment status of households

are linked with the competitiveness of business sector as well as future outlook of Thai economy. Eventually, if all concerned parties are not sufficiently prepared, it may spark other economic problems and may impact quality of assets and expansion of credit by banks in the time to come.

Hence, it is undeniable that banking system is still the main mechanism that supply finance for the economic system despite the fact that there are other alternative sources of finance but SMEs and households, which are foundation of the economic system, still depend on loans as a main source of finance. The research team wishes to conclude this article by emphasizing the necessity for policy makers and service providers to continue with the development of financial innovations in an appropriate and suitable manner.

It is difficult to distinguish factors that contribute to the success of mitigating financing constraints in the recent period on account of competitiveness or new innovations. This is because competition and innovations are complementary to one another. Competition is the force that pushes the need to create new innovations and thereby forces others to develop their own. This eventually uplifts the standard of the overall banking system. Then, competition will continue to stimulate service providers in creating newer innovations and the cycle continues.

However, the research team has noted some issues regarding the competition in the Thai banking system after the share in the credit market is still concentrated, partially as a result of attempts to develop innovations and expand customer base. This is then linked to the fact that each bank started with unequal resource endowments which have caused their abilities to reform their working procedure to be different. This can be the reason as to why the process

creating innovations is not as fast as desired which leads to the possibility that some credit seekers still do not receive suitable loan offers.

With these notions, the research team perceives a significant policy pertaining to the development of Thai banking system to make them robust to changes in the future- *Government should consider in supporting the liberalization of financial service market to make it more competitive.* Quantitative aspect of competition is not only a matter of concern here but also qualitative aspect by having competitors who are at par in creating innovations in the market. If there are many competitors but majority of them are small players who face competition constraints against large players, it cannot be said that the competition of such a banking system is truly efficient.

Moreover, in the situation in which Thailand is entering the new paradigm of economic infrastructural development amidst the trend of economic liberalization that is becoming more and more intense, from one aspect, the entry of a service provider of global or regional standard with advanced technology and high quality service will make domestic players more alert in creating innovations. Not only will the development in new products and services mitigate financing constraints for the private sector in Thailand but it will also stimulate Thai banks to develop their channels and service networks to ease constraints beyond the border as well which eventually benefits service seekers.

Nevertheless, issue of risk about stability will be evident in the time to come. This will come in forms of, for instance, increasing accumulation of household debts. It is interesting to point out that encouraging innovations through various mediums discussed above needs to be complemented with ‘suitable control mechanism’ in the forms of interest rate policy, bad debt provision or macro-prudential measures so

not to trade off mitigation of financing constraints with sustainability of the overall economic and financial system. In the end, it should be noted that liberalization in trade, investment and financial services makes planning and regulatory efforts appropriate with economic conditions from time to time. This also includes mechanism design which allows transmission of policy to be as efficient as expected. Although challenging, they are significant for the future research on this issue with hopes that it will assist banks, firms and households to overcome challenges ahead in an efficient manner towards a stable economic growth in the long run.

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