BANK OF THAILAND

FINANCIAL STABILITY REPORT 2015

Bank of Thailand Financial Stability Report 2015

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Message from the Governor

2015 was a year of volatility for the world economy. Chinese economic slowdown, the plummeting of oil and commodity prices, and the Fed's decision to raise the policy rate contributed to global volatility. With its dependence on exports and close linkages to the global financial markets, the Thai economy was inevitably affected by these external factors. Thai exports thus contracted, impeding the pace of economic recovery. Capital outflows also accelerated and financial market volatility intensified. Drought and depressed farm prices further held back growth. Amid these uncontrollable headwinds, macroeconomic policies, both monetary and fiscal, worked in tandem to cushion the impacts of global economic fragilities. It was also an opportune time to bolster infrastructure development with a view to sustain long-term growth.

The gradual and weaker-than-expected economic growth in 2015 weighed down the private sector's income and debt servicing ability, as well as the banking system's loan quality. Risks to Thailand's financial stability thus heightened in 2015. Nonetheless, the financial health of corporate and financial institutions sectors remained sound. External stability was also resilient, reflected by a sustained current account surplus and sizeable international reserves. In addition, Thailand has sufficient macroeconomic policy space to safeguard financial stability in the face of increased risks.

Under uncertain global environment in 2016, the Bank of Thailand (BOT) will closely monitor and assess the risks. The BOT will also deepen coordination with other economic agencies and regulatory bodies in exchanging information and viewpoints in order to attain effective monitoring and assessment of risks to financial stability. This will help us realize the common goal of maintaining financial stability and supporting sustainable growth of the Thai economy.

The BOT hopes that this Financial Stability Report would assist relevant stakeholders to be aware of risks in the financial system, their transmission, as well as potential impacts on financial stability. This understanding would help the business sector and the public assess risks, make plans, adapt and proactively prepare themselves for any challenges that could emerge.

Mr. Veerathai Santiprabhob
Governor
21 January 2016

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Executive Summary

In 2015, risks to Thailand's financial stability increased from the previous year. Sluggish global recovery weighed down Thailand's growth, denting income and debt servicing ability of the household sector and part of the corporate sector. Uncertainties in global financial markets soared, translating into greater volatility of capital flows, the exchange rate and asset prices. Nevertheless, financial position remained sound at both macro and key sectoral levels, including the financial institutions and corporate sectors, enabling the economy to absorb the elevated level of risks. Going forward, there is a need to monitor the search for yield behavior under the prolonged low interest rate environment, and to assess risks stemming from structural changes in the economy, including the growth of non-banks and financial innovations.

1) Thailand's financial stability was subject to greater risks than last year, due to slow global economic recovery that weighed down Thailand's growth. As a consequence, income and debt servicing ability of the private sector declined, and commercial banks' loan quality worsened.

Falling exports weakened income of households in the manufacturing and exports sectors. Moreover, subdued farm prices and reduction in farm output, caused by drought, dented farm income. Meanwhile, household debt remained high. These factors prompted a rise in non-performing loans (NPL) for all consumer loan types, notably personal and credit card loans.

There were more cases of debt default by small and medium enterprises (SMEs). Commercial banks recorded higher NPL for SME loans than last year, as SMEs suffered losses amid fragile economic conditions and depressed commodity prices.

Some large listed companies had higher debt to equity (D/E) ratio, partly because they incurred debt to finance business expansion amid low borrowing cost. Some business sectors also recorded losses, resulting in lower equity base. However, the overall financial position of non-financial, listed companies (in the SET and mai) was sufficiently sound to provide some cushion against risks that could aggravate in the periods ahead. The financial institutions sector was in strong position, backed by high levels of capital buffer and loan loss provision that could mitigate the impacts of rising bad debt. With the economy recovering gradually, the government introduced financial measures to assist sectors that were weighed down by sluggish economic conditions.

Examples included measures to improve the livelihood of farmers and low income earners, credit measures for SMEs, and real estate sector stimulus package. These measures were projected to help reduce expenses and provide greater liquidity to the private sector. Furthermore, measures to promote private and public investment in megaprojects would provide positive tailwinds supporting economic recovery going forward.

2) The prolonged low interest rate environment encouraged more search for yield behavior in capital market, bond market and other asset markets. In the first half of 2015, the amount of investment by retail investors in the stock exchange continually soared, with most investment going to smaller stocks that were not in the SET50 index and to stocks in the mai. Stock market became less overheated in the second half of 2015. However, price to earnings ratio (P/E) remained higher than the past average. Moreover, overseas securities investment, particularly through foreign investment fund (FIF), edged up, with some investment going to countries with relatively high credit risk.

The corporate sector increasingly turned to the issuance of bonds as a source of financing, due to the lower borrowing cost compared to bank loans. In addition, some business groups, especially the real estate sector, issued more non-rated bonds. Moreover, there were signs of speculation relating to the sales of reservation agreements for condominium units in Bangkok. This created a risk that speculators might not be able to find real buyers to transfer the ownership of the units when the construction was completed, which would lead to higher excess supply of housing stock. Such outcome would increase the financial burden on real estate developers and could have further impacts on other economic sectors.

Nevertheless, risks associated with search for yield behavior to overall financial stability remained limited. This was due to the following factors. (1) In early 2015, the Securities and Exchange Commission (SEC) introduced market surveillance measures to address signs of market overheating. (2) Most stock investors used cash in their transactions, with margin loan accounting for a small proportion of transactions. (3) Most investments in foreign securities through mutual funds were hedged against the exchange rate risk and were mostly term funds with fixed redemption period. (4) Risks associated with non-rated bonds issuance was not too high. Non-rated bonds accounted for a small part of the total value of corporate bonds, and were offered to accredited investors. And (5) for the short term, the impact of real estate speculation on financial sector stability remained limited because most business operators engaged in proper risk management and had strong financial standing.

Amid the low interest rate condition, risks stemming from new investment types need to be monitored going forward, especially in cases where investors might lack a proper understanding of risk assessment from various investment products. This could lead to underpricing of risks and accumulation of fragilities and risks to Thailand's financial stability.

3) External risks to Thailand's financial system stability. Global growth picked up slowly due to the slowdown of the Chinese and emerging market economies. Policy divergence among major advanced economies became more pronounced, with continuing with monetary easing from the Bank of Japan and European Central Bank amid weak economic recovery. The U.S. economy saw a steady recovery, prompting the Fed to raise the policy rate for the first time in 7 years in December 2015. The uncertainty over the timing and pace of the Fed's interest rate hike caused greater volatility in the global financial markets. However, the impacts on the Thai financial system were limited because Thailand's external positions was strong and able to absorb the heightened volatility. The current account consistently recorded a surplus and high levels of international reserves were sustained. Furthermore, part of the external debt held by the Thai private and public sectors was denominated in baht, including government and corporate bonds held by foreign investors. Foreign currency denominated debt mostly belonged to large corporates with relatively sound management of currency risks.

4) Risks to Thailand's financial system stability caused by structural factors. Currently, the impacts of these risks on financial stability were not evident. However, risks associated with structural problems would need to be monitored and assessed going forward. The growth of non-banks could have more profound impacts on financial stability due to connections with other financial systems. New financial innovations and technology could also spur higher risks for consumers, service providers, financial institutions and the overall payments system. Concerned regulators would need to be prepared for these developments.

Economic and Financial Conditions and Risk Factors

Chapter 1 : Economic and Financial Conditions and Risk Factors

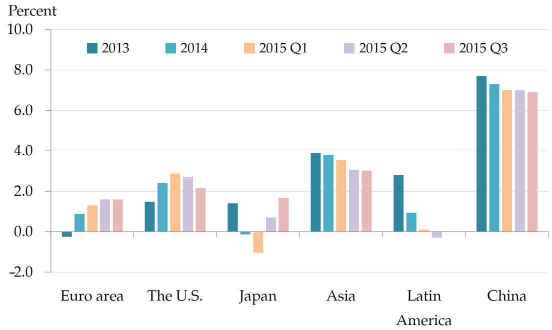
Thailand's financial stability was subject to higher risks stemming from the gradual and slower-than-expected recovery of the global and Thai economies and falling commodity prices. These affected household and business sectors, dampening their income and debt servicing ability. This, in turn, undermined financial institutions' loan quality and profitability. Moreover, the prolonged low interest rate environment in the global and Thai economies encouraged search for yield behavior among investors. The global financial markets exhibited greater volatility due to the slowdown of the Chinese economy and the divergence in monetary policy directions of major economies. This situation resulted in heightened volatility of capital flows, exchange rate and asset prices in the Thai financial markets.

Key Risk Factors for the Thai Financial System	
Global economy	- Economic slowdown in China and Asia - Risks from the euro area economy, such as uncertainties in economic recovery and geopolitical risks - Falling and subdued commodity prices - Divergence in monetary policy of major economies
Domestic economy	- Gradual and slower-than-expected recovery of the domestic economy dented income and debt servicing ability of households and small businesses - Search for yield behavior amid the low interest rate environment
Financial institutions	- Financial institutions' loan quality and profitability deteriorated, but loan loss provision and capital remained high, offering protection against risks associated with declining asset quality.
Financial markets	- Global financial market volatility resulted in increased volatility in capital flows, exchange rate and asset prices.

1.1 Global economy

The global economy posted weaker growth due mainly to the slowdown in Chinese and emerging market economies (Chart 1.1.1). The Chinese slowdown was attributed to the government's economic reform aimed at promoting consumption as the main driver of growth in place exports and investment. Growth was also held back by the mitigation

Chart 1.1.1 Growth in different regions



Source: CEIC

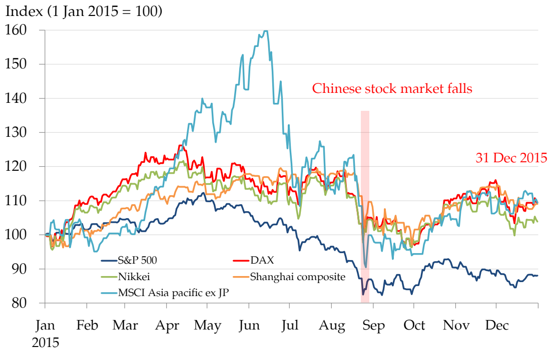
of risks to financial and fiscal stability, which restrained credit growth and high-risk investment. Growth in Asian and Latin American economies weakened in line with exports contraction caused by lower demand in trading partners' economies, especially China, and by depressed commodity prices.

Major advanced economies continued to expand The recovery trend in the U.S. was underpinned by consumption growth, fueled by labor market rebound, lifted the private sector confidence and improved financial conditions. The euro area economy started to show signs of recovery, boosted by stronger private consumption, amid lower oil prices and commercial banks' continuing credit expansion. The Japanese economy rebounded gradually, as domestic demand, both consumption and investment, remained feeble. Disparities in the recovery prospects of the major advanced economies led to a monetary policy divergence. The Fed increased the policy rate in December, while the European Central Bank and Bank of Japan maintained accommodative monetary policy to support economic recovery.

Downside risks to the global economy during the past year affecting economic growth and volatility in both global and Thai financial markets were generated by four key factors as follows.

(1) The slowdown of the Chinese and Asian economies affected the global economy, especially countries in China's supply chain and commodity-exporting countries. In addition, volatility in the Chinese financial markets resulted in greater volatility in the global financial markets. This heightened volatility was observed during June-August period, when Chinese stock prices plummeted by around 40, causing global stock indices to fall as well (Chart 1.1.2). Moreover, the prospect of the increase in the federal funds rate, slower growth in Asia's emerging market economies, and yuan depreciation all contributed to the weakening of Asian currencies against the U.S. dollar. This depreciation of Asian currencies added to the debt burden of the region's business sector, especially in countries with high levels of foreign currency dominated debt.

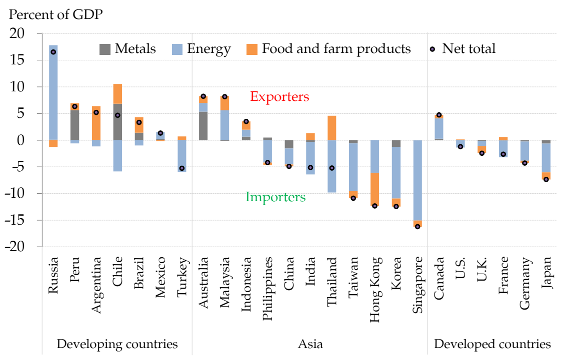
Chart 1.1.2 Stock indices



Source: Bloomberg

(2) The fall in oil and commodity prices. Declining oil prices was partly attributed to structural shifts in the global oil market, particularly the advanced oil drilling technologies in the U.S. Moreover, major oil-exporting countries maintained high levels of production to sustain their market shares and oil exports revenues, while demand for oil remained subdued in line with gradual global recovery. Other commodity prices plunged mainly due to the slowdown in China, the world's major consumer of commodities. As a result, the private sector's income dropped in the region's commodity-exporting countries (Chart 1.1.3), constraining their consumption and investment growth. In addition, low commodity prices weighed down inflation across the world, increasing deflation risks in some countries where demand remained fragile, such as the euro area and Japanese economies.

Chart 1.1.3 Commodity exporting/importing countries (2013)



Source: Trademap

(3) Monetary policy divergence in major economies. Uncertainty over the timing and pace of the Fed's policy rate hike, coupled with the European Central Bank and the Bank of Japan's continual easing of monetary policy, increased the capital flow volatility in the global financial markets.

(4) Risks from the euro area economy. Financial conditions in the euro area loosened following the European Central Bank's announcement of further quantitative easing in early 2015. However, there were major incidents that heightened financial sector volatility. The risk of Greece debt default rose in mid-year, threatening the stability of the European Union (EU). In addition, the EU sanctions against Russia over the geopolitical conflict between Russia and Ukraine, and the terrorist attacks in Paris towards year-end further dented public confidence.

1.2 Domestic Economy

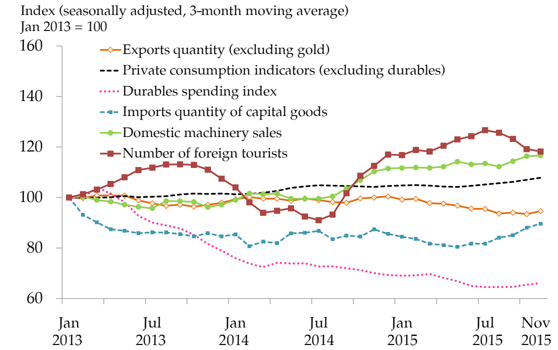
Key risks to the stability of the domestic economy included the risk of sluggish economic recovery that dented income and debt servicing ability, as well as higher risks from search for yield behavior under the prolonged low interest rate environment.

The Thai economy picked up gradually, driven mainly by tourism and public spending. However, the recovery was held back by contracting exports. Exports were hit by weaker growth in trading partners, especially the Chinese and Asian economies. Structural problems, particularly constraints on advanced production technology, further undermined Thailand's export competitiveness. Private consumption rebounded slowly, as households became more careful with their spending and financial institutions remained cautious in their lending to households. Private investment remained subdued. Businesses delayed their investment due to weak domestic and external demand, causing production capacity to remain adequate. Financial institutions also restrained their lending to businesses, especially small and medium enterprises (SMEs). The government's megaprojects were also in the early phase (Chart 1.2.1).

Weaker exports, drought and depressed agricultural prices dampened income of affected households. Household debt also remained elevated. These headwinds increased the risk of households not being able to service their debt. Nonetheless, households adapted to the lower income problem by exercising greater caution in their spending and borrowing. This helped contain risks from new debt accumulation and the growth of household debt to GDP ratio. At the end of 2015 Q3, household debt to GDP ratio was 81.1 percent, slightly up from 80.7 percent at the end of 2014 (Chart 1.2.2).

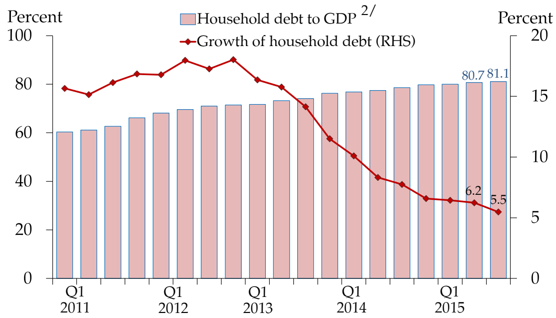
Apart from its impact on the household sector, the gradual recovery of the Thai economy weighed down financial position of the business sector. In the first nine months of 2015, sales and net profits of non-financial companies listed in the stock exchange (SET and mai) declined from the same period in the previous year. Likewise, the asset turnover

Chart 1.2.1 Thailand's economic indicators



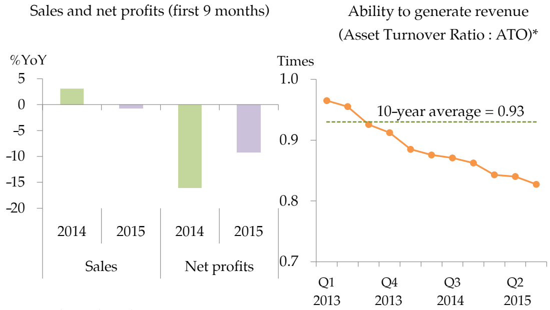
Source: Department of Tourism, Revenue Department, Nielsen Company, calculations by Bank of Thailand .

Chart 1.2.2 Household debt [1/]



Note: [1/] Loans to households by financial institutions
[2/] Calculation based on rolling GDP method of previous 4 quarters
Source: Bank of Thailand

Chart 1.2.3 Growth of sales and net profits, and ability to generate revenue of listed companies



Note: Median values shown
Source: Stock Exchange of Thailand, calculations by Bank of Thailand

ratio (ATO)[1], an indicator of the companies' ability to generate sales, fell continually and was below its long-term average (2005 – 2015) in all business categories (Chart 1.2.3). Lower profitability weakened the business sector's debt servicing ability to some extent, but most businesses still had adequate liquidity and were able to repay debt. In addition, the business sector did not have a huge debt burden, as reflected by the low level of debt to equity ratio of 0.8.

As economic recovery remained sluggish, the Monetary Policy Committee (MPC) maintained accommodative monetary policy, keeping the interest rate at low level to support growth. However, the low interest rate environment induced the search for yield behavior. If investors lacked a good understanding of risks and underpriced the risks, vulnerabilities could build up in some areas, such as investment in the stock market, a popular ground for those searching for yield higher than the savings rate. In the first half of 2015, the number of retail investors in the stock market rose continually. Although stock market transactions cooled down somewhat, Thailand's stock exchange index was still high relative to its past average.

Search for yield behavior was also observed in the real estate sector. Signs of investment for short-term speculative purposes, especially the purchase of reservation agreements

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[1] The ratio of total sales in the previous four quarters to the average value of assets in the same period.

for condominium in Bangkok, started to emerge. As demand for property softened, while developers continued to launch new projects, the number of cumulative housing stocks climbed significantly, notably condominium units in Bangkok and its vicinity. Increased short-term speculation could lead to higher excess supply in periods ahead if the speculators could not find real buyers to transfer the ownership of the units upon completion of the projects. Hence, there was a need to monitor the developers' ability to adapt themselves in response to these risks. This was especially so for small developers with limited ability to adapt and inferior financial position compared with big developers. Moreover, the behavior of developers needed to be monitored. In particular, major developers were reducing their reliance on commercial bank funding and switching to other financing channels, such as corporate bonds, joint venture and property funds. Although this development signaled a greater role of capital markets as a financing source alongside commercial bank loans, it also created another channel through which risks in the real estate sector could be directly transferred to capital markets, as well as institutional and retail investors.

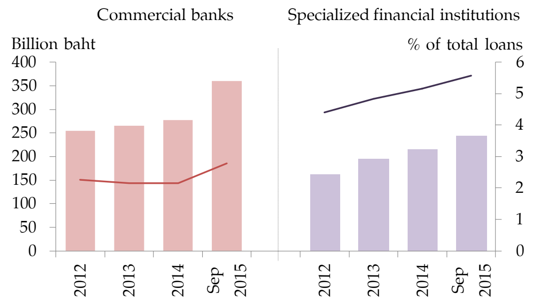
Going forward, risks associated with new forms of investment under the low interest rate environment need to be monitored, notably those channels where investors have inadequate information and are unable to assess risks accurately. Examples are the purchase of non-rated bonds and investment in foreign securities (for more details, see section 2.2, 'The prolonged low interest rate condition').

1.3 Financial Institutions Sector

The gradual pace of economic recovery and the lower debt servicing abilities of both household and corporate sectors weighed down loan quality and profitability of financial institutions.

Financial institutions' loan quality deteriorated in line with declining debt servicing ability of the private sector (Chart 1.3.1). Loan quality of commercial banks worsened in every category of debtors, especially SMEs and retail debtors. Moreover, a major debtor in the steel industry experienced problems with its business overseas. Consequently, non-performing loan (NPL) ratio climbed from 2.2 at the end of 2014 to 2.8 at the end of 2015 Q3. Loan quality of specialized financial institutions (SFIs)[2] declined due mainly to retail debtors. The NPL ratio for SFIs rose from 5.1 at the end of 2014 to 5.6 at the end of 2015 Q3. However, the financial institutions system

Chart 1.3.1 Financial institutions' loan quality



Note: Financial institutions' loan quality is indicated by non-performing loan, defined as loan overdue (principle or interest) by more than 3 months starting from the due date
Source: Bank of Thailand

[2] Specialized financial institutions (SFIs) comprise the Government Savings Bank (GSB), the Bank for Agriculture and Agricultural Co-operatives (BAAC), the Government Housing Bank (GHB), the Islamic Bank of Thailand, the Small and Medium Enterprise Development Bank of Thailand (SME Bank), the Export-Import Bank of Thailand (EXIM Bank), the Thai Credit Guarantee Corporation (TCG), and the Secondary Mortgage Corporation (SMC). GSB, BAAC and GHB are key SFIs supporting credit expansion in line with the government's objectives.

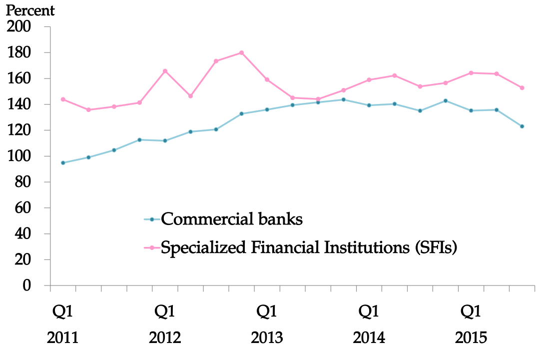
still had high levels of provision to withstand the worsening loan quality. The ratio of actual to regulatory loan loss provision for commercial banks stood at 153.9. The ratios of total loan loss provision to NPL for commercial banks and SFIs were 123.0 and 152.8 percent respectively at the end of 2015 Q3 (Chart 1.3.2).

Financial institutions' profitability weakened in line with the gradual pace of economic recovery. Commercial banks' operating profit fell in the first nine months of 2015 compared with the same period in the previous year (Table 1.3.1). This was due to higher loan loss provision made for doubtful debt amid deteriorating loan quality. In addition, net interest income remained steady due to weak credit growth amid sluggish economic conditions, causing net profit to fall by 7.0 percent from the same period last year. Return on asset (ROA) also declined from 1.4 percent in the first nine months of 2014 to 1.2 percent.

SFIs' net interest income picked up in the first nine months of 2015, thanks to credit growth linked to government policy and lower deposit cost in line with interest rate condition in the financial market. As a result, net interest margin (NIM) increased from 2.7 percent in the first nine months of 2014 to 2.9 percent, while ROA climbed from 0.67 in the first nine months of 2014 to 0.76 percent.

Financial institutions' credit continued to expand, lending support to economic

Chart 1.3.2 Ratio of total provisions to NPL



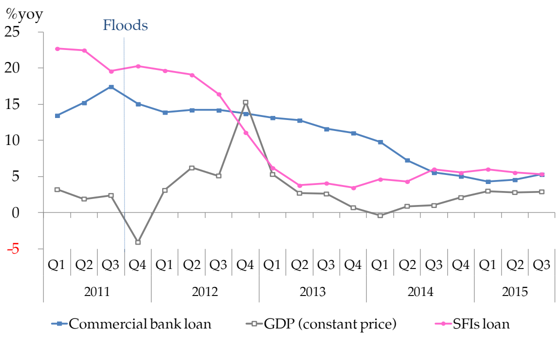
Source: Bank of Thailand

Table 1.3.1 Consolidated income statement

Consolidated income statement (million baht)	Commercial banks		Specialized financial institutions	
	9 months 2015	%yoy	9 months 2015	%yoy
Operating profit	510,908	7.3	124,027	12.7
Net interest income	315,242	0.0	105,824	12.7
Non-interest income	195,665	21.7	18,203	12.9
Operating costs	221,889	5.4	53,377	2.5
Net operating profits	289,019	8.9	70,650	21.9
Bad debts, doubtful accounts and loss on impairment	104,781	71.3	43,175	23.5
Income tax	30,481	-21.5	-	-
Net profit (loss)	153,842	-7.0	27,475	19.5

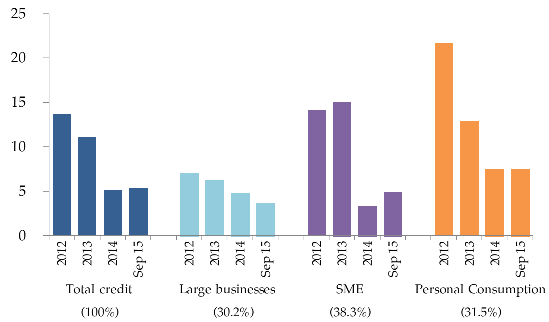
Source: Bank of Thailand

Chart 1.3.3 Financial institutions' credit growth



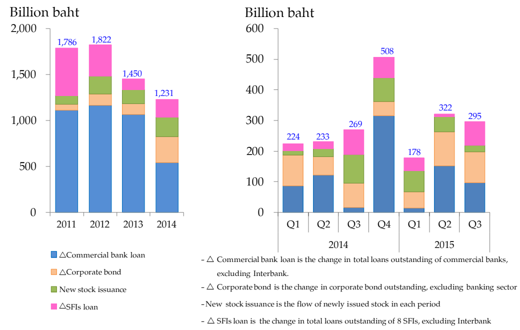
Source: Bank of Thailand

Chart 1.3.4 Commercial banks' loan growth



Note: Figures in parentheses show the share of each loan category in total credit at 2015 Q3
Source: Bank of Thailand

Chart 1.3.5 Fund raising through credit, corporate bond and stocks



Source: Bank of Thailand, Securities and Exchange Commission, and Stock Exchange of Thailand

recovery. Large corporates increased fund raising through capital markets. At the end of 2015 Q3, commercial banks' credit, the main source of funds for the private sector, grew by 5.3 percent, slightly higher than that in 2014, mainly due to growth in corporate loans. This reflected the gradual pace of economic recovery and commercial banks' caution in lending. Moreover, large corporates increased fund raising through bond and stock market (Chart 1.3.3 – 1.3.5), partly to take advantage of the prevailing low interest rate environment. Consumer loans expanded by 7.5 percent, close to the growth rate in the same period in the previous year.

SFIs' credit continued to expand, recording a 5.4 percent growth at the end of 2015 Q3 compared to the same period in the previous year, and close to the growth rate at the end of 2014. The credit growth was mostly attributed to government policy loans designed to address informal debt problems among farmers and to satisfy people's demand for home. However, going forward the impact of these government credit measures on SFIs' loan quality need to be assessed, especially if economic recovery remained weak and uneven across different sectors.

The sluggish economic recovery had some adverse impacts on loan quality and profitability. Nevertheless, the stability of the financial institutions sector remained sound, conducive for credit expansion in support of economic recovery in the periods ahead (for more details, see section 2.1 'Impacts of slow economic recovery on Thailand's financial stability').

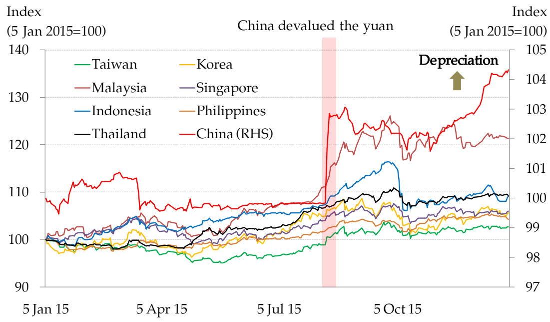
1.4 Financial markets sector

External risks in the global economy and financial markets, along with sluggish recovery of the Thai economy, created greater volatility in Thai financial markets.

The Thai financial markets exhibited higher volatility than last year. The European Central Bank's monetary easing, coupled with improved foreign investor sentiments on Thailand's economic fundamentals, contributed to capital inflows in early 2015. However, in the latter half of the year, the Thai financial markets encountered more headwinds. There were concerns over the economic slowdown and financial sector risks in China, the Fed's policy rate hike, and slower-than-expected recovery of the Thai economy. As a result, foreign investors reduced their holdings of emerging market assets, including those of Thailand's.

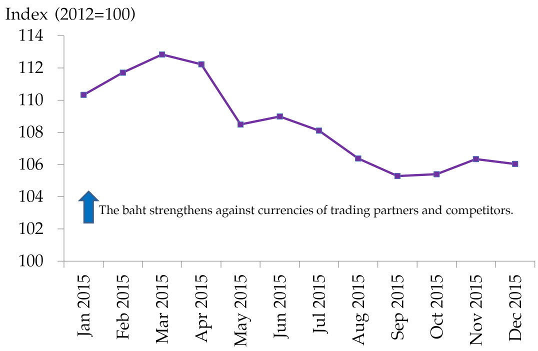
Capital outflows from emerging market economies including Thailand, and the change in yuan policy in August 2015 caused the Thai baht to depreciate and fluctuate. In 2015, the Thai baht moved between 32.30 and 36.66 baht per U.S. dollar, and closed at 36.00 baht per U.S. dollar on 30 December 2015, depreciated by 8.61 percent from the previous year. The degree of baht depreciation and volatility was moderate compared with regional currencies (Chart 1.4.1). When the baht was measured against 25 trading partners' currencies, the nominal effective exchange rate (NEER) did not weaken significantly because regional currencies moved in the same direction as the baht (Chart 1.4.2).

Chart 1.4.1 Exchange rate of Asian currencies (against the U.S. dollar)



Source: Bank of Thailand and Reuters

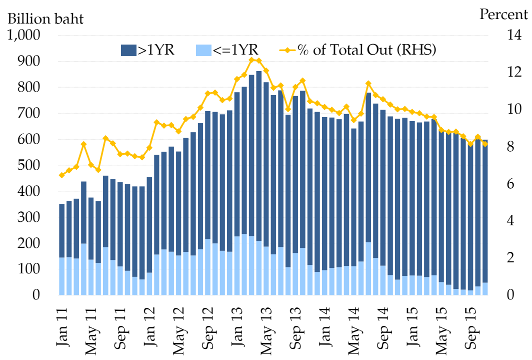
Chart 1.4.2 Baht index (Nominal Effective Exchange Rate)



Source: Bank of Thailand

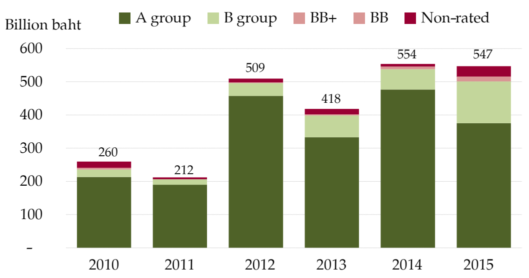
Weaker baht affected Thai businesses with debt denominated in foreign currencies. However, the impact remained limited because most of the foreign currency-denominated debt belonged to large corporates with relatively sound management of exchange rate risk (for more details, see Article 2 'Risk assessment of the Thai business sector's debt accumulation').

Chart 1.4.3 Government bonds holding by foreign investors



Source: Bank of Thailand

Chart 1.4.4 Value of newly issued long-term bonds, by credit rating



Source: ThaiBMA

*Only long-term bonds registered with ThaiBMA

Foreign investors reduced their holdings of government bonds, especially short-term bonds, based on the market expectation of the Fed's policy rate hike in late 2015 (Chart 1.4.3). **Corporate bond issuance by companies listed with the Thai Bond Market Association (ThaiBMA) slowed down, both for short-term and long-term bonds issuance. However, some firms issued long-term non-rated bonds.**

In 2015, the value of new long-term corporate bonds declined by 1.3 percent from last year. Most of the newly issued corporate bonds were of good quality (Chart 1.4.4). However, over the past few years, corporates increased their issuance of non-rated bonds, whose outstanding value climbed from 8,000 million baht in 2014 to 31,100 million baht in 2015. Real estate companies were the top issuer of non-rated bonds. Nevertheless, risks to financial stability remained limited because non-rated bonds were only offered to specific investor groups.

Going forward, risks in the bond market that warrant close monitoring are the impacts of the Fed's policy rate hike on Thai bond yields. Bond yields, notably for long-term bonds, could edge up, affecting the financing costs and the roll-over of corporate bonds (for more details, see section 2.3 'The impacts of external risks to Thailand's financial stability').

The Thai stock market (SET and mai) posted greater fluctuations, especially in the second half of 2015, in line with other regional stock markets. Falling Chinese stocks in August, concerns over the slowdown of the Chinese and regional economies, and the anticipation of the Fed's policy rate increase, prompted foreign investors to gradually cut their investment in regional stock markets including Thailand. Therefore, Thai stock indices fell and experienced higher volatility. On 30 December 2015, SET and mai indices closed at 1,288.02 and 522.62 respectively, down from 1,497.67 and 700.05 at the end of 2014. Foreign net sales in SET and mai markets totaled 155,631 million baht in 2015. Domestic investors, both institutional and retail, were net buyers. However, retail investors cut their investment in the mai market, an indication of less speculative behavior in the mai market after the Securities and Exchange Commission (SEC) had introduced restrictions on irregular trading in early 2015. Despite the fall in the stock indices, stock prices remained high, with the P/E ratios in both SET and mai markets being above their long-term average (2010 – 2015).

Mutual funds continued to increase their overseas investment. However, risks to investors and mutual funds business were still contained. This was because most of the investment were in short-term debt securities and deposits of less than one-year maturity, and the exchange rate risks were properly hedged. Moreover, most of the investment were limited to specific group of accredited investors. The receiving countries of the investment, such as China and Macao, Luxembourg and the U.S., also had reasonable ratings (for more details, see section 2.2 'The prolonged interest rate environment'). **Risks posed by mutual funds**

business to financial stability remained limited because mutual funds had sound investment policy and hedging. In addition, as the size of mutual funds business was not large, the direct link between mutual funds and commercial banks was weak (for more details, see section 3.1 'The expansion of non-banks and impacts on financial stability').

Assessment of Risks to Financial Stability in the Periods Ahead

Chapter 2 : Assessment of Risks to Financial Stability in the Periods Ahead

Thailand's slow economic recovery weakened the private sector's financial position and financial institutions' loan quality. However, strong financial position of the corporate and financial institutions sectors, together with government assistance measures, helped mitigate some of the adverse impacts.

Search for yield behavior in in capital and real estate markets continued to increase in the prolonged low interest rate environment. This could lead to the buildup of vulnerabilities. The impact of heightened global financial volatility on financial stability was limited, thanks to Thailand's sound external position.

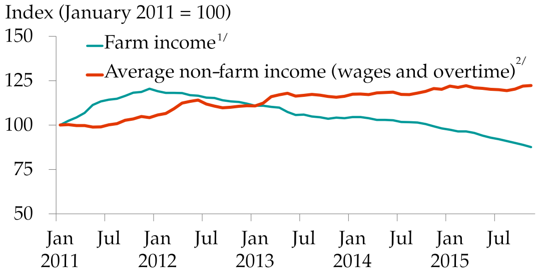
2.1 Impact of slow economic recovery on Thailand's financial stability

The slow recovery of the domestic economy dampened income and debt servicing ability of the private sector, especially agricultural households and SMEs. Nonetheless, the corporate sector's financial position remained sound. Financial institutions were also in a strong position to withstand the increasing risks of lower loan quality, thanks to high levels of capital and loan loss provision. The government stimulus measures also helped lessen the impact of the sluggish recovery on the private sector.

Household sector's financial stability

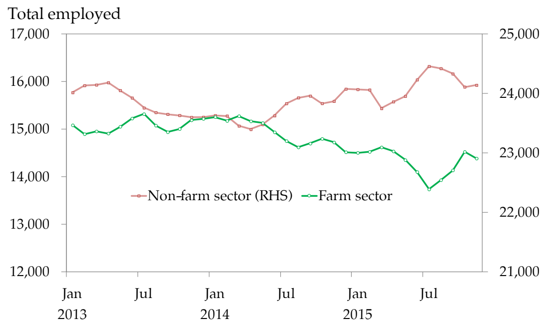
Declining income of household related to manufacturing and export sectors was in was in line with subdued domestic economic conditions and ongoing sluggish exports. Moreover, depressed agricultural prices and

Chart 2.1.1 Household income



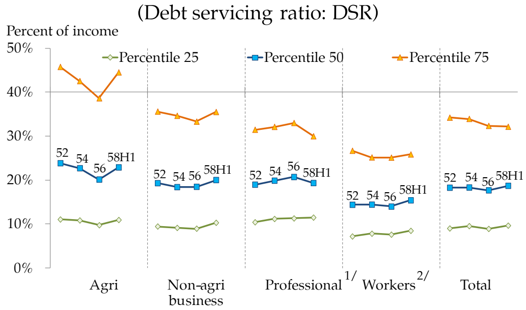
Note: 1/ Seasonally adjusted, 12-month moving average
2/ Seasonally adjusted, 3-month moving average
Source: Office of Agricultural Economies and National Statistical Office, calculations by Bank of Thailand

Chart 2.1.2 More workers moved to non-farm sector



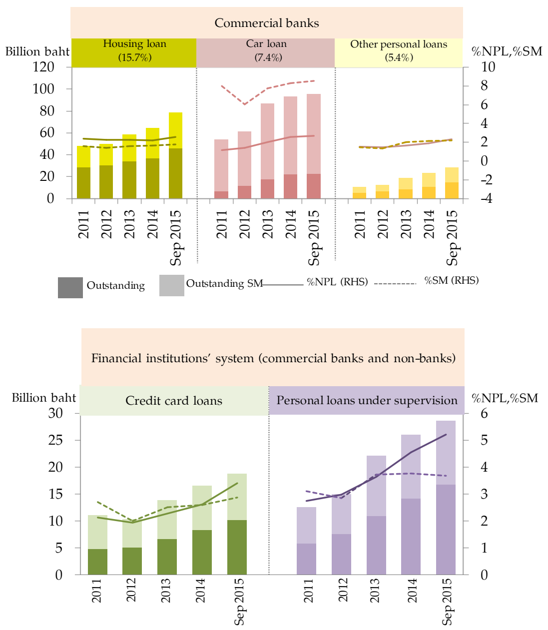
Source: NSO, calculations by Bank of Thailand

Chart 2.1.3 Debt servicing burden to monthly income
(Debt servicing ratio: DSR)



Note: Only households with debt are considered.
1/ Professional households, such as managers, academics, professionals and technical workers
2/ Worker households, such as workers in agriculture, forestry, fishery, machine operations, clerks, service workers and craftsmen in manufacturing or construction
Source: The household socioeconomic survey, National Statistical Office of Thailand, calculations by Bank of Thailand

Chart 2.1.4 Personal consumption loan quality, by credit types



Note: SM is special mentioned loans, defined as loans overdue (principle or interest) by 1-3 months starting from the due date
Source: Bank of Thailand

drought dampened income of agricultural households (Chart 2.1.1). Although some farm workers adapted by finding jobs in non-farm sector (Chart 2.1.2), however such adaptation could not compensate for the lower farm income. This was because most of them switched to jobs in sectors with paid low wages per hour, such as construction, hotels and restaurants.

The income uncertainty, coupled with the existing high levels of household debt that had accumulated since the aftermath of the 2011 major floods, undermined households' debt servicing ability. Based on Socio-Economic Survey, households' debt service ratio (DSR) worsened in the first half of 2015, compared to that in 2013 (Chart 2.1.3). Households' DSR fell in all occupation groups, notably agricultural households and those running SMEs, reflected by the average DSR at the 75th percentile, representing households with relatively high debt burden. The DSR for these two household groups increased markedly from the level observed in 2013 to the level close to 40 percent [1], which is the threshold indicating a high probability of default. This finding was consistent with the deteriorating quality of household loans, with commercial banks' NPL ratio for consumer loans registering at 2.8 percent in 2015 Q3, up from 2.4 percent at the end of 2014. The rise in NPL ratio occurred across all

[1] BOT Symposium. 2014. "The rise in household debt: implications for economic stability."

categories of household loans, especially personal loans under supervision and credit card loans[2] (Chart 2.1.4). These household loans were used for consumption and liquidity purposes. However, government assistance measures targeted at households, such as measures to improve the living standards at the village and sub-district levels, and soft loans for farmers would somewhat contribute to lower expense and higher liquidity for households whose income was hit by sluggish economic growth.

Going forward, if economic recovery remained gradual, risks to households' income and debt servicing ability would need to be constantly assessed. In particular, agricultural households are subject to greater vulnerabilities than other groups. They may also suffer from additional headwinds as a result of drought in the first half of 2016 and subdued global commodity prices. Households need to be aware of risks on their future debt servicing ability, and should be careful not to take on excessive debt. They should also consider the necessity of debt accumulation, which should be used primarily as a means to raise household income.

Corporate sector's financial stability

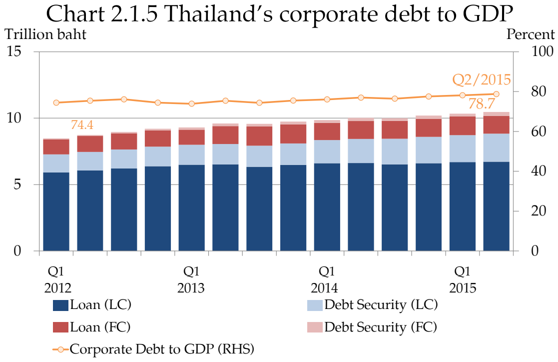
The overall financial position of non-financial corporate listed on the stock exchange of Thailand remained sound. However, slow economic recovery weighed

[2] Data for commercial banks and non-banks.

down debt servicing ability of some businesses, notably SMEs. Thus, there is a need to monitor the pace of economic recovery and the government economic stimulus that could affect the corporate sector's turnover and financial stability.

Overall, the Thai corporate sector still had solid financial positions. Corporate debt did not accelerate much and remained at moderate levels relative to other countries (Chart 2.1.5) (for more details, see Box 2 "Assessment of risks from Thai corporate sector's debt accumulation"). Moreover, corporate sector's profits generally remained healthy despite the economic slowdown. Based on data of listed companies in the SET and mai, corporate sales and revenue generation edged down, as indicated by the decline of asset turnover ratio (ATO) in line with lower sales. However, the corporate sector maintained well debt servicing ability and adequate liquidity. The interest coverage ratio (ICR)[3] remained above the minimum threshold level of 1.5 and the current ratio (CR)[4] stayed over 1. Moreover, the overall listed companies had moderate debt burden, confirmed by the debt to equity ratio (D/E) of 0.8 (Chart 2.1.6).

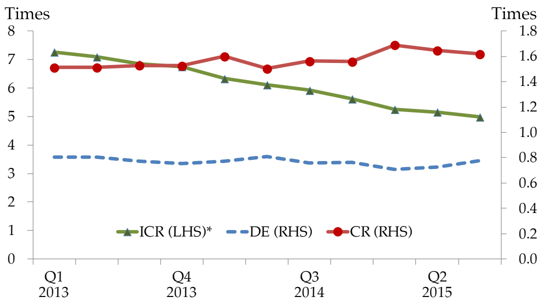
Chart 2.1.5 Thailand's corporate debt to GDP



Note: LC (Local Currency) denotes debt denominated in Thai baht, and FC (Foreign Currency) denotes debt denominated in foreign currencies

Source: Bank of Thailand

Chart 2.1.6 Corporate sector's financial position



Note: Calculations based on median values, annualized method.

[3] Interest coverage ratio (ICR), which indicates the ability to meet interest payments, is the ratio of profit (loss) before interest and tax to interest expense.

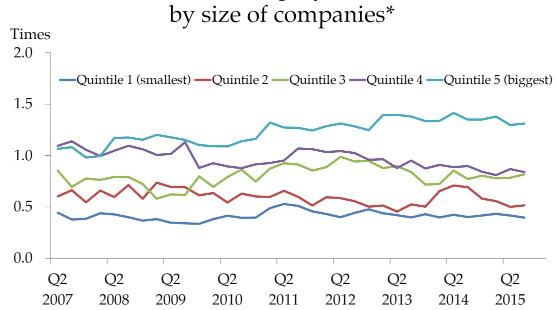
[4] Current ratio (CR), which measures a company's ability to pay off its short-term liabilities when they are due, is the ratio of current assets to current liabilities.

Nevertheless, the gradual recovery of the domestic economy and falling exports affected balance sheets of some corporates. If the listed companies were divided into 5 groups based on their asset sizes, some large companies were found to have accumulated more debt, as indicated by an increase in the D/E ratio of the largest-size listed companies (Chart 2.1.7). The higher debt was partly used to finance business expansion and investment both in Thailand and overseas, taking advantage of the low cost of borrowing. Some corporates also suffered losses, which reduced their equity.

Small corporates in the SET and mai were subject to higher risks in debt repayment. If the two companies groups in the Thai stock exchange with the lowest amount of assets continued to suffer losses as reflected by their ICR at 25th percentile. This suggested that some companies continually incurred losses, resulting in higher financial risks (Chart 2.1.8). If these companies were used as a proxy for non-listed SMEs, then it could indicate declining financial strengths and higher default risks among SMEs. This was consistent with commercial banks' lower loan quality for SMEs, particularly small businesses (Chart 2.1.9). The NPL ratio of small corporate loans climbed to 4.1 percent at the end of 2015 Q3, up from 3.5 percent at the end of 2014.

Looking ahead, there are two main issues that need to be monitored: (1) the

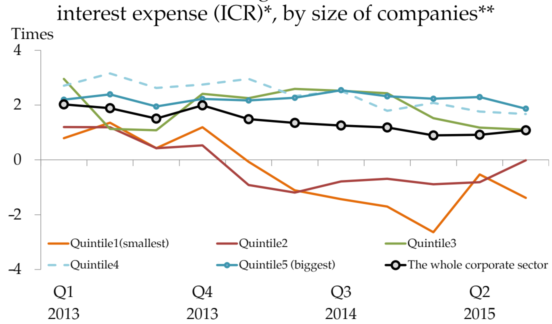
Chart 2.1.7 Debt to equity ratio (D/E ratio) by size of companies*



Note: Calculations based on median values, *divided into 5 groups (each with the same number of firms) using quarterly assets as the criterion.

Source: Stock Exchange of Thailand, calculations by Bank of Thailand

Chart 2.1.8 Ratio of earnings before interest and taxes to interest expense (ICR)*, by size of companies**

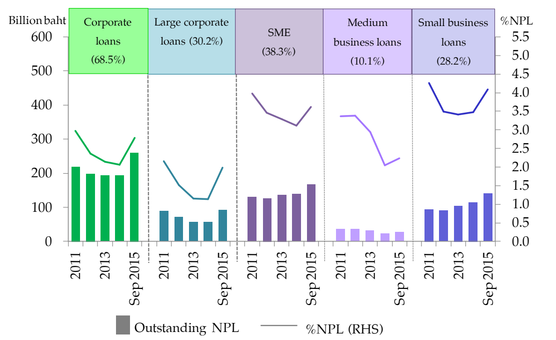


Note: * Annualized ICR at 25th percentile

** Divided into 5 groups (each with the same number of firms) using quarterly assets as the criterion.

Source: Stock Exchange of Thailand, calculations by Bank of Thailand

Chart 2.1.9 Corporate loan quality, by size of business



Figures in parentheses show the ratio of each loan type to total loans

Source: Bank of Thailand

prospect of economic recovery. If the economy picked up slowly and remained uneven across different sectors, then some businesses with existing vulnerabilities could be adversely affected, such as SMEs and commodity-related businesses. (2) The effectiveness of government economic stimulus. Remedy measures, such as SMEs assistance and soft loans, are projected to provide greater liquidity for businesses affected by the weak recovery. In addition, if the investment megaprojects were implemented as planned, they would further promote growth and facilitate the corporate sector's adjustment.

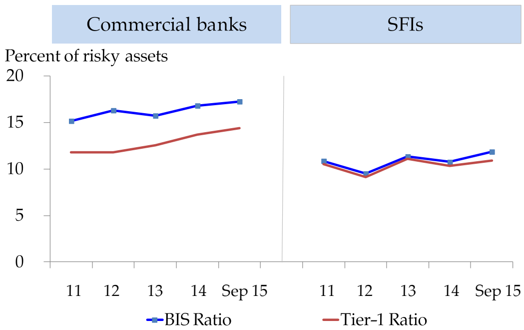
Financial institutions sector stability

Loan quality of the private sector declined in tandem with slow economic recovery, but financial institutions sector stability remained sound. Commercial banks and SFIs had adequate capital buffers and loan loss provision to cushion the impacts of deteriorating loan quality and to facilitate credit expansion to sustain economic recovery in the periods ahead.

The private sector's debt servicing ability edged down, causing a decline in loan quality of both household and corporate sectors. However, the lower loan quality did not have a substantial impact on the stability of financial institutions system. This was due to the large amount of loan loss provision and capital buffers held by commercial banks and SFIs. At the end of 2015 Q3, commercial banks' BIS ratio and Tier-1 ratio, based on Basel III, were 17.3 percent and 14.4 percent, respectively. SFIs' BIS ratio and Tier-1 ratio were 11.0 percent and 10.9 percent, respectively. These figures were higher than the minimum requirement levels, except for some SFIs that were in the process of problem solving (Chart 2.1.10). Moreover, financial institutions adapted by improving their debt management and monitoring and assisting SMEs that had a potential to continue operating by several measures including debt restructuring, adjustment of debt repayment conditions, debt moratorium or extension of principal payment terms, reduction of interest rates, and provision of liquidity assistance through credit, along with close monitoring of higher risks. The BOT conducted thematic examination of the debt restructuring and adjustment of payment terms in order to ensure that debtors were given reasonable and effective assistance.

Aside from the thematic examination of commercial banks' debt restructuring, the BOT required commercial banks to carry out stress test under the scenarios set by the BOT. This was designed to evaluate the stability of the commercial banking system and prepare for potential crises. The latest stress test was conducted based on financial balances as of 31 December 2014 and covered 15 commercial banks whose combined assets made up of 88 percent of total assets held by all commercial banks. Under the given scenario that GDP contracted by 4 percent in 2015 and 2 percent

Chart 2.1.10 Capital and provisions



Source: Bank of Thailand

in 2016, the stress test results indicated that although some commercial banks were affected, the overall commercial banking system was able to maintain financial strength and adequate capital buffers to cope with adverse impacts under stress scenarios. In terms of liquidity, the liquidity coverage ratio (LCR)[5] of all commercial banks was above 60 percent, which would be the minimum standard required by the BOT from 2016 onwards.

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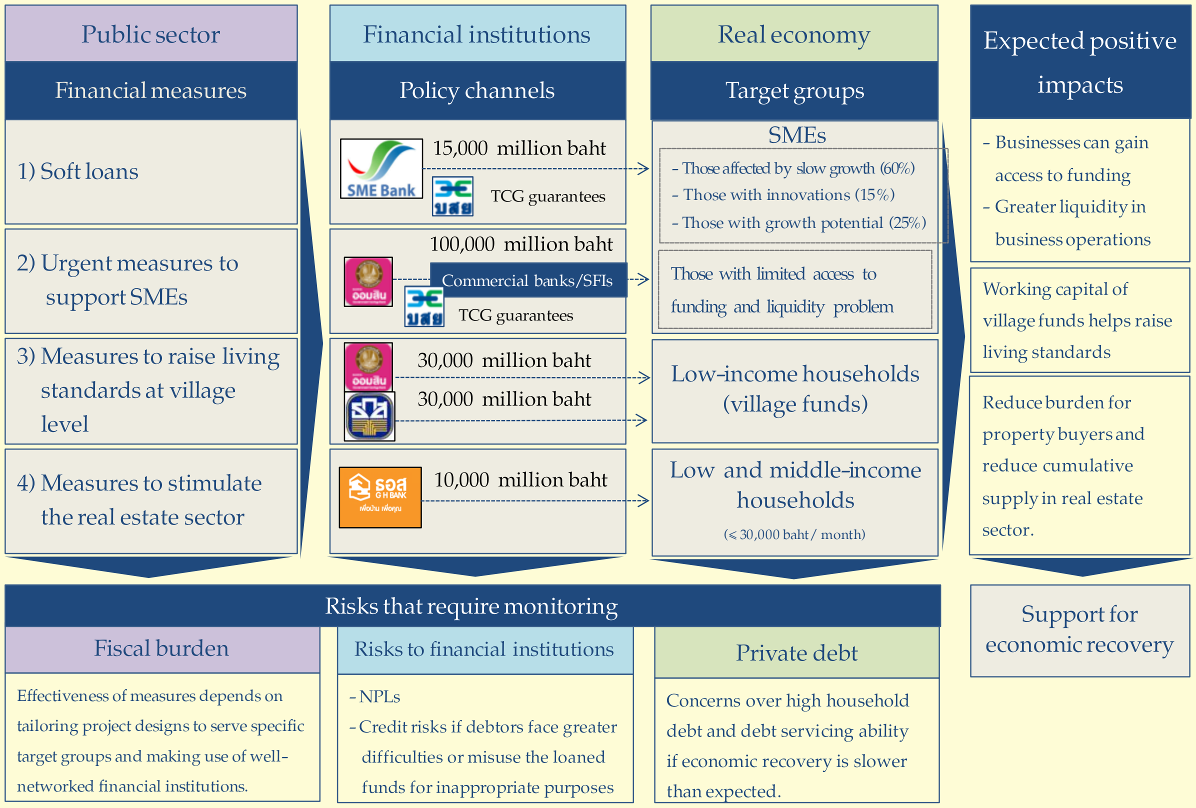
[5] The LCR measures the amount of liquid assets held by financial institutions in order to meet cash outflows in time of crisis. The LCR is calculated by dividing liquid assets by forecasted net cash outflows in a 30 day period under a crisis scenario.

Box 1: Government stimulus through specialized financial institutions (SFIs) and framework for impact monitoring and assessment

As the Thai economy confronted domestic and external downside risks, the public sector had to play a greater role in stimulating economic growth. In 2015, the government periodically introduced a series of financial and fiscal measures for this purpose. The financial measures were mainly in the form of soft loans provided by SFIs, including the following. 1) *Soft loan programs* worth 15,000 million baht, provided by the SME Bank. 2) *Urgent measures to promote SMEs* worth 100,000 million baht, designed to provide liquidity for SMEs. The Government Savings Bank (GSB) acted as the intermediary for commercial banks and/or other SFIs interested in the program. 3) *Measures to enhance living standards at village level* worth 60,000 million baht, in the form of loans extended to the village funds by the Bank for Agriculture and Agricultural Cooperatives (BAAC). 4) *Stimulus measures for the real estate sector*, worth 10,000 million baht and provided by the Government Housing Bank (GHB). The measures aimed at facilitating access to credit among low-income and middle-income households. The total financial package of these four measures amounted to 185,000 million baht, or 1.2 percent of total loans outstanding in the commercial banks and SFIs at 2015 Q3 (excluding interbank loans).

Chart 1 The government's financial measures through SFIs and their financial and economic impacts



Both quantitative and qualitative analyses are required to assess the impacts of these financial measures. The assessment must evaluate the amount of money injected into the real economy and for specific targeted sectors. Risks must also be considered, including the potential increase in debt burden among firms and households, which could affect their debt servicing abilities. In particular, low-income households are more sensitive to economic fluctuations. In the financial institutions system, assessment should focus on deteriorating loan quality and the prospect of higher credit risk if the borrowers' income were to take a hit. Nevertheless, for the two measures targeting SMEs, the government has prepared safeguards for financial institutions by allowing them to apply for credit guarantee from the Thailand Credit Guarantee Corporation (TCG). The government provides partial fee to some debtors and subsidizes the guarantee program. This helps reduce the risks faced by financial institutions. The government, though, could have a larger fiscal burden due to compensations made to SFIs.

The financial measures implemented through SFIs help support growth in the short term. Building confidence and boosting private investment to sustain long-term growth requires other elements of public policy, including direct government spending and public-private partnership (PPP), such as investment in infrastructure megaprojects.

Box 2: Assessment of risks from the Thai corporate sector's debt accumulation

Following the global financial crisis of 2008, major industrial countries mostly adopted ultra-ease monetary policy. They kept the interest rate at low levels and implemented quantitative easing (QE), increasing liquidity in the global financial markets. Part of the capital flows moved into emerging markets, reducing the borrowing costs and spurring a rise in corporate leverage in these economies. The heightened corporate leverage was one of the concerns highlighted in the IMF's Global Financial Stability Report (GFSR), October 2015 issue. The IMF judged that risks in emerging markets could increase in the coming periods due to the following factors:

(1) Higher cost of funding after the Fed's interest rate hike.

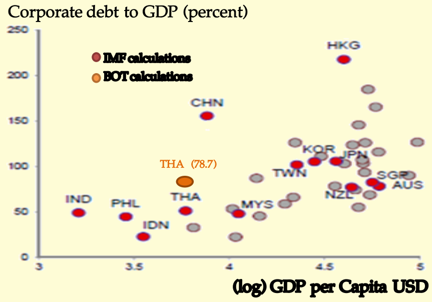
(2) Depreciation of emerging markets' currencies against the U.S. dollars, as capital flows would likely reverse from emerging markets back to major advanced economies, especially the U.S. This would translate into higher corporate indebtedness in emerging markets with high levels of debt denominated in foreign currencies.

(3) An increase in economic risks in emerging markets due to the slowdown in the Chinese and Asian economies. This would undermine the corporate sector's capacity to service debt and weaken financial institutions' loan quality, posing a systematic risk to the financial sector.

The assessment of risks posed by corporate leverage to Thailand's financial stability showed that the risks were still at limited levels, due to the following reasons.

(1) Thailand's corporate debt did not accelerate much and was still at moderate levels relative to other countries, particularly to those with similar level of financial development. The finding was consistent with the IMF report[1], which indicated that Thailand's corporate debt had not expanded as quickly as in other countries. The report also found that, when GDP per capita was used as a proxy for the level of financial development, Thailand's corporate debt to GDP was moderate relative to that of other countries with similar levels of GDP per capita[1] (Chart 1). Non-financial corporate debt stood at 78.7 percent of GDP at 2015 Q2, slightly up from 74.7 percent in 2011.

Chart 1 Thailand's corporate debt to GDP, relative to other countries



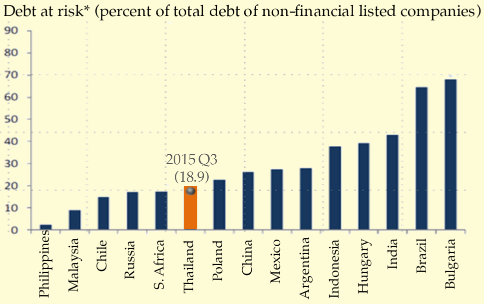
Note: BOT data covers all loans and bonds issued by the corporate sector. IMF data is based on BIS database, which includs loans and bonds held by other depository corporations (ODC).

Source: IMF, Asia and Pacific Department, Presentation, September 2015

(2) The impacts of the weaker baht on Thailand's corporate external debt burden remained limited because the Thai corporate sector had, relative to that in other countries, moderate levels of debt denominated in foreign currencies[6]. In addition, most Thai corporates had improved their management of exchange rate risks, an important lesson learned after the 1997 financial crisis. Some businesses with foreign debt received exports revenue and investment returns in foreign currencies, which acted as a natural hedge against exchange rate risks. These businesses included, among others, energy, electricity, automobiles, tires and food. Businesses whose revenues were in baht, such as leasing companies that borrowed abroad in foreign currencies and lent in baht, had made substantial hedging against currency risk. Some importers could also transmit the higher cost caused by weaker baht to selling prices, such as in the case of petroleum business. Moreover, importers and those that borrowed abroad increased their currency hedging during the period of baht depreciation, reflecting the corporate sector's monitoring of risks and adaptation to the changing environment.

(3) The Thai corporate sector's financial strength was sustained. Despite declining profits of non-financial listed companies (SET and mai) over the first 9 months of 2015 amid subdued economic conditions, their debt servicing ability remained sound. The interest coverage ratio was high at 5 times, while debt to equity ratio remained steady at low levels. The corporate sector therefore had some ability to cushion itself against the risk of economic slowdown going forward. Moreover, considering the share of debt at risk[7] to total corporate debt, which is one of indicators of default risk, the Thai corporate sector's debt at risk remained quite stable since the aftermath of the global financial crisis of 2008, and concentrated mostly on the same companies.

Chart 2 Debt at risk,
Thailand and other countries, 2014



Note: *Debt at risk is the ratio of debt held by companies with ICR below 1.5 to the total debt held by non-financial listed companies in SET and mai (based on financial statement in 2015 Q3)

Source: Julian T.S. Chow (2558) "IMF working paper: "Stress Testing Corporate Balance Sheets in Emerging Economies" (Sep 2015)", Stock Exchange of Thailand, calculations by Bank of Thailand

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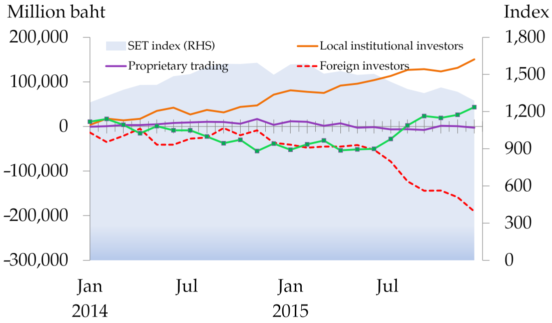
[6] IMF's GFSR, October 2015.

[7] Debt at risk is defined by the IMF as the debts of firms with ICR below 1.5 (Chow, Julian T.S. 2015. "Stress Testing Corporate Balance Sheets in Emerging Economies." IMF working paper.)

At 2015 Q3, debt at risk stood at 18.9 percent of total corporate debt in the SET, a low level relative to that in other emerging markets (Chart 2).

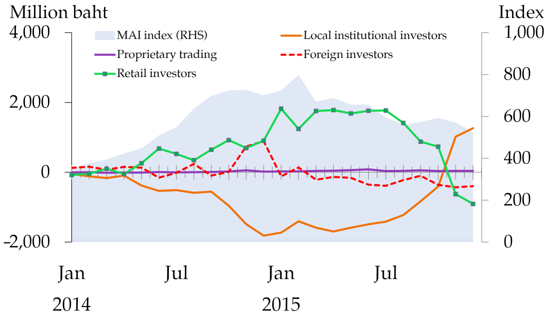
In sum, the Thai corporate sector's debt accumulation in recent periods had not concerned the overall financial stability, thanks to the financial strength of Thai companies, particularly those listed in the SET, and sound management of currency risk. However, going forward the following downside risks could affect the Thai private sector's stability and hence would be monitored: (1) Uncertainty over economic recovery, which could undermine debt servicing ability of firms, especially SMEs or businesses with weak financial positions. (2) The Fed's interest rate hike could push up bond yields in Thailand, increasing the cost of funding for Thai companies that rely on corporate bond financing.

Chart 2.2.1 The Stock Exchange of Thailand index and cumulative net buys classified by investor types



Source: Stock Exchange of Thailand, latest data as of 30 December 2015

Chart 2.2.2 MAI index and cumulative net buys, by investor types



Source: Stock Exchange of Thailand, latest data as of 30 December 2015

2.2 The prolonged low interest rate environment

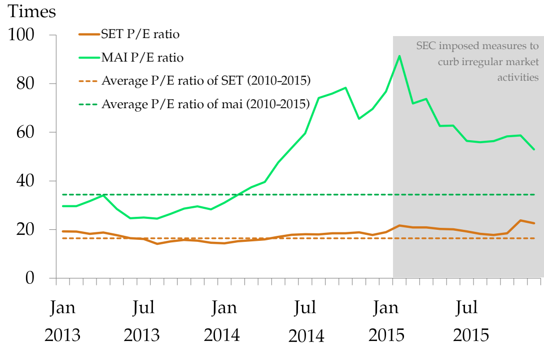
Accommodative monetary policy designed to support economic recovery resulted in a prolonged low interest rate environment, inducing more search for yield activities both in capital and real estate markets. Nevertheless, the risks associated with such behavior to overall financial stability remained limited. The signs of under-pricing of risks still need to be monitored, given some investors' lack of information and limitations in risk assessment. The under-pricing of risks could cause the buildup of asset price bubbles and vulnerabilities that could affect Thailand's economic and financial stability in the future.

Stock market investment in both SET and mai was the main channel used by search for yield investors. In the first half of 2015, investment by retail investors increased from the previous year, notably investment in small stocks not included in the SET50 index and mai stocks. However, risks of speculation in the stock market declined after the SEC had introduced measures to regulate irregular trading in early 2015. A trading alert list was announced, requiring investors who wish to buy these stocks to advance the full amount of cash before purchasing the stocks and disclose securities with unusually high turnover (Turnover list). Such measures led to a steady decline in investment, particularly in the mai, until the late 2015 (Charts 2.2.1 – 2.2.2).

The SEC measures eased the overheating of the stock market somewhat, but Thai stock prices were still high relative to earnings per share. The price-earnings ratio (P/E)[8] in both SET and mai were above historical averages (Chart 2.2.3). Under these circumstances, if the economy recovered slower than expected, it could affect listed companies' performance, posing a risk to financial stability. However, the risks to financial system stability remained limited because most stock trading was settled using cash accounts. Margin loan remained at a low level, recording at 12 percent of total trading value at the end of November 2015.

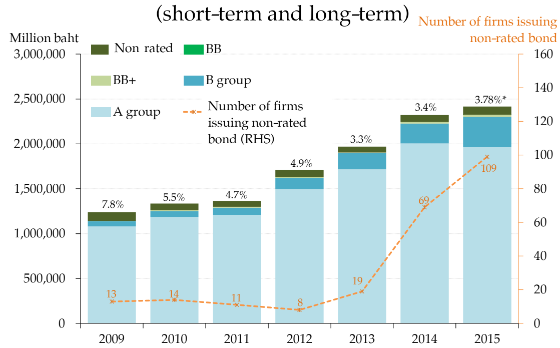
With regard to the domestic bond market, the corporate sector increasingly issued non-rated bonds as a source of funding. This was in line with investors' desire to find investment options with higher returns than the savings rate. In 2015, there were 109 companies[9] that issued non-rated short-term and long-term bonds, up from 69 companies in 2014 (Chart 2.2.4). Most non-rated short-term bonds were issued by commercial banks, while most non-rated long-term bonds were issued by real estate businesses. However, the impact on financial stability was still marginal because non-rated bonds accounted for a small proportion of the total value of corporate bonds, and were offered only to accredited investors.

Chart 2.2.3 Price-Earnings ratio (P/E) of SET and mai



Source: Stock Exchange of Thailand, latest data as of 30 December 2015

Chart 2.2.4 Corporate bonds outstanding (short-term and long-term)

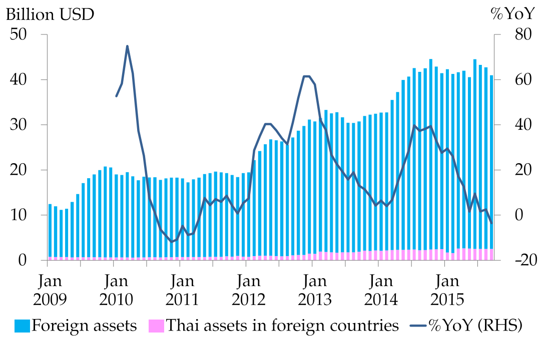


Note: *Percent of non-rated bonds to total corporate bonds
Source: Thai Bond Market Association (Thai BMA)

[8] Earnings per share over the latest 12 months.

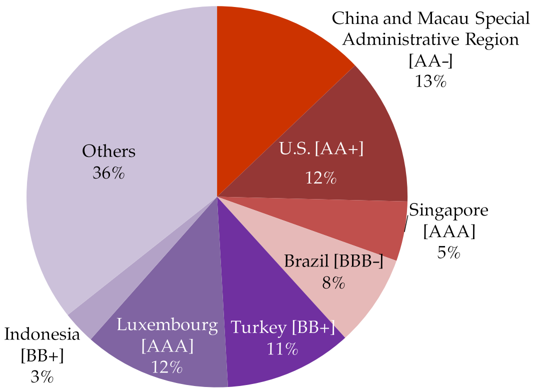
[9] Data includes only bonds registered with ThaiBMA.

Chart 2.2.5 Outstanding investment in foreign assets



Source: Bank of Thailand, data as of September 2015

Chart 2.2.6 Foreign security investment, by initial destination countries



Source: Bank of Thailand, latest data as of September 2015

Apart from investment in the domestic capital markets, some investors increased their investment in foreign securities, mostly by institutional investors and foreign investment fund (FIF). Thus, accumulative investment in foreign securities posted a steady increase in recent periods (Chart 2.2.5), partly spurred by the BOT's easing of regulations to facilitate investment in foreign securities as part of the Capital Account Liberalization Master Plan (2012-2014). Moreover, foreign investment destinations became more varied, and some investment was made in countries with high credit risk. For example, Brazil's credit rating was reduced to non-investment grade in September 2015.[10] However, the impact on financial stability was still limited, because most investment in foreign securities went to countries with investment grade ratings such as China and Macao Special Administrative Region, Luxembourg and the U.S. In fact, the risks associated with investment in Brazilian securities were also limited, because such investment accounted for just 7 percent of total investment in foreign securities (Chart 2.2.6), was in the form of term fund, and was mostly made by accredited investors.

Investment in the Thai real estate market was another channel used by search for yield investors. Signs of speculation were observed with the increase in the trading of

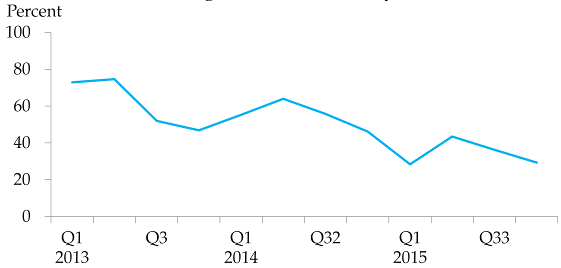
[10] In September 2015, the Standard and Poor's (S&P) reduced Brazil's credit rating from BBB- to BB+, which was below investment grade.

reservation agreements of condominium units, especially in mid-2015 which in part due to the accelerating growth of condominium reservations since 2015 Q1 (Chart 2.2.7). Surveys of property developers also pointed out the similar signs of speculation on condominium reservations, notably in areas near mass rapid transit lines in Bangkok. If the developers continued to create more condominium projects in response to higher speculative demand but the speculators could not find real buyers wishing to transfer the ownership when the projects were completed, then the developers could be left with more unsold condominium units than anticipated. This could create financial burden for developers and could have an impact on investors and related economic activities.

Nonetheless, the impact of increased real estate speculation to financial stability was expected to be limited, thanks to the developers' financial strength and sound risk management. For example, the developers moved to collect a fee for the transfer of reservation agreements and increase the proportion of down payments to stem the speculation. Commercial banks also exercised greater caution in mortgage lending, helping to mitigate the risks of real estate speculation to financial stability.

In sum, the impact of search for yield activities on the financial system remained limited. The stock market cooled down somewhat. The issuance of non-rated bonds still

Chart 2.2.7 Reservation rate for condominium units in Bangkok and its vicinity



Source: AREA's reservation rate is the ratio of the number of condominium units reserved in the first month after launching of sales to the total number of units available for sale in the month, calculations by Bank of Thailand on a quarterly basis.

accounted for a small part of total corporate bonds and limited to specific investor groups. The impact of real estate speculation remained limited as most developers had proper risk management and financial strength. However, going forward the risks of new investment types under the low interest rate environment would need to be monitored. Particular attention should be given to investment channels where investors lacked accurate information and could not assess risks effectively, which could give rise to the under-pricing of risks and future buildup of vulnerabilities in the Thai financial system.

2.3 External risks to Thailand's financial stability

Global financial market volatility had limited impacts on financial stability, thanks to Thailand's sound external positions and the Thai corporate sector's proper exchange rate risk management.

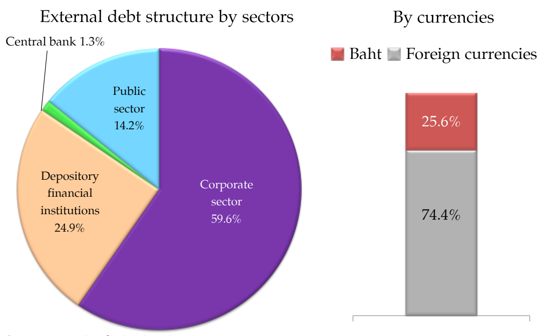
The global economy posted a weaker-than-expected growth, with the Chinese and emerging market economies in a marked slowdown. Policy divergence between major economies was also evident. The Fed raised the policy rate in December 2015 while Bank of Japan and European Central Bank continued to undertake monetary easing amid weak economic recovery. This policy divergence created greater volatility in the global and Thai financial markets including the foreign exchange market. However, heightened global financial volatility had limited influence on

Thailand's financial stability, as the country's sound external positions helped lessen the impacts. Assessment of various factors is as follows:

1. Thailand's external debt remained moderate relative to international standards.[11] Thailand's foreign debt in 2015 Q3 was 133.7 billion U.S. dollars or 32.7 percent of GDP, well below the median debt-to-GDP ratio of 40 percent in emerging market economies. Moreover, the impact of exchange rate to external debt was limited because part of the external debt (25.6 percent) was denominated in baht. This baht-denominated debt was mostly in the form of domestic government and corporate bonds, unlike the situation in 1997 when almost all foreign debt was denominated in foreign currencies (Charts 2.3.1 – 2.3.2). In addition, businesses with foreign debt have effectively engaged in financial instruments to hedge against currency risks.

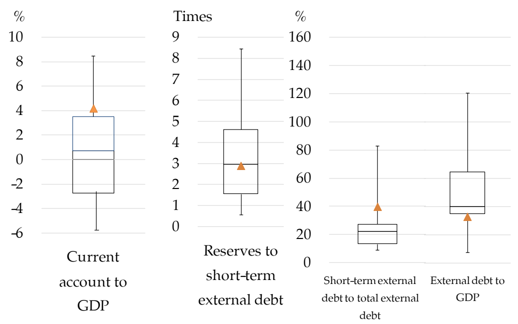
2. Thailand's international reserves were adequate to provide safeguard against any potential rise in capital flow volatility. International reserves at 2015 Q3 stood at 168.8 billion U.S. dollars, 2.8 times the amount of external debt. This means that Thailand had enough foreign currencies to meet its external debt obligations if its short-term foreign debt were not extended. International reserves were able to cover 10 months of imports, higher than

Chart 2.3.1 Structure of Thailand's external debt, by economic sectors and currencies (as of 2015 Q3)



Source: Bank of Thailand

Chart 2.3.2 Thailand's external stability indicators, compared with emerging markets



Source: Bank of Thailand, IMF, IIF and World Bank

Note: 1) P25 P50 P75 show the 25th 50th and 75th percentiles of 22 emerging market economies respectively.

2) International benchmarks:

Current account to GDP greater than -2

Reserves to short-term external debt greater than 1

External debt to GDP lower than 48 percent

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[11] The ratio of external debt to GDP for middle-income countries ranges between 48 and 80 percent, based on World Bank criteria.

the international norm of 3 – 4 months.[12] These indicators confirmed Thailand's ability to withstand the risks of more pronounced capital flow volatility.

3. **Thailand's current account was continually in surplus.** The current account in 2015 was expected to record a surplus of 8.7 percent of GDP[13], higher than the 0.7 percent median in emerging market economies. This was in part due to lower imports value amid subdued oil prices and weaker growth, as well as lower imports quantity amid subdued domestic demand and falling exports. The current account surplus would mitigate the risks to financial stability if capital flight were to occur.

4. **The share of Thai assets held by foreign investors declined, reducing the risks and the impacts of capital reversal.** The impacts of capital reversal in Thailand would not be as severe as in other emerging market economies where the share of foreign investors in their financial markets was high. The shares of foreign investors in Thai government bond market and the SET were 8.14 and 31.6 percent respectively.[14]

5. External risks to the Thai financial institutions and corporate sectors remained

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[12] Based on IMF standards.

[13] Monetary Policy Report, December 2015.

[14] Data at the end of November 2015. Data on foreign investors' bond holding was obtained from the BOT. Foreign investors' share of equity securities was obtained from the Stock Exchange of Thailand.

limited. Commercial banks had to adhere to the BOT regulations on the limitation of foreign exchange positions and excised well risk management practices such as managing currency and maturity mismatches between their assets and liabilities. The corporate sector had moderate external debt relative to that in other countries, and had sound risk management (for more details, see Box 2 "Assessment of risks from Thai corporate sector's debt accumulation").

A major risk that warrants close monitoring in the next periods stems from the impacts of the Fed's interest rate hike on Thai bond yield. In particular, long-term bond yield could edge up and companies would have difficulty rolling over debt with higher costs. The amount of corporate bonds maturing in 2016 – 2017 is approximately 940 billion baht, or 40 percent of the total corporate debt outstanding. Preliminary analysis showed that the impacts to financial stability would be limited because of the following reasons. (1) Most of the maturing bonds were issued by large listed companies with A-rating[15]. And (2) most of maturing bonds' terms to maturity are less than 3 – 4 years, a maturity range that yields depend primarily on domestic financial conditions.

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[15] A-rating includes AAA, AA+, AA, AA-, A+, A and A- credit ratings.

Assessment of Structural Risks to Financial Stability

Chapter 3 Assessment of Structural Risks to Financial Stability

Structural changes currently evolving in Thai financial system are another challenging aspect to the overall financial stability. The current structural concerns are as follows: 1) An expansion of non-bank financial institutions may pose risk to financial stability from their linkages to the financial market and other financial institutions. Although the risks that stem from these non-banks are currently contained, regulators have to closely monitor and assess the development of such risks. This is because these non-banks are expected to play an increasing role along with complexity of financial products, while the low interest rate environment has induced search for yield behavior with greater risk tolerance. 2) Technological advancement in financial institutions and payment system, asides from their benefits, also recognizes as a new threat to the global financial stability.

3.1 Expansion of non-bank financial institutions and implications on financial stability

With regard to the increasing role of non-banks worldwide, which can be seen in terms of market-based nonbanks such as asset management companies and securities companies, and bank-like nonbanks such as saving cooperatives, credit card companies, and personal loan companies, international organizations[1] and regulators in various countries including Thailand have paid more attention to potential risks that these non-banks may pose. Although currently such risks are still limited, the Bank of Thailand, together with relevant supervisory authorities, is closely

[1] For example (1) Financial Stability Board (FSB) and International Organization of Securities Commissions (IOSCO), "Assessment Methodologies for Identifying Non-Bank Non-Insurer Global Systemically Important Financial Institutions", March 2015, (2) International Monetary Fund (IMF), "Global Financial Stability Report (GFSR)", April 2015 and (3) Bank for International Settlements (BIS), "85th Annual Report", June 2015

monitoring the development and risks associated with these non-banks. Of particular attention are mutual funds under asset management companies and saving cooperatives. Given their growing importance, these non-banks may affect financial stability going forward, should there be any shortfalls in regulations and supervision.

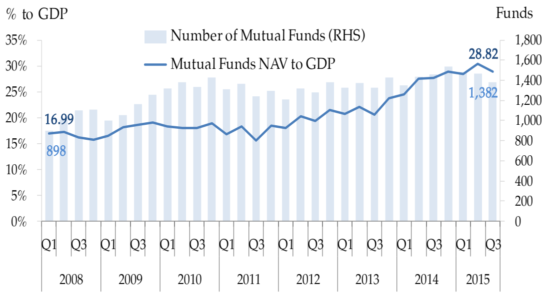
Mutual funds

The growth of mutual funds in Thailand was a result of capital market and investment management development policies. Also, the low interest rate that has persisted since the 2008 global financial crisis contributed to greater interest in investment in mutual funds units among net savers. In addition to higher expected returns than deposits and tax benefits from certain types of funds, mutual funds also offer alternatives for diversification of risks.

Between 2009 and 2014, total net asset value (NAV) of mutual funds grew by 16.8 percent annually. It recorded at 3.9 trillion baht in 2015 Q3, or 28.8 percent of GDP, up from 17.0 percent in 2008 Q1 (Chart 3.1.1). Moreover, mutual funds were growing in variety. The number of funds had increased from 898 in 2008 Q1 to 1,382 in 2015 Q3. Regarding asset allocation, in 2015 Q3, the majority 31 percent of assets was invested in domestic bonds, followed by deposits, domestic equities, gold, and other assets (Chart 3.1.2).

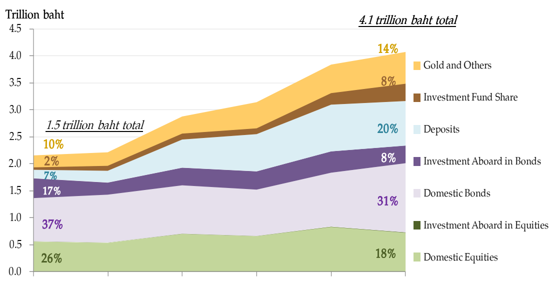
The risks to financial stability from mutual funds stem from their linkages to the system via various assets that they invest in, such as commercial banks deposits, government bonds, as well as local and foreign equities. Should prices of these assets become volatile, or investors lose confidence in the NAV of the funds, massive investment

Chart 3.1.1 Mutual Funds NAV to GDP and Number of Mutual Funds



Source : Securities Exchange Commitee (SEC) and analysis by the Bank of Thailand

Chart 3.1.2 Asset Allocations of Mutual Funds



Note % investment of mutual funds

Source : Securities Exchange Commitee (SEC) and analysis by the Bank of Thailand redemption may result, straining liquidity of the funds. As a result, the funds would be forced to quickly withdraw deposits or fire sale their assets, exacerbating liquidity and asset prices in the financial system. If the problematic funds are bigger size and there is higher number of similar funds, the impact on financial stability system will be larger, because the incident could trigger widespread panics and concerns among investors. Moreover, if affected mutual funds are subsidiaries of commercial banks, the problem may spillover to the banks if effective liquidity management is not put in place.

Nevertheless, overall assessment reveals that risks to financial stability from mutual funds remain limited, because of the following reasons.

(1) Mutual funds possess prudent investment policies and risk management, and are subject to supervision from the Securities and Exchange Commission (SEC) according to international standards. Asset management companies tend to invest in high-quality assets, and most investment in foreign assets is hedged against exchange rate volatility. Moreover, according to SEC rules, companies are not allowed to leverage, and the size of investment in futures contracts is capped. As such, risks to repayment of loans and other liabilities are contained.

(2) Most mutual funds are closed-end funds or behave like ones. Approximately 40 percent of total funds value is registered as closed-end funds, and a portion of open-end funds have pre-specified auto redemptions similar to closed-end ones. As such, fund's managers can predict the patterns of future redemptions and manage liquidity accordingly. Moreover, following SEC regulations on liquidity risk management, asset management companies have to maintain adequate reserve requirements in accordance with investors' redemption patterns. Also, if a fund encounters liquidity problem, SEC could announce a temporary halt to trading activities of the fund in order to curb panic redemption among investors.

(3) The size of mutual funds companies is not large compared to overall financial institution system. At the end of 2015 Q3, the total NAV of mutual funds stood at 3.9 trillion baht or 10.7 percent of overall assets in the financial institutions system in 2014. Also, the NAV of the largest fund recorded at only 0.6 percent of overall assets in the financial institution system.

(4) Direct linkage between mutual funds and commercial banks remains limited. Mutual funds' deposits at commercial banks only account for 3.4 percent of total deposits in the system. Commercial banks' investment in mutual funds adds up to merely 0.2 percent of overall commercial banks assets or 1.3 percent of their investment (data as of 30 September 2015). Moreover, in order to prevent spillover of risk from subsidiary asset management companies to their parent commercial banks, the Bank of Thailand has implemented consolidated supervision over financial conglomerates. The focus has been placed on the management of liquidity risks that may arise when mutual funds and commercial banks hold common assets. When that is the case, should for any reasons the funds are forced to fire sale these common assets, the fall in asset prices will worsen the position of commercial banks. Currently, however, such risk is deemed limited, because Thai commercial banks, specialized in lending activities, only invest 13.8 percent of their total assets in securities. In addition, the majority of such investment is held for liquidity purpose, and not for trading.

Saving cooperatives

Saving cooperatives in Thailand offer basic financial services, namely deposits taking and credits issuance. These services, however, are provided only to members, who are identified by certain shared aspects, such as working in the same organization. Relations within the network of members, as well as surrounding communities, allow the group to monitor and inspect each other's action. This is in accordance with the principal and philosophy of saving cooperatives as not-for-profit organizations that promote saving habit and provide mutual support among members. Therefore, the advantage of saving cooperatives is the ability to assess financial standings of members, and provide more convenient access to financial services to the group.

Over the past 10 years, saving cooperatives have seen rapid and persistent growth.[2] They play the most important roles among various types of cooperatives, such as credit union cooperatives.[3] The number of saving cooperatives surged from 1,239 in 2005 to 1,415 in 2015. Moreover, their total asset value grew by roughly 3.5 times from 600 billion baht in 2005 to around 2 trillion baht in 2015 H1, an approximately 13 percent average annual growth.

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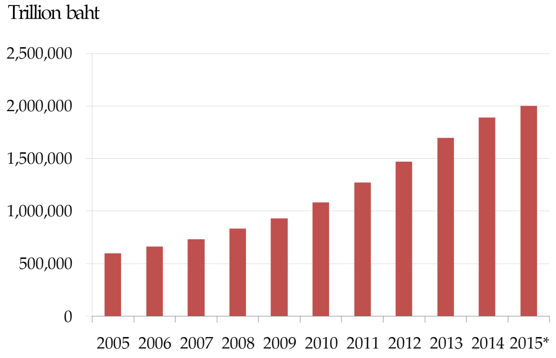
2 In 2014, saving cooperatives contributed to over 87 percent of assets of all cooperatives.

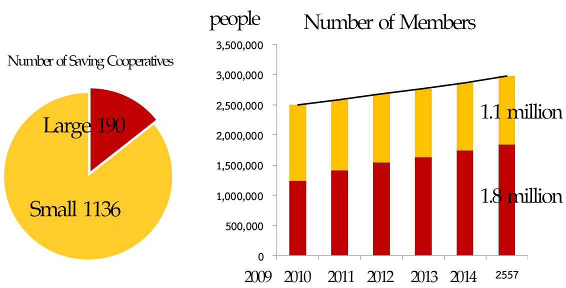
3 Unlike saving cooperatives, credit unions take members from different occupations living in the same area.

Chart 3.1.3 Total Asset Values of Saving Cooperatives from 2005 to present



Note: *Preliminary data as of end of 2015 Q2, based on liability side by summing equity and members deposits. The remaining is assumed to grow at the same rate with 2014.
Source : Cooperative Auditing Department and Bank of Thailand

Chart 3.1.4 Number of Savings Cooperatives and Members



The asset size of saving cooperatives totals 15 percent of GDP, or approximately 5 percent of overall assets in financial institution system (Chart 3.1.3). Saving cooperatives are also important from a social standpoint, reflected by the number of members that exceeded 3 million in 2014 (Chart 3.1.4). In addition, credits from saving cooperatives accounted for roughly 15 percent of total household debt, making them the third most important creditor of households, after commercial banks and specialized financial institutions.

The rapid growth of saving cooperatives, both in terms of asset size and number of members, may have risk implications to the economy and society as a whole. Also, in a low interest rate environment, some cooperatives are pressured to seek higher returns by expanding credits and invest in riskier assets. Meanwhile, some cooperatives that possess insufficient deposit and equity base to accommodate the demand for credits, have to borrow from other cooperatives or financial institutions. When this happens, risks associated with a certain cooperative can be transferred to its lenders, contributing to accumulation of risk within the system. As a result, the cooperative system with larger asset size and number of members should have better and standardized risk management practices.

Nevertheless, overall assessment reveals that **saving cooperatives do not present significant risks to Thailand's financial stability at the moment, given the following reasons.**

(1) Asset size of most saving cooperatives is not large. Each of the saving cooperatives has on average about 280 million baht in assets. About 190 of them have over 2 billion baht, constituting roughly 83 percent of saving cooperative's total assets. Even the one with the largest asset size has about 10 billion baht, which is considered small compared to commercial banks.

(2) A large part of funding of saving cooperatives comes from members, including shareholders' equities and members' deposits. At the same time, the share of borrowing from other financial institutions remains small, as suggested by the Debt to Equity (D/E) ratio of below **two** in most cases.

(3) The interconnectedness among saving cooperatives and between cooperatives and other financial institutions remains limited, although it is projected to rise. An analysis of transactions among saving cooperatives and commercial banks suggests that deposits from and credits to saving cooperatives constitute only 0.3 percent and 1.5 percent of overall commercial banks assets, respectively. Nevertheless, it is noteworthy that reliance on external funding among saving cooperatives has increased markedly over the past 7 years. This is shown by the surge in bank overdraft and short-term loans from 0.5 percent of total liabilities and equities of cooperatives system in 2007, to 4.1 percent in 2014. Likewise, accounts payable and notes payable rose from 6.9 percent to 12.4 percent over the same period. Such trend reflects increasing interconnected between the cooperatives system and other financial institutions, which has to be closely monitored going forward.

Regarding the connectedness within the saving cooperatives system, investment in deposits at other cooperatives and credits extended to them are both found to be limited, totalling only 7.6 percent of the cooperatives system's assets. At the same time, deposits from other cooperatives[4] contribute to merely 0.9 percent of total liabilities and equities of the system (Chart 3.1.5). **As a result, the likelihood that risks from one cooperative will lead to a systematic problem remains low.**

Although the growth of saving cooperatives has not significantly affected financial **stability, but in the future, the quick expansion of asset size and number of members may result in a build-up of fragility. Therefore, it is essential to promote a sustainable role of saving cooperatives, as well as enhance their general management and risk management capacity. This way, they can continue to improve access to financial services, while maintaining stability of the financial system.** Relevant agencies have recognized such needs and implemented various measures to bolster the conditions of saving cooperatives. These measures include (1) improving cooperatives supervisory framework, (2) upgrading risk management capacity and providing risk management trainings for cooperatives' executives and board members, (3) promoting good governance among executives and board members, (4) informing members of their roles and responsibilities in monitoring the cooperatives management, and (5) developing a database that allows for timely assessment of linkages between cooperatives and the financial system.

Over the past period, saving cooperatives have been encouraged to join the National Credit Bureau (NCB), so that financial institutions and cooperatives can access to more complete information about the debt obligations of each debtor. If more

Chart 3.1.5 Linkages among Saving Cooperatives and to Other Financial Institutions

Amount of transactions between commercial banks and other financial institutions (data as of September 2015)

	Deposits at commercial banks (% of commercial banks assets)	Credits from commercial banks (% of commercial banks assets)
Depository SFIs	0.06%	0.60%
Mutual funds under Asset Management Companies	2.37%	0.15%
Insurance companies	0.34%	0.14%
Cooperatives*	0.31%	1.47%
- Savings cooperatives**	0.25%	1.46%
Provident fund	0.16%	-
Others	1.12%	3.20%
Total	4.35%	5.56%

Note: * Including all types of cooperatives and federations of cooperatives
** Saving Cooperatives and Federations of Savings and Credit Cooperatives
Source: Bank of Thailand

*Total assets of savings cooperatives ****
(Data as of December 2014)

% of total assets	2007	2014
Cash and deposits at commercial banks	3.2%	2.2%
Deposits at other cooperatives	0.9%	3.0%
Short-term investment	1.6%	2.2%
Long-term investment	7.6%	9.4%
Credits to members	79.6%	77.7%
Credits to other cooperatives	6.0%	4.6 %
Other assets	1.1%	0.9%

*Debt and equity of savings cooperatives****
(Data as of December 2014)

% of total assets	2007	2014
Deposits from members	27.1%	27.9%
Deposits from other cooperatives	0.4%	0.9%
Overdraft and short-term loans	0.5%	4.1%
Accounts payable and notes payable	6.9%	12.4%
Long-term loans payable	5.8%	6.5%
Other liabilities	2.7%	2.2%
Equities	56.6%	46.0%

Note : *** Excluding Federations of Savings and Credit Cooperatives
Source : Cooperative Auditing Department

[4] Excluding the linkage between saving cooperatives and The Federation of Saving and Credit Cooperatives

cooperatives join the NCB, loans decisions will be more effective and the risk of excessive household debt can be reduced. Currently in the initial stage, two saving cooperatives have already joined the NCB, while four more are in preparation process. The number is expected to rise gradually, as more cooperatives recognize the benefits of a membership and become more prepared, particularly regarding their IT system capabilities.

Given the quickly growing role of saving cooperatives, efforts to ensure effective supervisory process and enhance stability are essential. Constant monitoring and assessment of progress are also pivotal.

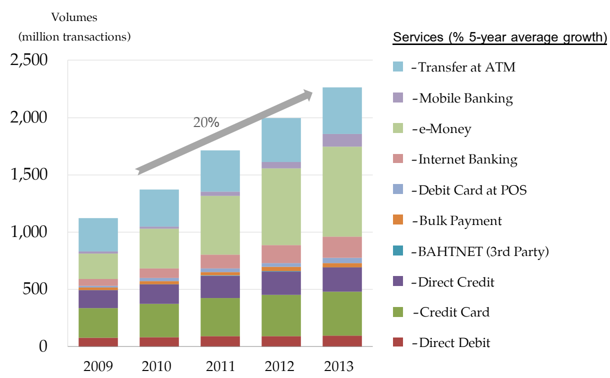
To conclude, non-banks, particularly mutual funds and saving cooperatives, are gaining in importance over the past period, reflecting the increasing variety of savings and investment alternatives. Although the risks from these non-banks to financial stability have been thus far limited, their increasing importance, future growth prospect, and relevance to a large number of individuals and households, require that relevant supervisory authorities constantly monitor their developments. At the same time, databases and risk assessment framework have to be developed, so as to prevent any possible risks. These efforts would ensure that the expanding role of non-banks indeed result in a more effective financial system and greater benefits for the clients.

3.2 Technological advancements in the financial institution and payment systems: developments and risks

Financial services and payment systems in Thailand are transforming towards electronics platforms, utilizing financial technology (Fintech).

The new technology, which enable financial transactions to take place anywhere, anytime, and on any devices, via internet connection and mobile devices, bring about both benefits and risks. Therefore, preparations have to be put in place for the changing nature of financial transactions, and monitoring system is required to prevent potential cyber risks. The shift towards electronic services has been driven by a number of factors. First, the familiarity of technology and growing penetration of electronic financial services among businesses and individuals (Chart 3.2.1). Second, government policies that promote the use of advanced information technology among public and private enterprises. Third, the Bank of Thailand's proactive role in the development of electronic financial and payment services, as well as related infrastructures. Finally, competition among commercial banks and non-banks in the electronic financial services market.

Chart 3.2.1 Annual Volumes of e-Payment Transactions



Source: Bank of Thailand

Developments of financial and payment services will benefit the needs of customers and promote economic activities in various sectors.

Individuals can enjoy convenient, express, and affordable financial and payment services, which will improve their standard of living.

Businesses can more efficiently manage their finances through electronic services, which offer straight-through-processing for all transactions, ranging from purchase, payment, to shipment. Moreover, the variety of payment options, including credit cards and online payments, will open up new markets and business opportunities. In addition, the electronic system can offer useful data for business planning, in order to respond better to customers' needs.

Government agencies can use electronic platforms to provide more convenient, faster, and more comprehensive services, such as fees and taxes payments. Moreover, the financial management within government, like revenue collection and budget disbursement, will also become more convenient, timely, transparent, and accountable.

More widespread use of electronic financial and payment services will contribute to Thailand's economic development in a number of ways. For example, the economic costs associated with cash and checks management can be reduced, the country's competitiveness will be boosted, and data gathered by the electronics system can aid economic and social policy recommendations, in tandem with the promoting on digital economy of Thai Government.

At the same time, potential risks from technological advancement (cyber risks) need to be prepared for. Among the many forms in which cyber risks can take place, most common damages and mistakes by the service providers and users are operational and settlement risks. In response to these risks, financial institutions and payment service providers have increasingly improved their risk management systems in order to avoid systemic problems. However, over the past few years, there has been an emerging security threat from the so-called "cyber attacks", which are growing both in frequencies and complexity. Given rising interconnectedness in the financial system, the likelihood that a cyber attack on certain institutions will escalate into a systemic problem, causing widespread damage on users, also increases. For instance, in 2013 a large and well-known bank in the United States was hacked, and customers' information from over 83 million accounts was stolen. In that same year, a South Korean bank was also attacked, causing its ATM and internet/mobile banking services to be suspended for many hours. Given such growing threats, the World Economic Forum in 2015 has declared cyber attacks among the ten key global risks to monitor.

In Thailand, 65 million attacks have been alerted in 2014 (not limited to financial institutions). The number has more than doubled from the previous year. The most common forms of IT security threats include the following. (1) Distributed Denial of Service (DDoS) attack, a form of system interference characterized by a large number of coordinated simultaneous usage of a website over a short time span in order to paralyze the system. (2) Phishing, an act of forging or changing information on an organization's website in order to cause misunderstanding or damage to the organization reputation, and possibly with the goal of stealing customers' sensitive information. (3) Installation of malwares to steal information or money in customers' bank accounts, leading to financial damages.

Therefore, **in order to promote the benefits of electronic financial services and prevent possible security threats, the Bank of Thailand has set out a number of action plans and regulations for financial and payment service providers, according to the Financial Sector Master Plan Phase III and Payment Systems Roadmap.** The focus has been placed on the promotion of electronic financial and payment services among the public and private sectors, the development of infrastructures and environment conducive for an advancement of these services, and the promotion of users' awareness and confidence in the system. Specific measures include:

(1) Establish cyber security protection framework for financial institutions, suitable for all levels of operations, ranging from policy level, risk management, to the control, tracking, and monitoring of risk in everyday operations, in line with international standards. Cyber security is listed as one of the technological risks, to be managed according to the "Three Lines of Defense" principle. The first line constitutes a unit responsible for cyber risk management as a first resort, with daily and round-the-clock operations. The second line is an effective, comprehensive, and prudent risk management framework. The third line is an independent agency in charge of system inspections and carrying out annual system penetration tests, in order to ensure safety against cyber attacks.

(2) Improve regulatory framework to accommodate developments in electronic payment systems. The regulations are designed to be more flexible, accommodative, and conducive for new innovations. Moreover, they must ensure stability and safety of electronic services, as well as related infrastructures, while seeking to foster competition and interoperability among providers, and offer sufficient customer protection measures.

(3) Support the Payment Systems Act, which will serve as a unified payment systems regulation. The Act would improve Thailand's payment system to be on par with international standards, boost effectiveness of the supervisory framework, and enhance competitiveness of the service providers.

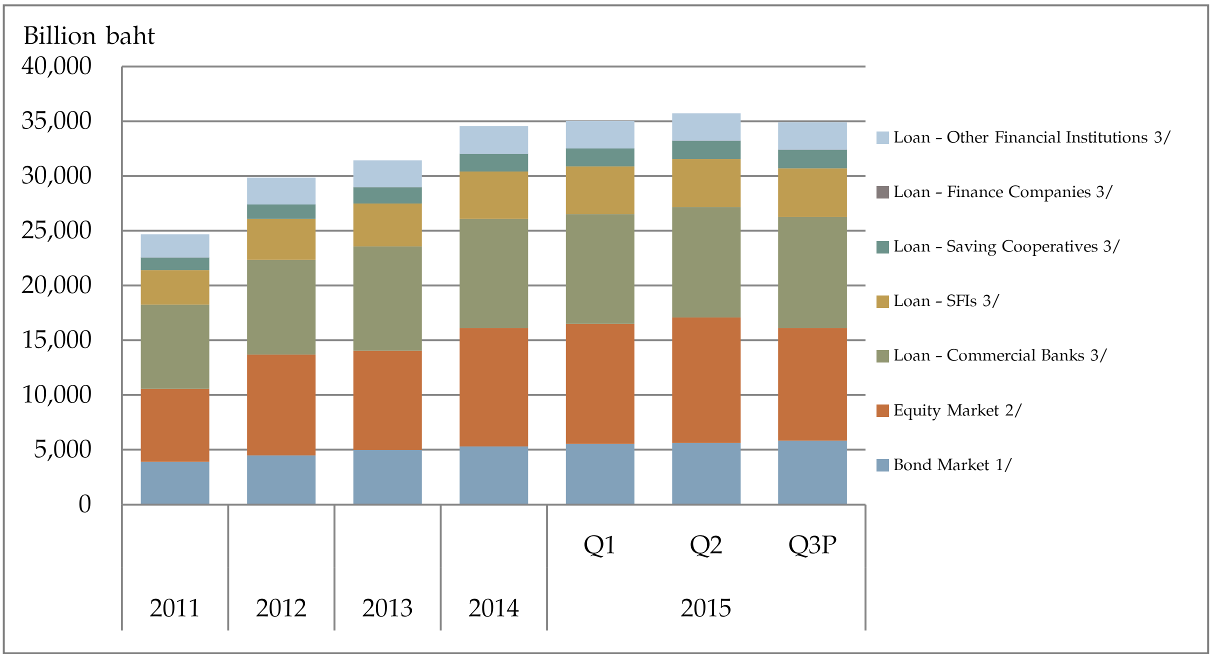
(4) Promote proactive collaborations with relevant parties, including government agencies, regulatory bodies, as well as financial and payment service providers. Such partnership will lead to a coherent development of services and infrastructures, from which all parties can benefit. It will also avoid redundant investment, and facilitate appropriate supervision of risks.

Under the financial environment in which technology and the internet are becoming increasingly important and forming an integral part of people's daily lives, subsequent risks and security threats are difficult to avoid. Thus, financial service providers are urged to develop measures and systems to timely monitor emerging threats. Also, collaborations with the Bank of Thailand and other relevant agencies, such as the Electronic Transactions Development Agency, will be highly beneficial. For example, they will facilitate an exchange of data and know-hows, as well as support the development of in-depth human resource expertise. Moreover, all involved organizations can work together to develop risk prevention plans, emergency drills, and a long-term central knowledge-sharing platform, which will enable more effective management of cyber attacks. Together, these efforts will ensure that technological advancements bring about real benefits for the economic and financial systems.

Annex 1
Thai Financial System

Annex 1 Thai Financial System

1. Thai Financial System Structure: By Types of Funding



[1/] Par Values of bonds issued in Thailand, excluding the issuance in financial sector and non-residents

[2/] Values of listed equities in SET and mai, excluding the issuance in financial sector

[3/] Loan to households, non-financial corporates, the government, and other financial institutions such as credit card, personal loan companies, leasing companies, insurance companies, securities companies, and pawnshops

2. Financial Institutions System: Number and Asset Size of Major Financial Institutions

Types of Financial Institution	2015 Q3 [P] Number	2015 Q3 [P] % of Total assets of Financial Institutions
Depository Corporations		
Commercial Banks	30	48.24
Specialized Financial Institutions	6	15.19
Savings Cooperatives [1/]	1,415	6.12
Finance Companies	2	0.04
Money Market Mutual Funds	41	0.73
Non-Depository Corporations		
Mutual Funds (excluding Money Market Mutual Funds)	1,393	10.11
Insurance Companies	86	8.02
Leasing Companies	767	2.01
Credit Card and Personal loan companies under regulation [2/] (including Nano-Finance Loans) [3/]	32	2.53
Provident funds	412	2.39
Government Pension Fund	1	2.09
Asset Management Companies	35	0.76
Securities Companies	51	0.88
Agricultural Cooperatives	3,610	0.55
Pawnshops	598	0.20
Secondary Mortgage Corporation (SMC)	1	0.04
Thai Credit Gaurantee Corporation (TCG)	1	0.09

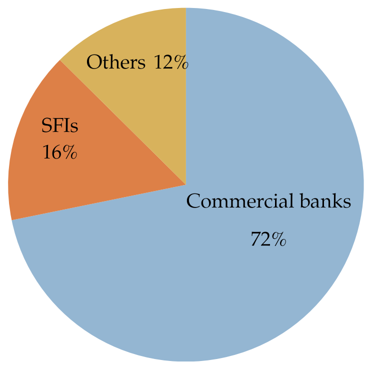
[1/] Excluding credit unions

[2/] Only including financial institutions with licenses issued by the Bank of Thailand and operate in line with definitions of financial institutions according to the Monetary and Financial Statistics (2000) standard

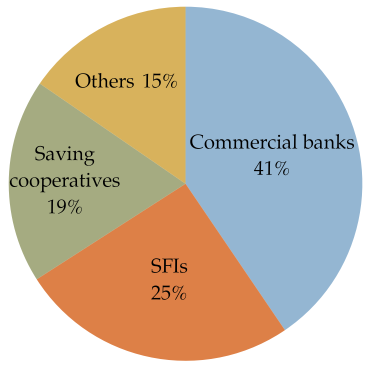
[3/] As of 2015 Q3, there were 4 providers of nano-finance loan in total.

3. Loan: Corporate and Consumer Loan

Shares of Corporate Loan Providers as of 2015 Q3

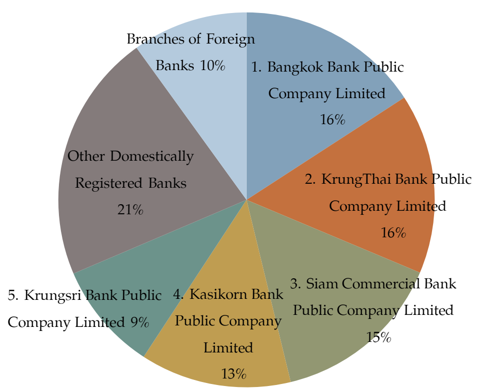


Shares of Consumer Loan Providers as of 2015 Q3

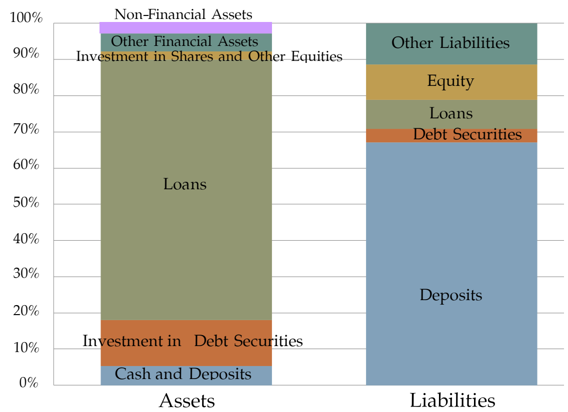


4. Structure of Commercial Bank System

Shares of Commercial Bank By Asset Size

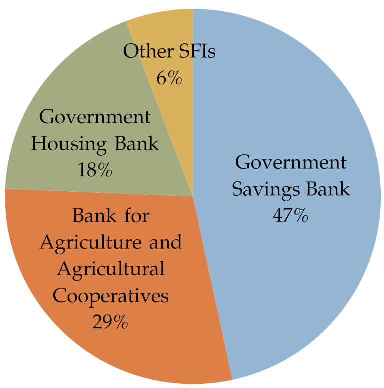


Asset and Liability Structure of Commercial Bank

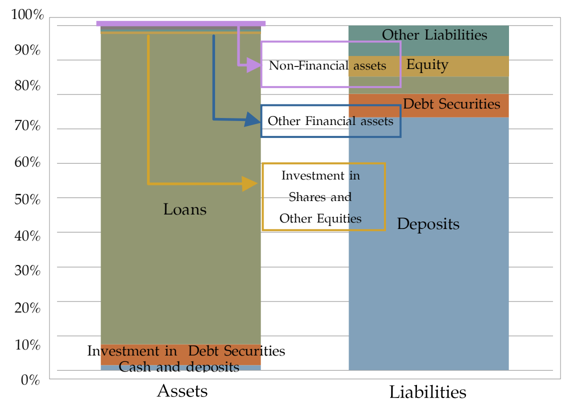


5. Structures of Specialized Financial Institutions (SFIs)

Shares of Depository SFIs By Asset Size



Asset and Liability Structure of Depository SFIs



Indicators for financial condition and assessing risk to financial stability

Indicators	2011	2012	2013	2014	2015			
					Q1	Q2	Q3	Q4
Overall financial system								
GDP at current price (million baht)[1/]	11,300,485	12,354,656	12,910,038	13,148,601	13,227,646	13,290,244	13,368,449	n.a.
Funding structures								
Private credit to GDP (times)	1.2	1.3	1.3	1.4	1.4	1.4	1.4	n.a.
Stock market capitalization to GDP (times)	0.6	0.7	0.7	0.8	0.8	0.9	0.8	n.a.
Bonds market capitalization to GDP (times)	0.3	0.4	0.4	0.4	0.4	0.4	0.4	n.a.
1. Financial institutions								
1.1 Commercial banks								
Total asset (billion baht)	12,981	14,774	16,182	16,746	16,909	16,963	17,191	n.a.
% yoy	10.5	13.8	9.5	3.5	4.4	4.9	5.4	n.a.
Deposit (excluding Interbank)	7,865	10,000	10,930	11,693	11,847	11,760	11,770	n.a.
% yoy	6.8	27.1	9.3	7.0	6.8	7.0	5.4	n.a.
Loans (excluding Interbank)	8,476	9,637	10,701	11,240	11,255	11,408	11,505	n.a.
% yoy	15.1	13.7	11.0	5.0	4.3	4.6	5.3	n.a.
Corporate loan	6,080	6,723	7,450	7,748	7,730	7,840	7,881	n.a.
% yoy	14.8	10.6	10.2	4.00	2.9	3.2	4.3	n.a.
- Small and medium-sized enterprises (SMEs)	14.4	14.1	15.1	3.4	4.4	5.2	4.9	n.a.
- large corporate	15.1	7.0	6.3	4.8	1.1	0.7	3.7	n.a.
Consumer loan	2,396	2,914	3,251	3,493	3,525	3,568	3,624	n.a.
% yoy	15.8	21.6	12.9	7.4	7.6	7.8	7.5	n.a.
- Housing loan	10.1	11.7	12.5	12.1	11.6	11.6	10.7	n.a.
- Car loan	21.8	39	8.4	-3.4	-4	-3.7	-2.7	n.a.
- Credit card and personal loan under regulation	15.0	20.3	14.6	5.0	6.4	5.4	4.2	n.a.
- Other personal loan	28.3	27.1	21.5	14.1	16.0	17.3	16.3	n.a.
Liquidity (%)								
Loan to deposit	107.8	96.4	97.9	96.1	95.0	97.0	97.8	n.a.
Loan to deposit and B/E	89.9	93.1	96.6	95.7	94.5	96.5	97.3	n.a.
Asset quality								
NPL Ratio (%)	2.7	2.3	2.2	2.2	2.3	2.4	2.8	n.a.
SM Ratio (%)	2.3	2.2	2.4	2.6	2.8	2.7	2.4	n.a.
Actual/Regulatory loan loss provision (%)	146.7	157.2	168.3	169.4	165.9	165.1	153.9	n.a.
NPL coverage ratio (%)	112.6	132.8	143.7	142.8	135.2	135.7	123.0	n.a.
Profitability								
Operating profit (billion baht)	255	288	338	345	87	95	108	n.a.
Net profit (billion baht)	144	174	204	214	50	53	50	n.a.
Return on asset (ROA)	1.1	1.2	1.3	1.3	1.2	1.3	1.2	n.a.
Net Interest Margin (%)	2.5	2.5	2.6	2.6	2.5	2.5	2.5	n.a.
Capital adequacy								
Regulatory capital to risk-weighted asset (%)	15.2	16.3	15.7	16.8	16.6	16.8	17.3	n.a.
Tier-1 Ratio (%)	11.8	11.8	12.6	13.7	13.7	14.0	14.4	n.a.
Common Equity Tier 1 (%)	-	-	12.4	13.6	13.6	13.9	14.3	n.a.
Interest rates								
Minimum loan rate (MLR)	7.7	7.6	7.6	7.5	7.4	7.4	7.4	7.4
12-month fixed deposit	2.8	2.5	2.4	2.1	1.9	1.7	1.6	1.5

Notes: [1/] The quarterly values of Nominal GDP is calculated by 4-quarterly data moving sum

Indicators for financial condition and assessing risk to financial stability

Indicators	2011	2012	2013	2014	2015 Q1	2015 Q2	2015 Q3	2015 Q4
1.2 Specialized financial institutions [2/]								
Total asset (billion baht)	3,772	4,140	4,492	4,678	4,852	4,851	4,817	n.a.
% yoy	16.3	9.8	8.5	4.1	6.0	3.1	3.5	n.a.
Deposit (excluding Interbank)	3,071	3,348	3,692	3,867	3,998	4,030	4,004	n.a.
% yoy	21.6	9.0	10.3	4.8	5.3	4.2	4.7	n.a.
Loan (excluding Interbank)	3,065	3,405	3,523	3,717	3,758	3,768	3,845	n.a.
% yoy	20.3	11.1	3.5	5.6	6.0	5.5	5.4	n.a.
Asset quality								
NPL Ratio (%)	4.7	4.4	4.9	5.1	4.9	5.1	5.6	n.a.
SM Ratio (%)	2.4	1.9	2.3	3.2	2.8	3.6	3.2	n.a.
Profitability								
Operating profit (billion baht)	66	67	74	76	24	23	24	n.a.
Net profit (billion baht)	36	20	44	34	4	10	13	n.a.
Return on asset (ROA)	1.0	0.5	1.0	0.7	0.3	0.9	1.1	n.a.
Net Interest Margin (%)	3.1	2.9	2.8	2.8	3.1	2.7	3.0	n.a.
Capital adequacy								
Regulatory capital to risk-weighted asset (%)	10.9	9.5	11.3	10.8	11.4	11.4	11.9	n.a.
2. Financial markets								
Government bond market								
Bond spread (10years-2years)	0.2	0.6	1.4	0.7	0.9	1.5	1.5	1.1
Non-Resident holdings (%)	7.4	10.6	10.3	10.0	9.6	8.8	8.1	n.a.
Stock markets SET + mai								
SET Index (End of period)	1,025.3	1,391.9	1,298.7	1,497.7	1,505.9	1,504.6	1,349.0	1,288.0
SET Actual volatility (%)	21.0	12.2	19.7	11.9	12.4	11.4	16.5	13.7
SET Price to earning ratio (times)	12.1	18.3	14.6	17.8	20.9	20.1	17.8	22.6
mai Index (End of period)	264.2	415.7	356.8	700.05	671.1	656.8	573.7	522.6
mai Actual volatility (%)	17.8	13.1	26.4	18.3	19.9	18.2	26.3	16.9
mai Price to earning ratio (times)	16.4	22.8	28.3	69.6	71.8	62.8	56.4	52.9
Foreign exchange market								
Exchange rates (End of period) (USD/THB)	31.6	30.6	32.9	32.9	32.5	33.8	36.3	36.0
Actual volatility (%annualized)	4.8	4.6	5.9	4.0	3.6	5.4	5.2	6.1
Nominal effective exchange rate (NEER)	100.2	100.0	107.0	104.3	111.6	109.9	106.6	105.9
Real effective exchange rate (REER)	99.7	100.0	106.5	103.1	108.0	106.0	102.4	101.5
3. External sector								
Current account to GDP [3/]	2.9	-0.4	-0.9	3.3	8.0	6.3	6.8	n.a.
External debt to GDP [4/]	31.1	35.3	35.8	34.5	33.7	33.3	42.7	n.a.
External debt (million USD)	104,334	130,747	141,933	140,698	138,016	136,779	133,745	n.a.
Short-term (%)	45.3	44.5	43.6	40.2	38.7	40.2	40.3	n.a.
Long-term (%)	54.7	55.5	56.4	59.8	61.3	59.8	59.7	n.a.
International reserves								
Net reserves (million USD.)	206,378	205,800	190,207	180,238	175,879	178,654	168,823	n.a.
Gross reserves to short-term debt (times)	3.7	3.1	2.7	2.8	2.9	2.9	2.9	n.a.

Notes:

[2/] Include Government Savings Bank, Bank for Agriculture and Agricultural Cooperatives, Government Housing Bank, Islamic Bank of Thailand, SME Bank, Export-Import Bank of Thailand, Thai Credit Guarantee Corporation, and Secondary Mortgage Corporation

[3/] Current account to GDP ratio is calculated by quarterly nominal GDP in the same period

[4/] External debt to GDP ratio is calculated by 3-years averaged nominal GDP

Indicators for financial condition and assessing risk to financial stability

Indicators	2011	2012	2013	2014	2015			
					Q1	Q2	Q3	Q4
Capital flow								
Net capital flow (million USD)	-8,269	12,790	-2,488	-16,489	-2,015	-1,787	-7,212	n.a.
Direct investment (flow)								
Thailand direct investment abroad	-7,176	-14,261	-12,276	-7,866	-2,506	-1,021	-1,186	n.a.
Foreign direct investment in Thailand	2,474	12,899	14,416	12,826	4,731	4,704	302	n.a.
Portfolio investment (flow)								
Thailand portfolio investment abroad	2,260	-6,960	-3,399	-7,392	-366	-2,533	156	n.a.
Foreign portfolio investment in Thailand	3,903	10,358	-1,368	-4,695	-2,715	-2,803	-1,290	n.a.
4. Households								
Household debt to GDP (%)	66.2	71.5	76.3	79.8	80.0	80.7	81.1	n.a.
%YoY	16.8	18.0	11.5	6.6	6.4	6.2	5.5	n.a.
Financial assets to debt (times)	2.4	2.5	2.4	2.5	2.6	2.5	n.a.	n.a.
Commercial banks NPL and SM ratio (%)								
- Housing loan	4.0	3.7	3.9	3.8	4.1	4.0	4.4	n.a.
- Car loan	9.2	7.4	9.8	10.8	10.9	11.1	11.2	n.a.
- Credit card and personal loan under regulation	4.5	4.7	6.0	6.8	7.5	7.9	7.9	n.a.
- Other personal loan	3.0	2.8	3.7	4.0	4.4	4.3	4.6	n.a.
5. Corporates								
Corporate debt to GDP (%)	74.7	74.4	75.5	77.5	78.1	78.7	n.a.	n.a.
Commercial banks NPL and SM ratio (%) :								
- Small and medium-sized enterprises (SMEs)	6.4	5.7	5.5	5.5	5.8	5.8	5.9	n.a.
- Large corporate	3.7	3.2	3.0	3.3	3.7	3.7	3.6	n.a.
Performance of non-financial listed companies								
Net profit margin (%)	2.6	5.5	5.0	4.4	5.0	4.8	4.7	n.a.
Debt to equity ratio	0.8	0.8	0.8	0.8	0.7	0.7	0.8	n.a.
Interest coverage ratio (times)	6.2	7.1	6.8	5.6	5.3	5.2	5.0	n.a.
Current ratio (times)	1.5	1.5	1.5	1.6	1.7	1.6	1.6	n.a.
6.Real estates								
Number of new mortgage loan from commercial banks								
Single-detached and semi-detaced house	17,329	22,949	18,353	15,694	3,001	3,383	3,115	1,928
Townhouse and commercial building	20,577	26,277	25,261	21,764	4,212	4,987	4,812	3,089
Condominium	20,478	26,477	28,087	25,381	4,351	6,569	7,843	4,893
Number of new residential launches in Bangkok and its vicinities								
Single-detached and semi-detaced house	19,104	15,100	17,226	18,933	3,231	2,045	6,694	3,676
Townhouse and commercial building	22,343	24,390	30,074	26,980	5,172	5,866	5,014	5,894
Condominium	40,134	62,548	84,250	65,298	13,788	19,766	10,575	14,326
Housing price index (Jan 2553/2010= 100)								
Single-detached house (including land)	103.8	105.0	110.8	116.2	118.6	117.6	121.2	n.a.
Townhouse (including land)	109.6	112.8	121.2	130.1	135.7	138.0	141.8	n.a.
Condominium	107.2	113.3	119.4	130.1	137.3	138.6	144.6	n.a.
Land	110.0	114.7	125.0	136.2	147.5	147.6	153.2	n.a.
7. Fiscal sector								
Public debt to GDP (%)	40.8	43.7	45.7	46.3	43.3	42.8	43.0	n.a.