BANK OF THAILAND

FINANCIAL STABILITY REPORT

2021

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Contents

Executive Summary

Over the past two years, the Thai economy has been hit by several waves of COVID-19 outbreak, severely and extensively affecting both households and businesses. While the situation has improved to some extent in the last quarter of 2021 and the economy has appeared to be on a recovery path, following the relaxation of containment measures and travel restrictions, the **progress of the recovery is still vulnerable to uncertainty and remains uneven across different sectors. Consequently, it would take time for economic activities to return to pre-COVID-19 level, in which case debt serviceability of certain groups of households and corporates may present a risk to financial stability.** Thai households remain highly indebted, as reflected by the ratio of household debt to gross domestic product (GDP) which has risen to 89.3 percent in 2021Q2 and likely to increase further. Small and medium enterprises (SMEs) and firms in tourism-related services sectors still face higher liquidity and solvency risks compared to firms in other sectors, given slower pace of recovery. On the other hand, **the Thai financial system remains stable**. Commercial banks have ample capital, provisions, and liquidity to support economic recovery through credit provisions. Insurance businesses are financially sound in general, but the pandemic has affected a few companies that offer COVID-19 insurance policies, for which precautionary measures have been taken by authorities to limit systemic impact given uncertainty of the situation. Overall, **results of stress tests reflect the strength of financial institutions**, while financial markets remain stable and functioning normally.

Synchronized use of monetary and fiscal policies, as well as regulatory measures, was crucial in supporting the economy, bolstering confidence in financial markets, and helping debtors through the crisis. The policies implemented thus far also helped to maintain stability of the Thai financial system, thereby reducing the likelihood of systemic event. Measures by authorities were continuously adjusted in accordance with changing economic situation. In 2021, the outbreak of the Delta strain of COVID-19 caused a more severe and protracted impact on the economy than expected. Consequently, it was necessary for monetary policy to remain accommodative, while financial measures had to shift from broad-based measures, that is the blanket assistance to businesses and households implemented in 2020, to more targeted measures that would provide longer-term reliefs in line with state of the problem. These included liquidity support to those that continue to be impacted by the pandemic, adjustment of debt restructuring methods in line with debtors' situations and prospects, and supervision of the financial system to support economic recovery.

Looking ahead, the Thai financial system will continue to face a number of key challenges as follows: (1) Economic recovery will take time and continue to be subject to high uncertainty due to ongoing viral mutations such as the Omicron. In light of this, the Bank of Thailand (BOT) has extended the relaxation of asset classification and provisioning guidelines to encourage financial institutions to expedite debt restructuring for borrowers, in a way that ensure sustainable debt repayment prospects in the long run. **(2) The problem of household debt, which has long been accumulated and aggravated by the pandemic,** requires a holistic solution to address both the curb of new debt and management of existing debt to reduce the possibility of households falling into debt traps. **(3) The "new normal" context of the economic and financial system post-COVID-19 will require some corporate sectors to adapt in order to remain competitive.** In this regard, the BOT is considering financial measures to provide funding support for long-term business adjustment.

Finally, close collaboration between regulators – including the BOT, the Office of the Securities and Exchange Commission (SEC), the Office of Insurance Commission (OIC) and other government agencies – is of high importance for effective monitoring of risks within different parts of the financial system so that the relevant measures can be implemented to address such risks in a timely manner. Furthermore, the public sector will also have a significant role to play in supporting the corporate sector's transitioning to a post-COVID-19 world in order to sustainably get the economy through the crisis.

Chapter 1: Risks to Thailand's financial stability

Compared to 2020, the risk of a financial crisis has subsided in part due to prompt introduction of targeted financial measures which were timely adjusted in response to changing economic situation. However, several sectors in the Thai economy remain fragile owing to the accumulated impact since the first wave of the COVID-19 pandemic, slower-than-expected recovery in some sectors, and uncertainty over the pandemic situation.

The new wave of COVID-19 Delta-variant infection in April 2021 had a widespread, severe, and prolonged impact on the Thai economy, causing the economy to contract in the 2021Q3. The outbreak also delayed the economic recovery to return to the pre-COVID-19 level in early 2023 rather than mid-2022 as previously assessed. The government had to impose lockdown measures to limit economic activities, affecting the ability to service debt of households and businesses, particularly those in the services sector that were vulnerable since the pandemic began. In contrast, firms in the export sector have seen strong recovery in line with the global economic rebound, resulting in an uneven recovery across households and businesses. Consequently, the BOT has adjusted the policy approach from focusing on short-term broad-based measures to support businesses and households in a more targeted and longer-term manner corresponding to the more-protracted-than-expected COVID-19 situation. The measures are targeting those persistently affected by the COVID-19 shock and facing slower rebound. Furthermore, certain macro-prudential measures were also eased to support the economic recovery. Meanwhile, the priority is still to safeguard the stability of financial institutions as they are the key engine in transmitting policy support, while minimizing moral hazard in the part of borrowers, so that financial institutions remained capable of providing a much-needed assistance to vulnerable borrowers effectively.

Later, as the situation improved and uncertainty over another COVID-19 outbreak fell, thanks to the adequate provision and widespread distribution of vaccines, the government started easing lockdown measures on 1 September 2021 and opening the country on 1 November 2021, leading to potentially more robust economic recovery. However, certain groups of businesses and households remain vulnerable to developments in the period ahead as the emergence of the new Omicron variant had once again raised uncertainty, and tourism sector could take years to return to its normal state due to the international travel restrictions of foreign countries. Additionally, the decline in revenues of some business sectors because of the changing economic landscape in the post-COVID world and the rise of debt burden during the COVID-19 period has affected debt repayment ability of some businesses and households, exacerbating the pre-existing household debt vulnerabilities. In this light, the measures implemented during this phase would aim to expedite sustainable debt restructuring in accordance with the long-term ability to repay debt of borrowers, with a focus on vulnerable businesses and households.

1.1 Financial vulnerabilities of households and corporate sectors

Household vulnerability heightened as the COVID-19 shock aggravated pre-existing high level of household indebtedness, especially low-income workers (earning less than 10,000 baht per month) in the non-agricultural private sector whose income dropped more than other household groups, causing their debt repayment ability to deteriorate. This is partly because their debt consists mainly of consumer loans, which is unproductive and requires high monthly repayment, causing the debt repayment ability to be sensitive to income shocks. If their income recovery is protracted such that debt serviceability of borrowers is affected pervasively, financial institutions providing retail credit, particularly those whose customer base comprises largely low-income borrowers, could be negatively affected and potentially passing on risks to other sectors in the financial system. Moreover, heightened debt burden of households could impact macroeconomic outlook via slower private consumption growth.

SMEs faced tighter liquidity constraints due to the new COVID-19 outbreak, and the number of firms with insolvency issue, especially in the service sector, increased because SMEs are more likely to face greater funding constraints and have lower ability to adapt their business models compared to larger corporates. The prolonged COVID-19 pandemic could affect SMEs' debt serviceability on a large scale, resulting in the credit quality deterioration of financial institutions' system and employment prospects of the country. For medium- and large-sized corporates, although there had been a rise in debt creation overall, the main purposes were to replenish liquidity during the COVID-19 period and to invest. Besides, large conglomerates would likely recover following the global economic recovery, especially in the industrial sector. Therefore, risks to the financial system stemming from large conglomerates were limited.

Financial measures in 2021 were put in place initially to preserve and replenish liquidity for viable SMEs and retail borrowers, especially those severely affected and facing slow rebound, to accommodate the effect of the new COVID-19 outbreak. **Subsequently, when the situation improved, measures to promote long-term debt management (3 September 2021) were introduced** to incentivize financial institutions to support borrowers with long-term debt restructuring in accordance with the borrowers' income path, which initially declines, then the installment gradually steps up in line with the increase in income based on the pace of the economic recovery. **Also, support measures to alleviate regulatory burden and expenditure of financial institutions** had led to timely assistance to borrowers at a considerable scale, as reflected by the continuous decline in the number of bankruptcy cases of retail borrowers in the banking system.

1.2 Resiliency of the Thai financial system

The Thai financial system remains robust, as confirmed by the stress test results of the banking system, mutual funds, and insurance companies, under the adverse scenario assumption that the COVID-19 effect on the Thai economy would be severe and prolonged. The stress test was conducted both by regulatory authorities (i.e., top-down stress test) and financial institutions (i.e., bottom-up stress test). However, there remains a need to closely monitor the performance and financial positions of financial institutions, which may continue to be affected despite the anticipated economic recovery. Examples include loan quality of banking institutions after certain support measures expire (e.g., relaxation of loan classification criteria, expiring in March 2022, in which banks could freeze the status of retail and SMEs' borrowers who are in the process of debt restructuring), and the ability to pay the COVID-19 insurance claims of the insurance companies. In addition, the progress of debt restructuring programs and the capability of financial institutions to maintain the flow of credit to the real economy must also be closely monitored, as financial positions of households and businesses remained fragile, and the pandemic situation remained highly uncertain.

Thai financial markets remain sound despite high volatility of global financial markets due to concerns over early tapering by the US. Federal Reserve at the beginning of the year, as shown by the statistics of trading volume and yield movement of the government and corporate bond markets all year round. **Overall markets continue to function normally.** The value of corporate bond markets has increased while most of the bonds' credit spreads declined and almost returned to the pre-COVID level. Nevertheless, the BOT would closely monitor risks of severe market fluctuations and prepare policy measures should any unexpected events arise, such as political turmoil or early policy normalization in the advanced economies which are likely to recover faster than the emerging market economies. Such trigger events, in turn, could spread risks to other key players in the financial system, such as saving cooperatives which had been increasing their investments in corporate bonds and equities in the past years.

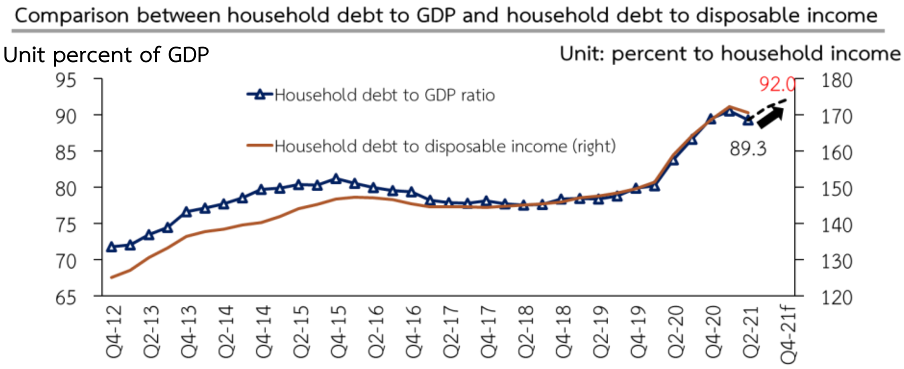
In summary, the Thai financial system, which has played an instrumental role in maintaining economic momentum in recent periods, remains capable of supporting the economic recovery going forward via both debt restructuring and business model transformation mechanism offered by both financial institutions and financial markets in line with the new-normal context of the post-COVID world.

Chapter 2: Financial vulnerabilities of the household and corporate sectors

2.1 Household sector

Household vulnerability has been building up even before the COVID-19 outbreak, as shown by time series of household debt to GDP ratio (Figure 1). In 2021Q2, the ratio was at 89.3 percent, with a tendency to rise further. Besides, credit card and unsecured personal loans, which require larger monthly installments as these loans are short-term with relatively high interest rate, account for a significant portion of total household debt. This contrasts with other countries, where household debt is mainly composed of housing loans[1] which are long-term debt with lower interest rates (Figure 2).

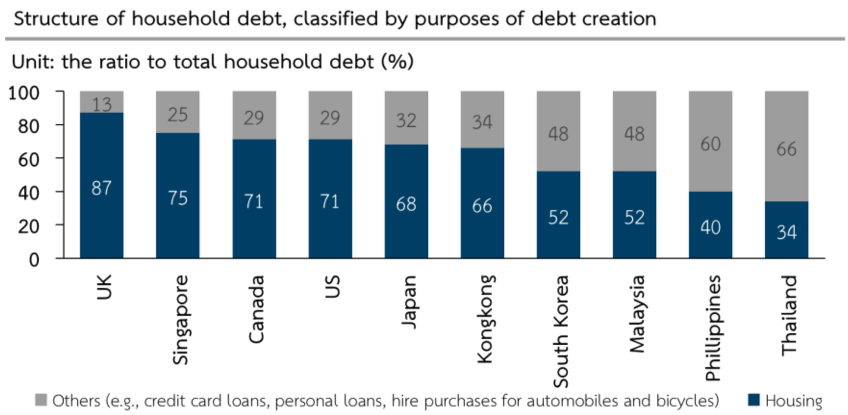
Figure 1: Household debt to GDP ratio remained high.



Note: Household debt refers to financial institutions' loan to household and household (disposable) income refers to after-tax income estimates based on yearly national income data

Source: Office of the National Economic and Social Development Board and the Bank of Thailand

Figure 2: A portion of household debt is non-housing debt, which includes consumer loans with high monthly payment.



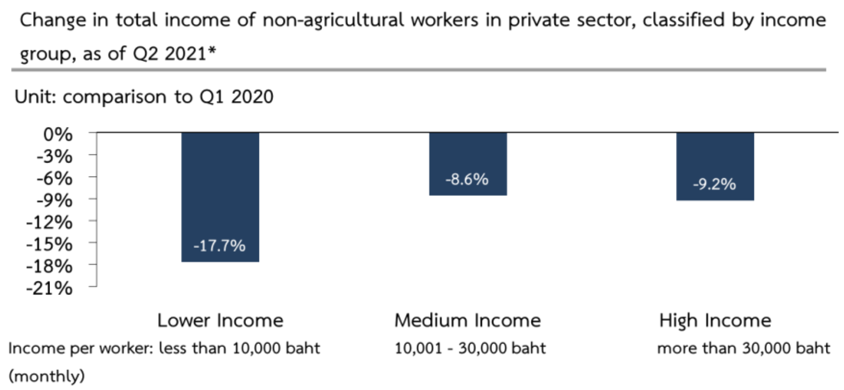
Note: the data is as of 2019, except the data of Malaysia is as of 2017

Source: CEIC, Bank of Thailand, Hong Kong Monetary Authority, Monetary Authority of Singapore, Bank Negara Malaysia, Bank of Korea, Bank of England, Bangko Sentral ng Pilipinas. Calculations by the Bank of Thailand

[1] The data on household debt excludes those of village funds, student loan fund, and informal debt.

The COVID-19 pandemic outbreak during the second and third quarter had increased the Thai household fragility due to unemployment or income shock. Based on the National Statistics Office data, the number of unemployment in 2021Q3 increased substantially from the year-2019 average at 370 thousand people, or approximately 1 percent of the total labor force, to 870 thousand people, or approximately 2.3 percent of the total labor force.[2] Low-income non-agricultural workers in the private sector (monthly earning less than 10,000 baht) were affected more severely than other income groups, as shown by the change in non-agricultural private-sector workers' total income from 2020Q1 to 2021Q2 by income group (Figure 3). This, in turn, led to a decline in household buffers as some must use their savings to compensate for their missing income. As of August 2021, most of the vulnerable households, those who had at least one 30-day past due account, had credit card debt and personal loans and borrowed from specialized financial institutions (SFIs) and other non-bank financial intermediaries (non-bank). In addition, approximately two out of five borrowed from more than one financial service providers (Figure 4).

Figure 3: Low-income households (with monthly earning less than 10,000 baht) were severely affected.



Note: *Change in total income of non-agricultural private-sector workers from pre-COVID (Q1 2020) to post-COVID (Q2 2021) based on a sample group (3,983 people) of non-agricultural private-sector workers working more than 24 hours per week before the COVID-19 outbreak.

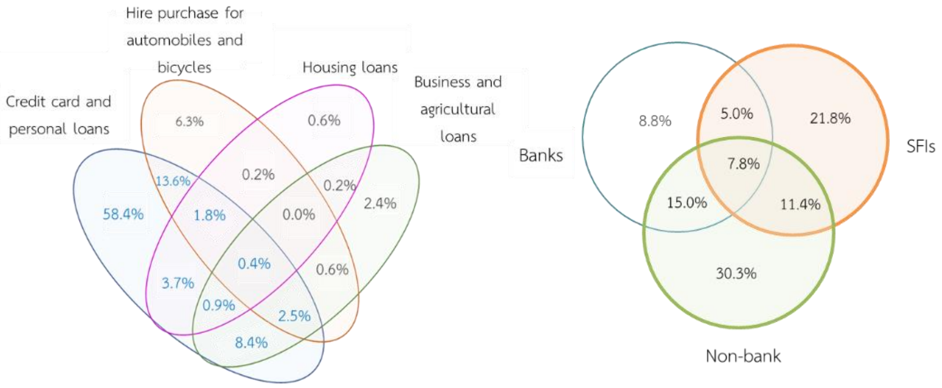
Source: Labour force survey (LFS), National Statistical Office. Calculations by the Bank of Thailand.

[2] Source: Labour Force Survey (LFS), National Statistical Office. Calculations by the Bank of Thailand.

Figure 4: The majority had credit card debt and personal loans, and roughly 2 out of 5 borrowed from more than one type of financial institutions.

The ratio of vulnerable retail borrowers, as of August 2021, classified by the type of debt and lending financial institutions

Unit: the ratio to total vulnerable retail borrowers.



Note: vulnerable retail borrowers refer to those with at least one 90-day past due account.
Source: retail credit data from National Credit Bureau (NCB). Calculations by the Bank of Thailand

Even though the BOT had introduced several support measures continually in response to the pandemics, the new wave of COVID-19 infection was severe and protracted more than anticipated, causing a rise in the number of retail borrowers in need of support. Based on an analysis under the baseline scenario as of June 2021, using the database consisting of almost 15 million borrowers by joined between the BOT dataset, covering banks, SFIs, credit card companies, and hire purchase companies' data, and the National Credit Bureau (NCB) dataset, additional assistance measures for over-indebted retail borrowers were warranted. This included long-term debt restructuring program which the lending financial institutions would have to incur losses (e.g., deduction of interest rate or principal) in the range of hundred billion baht by the end of 2022.

The BOT, in cooperation with other related regulatory authorities, has put in place several additional measures to alleviate household financial burden via financial institutions in 2021, with an objective to give the proactive and targeted support, tailored to the needs of each borrower according to their specific problems. Two types of support measures were undertaken: **(1) measures aimed to maintain and replenish liquidity for households.** These included: (1.1) temporary regulatory relief for credit card, personal loan under regulation, and digital personal loan[3] by reducing minimum payment rate, together with increasing maximum credit line restriction for (a) credit card and personal loan borrowing to twice of income for borrowers with average monthly income not exceeding 30,000 baht and (b) digital personal

[3] For more details, see Regulations on credit card, personal loan under regulations, and digital personal loans under regulations, as of 3 September 2021

loan; (1.2) measures to support credit provision and refinancing via SFIs so that troubled retail borrowers could obtain liquidity to sustain a living, and reduce their debt burdens by lowering interest and extending loan maturity in line with changing serviceability. Examples include the COVID-19 fighting loans and refinancing loan for secured products lent by other financial institutions and additional borrowing for personal consumption (i.e. Re-plus loan).

(2) Measures aimed to help borrowers manage their existing debt. Examples include (2.1) *debt restructuring program to reduce the borrowers' debt burden* (for those mildly affected) as follows. (2.1.1) Phase-3[4] support measures to alleviate financial burden of afflicted retail borrowers, especially (a) vulnerable groups with credit card and personal loans and (b) title loan, auto hire purchase, housing mortgage and home-for-cash loan. The measures were designed primarily to reduce debt burden, such as extension of debt repayment period and restriction of interest rate charged to not exceed the ceiling rate or the current contract rate. (2.1.2) Measures to support debt refinancing and consolidation[5] of housing loans and other retail loans in order to reduce interest rate burden of borrowers with good repayment records or those affected by the COVID-19 shock. The idea is to utilize the existing collateral under housing loan to reduce interest rate burden and long-term installment. Also, (i) financial institutions were temporarily prohibited from collecting a prepayment fee from borrowers of personal loan and business loan under regulation, and (ii) the program criteria, which initially allowed only consolidation of debt within the same financial institution, was extended to cover debt consolidation across different financial institutions.

(2.2) Measures to facilitate sustainable debt restructuring (for borrowers who were severely affected) which included: (2.2.1) sustainable debt restructuring program[6] to alleviate the COVID-19 impact which was expected to be severe, protracted, widespread, and highly uncertain. The weight was given to expediting financial institutions' debt restructuring which considers long-term earning of borrowers, by easing regulations on asset classification and provisioning proportionately to the intensity of support provided to borrowers with the following guiding principles: (i) the scenario assessment must be forward-looking; (ii) the measures could support borrowers at a large scale in a timely manner; (iii) the measures are targeted and tailor to each borrower's problem; (iv) the measures are fair for both borrowers and lenders; and (v) the measures do not create moral hazard behavior among the non-affected borrowers; (2.2.2) debt clinic and debt mediation program, which had continuously been providing support to borrowers of all status. Moreover, the BOT is in the process of

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[4] For more details, see Measures to support retail borrowers during the COVID-19 pandemic period (Phase 3) (TH version), as of 14 May 2021.

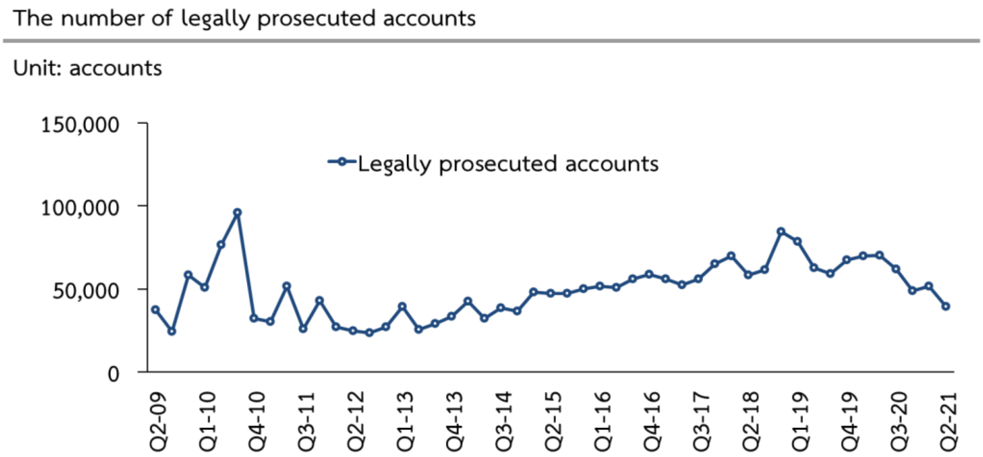
[5] For more details, see Measures to support borrowers affected by the COVID-19 pandemic (long-term measures to manage debt by refinancing and debt consolidation) (TH version), as of 16 November 2021.

[6] For more details, see Measures to support retail borrowers during the COVID-19 pandemic period (sustainable debt management) (TH version), as of 3 September 2021.

consulting with related parties to set up sustainable debt-restructuring mechanisms for SFIs borrowers going forward.

Policy measures undertaken so far have provided support to households on a large scale and sustained debt repayment ability of households. In 2021Q3, the number of accounts receiving support was 6 million, accounting for a total of 2.1 trillion-baht debt outstanding. Specifically, the number of accounts whose borrowers received the support from banks and non-bank was 2.6 million, totaling 0.9 trillion-baht debt outstanding, while the number of those received the support from SFIs was 3.4 million, totaling 1.2 trillion-baht debt outstanding. Indeed, such measures led to modest improvement in credit quality when compared to the pre-COVID level, as reflected by the decline in outstanding balance of non-performing retail loan in the banking system from 3.23 percent in 2020Q1 to 2.89 percent in 2021Q3. In addition, the number of banks' retail borrowers legally prosecuted reduced in recent periods and almost returned to its normal level[7] (Figure 5).

Figure 5: The number of legally prosecuted retail borrowers in the banking system had decreased in the recent periods.



Source: National Credit Bureau (NCB)

Even though the government continuously enacted several support measures for households, some groups of households, particularly the vulnerable ones, remained fragile and their debt serviceability had deteriorated. This is because some households are still affected by the COVID-19 shock and recovering slowly. Additionally, even if their income recovers, its level might not return to the pre-COVID level given the changing economic landscape in the post-COVID period. Besides, the heightened debt burden and deteriorated buffer have also added to the household vulnerability. Looking ahead, the COVID-19 situation, albeit improving overall, remains highly uncertain. A future broad-based decline in debt serviceability of households could spread risks to the financial institutions, especially if

[7] Source: based on an analysis using NCB data by Puey Ungphakorn Institute for Economic Research (PIER)

borrowers default on several accounts with different lenders, both banks and non-banks, and potentially affect future private consumption. Therefore, incentivizing financial institutions to restructure debt in a sustainable manner to enhance the borrowers' long-term debt repayment capability, as well as improving the borrowers' ability to manage their debt and make their financial plan, remained a priority. This should mitigate the risks of credit quality deterioration and provisioning burden of banks in the periods ahead.

In the long term, it is imperative to tackle household over-indebtedness problem in a holistic way. This includes policy measures to prevent over-borrowing which could lead to risk of over-indebtedness problem and to manage existing debt which had made some households caught into a debt trap. The measures should be implemented across debt journey as follows: *(1) prior to debt creation* (e.g., promoting financial literacy and discipline, encouraging more alternative financial service providers to tackle informal debt problem, and developing credit data infrastructure which includes all types of debt held by households), *(2) during debt creation* (e.g., encouraging responsible lending practices by financial institutions, standing ready to introduce MaPP measures if necessary, and supporting competition among financial institutions in providing debt consolidation and refinancing), and *(3) after debt creation* (e.g., introducing comprehensive approach to help lower borrowers' debt burden and promoting sustainable debt restructuring-should there be debt serviceability issues). Thus, a holistic approach would be required to address household debt issues in a sustainable manner, together with (a) considering the risks of fostering moral hazard behavior, (b) tackling informal debt problem, and (c) sustainably restoring household income to ensure comprehensive debt resolution.

2.2 Corporate Sector

The overall growth in corporate debt to GDP since the start of the COVID-19 pandemic can be attributed to the contraction in GDP and the increase in borrowings by <u>large corporates</u> to enhance liquidity buffers and to fund new investments (Figure 6). These large corporates are generally poised to recover well alongside global economic and export recovery, especially in manufacturing sectors, as well as the easing of containment measures by the government. On the other hand, **loans to <u>SMEs</u>, which had seen a prolonged contraction since before the COVID-19 outbreak, has just achieved positive growth since 2021Q2** mainly due to measures to grant soft loans and rehabilitation loans. If such policy support measures are excluded, however, SMEs would continue to see no loan growth (Figure 7).

Figure 6: The ratio of corporate debt to GDP rose steadily during the pandemic, partly due to GDP contraction.

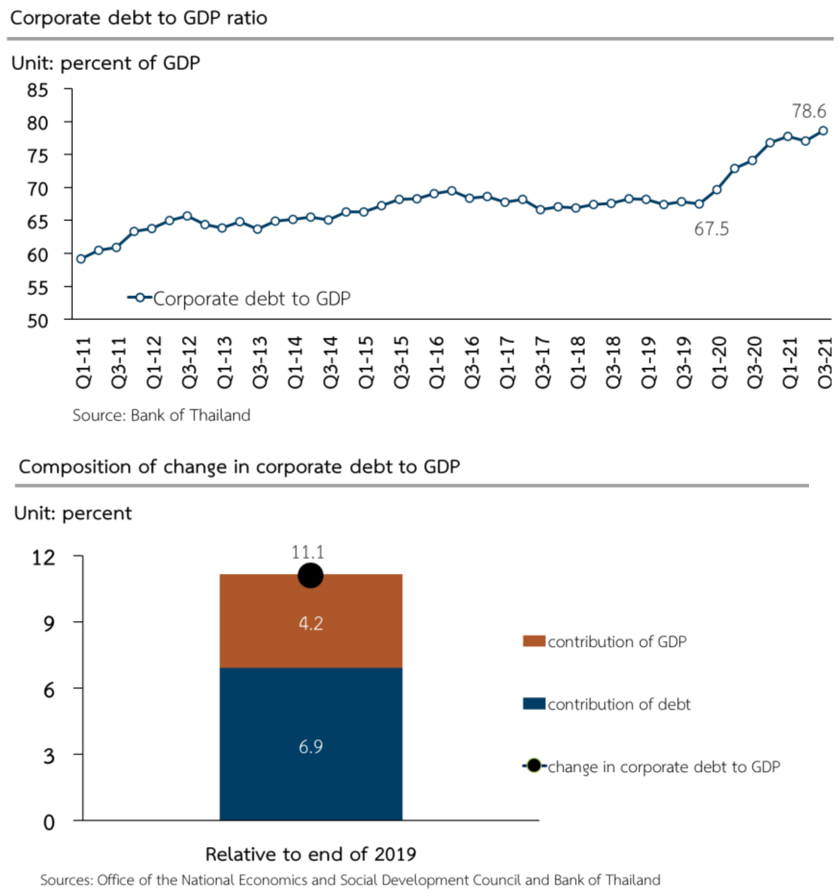
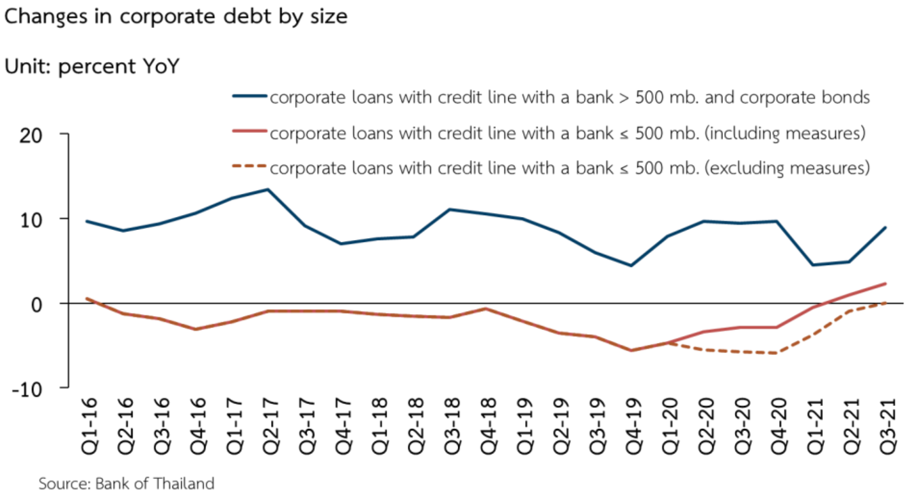


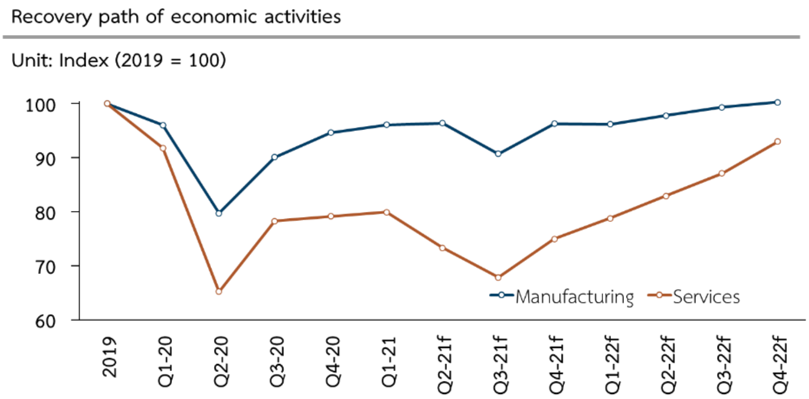
Figure 7: SME loans achieved positive growth in 2021Q2 while loans granted to large corporates continue to expand.



The new waves of COVID-19 outbreak in the second and third quarters of 2021 had exacerbated the impacts and vulnerabilities that were built up since the first wave. Recovery of the corporate sector has also become more uneven, particularly with respect to the following two dimensions:

Sectoral dimension: The recovery of businesses in manufacturing sectors is likely to pick up in line with global economic recovery, while services sectors continue to lag behind (Figure 8). Especially hard-hit sectors were tourism-related businesses, such as hotels, passenger transportations and restaurants, which were significantly affected by the implementation of lockdown measures and travel restrictions to curb new outbreaks. Nevertheless, outlook for services sectors has improved somewhat as containment measures were lifted on 1 September 2021 and the government introduced measures to stimulate domestic travel such as the "We Travel Together" and "Tour Teaw Thai" schemes, which allowed economic activities to resume and fueled domestic travel, especially in tourism provinces. More importantly, a key factor for revival of the tourism sector is the reopening of the country to foreign tourists, in which the government has announced rules for quarantine-free reopening to visitors from certain countries on 1 November 2021. However, it would take some time for the number of tourists to return to its pre-COVID-19 level in 2019 of 40 million people. By the BOT's estimates, the number of visitors is expected to reach 0.28 million and 5.6 million in 2021 and 2022 respectively[8], as restrictions may continue to be applied in origin countries such as travel restrictions to certain countries or quarantine requirements upon return. Recovery of economic activities in the accommodation sector is therefore expected to reach only 57 percent of its pre-COVID-19 level in 2022, while some sectors, such as IC & semiconductor and electrical appliances, can fully recover to their previous levels (Figure 9).

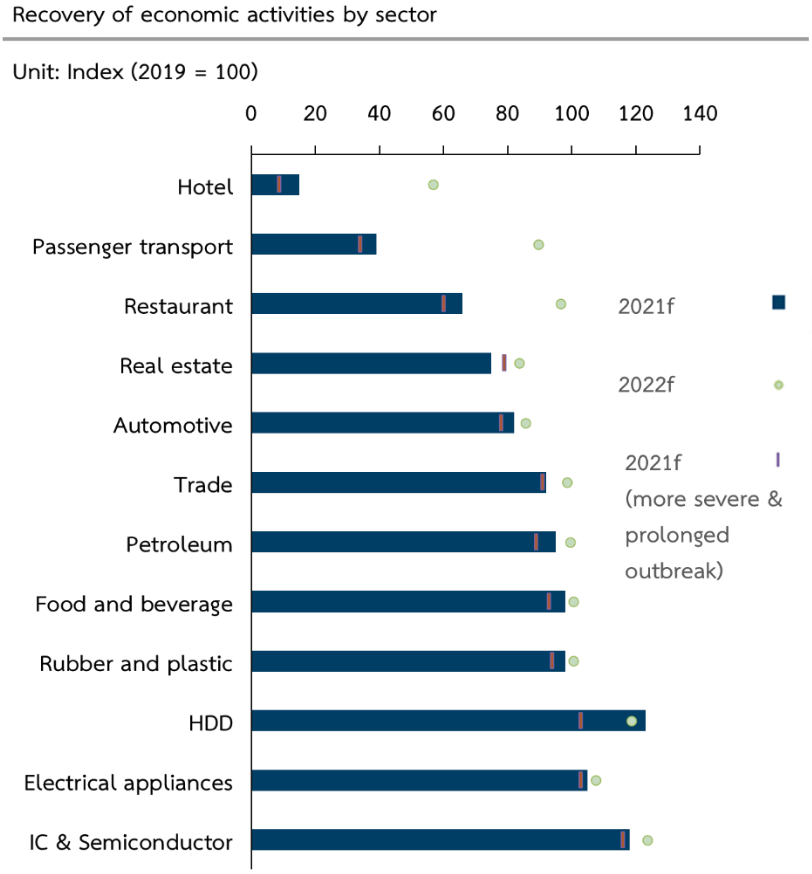
Figure 8: Manufacturing sectors are picking up in line with global economic recovery, while service sectors continue to lag behind.



Source: Bank of Thailand

[8] For details, see Economic Projections as of December 2021.

Figure 9: Recovery from the pandemic is uneven across corporate sectors, with some sectors having recovered to pre-COVID-19 levels while others, mainly service sector, face a much slower recovery.

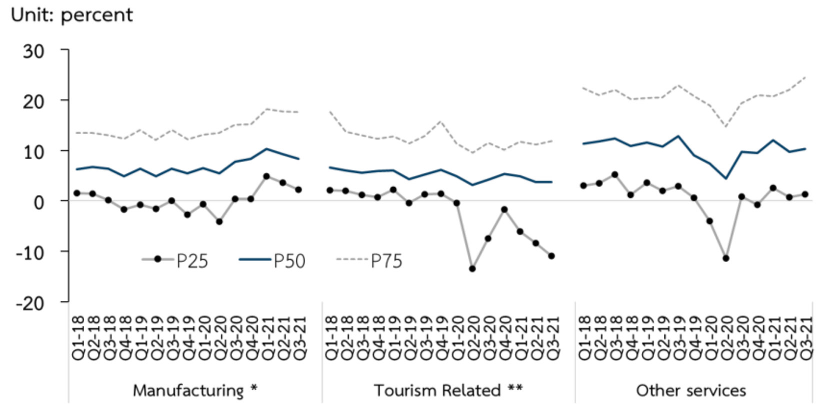


Source: Bank of Thailand

Size dimension: Large corporates are expected to recover quite well, given their ability to adapt and prepare for rising uncertainty going forward. This is reflected by the improvement in operating profit margins (OPM) of listed companies, especially those in the industrial sector. Similarly, debt serviceability, as indicated by the interest coverage ratio (ICR), has gradually improved, along with an overall decline in debt-to-equity (D/E ratio) following an initial rise since the beginning of the pandemic (Figure 10). The initial increase in debt can be attributed to an accumulation of liquidity buffers to cope with uncertainty of the COVID-19 situation, as well as accommodative financial conditions that reduce the cost of funding in both loan and bond markets. For firms in the tourism-related sectors, however, debt levels remain relatively high while revenues have yet to fully recover. Hotel businesses, in particular, would require longer recovery times than other businesses despite being large in size. Hence, the ability of these firms to service debt must continue to be closely monitored.

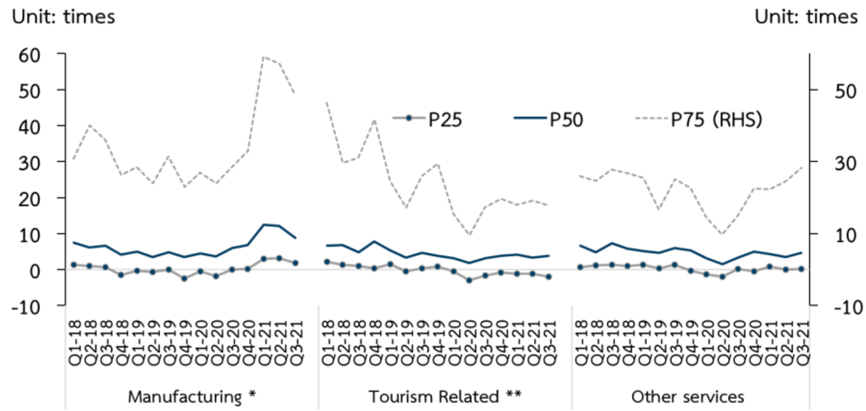
Figure 10: Large corporates are well on their way to recovery, with overall improvements in OPM and ICR along with decline in D/E ratio.

Operating profit margin (OPM)



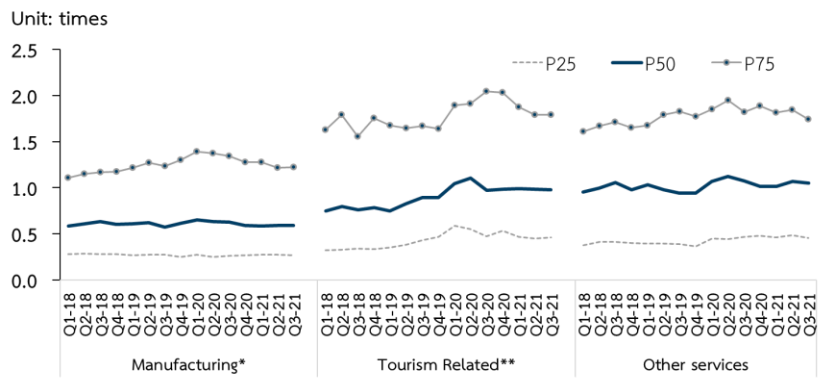
Note: * Manufacturing includes manufacturing businesses and petroleum
** Tourism Related includes hotel, airlines, restaurants and trade
Source: Stock Exchange of Thailand, calculations by Bank of Thailand

Interest coverage ratio (ICR)



Note: * Manufacturing includes manufacturing businesses and petroleum
** Tourism Related includes hotel, airlines, restaurants and trade
Source: Stock Exchange of Thailand, calculations by Bank of Thailand

Debt to equity (D/E ratio)

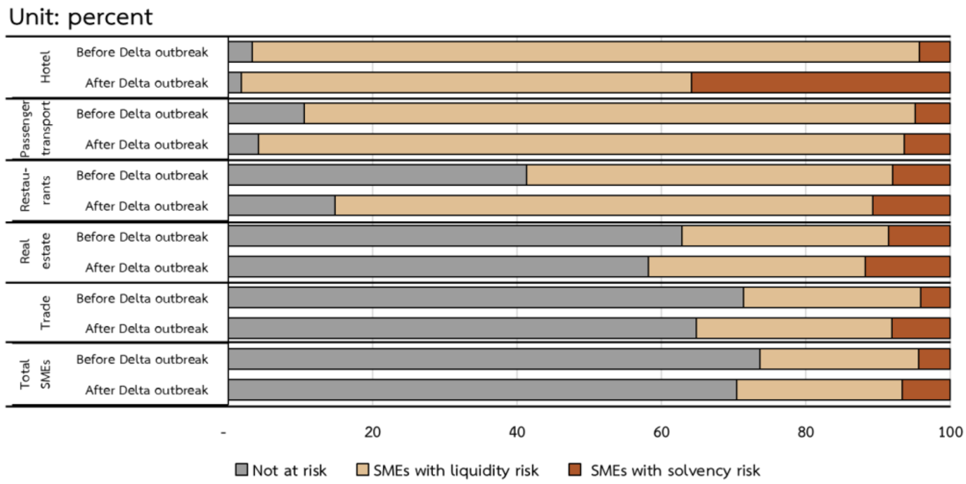


Note: * Manufacturing includes manufacturing businesses and petroleum
** Tourism Related includes hotel, airlines, restaurants and trade
Source: Stock Exchange of Thailand, calculations by Bank of Thailand

In contrast, SMEs have found themselves increasingly facing liquidity constrained as new waves of outbreak hit, and more firms could be facing solvency problems even as the economy starts to gradually recover. This finding is based on a forward-looking assessment of SMEs' financial health within 2022 carried out by the BOT in August 2021, based on the scenario that the latest wave of outbreak would be more severe and prolonged than expected - such that lockdown restrictions would remain in place until the end of 2021Q4 and GDP shows no sign of growth in 2021 – and that recovery paths for revenues and economic activity would be different across sectors. Assessment results indicated that a larger proportion of SMEs may be facing liquidity or solvency problems compared to results of a previous assessment carried out before the outbreak, and SMEs in tourism-related sectors, such as passenger transportation, restaurants, and trade are particularly vulnerable. Furthermore, a portion of hotel businesses, which were already facing significant liquidity problems, could find themselves at risk of insolvency as their buffers deteriorate and may need to exit (Figure 11).

Figure 11: More SMEs, especially in tourism-related sectors, are likely to face liquidity or solvency risks under a more severe and prolonged outbreak.

Proportion of SMEs expected to face liquidity or solvency problems* within 2022



* (1) Assessment results based on the scenario that the latest wave of outbreak would be more severe and prolonged than expected, such that lockdown restrictions would remain in place until the end of 2021Q4 and and GDP growth would be zero in 2021, carried out in August 2021

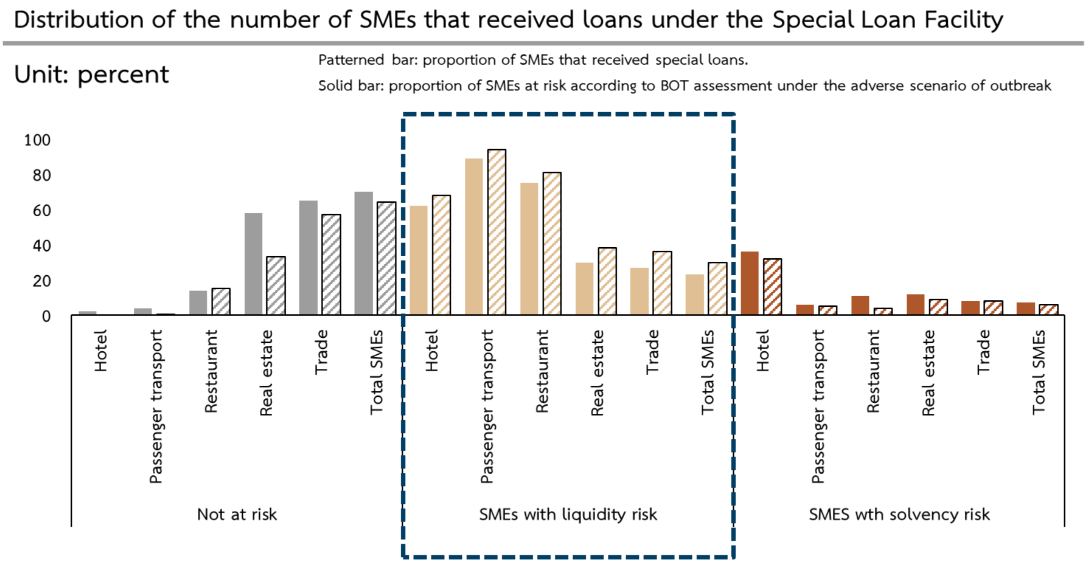
(2) Assessment covers 63,580 registered companies with outstanding bank loans and contract amounts lower than 500 million baht

Source: Bank of Thailand

Accordingly, financial measures implemented in 2021 were focused on helping SMEs and significantly affected businesses with slow recovery prospects in two main ways. (1) Measures to maintain and provide new liquidity to SMEs include: (1.1) the Special Loan

Facility for SMEs[9] and subsequent amendments[10], first implemented on 20 April 2021. Through close and continuous monitoring and assessment of the program's efficacy, the BOT found that loans from the facility had been adequately distributed to affected SMEs across different sectors, as a greater proportion of SMEs that received loans were assessed to be potentially liquidity constrained (Figure 12). Despite this, the BOT assessed that demand for the loan facility would continue to increase as the new phase of outbreak becomes more prolonged and severe than expected. In addition, discussions with all relevant stakeholders, including business representatives through the Thai Chamber of Commerce and the Board of Trade of Thailand as well as financial institutions, revealed a number of problems, obstacles, and limitations to be addressed. Therefore, on 31 August 2021, regulations regarding the Special Loan Facility were revised to enhance and broaden liquidity assistance to prospective SMEs by (i) increasing the credit limit for SMEs with low existing credit line or without a credit line, and (ii) increasing the individual credit guarantee rate for risky debtors to facilitate credit provision to more vulnerable groups. (1.2) soft loan programs offered by specialized financial institutions (SFIs) under government support such as the Local Economy Loan Phase 4 and the Community Building Loan, which provided a total of approximately 160 billion baht in assistance. And (1.3) SME loan guarantees by the Thai Credit Guarantee Corporation (TGC), which provided a total guarantee limit of 170 billion baht for existing business operators and a total of 8 billion baht for start-ups and "innobiz" entrepreneurs.

Figure 12: Liquidity from the Special Loan Facility was well distributed to constrained SMEs.



Source: Bank of Thailand

[9] For more details, see Financial rehabilitation measures to support SMEs.

[10] For more details, see Additional policies to enhance support.

(2) Measures to support restructuring of existing debt include *(2.1) debt restructuring schemes to reduce existing debt burdens* (for moderately affected borrowers) as follows: (2.1.1) the 2-month debt moratorium for debtors directly impacted by the government's control measures[11], which provided relief from debt repayment burdens while under lockdown during severe outbreak in July 2021; (2.1.2) the Asset Warehousing scheme with buy-back options[12], which helps affected borrowers whose businesses require a long recovery period but remain viable (e.g. hotels) to reduce burdens from existing collateralized debt, by way of collateral transfer to the creditor with rights to repurchase at transfer price and to lease back the assets, which allow opportunity for businesses to resume normal operations when ready; (2.1.3) the DR BIZ scheme[13] for borrowers with multiple creditors, which began in 2020, helps alleviate existing debt burdens through debt consolidations and more streamlined processes for dealing with multiple creditors. *(2.2) debt restructuring scheme to ensure sustainable debt resolutions* (for significantly affected borrowers) through the Sustainable Debt Restructuring Program[14] implemented for both households and SMEs (more details in the above section on household sector).

The abovementioned measures, as well as debt restructuring measures carried out by financial institutions under incentives from regulatory forbearance and cost reduction, have assisted a significant number of corporates, especially SMEs and businesses facing a prolonged recovery such as hotel. As of 2021Q3, a total of 0.65 million corporate accounts were restructured with a total outstanding value of 1.7 trillion baht, of which 0.63 million accounts were those of SMEs with total outstanding value of 1.0 trillion baht. Liquidity assistance measures also played an important role in keeping SMEs afloat. The *Special Loan Facility (totaling 250 billion baht)* provided 42,000 SMEs with a total of 135 billion baht in new credit, which was well distributed in terms of business size, sector, and region, and more than 60 percent of loans were granted to existing SME borrowers (with credit line of less than 50 million baht) and new borrowers. At the same time, the *Asset Warehousing scheme (totaling 100 billion baht)* assisted 224 debtors with a total asset value of 29 billion baht transferred (Figure 13). As a result of these measures, corporate credit quality remains close to its pre-COVID-19 level, with non-performing corporate loans (NPL) at 3.25 percent in 2021Q3.

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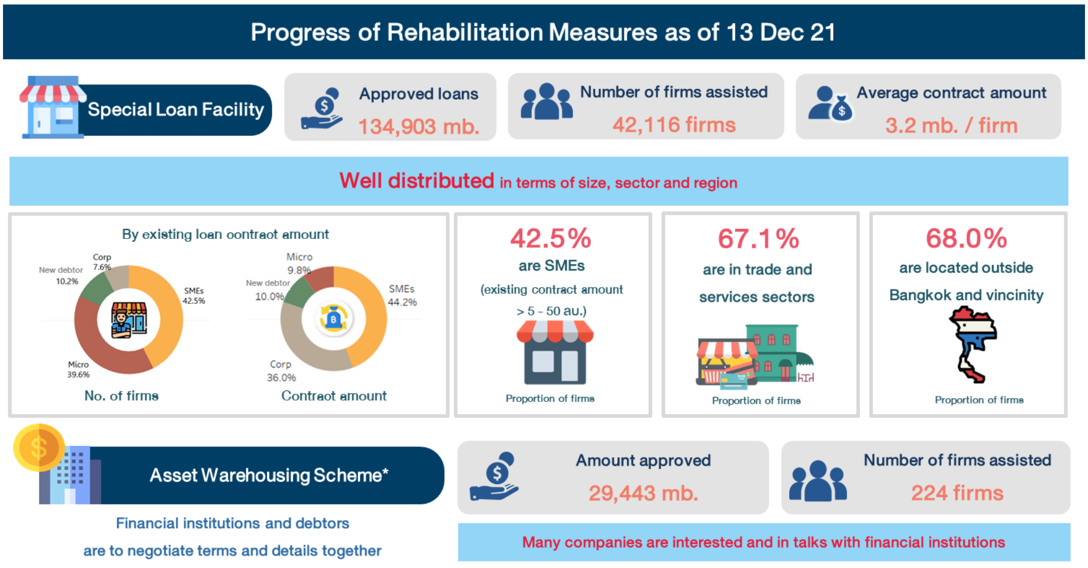
[11] For more details, see 2-month debt moratorium (TH version), 15 July 2021.

[12] For more details, see Financial rehabilitation measures to support SMEs.

[13] For more details, see DR BIZ scheme.

[14] For more details, see Additional policies to enhance support.

Figure 13: Rehabilitation measures have made good progress, with liquidity being well distributed to viable SMEs through the Special Loan Facility and 29 billion baht of assets were transferred to relieve debt burdens under the Asset Warehousing scheme.



Note: Laws relating to the provision of tax incentives and disposal of non-performing debt for transactions under the Asset Warehousing Scheme have been effective since 14 Jul 21

Looking ahead, some tourism-related businesses and SMEs, especially those with limited access to funding, remain at risk due to slow recovery, rising debt, and diminishing buffers. If the pandemic continues to persist, debt serviceability of SMEs could substantially be impacted, which could in turn affect credit quality and soundness of financial institutions. Moreover, SMEs' financial health would have repercussions for overall employment and income of households, further affecting households' ability to repay debt and overall vulnerability of the financial system. Therefore, priority must be given to the maintenance and injection of liquidity, as well as timely and extensive debt restructuring for affected firms in consideration of their long-term debt serviceability, just as for vulnerable households.

Furthermore, the COVID-19 pandemic has brought about changes to the economic and financial system, with implications for the competitiveness of some business sectors and the overall Thai economy in the long-run. Hence, **the BOT is considering new financial measures to support business transformations by providing necessary funding to firms with future potential**. These may include firms that need to carry out digital transformation, adapt to changing consumer behavior, or reshape their businesses in line with environmental, social and governance (ESG) responsibilities and sustainability goals.

Financial measures can deliver assistance in two main ways. (1) Government subsidy or tax incentives that help to reduce costs and stimulate investments for transformation. **(2)**

Loans from financial institutions with a specific objective to facilitate adjustment to more competitive business models and additional incentives such as soft loans and loan guarantee. Financial support, however, is just one of many components needed to help businesses in their transition. Knowledge and understanding of business trends, analyses of market dynamics, and a clear role of the public sector are also required to cultivate an accommodative ecosystem that is conducive to business adjustments and workforce development, in order to revitalize economic potential and achieve sustainable economic growth going forward.

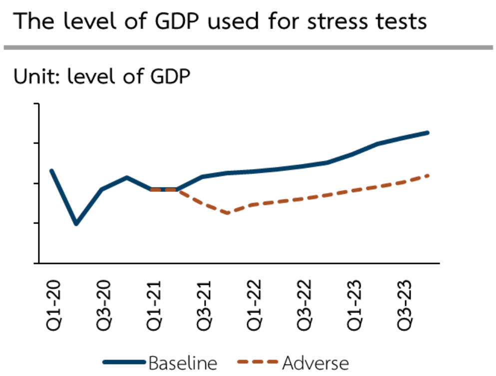
Chapter 3: Resiliency of the Thai financial system

The financial system, comprising financial institutions and financial markets, played an important role in shoring up the economy over the course of the pandemic. In particular, financial institutions such as banks have supported SMEs and households through the crisis by reducing their debt burdens and providing additional liquidity. At the same time, financial markets remain an important source of funding for businesses, thus help bolster their continuity during the time when their revenues may have substantially declined. Furthermore, both financial institutions and financial markets are becoming increasingly important in supporting a smooth economic recovery going forward, by facilitating sustainable debt restructuring in line with debtors' serviceability prospect and financing business transformations in a post-COIVD-19 world. Therefore, maintaining resilience and stability of the financial system is crucial in ensuring that the economy can recover smoothly.

3.1 Financial Institutions

Prudential supervision and risk management in the past have ensured that financial institutions continue to be of sound health, as indicated by results of solvency and liquidity stress tests conducted on the banking system, mutual funds, and insurance companies. Both top-down and bottom-up approaches are used in stress testing to ensure that financial institutions possess adequate capital or liquidity buffers to cope with uncertainty and risks posed by the COVID-19 pandemic, as well as to support economic recovery in the period ahead. Assessments for all types of financial institutions are based on a common set of economic assumptions. The adverse scenario assumes that a new variant of COVID-19 spreads rapidly worldwide and renders vaccines ineffective, causing trading partners to experience substantial economic slowdown. As a result, the Thai economy faces contraction in both 2021 and 2022 (Figure 14) while debt serviceability of corporates and households deteriorates, in turn affecting commercial banks' credit quality.

Figure 14: Thai economic scenarios for stress-testing



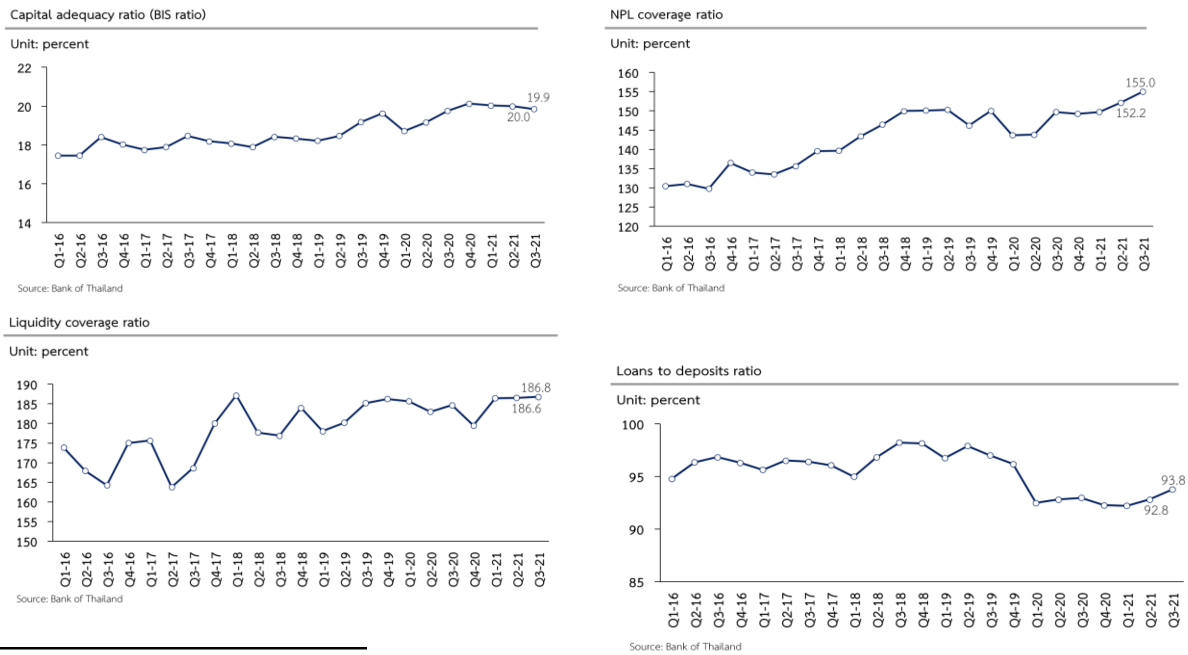
Source: Bank of Thailand

The commercial banking system

The commercial banking system remains sound, with ample capital, provisions, and liquidity. As of 2021Q3, the BIS ratio stood at 19.9 percent, the NPL coverage ratio was 155 percent, and the liquidity coverage ratio was at 186.8 percent (Figure 15). **Banks have continuously been building up their provisions, as indicated by the increase in NPL coverage ratio since the beginning of 2021. Moreover, results from the top-down stress test showed that, the banking system would still have sufficient capital under the adverse scenario, both in the cases where flexible classification and provisioning guidelines have been included and excluded.** In the case where the guidelines were included, the BIS ratio was estimated to be 16.3, 17.2 and 17.9 percent in 2021 to 2023 respectively (Figure 16). Results from the bottom-up stress test (or supervisory stress test) were not significantly different from the top-down test, with the BIS ratios for all banks greater than the legal requirement[15]. Under the adverse scenario, banks would have sufficient liquidity to deal with a crisis for at least 30 days.

The BOT has also carried out additional top-down stress tests to assess capital adequacy under specified scenarios where new risks have emerged to be used as a basis for policy consideration. For example, in contemplating banks' dividend payment policy, the scenario considered a case where the Thai economy faces a more prolonged recovery, given that the tourism sector would take some time to return to its pre-COVID-19 level and the number of foreign tourists would be about 1-2 million persons per year until 2025.

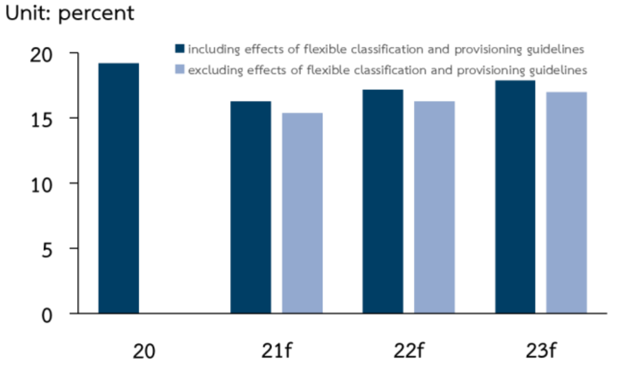
Figure 15: Thai commercial banking system remains robust, with ample capital, provisions and liquidity.



[15] The law requires domestic systemically important banks (D-SIBs) and other banks (non-D-SIBs) to maintain capital levels of at least 12 and 11 percent respectively.

Figure 16: Commercial banks are well capitalized under the adverse scenario in both cases where flexible classification and provisioning guidelines have been included and excluded.

Stress test results (BIS ratio)



Source: Bank of Thailand

Regulatory forbearance implemented so far with emphasis on flexible regulatory standard and cost reduction measures for banks should be maintained to provide incentive for banks to extend prompt and sizable assistance to borrowers. In this regard, additional policy actions taken in 2021 include: (1) extension of asset classification standstill for retail borrowers and SMEs[16] that have undertaken debt restructuring until 31 March 2022, to allow enough time for creditors and debtors to reach an appropriate debt restructuring arrangement with long-term effectiveness; (2) maintenance of flexible asset classification and provisioning criteria[17] until the end of 2023 to reduce regulatory costs for financial institutions that carry out sustainable debt restructuring by means other than extension of maturity alone; (3) extension of the FIDF (Financial Institutions Development Fund) fee reduction[18] from 0.46 to 0.23 percent per annum until the end of 2022 instead of 2021, so that the reduced financing cost can continue to be passed on to businesses and the general public; and (4) relaxation of dividend payment policy[19] to allow banks to be able to distribute up to 50 percent of net profit in dividends and removing the past payout rate ceiling, given that the banking system have been robust – as per stress test results – and cautiously building up provisions and capital. At the same time, banks should continue to strengthen their capital buffers as the economy remains in early stages of recovery.

While measures supporting corporates and households, as well as measures to give regulatory forbearance and cost reduction for banks are critical given uncertainty surrounding economic recovery, if maintained for too long, they can lead to an undesirable build-up of risks within the financial system. For example, resources may be

[16] For more details, see Additional policies to enhance support (TH version), as of 20 August 2021.

[17] For more details, see Additional policies to enhance support (TH version), as of 20 August 2021.

[18] For more details, see Additional policies to enhance support (TH version), as of 20 August 2021.

[19] For details, see Relaxation of dividend payment policy as of 11 November 2021

misallocated to non-viable businesses over the long-term (zombification) and assessment of borrowers' credit risk as well as the creditors' capital adequacy may be difficult and highly uncertain. **Therefore, future policy adjustments will depend significantly on economic conditions, and the BOT's top priority will be to ensure that the economy recovers smoothly and sustainably.** At the same time, additional consideration must be given to vigilant monitoring of systemic risks and preserving the resiliency of the banking system. In previously relaxing the dividend payment policy, the BOT has comprehensively evaluated the policy action in all three dimensions.

Looking ahead, the BOT will focus on monitoring the banking sector in 3 areas as follows: (1) financial status and performance – to ensure robustness against emerging risks, especially as credit quality of certain groups of borrowers may deteriorate due to uneven economic recovery; **(2) credit functioning** – to ensure availability of funds to support economic recovery; and **(3) progress of assistance to borrowers through debt restructuring in accordance with their long-term revenue prospects** – to ensure that assistance is targeted, timely, and sustainable, on a large scale.

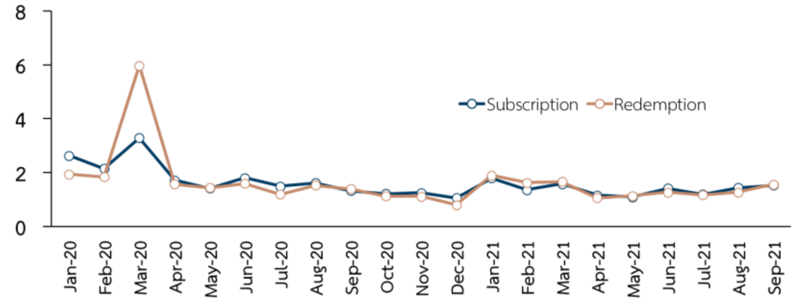
Mutual Funds

Deposit-like fixed income mutual funds, namely money market funds (MMFs) and daily-redemption fixed income funds (Daily FIs), experienced normal redemption volumes throughout 2021 (Figure 17)**. The fund management industry continued to grow, led by more high-risk segments such as foreign equity funds.** This was partly due to a prolonged low interest rate environment, as well as attractiveness of higher returns provided by both local and foreign risky assets in anticipation of economic recovery. During the first nine months of 2021, equity funds, fixed-term funds, and mixed funds experienced net capital inflows, while lower-risk mutual funds, such as Daily FIs and MMFs, as well as alternative investment funds, particularly investments in real estate which continue to be affected by the COVID-19 pandemic, recorded net capital outflow (Figure 18).

Figure 17: Redemption volumes of Daily FI funds have been normal since mid-2020.

Subscription and redemption values of Daily FI funds

Unit: hundred billion baht

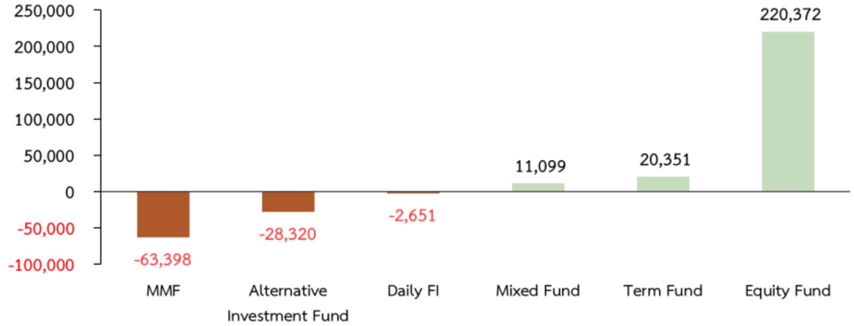


Source: The Office of the Securities and Exchange Commission

Figure 18: Growth of the fund management industry was driven by high-risk segments such as equity funds while lower-risk mutual funds experienced net capital outflow.

Total net cash flow of mutual funds during Jan – Sep 2021

Unit: million baht



Source: The Office of the Securities and Exchange Commission

Furthermore, stress tests conducted jointly by the SEC and fund management companies under the same adverse scenario used for banks revealed that **fixed income mutual funds remain stable with sufficient liquidity to meet unit redemptions**. This was in part due to more stringent supervision and risk management which prompted fixed income funds to increase their proportions of liquid instruments. In this regard, the SEC issued additional regulations to enhance the liquidity risk management process and provide comprehensive liquidity management tools for fund managers in line with international standards, in order to protect the interests of unitholders and mitigate potential systemic impacts on the financial system. Moreover, a crisis simulation exercise was conducted by SEC, together with fund management companies, to assess mutual funds' liquidity crisis management plans to strengthen confidence in the mutual fund industry.

Insurance companies

The insurance industry, which includes life and non-life insurance businesses, remains stable under the adverse economic scenario similar to the one used for banking system stress tests, with additional insurance-related events to cover sector-specific risks such as changes in the claim frequency rate. Stress test results indicate that almost all insurance companies would have a higher level of capital adequacy ratio (CAR) than required by law, and the industry would have sufficient liquidity to fully service potential claims by the insured.

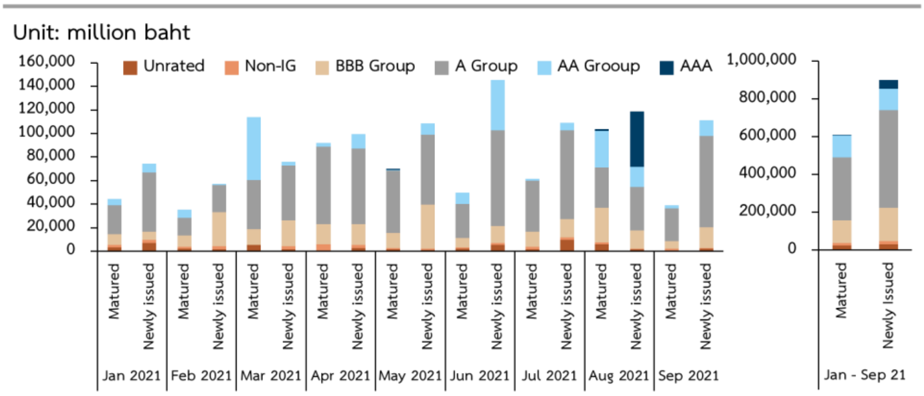
Furthermore, the OIC had conducted additional stress tests following the outbreak of the new Delta variant of COVID-19, in order to assess the risk of cumulative claims from the COVID-19 insurance policies on insurance firms' financial status. Two scenarios were used as follows: (1) rapid and continuous increase in cases of infection during 2021Q3, in which the number of infected cases would reach a maximum of 35,000 persons per day and gradually fall to less than 1,000 persons per day in 2022Q1; and (2) a new wave of COVID-19 outbreak in 2021Q4, in which the number of infected cases would peak at 25,000 persons per day during January 2022 and slowly decline to less than 1,000 persons per day in 2022Q2. Test results under both scenarios showed that **all life insurance companies and almost all non-life insurance companies would have sufficient CAR as required by law, but impact would be concentrated in some companies that sold a large number of COVID-19 insurance policies**. However, such impact would not cause any disruption to insurance businesses as a whole and would not have a systemic impact on the wider economic and financial system, given limited interconnectedness between insurance companies. Notwithstanding, the OIC will continue to monitor the situation closely to ensure that the insurance sector remains resilient going forward.

3.2 Financial Markets

Financial markets continue to function normally despite heightened volatility of global financial markets early in the year and longer-than-expected economic recovery as a result of the outbreak of the delta variant of COIVD-19. This is reflected by an increase in the overall value of the corporate bond market, as well as a reduction in credit spreads. As of the end of September 2021, the market grew 8.23 percent from the end of 2020, with higher outstanding values in all credit rating segments (Figure 19 and 20) and the increase was mainly attributed to issuance of long-term debt securities under favorable financial conditions and credit spreads. Most investment grade issuers raise funds for the purpose of repaying existing debt, increasing working capital, or enhancing liquidity buffers, while non-investment grade (non-IG) or unrated issuers predominantly issue more secured bonds to reassure investors, who became more cautious of investing in the high-yield segment (Figure 21).

Figure 19: Financial markets continue to function normally despite outbreak of the Delta-variant.

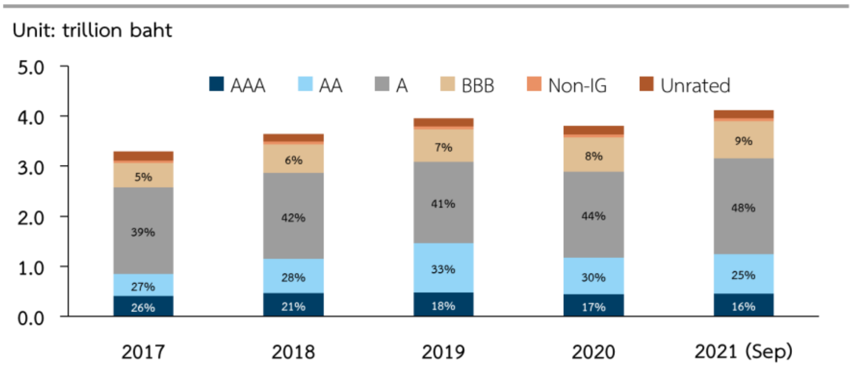
Monthly values of matured vs. newly issued bonds (Jan – Sep 21)



Source: The Office of the Securities and Exchange Commission

Figure 20: The corporate bond market has grown in all credit rating segments in 2021.

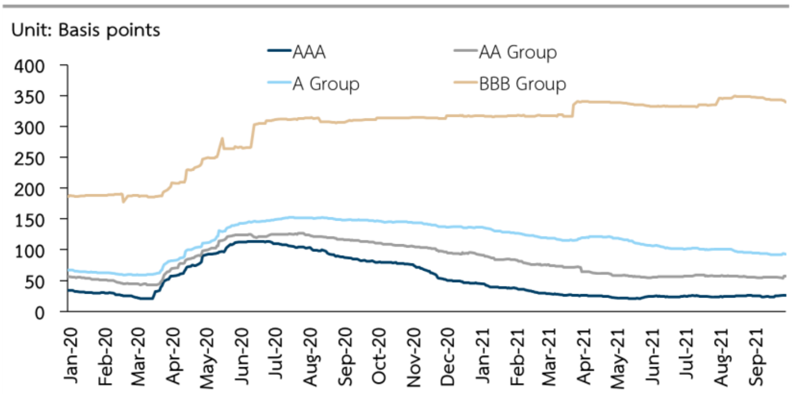
Outstanding values of corporate bonds by credit rating



Source: The Office of the Securities and Exchange Commission

Figure 21: Overall corporate bond spreads have declined.

Credit spread of corporate bonds with a tenor of less than 3 years



Source: ThaiBMA

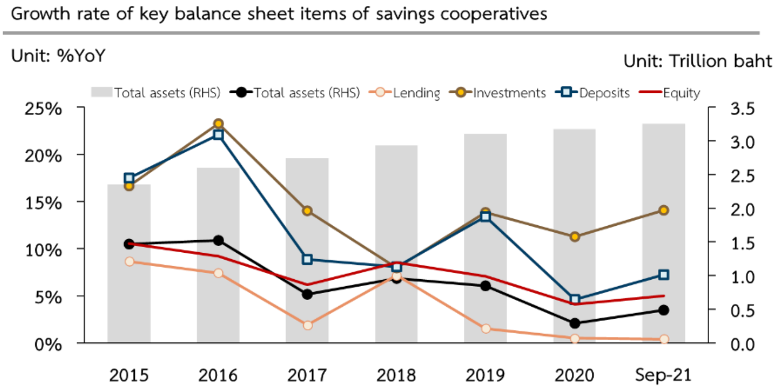
To facilitate smooth economic recovery and ensure that businesses can continue to raise funds via the corporate bond market in an environment of uncertain and uneven recovery, **the BOT extended the period of assistance by the Corporate Bond Stabilization Fund (BSF)** [20] **until the end of 2022** to provide a liquidity backstop for viable firms possessing investment grade credit ratings and bonds due to mature within 2022[21]. The scheme would help raise investors' confidence that such issuers would be able access funds to pay off their maturing debt so that the corporate bond market can continue to function as a fundraising channel to support revival of the economy.

Financial markets in Thailand have so far been quite resilient. However, in the period ahead, there is still a chance of severe volatility arising from the unexpected events with large scale impact, such as political unrest, unexpected policy spillover from major economies, failure of a systemically important firm, etc. **although the possibility is rather low. This disorderly market movement can pass on impact to key players in the financial system, especially to savings cooperatives that have consistently expanded investments** – in debt and equity securities – at a higher rate over the year compared to growth of assets and loans (Figure 22 and 23). Moreover, their debt investments are concentrated in a small number of issuers, raising the vulnerability of their financial position should a major issuer encounter any liquidity problems. In such a case, members of savings cooperatives may lose confidence and start to redeem their deposits in panic, so that cooperatives then need to liquidate their investments quickly to meet redemptions. The resulting fire-sale of corporate bonds in a relatively illiquid market can significantly affect bond prices and cause market dysfunction, which could further impact other parts of the financial system as well. **Therefore, measures are urgently needed to reduce the likelihood and impact of systemic risks posed by savings cooperatives, such as measures to limit investment concentration, enhance the risk management capacity of directors and personnel, as well as create an appropriate mechanism to provide liquidity assistance to saving cooperatives under emergency situations.**

[20] For details, see BSF extended to 2022 (TH version), as of 27 October 2021.

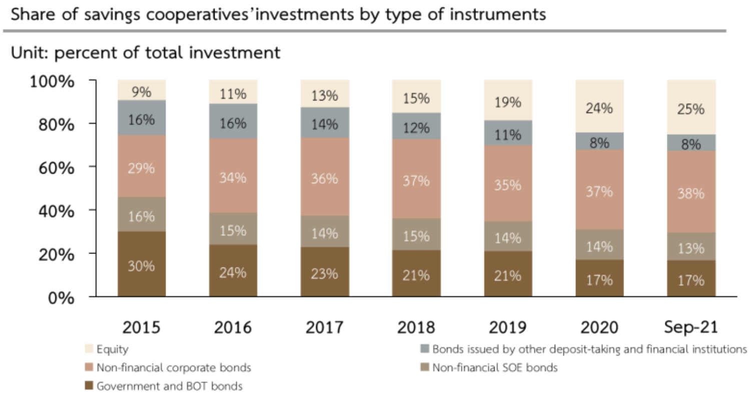
[21] Eligible bonds must be issued prior to the date of BSF establishment on 19 April 2020.

Figure 22: Savings cooperatives have consistently expanded investments at a higher rate than assets and loan growth.



Source: Cooperative Auditing Department, calculations by Bank of Thailand

Figure 23: Savings cooperatives primarily invest in corporate bonds and equity.



Source: Cooperative Auditing Department, calculations by Bank of Thailand

Chapter 4 Macro-prudential policy (MaPP) to address financial stability risks

Although the Thai economy has gradually recovered on the back of the positive vaccination progress and easing of lockdowns, the recovery has been uneven across sectors and remained fragile given weak financial positions of severely affected businesses and households. As a result, the BOT introduced several financial measures in tandem with accommodative monetary policy and fiscal stimulus measures. The BOT also relaxed certain MaPP measures in a counter-cyclical manner to support economic recovery and helped borrowers affected by COVID-19 in consideration of the fact that risks to financial stability emerging from easing the MaPP regulation are expected to be limited. The details are as follows.

(1) Relaxing regulations on residential mortgages and other housing-related loans temporarily (LTV measures)[22] to stimulate economic activities and support overall employment via real estate sector which has extensive links with several related businesses. In the period when the economy begins to recover, despite being uneven across sectors, and consumer confidence is uplifting, relaxing loan-to-value regulatory limit (LTV) would stipulate consumer demand, especially those with strong financial positions, boosting the flow of new credit to the economy. The revised LTV measure, effective on 20 October 2021 – 31 December 2022, limited the LTV ratio for residential mortgages (including top-up loans)[23] not to exceed 100 percent for the case of (i) collateral value less than 10 million baht for the second or higher mortgage loan[24] and (ii) collateral value more than 10 million baht for the first or higher mortgage loan.

Regarding the impact, the BOT's assessment indicated that the emerging risks to financial stability in a year ahead from speculations in the real estate sector would be limited, partly because economic recovery remains fragile, and financial institutions' credit underwriting standards remain cautious. Moreover, the revised policy would not aggravate the Thai household debt problem since the policy is intended to target borrowers with strong financial positions who can take on higher debt. However, the BOT would monitor the development of economic recovery, the condition of real estate market, financial institutions' underwriting

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[22] For more details, see Measures to stimulate activities in the real estate sector during the COVID-19 period (TH version), as of 20 October 2021.

[23] Top-up loan refers to loans offered over and above the existing housing loan for other purposes, such as personal loans or loans for paying insurance claims. Financial institutions may grant the top-up loan at the time of taking out the housing mortgage or during the repayment period (e.g., home for cash loan), which the current BOT regulations on housing loan does not apply.

[24] There is no revision on the LTV regulatory limit of the first home mortgage with the collateral value less than 10 million baht as it is now at 100 percent.

standards for housing loans, and the borrowers' capability to purchase houses and take out mortgages at a reasonable price, to ensure the timely and appropriate readjustment of the measures going forward.

(2) Relaxing regulations on credit card, personal loan under regulation, and digital personal loans temporarily, to relieve borrowers' debt burden as well as maintain and replenish liquidity for borrowers who could repay debt but were affected by the COVID-19 shock. The revised measures, effective from 3 September 2021 until the end of 2022, included: (i) increasing credit limit to be twice of income for credit cards and personal loans, (ii) maintaining minimum repayment rate for credit cards at 5 percent, (iii) increasing credit line limit and tenor limit for digital personal loans. Such relaxation would help increase access to funding and reduce the likelihood of borrowers acquiring informal debt going forward. The BOT would continue to closely monitor and explore appropriate support measures, including encouraging financial institutions to have a clear direction of how to support borrowers and maximize benefit to overall financial and economic system.

Box: Policy Framework for maintaining financial stability

Safeguarding "financial stability" is one of the top priorities of central banks around the world. The aftermath of the global financial crisis in 2008 had shed light on the importance of the financial system on the real economy. Currently, the financial interconnectedness has become even more complex, with diverse players and many dimensions of interlinkages between financial institutions and other sectors in the financial system. Hence, vulnerability in one sector could have a cascading impact and lead to a build-up of systemic risk, potentially causing a severe adverse impact on the macro stability.

To ensure that policies are in place to effectively promote financial stability and address any emerging risks in a timely manner, cooperation among regulatory authorities is needed to continuously assess risks and vulnerabilities in the financial system and developing mechanisms to implement measures in a preventive manner. The BOT's approach to enhancing the process of safeguarding financial stability is as follows.

(1) Developing monitoring frameworks and tools for early risk detection, assessing risks in a forward-looking manner, and timely identifying key vulnerabilities which could spread risks to the entire financial system. In this spirit, the BOT has developed financial stability dashboard to monitor risks in 8 key sectors: businesses, SMEs, savings cooperatives, real estate, financial markets, financial institutions, households, and external sector. In addition, the BOT is in the process of developing tools for monitoring technological risks and digitalization. Meanwhile, the BOT has also formulated risk assessment matrix (RAM) to be used in formation of adverse scenario for the financial institutions' stress test conducted in collaboration with other related supervisory authorities on an annual basis.

(2) Preparing preventive measures to swiftly mitigate risks should there be any sign of risk buildup in certain sectors which could cause adverse impact to the entire financial system, and developing mechanisms to address situations in which certain players or sectors are in trouble to contain the impact. A policy tool used for maintaining financial stability, or the MaPP, aims to limit risks buildup in certain pockets and build resiliency of financial sector to withstand the economic uncertainty. These are the mandate which could not effectively be achieved by neither monetary policy, which has a broad-based implication and is implemented to meet the mandate of overall price and economic stability, nor micro-prudential policies, which are used to maintain stability of individual financial institutions.

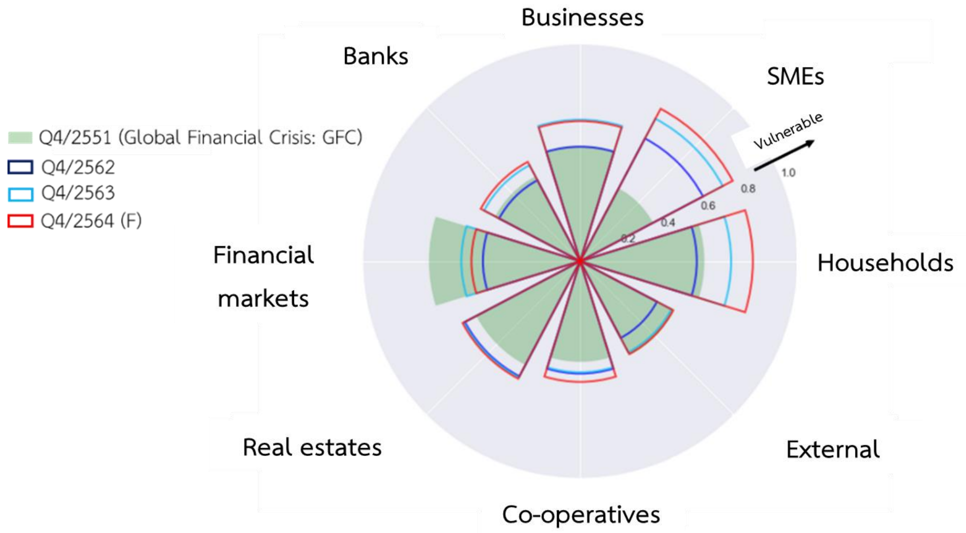
During the pre-COVID period, the BOT put in place several MaPP measures to contain financial stability risks in aspects of (1) financial interconnectedness (e.g., measures to regulate domestic systemically important banks (D-SIBs)), (2) risk buildup in certain sectors which could escalate to a financial crisis, especially when the economy is booming and credit growth is high for a long time, potentially forming a bubble (e.g., LTV measures to slow down housing loan growth and prevent speculative behavior), and (3) standardizing debt service ratio (DSR) definition for new retail lending.

To ensure effective MaPP measures, careful consideration must be done as an end-to-end process. First, the BOT must assess the level of risks to financial stability and identify key vulnerabilities which need policy intervention. Next, the policy must be carefully designed and calibrated to address the underlying nature of risks, taking into consideration the appropriate instruments, the degree of tightening, implementation timeline, and target groups. Also, unintended consequence (e.g., policy leakages especially to non-bank) and policy effectiveness must be assessed when designing policy packages. After formulating initial policy details, the BOT must consult with related regulatory agents regarding policy appropriateness and limitation to ensure that the policies are suitable for addressing the underlying problem and ready for implementation. Lastly, policy communication guidelines must be prepared to ensure the public's understanding of policy directions, and post-implementation policy effectiveness must be closely evaluated to ensure that the policies could be timely re-calibrated if necessary.

Amidst high uncertainty resulting from the COVID-19 pandemic in the period ahead, the BOT must coordinate with other supervisory authorities to monitor risks in every part of the financial system as well as closely assessing adequacy and effectiveness of measures undertaken while making relevant policy measures ready for timely implementation if needed to limit possible adverse impact toward financial stability and support the economic recovery going forward.

Annex: Thailand's financial system

1. Overview of risks to the Thai financial stability.

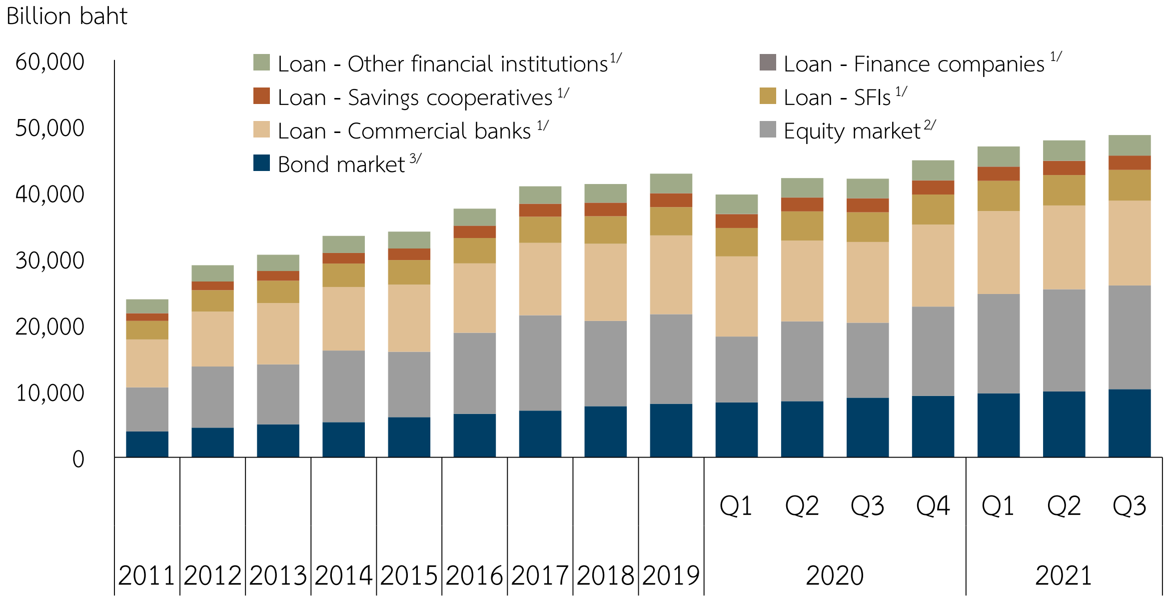


Note: Calculations by the Bank of Thailand. The risk scores were estimated using different indicators for each sector based on the stage of the business cycle at each period (i.e., whether it was an upturn or downturn phase). Statistical methods based on historical data and forecasting were employed.

Key entities	Risk to Thailand's financial stability
Businesses	Although some SMEs were more fragile, but business sector overall had been recovering after the ease of lockdown measures and the reopening of the country, especially large corporates which were capable of adapting and have shown recovery for quite some time in line with the global economic recovery.
SMEs	SMEs' liquidity problem worsened due to the Delta-variant outbreak. The number of firms facing insolvency problem increased, especially in service sector, as the fragility accumulated since the first round of infection.
Households	Households' debt serviceability deteriorated from the previous year owing to the Delta-variant outbreak which had exacerbated the prolonged household over-indebtedness problem, especially low-income households.
External sector	External stability remained robust. International reserves, albeit declining, remained ample. Foreign borrowings overall were low, and businesses with external debt were capable of handling risks of exchange rate depreciation. Current account deficit was present due to low earnings in tourism-related sector and the increase in crude oil prices.
Cooperatives	Risks in the savings cooperatives' system from high level of corporate bond investment were present and increasing as investment in risky assets rose after the economic condition had improved.
Real estate	Earnings of real estate developers remained weak since the end of year 2020, while effectiveness of the revised LTV measures in October 2021 was to be assessed.
Financial markets	Stability of the financial markets improved from the previous year, as shown by the improvement in the SET index, bond spreads, the value of bond issuance, and the firms' ability to roll over bonds at maturity.
Banks	Asset quality of the banking system deteriorated. However, the banking system had ample capital, provision, and liquidity, and would have a significant role in supporting the economic recovery. This was partly due to the easing of bank regulations and support measures undertaken to maintain debt repayment capability of households and SMEs.

2. Structure of the Thai financial system.

2.1 The Thai financial system: Types of funding



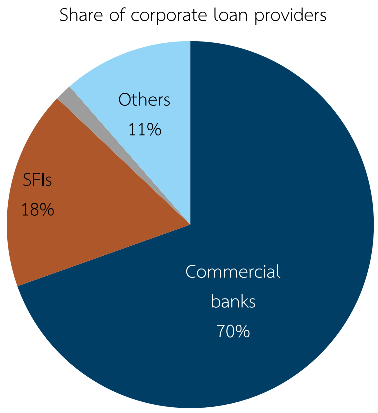
[1/] Loans given to households, non-profit institutions serving households, and other non-financial corporations.
[2/] Market value of equities listed in SET and mai, excluding equities issued by issuers in the financial sector and non-residents.
[3/] Par value of bonds issued in Thailand, excluding bonds issued by issuers in the financial sector and non-residents.

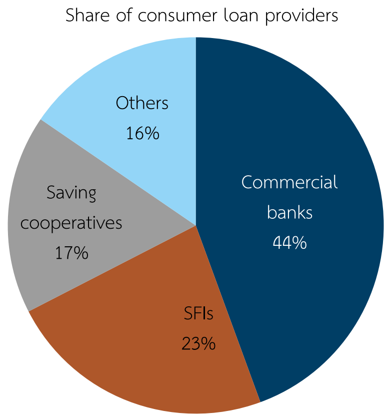
2.2 Financial institutions system: Number and asset size of major financial institutions.

Types of financial institutions	2021 Q3 [P] Number	2021 Q3 [P] % of total assets of financial institutions
Depository corporations		
Commercial banks	29	46.87
Specialized financial institutions (SFIs)	6	15.33
Savings cooperatives [1/]	1,415	6.54
Finance companies	5	0.06
Money market mutual funds (MMFs)	48	0.57
Other financial corporations		-
Mutual funds (excluding MMFs)	1,700	9.59
Insurance companies	78	9.48
Leasing companies	764	1.88
Credit card, personal loan and nano finance companies under regulation [2/3/]	70	2.54
Provident funds	366	2.63
Government pension fund	1	2.26
Asset management companies	65	0.75
Securities companies	48	1.12
Other non-depository financial institutions [4/]	689	0.38

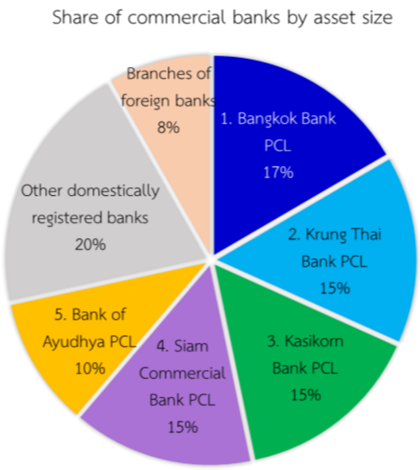
[P/] Preliminary data
[1/] Saving cooperatives data do not include credit union cooperatives.
[2/] Credit cards and personal loans under regulation include only financial institutions that operate with licenses issued by the Bank of Thailand and satisfy the definition of financial institutions according to the IMF Monetary and Financial Statistics Manual (2000).
[3/] There were 38 nano-finance operators as of 2021Q3.
[4/] Secondary Mortgage Corporations (SMC) and Thai Credit Guarantee Corporation (TCG)

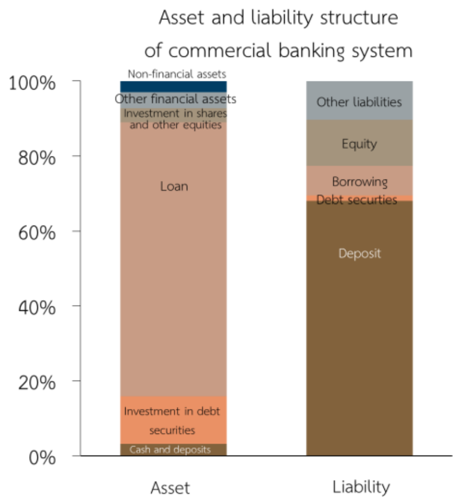
2.3 Loan: Corporate and consumer loan (as of 2021 Q3)



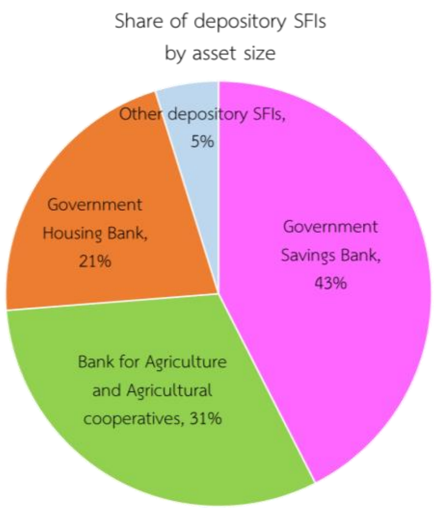


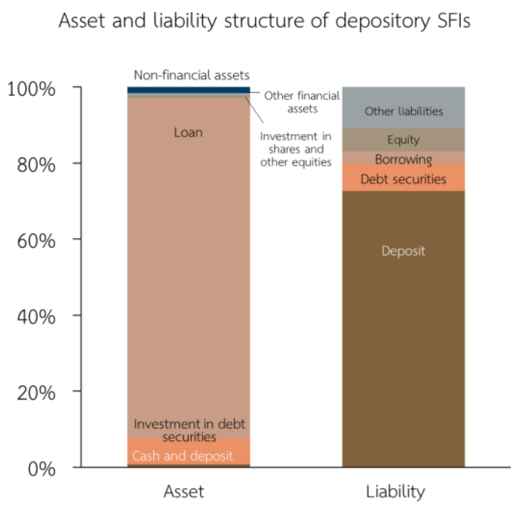
2.4 Structure of the commercial banking system (as of 2021 Q3)





2.5 Structure of the depository specialized financial institutions (SFIs) (as of 2021 Q3)



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