

ANNUAL REPORT 2021



BANK OF THAILAND

BANK OF THAILAND

ON THE PATH
TO RECOVERY



Mission

Promoting a stable financial environment to achieve sustainable and inclusive economic development



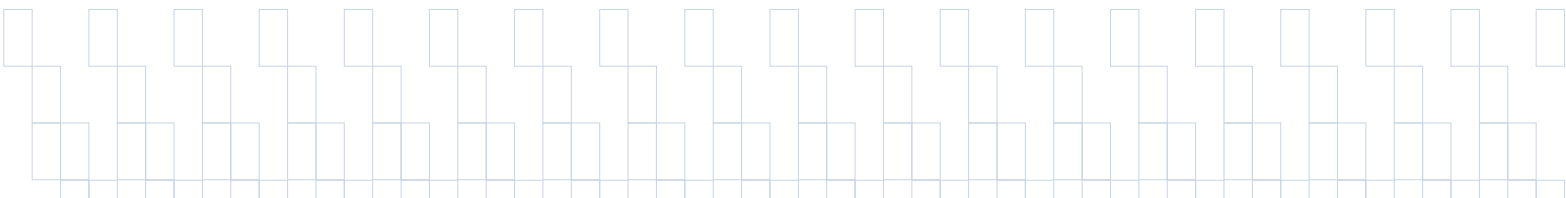
Vision

To be an organization of vision and principles that engages with stakeholders in pursuit of Thailand's sustainable economic well-being

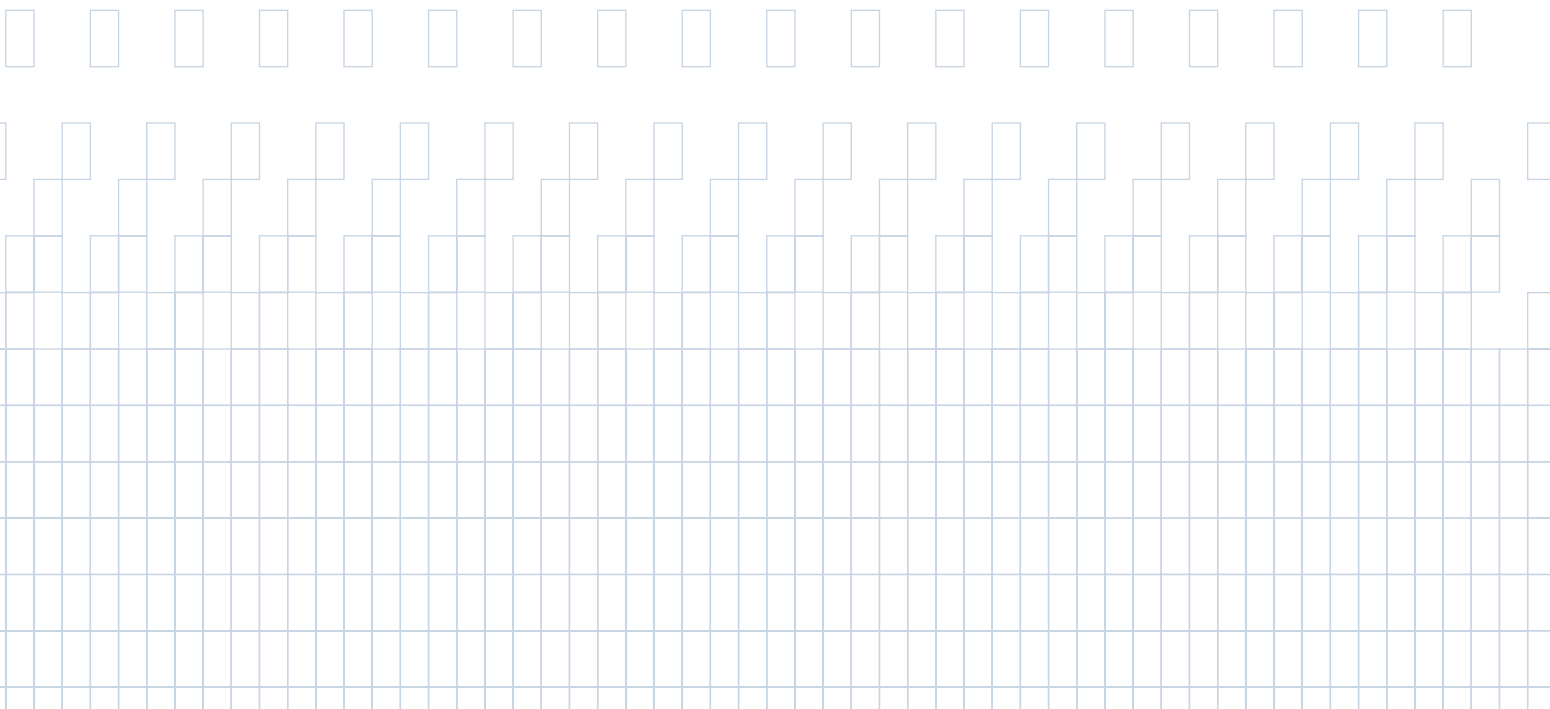


Values

Principles Visions Collaboration Humility

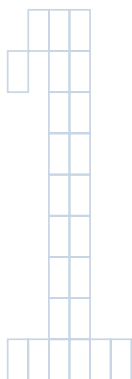


ON THE PATH TO RECOVERY





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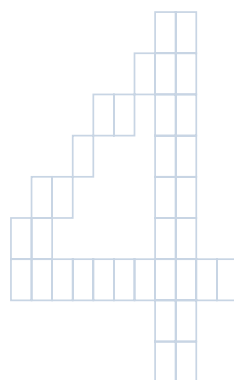
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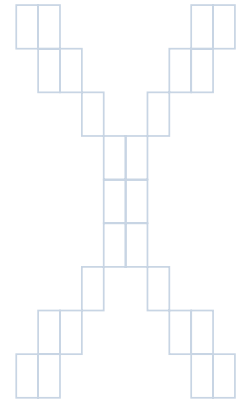
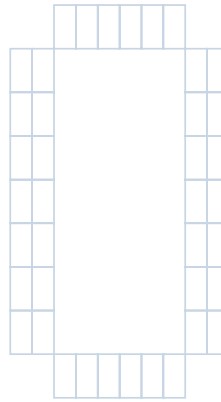
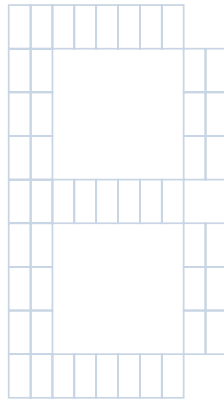
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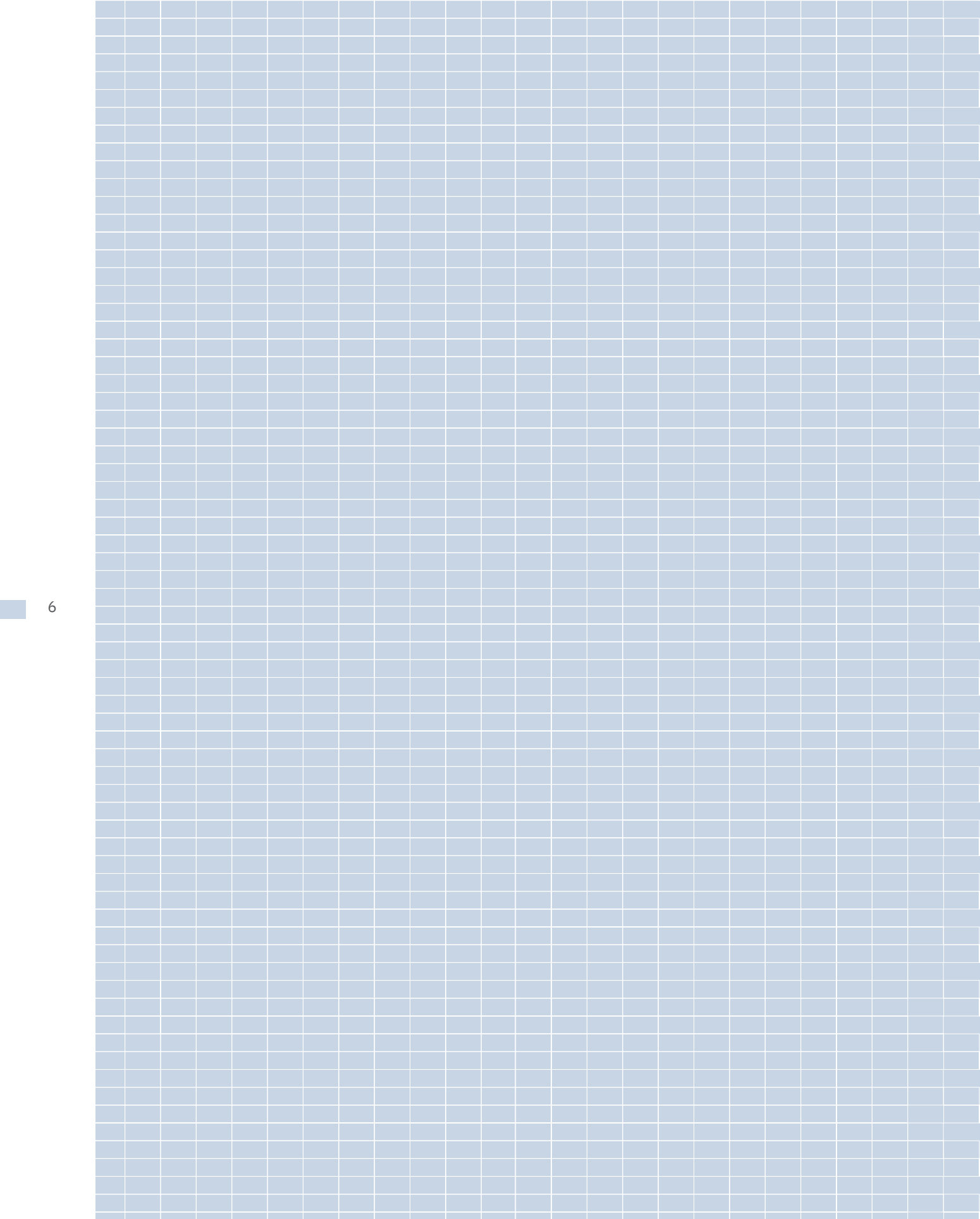
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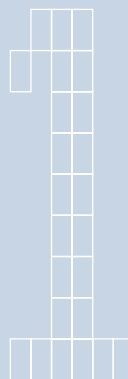
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MESSAGE FROM THE CHAIRMAN OF THE BANK OF THAILAND BOARD

The spread of COVID-19 since early 2020, which proliferated in 2021, has negatively impacted Thailand's economic and social developments. Furthermore, it poses an important challenge to the Bank of Thailand (BOT), as the country's central bank, in carrying out its mission for the sustainable well-being of the Thai people.

In 2021, when the pandemic significantly hindered Thailand's society, the BOT strived to maintain stability of the Thai financial system and foster inclusive and sustainable economic recovery, in accordance with its central bank mandate. The BOT closely monitored the situations and carried out various policies and measures in respond to the prolonged spread of COVID-19, which was not only unpredictable but also hindered economic recovery and increased inequality across sectors. In this regard, the BOT implemented the rehabilitation loan and debt suspension programs to provide direct and tailored support to businesses impacted by the pandemic, acting as a short-term remedy. In the long term, the BOT provided targeted and appropriate support to debtors via the debt restructuring program.

In conducting its mission of monitoring the BOT's activities, the Bank of Thailand Board, in collaboration with the 3 policy committees namely the Monetary Policy Committee, the Financial Institutions Policy Committee, and the Payment Systems Committee as well as the Bank of Thailand Audit Committee and the Risk Oversight Committee gave high importance in paving the path for the BOT to carry out its missions in a proactive, agile, open, and socially connected manner. This helped the BOT to prepare for the future, build financial system resiliency, foster the development of the central bank to address rapidly evolving

financial landscape due to technological innovations, and establish its foundations to enhance organizational productivity.

Regulation of risk and promotion of good governance were factors that the Bank of Thailand Board continuously prioritized, particularly risk stemming from carrying out new financial policies and measures from the BOT. The Bank of Thailand Board also emphasized fostering the capacity of the BOT in carrying out its roles given increasingly broad, in-depth, and complicated environments. Additionally, adjustments were made to the reserves management framework to be more in line with international standards. The Bank of Thailand Board also revised the BOT's governance framework so that the BOT's missions and coordination with the BOT's 3 Committees would be more transparent and efficient. These processes would bolster the BOT's credibility and public trust, which were vital factors for carrying out a central bank's duties.

On behalf of the Bank of Thailand Board, I wish to thank all BOT Board members, management, and staff for all their hard work, sacrifice and commitment throughout 2021, which allowed the BOT to play a vital role in supporting businesses and households in overcoming this severe economic crisis. I would also like to express my moral support for the BOT to continue carrying out its duties for the sustainable well-being of Thailand.

Mr. Poramete Vimolsiri

Chairman of the Bank of Thailand Board





MESSAGE FROM THE GOVERNOR OF THE BANK OF THAILAND

2021 was another year in which the Thai economy and its people were impacted by the COVID-19 pandemic. The uncertainty created from disrupted economic recovery as a result of the spread of new Covid variants caused the labor market to recover slowly. Households, particularly those with low income, were forced to accumulate debt as their source of income became uncertain and led to increasing levels of household debt. Certain businesses had to close down if they did not receive immediate assistance.

The Bank of Thailand (BOT) and Bank of Thailand Board were aware of the important role of central banks in alleviating various problems impacting the living standards of the public and business sectors. Therefore, the BOT and Bank of Thailand Board continuously implemented measures to assist debtors as well as adjusting previous support measures to be more in line with changing challenges.

The extension of the Soft Loans program as well as allowing public mechanisms to insure a higher proportion of the loans as a result of prolonged and more severe COVID-19 situation were clear examples of policy adjustments that were more targeted, flexible, and in line with changing developments. The BOT designed such measures to accommodate a variety of debtors, each with specific debt problems. These ranged from minimum measures to address immediate problems to long term debt restricting measures for those directly impacted by COVID-19. For those who started to have debt payment problems, there were measures such as the Debt Clinic by SAM, complete debt negotiations along with standardized debt restricting measures so that debtors did not have to negotiate with their creditors, which the debtors were usually at a disadvantage.

Implementing targeted measures which addressed the needs of the public under various limitations required intensive data analysis, and these data were collected from various sources. This included quantitative data that the BOT

received from financial institutions and regulators and qualitative data gathered through direct conversation with affected parties and opinions and views collected from various online platforms. In this regard, the BOT prioritized communication and inclusion of relevant stakeholders in policy designs.

The aforementioned adjustments allowed the overall economy, especially the financial sector, to continue to expand in light of the challenges currently facing Thailand. This was reflected in commercial banks' loans which expanded 6.5 percent in 2021, and was considered one of the highest expansions relative to neighboring countries.*

Given the spread of COVID-19 and rapidly changing trends, in 2022 the BOT will focus on 2 main priorities in carrying out its mandate. The first will be to address debt problems through consistent monitoring and advocating the use of existing measures so that they will achieve the desired results and address relevant stakeholders' problems and ensure that the economic recovery occurs smoothly. The second priority will be to establish strong roots so that the Thai economy and financial sector are prepared to move forward. This includes fostering innovation through technology and information, supporting sustainable economic transition, and promoting flexible regulations to address new forms of risks via a public hearing to take into account the opinions of stakeholders through the BOT's consultation paper "Repositioning Thailand's Financial Sector for a Sustainable Digital Economy."

I would like to reiterate to the general public that the BOT will emphasize solving Thailand's economic problems and establishing strong economic foundation for Thailand's sustainable well-being.

Mr. Sethaput Suthiwartnarueput
Governor of the Bank of Thailand

* Indonesia 5.2% Singapore 5.1% Malaysia 4.5% Philippines 4.3%

BOT AT A GLANCE

What Thai People Benefited from
the BOT's Policies and Actions in 2021



Thai people and the business sector

Asset Warehousing Program

under the fiscal budget of 100 billion baht.

At the end of 2021, **242** companies



242

companies

undergoing the program with the
asset under management worth



33,125

million baht.

Revised the guideline for SMEs' debt relief program

At the end of 2021, the
total amount of



140,237

million baht worth of
the assistance loans

were provided to



43,523 business owners;

42% of which were
SMEs

(the average loan amount ranging
from 5-50 million baht)

Soft Loan Program

(the application was closed on April 12, 2021)

The loans were **77,787** applicants
provided to at the total amount of
138,200 million baht

Throughout **2021**, the total of



5.66

million accounts

from both retail and business sectors were under
the BOT's debt relief measures.



Total of

3.53

trillion baht

of assistance
loans provided.

① **1.80** millions accounts
received **2.03** trillion baht of loans
from the commercial banks and
non-banks.

② **3.86** million accounts from SFIs
receiving **1.50** trillion baht worth
of loans

Relaxed some criteria for credit card, personal loan, and digital personal loan businesses

effective until the end of 2022. Those with credit card
debt or personal loans and have monthly income



less than

30,000

baht



were eligible for
an additional
lending limit by

2

times

For those with digital personal loans, the lending limit
was extended up to **40,000** baht with the condition
to repay the loans within 12 months.

By the end of 2021, there were a total of



746,986

digital P-loan recipients

with an average loan
value of

8,500

baht

Debt Exit Fastlane Program

From the program's inception in April 2020
till the end of 2021, there were



254,324

accounts

or **75%**

of eligible debtors

Debt Clinic Program

From June 2017 - October 31, 2021, there were
a total of



72,151

accounts

or **88%**

of those eligible under
the scheme



Doctor Debt Program

At the end of 2021, there were **69,789** site
visitors and **3,015** tickets issued from the
chatbot. As for the program applicants,
there were a total of **1,813** with **702** as
retail users and **1,111** as business owners.



Credit Card and Personal Loan's Debt Mediation Fair as well as Auto Hire Purchase Mediation Fair

From February 14 to June 30, 2021, there were



222,164

personal accounts

that were able to settle their credit card and personal loans with the creditors.

While



9,631

of car hire purchase accounts

were resolved from June to August 2021.

DR BIZ Program

At the end of 2021, accumulated eligible debtors were



291



37

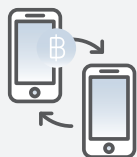
of which were still active debtors.

The total amount of

12,854

million baht

worth of debts was under the scheme.



e-Payment Transaction

There were

20,660.5

million e-Payment transactions

PromptPay registration since inception in 2016 rose to



68.6

million numbers in 2021

The volume of transactions averaged at

36.2

million transactions per day,



equivalent to an average value of

112.6

billion baht.



The financial institutions



Extended the period of the reduction of the Financial Institutions Development Fund fee (FIDF)

rate to

0.23%

from

0.46%

Relaxed dividend payment measures by abolishing the payout ratio ceiling



but maintained the limit of the

50%

of net profit



The Thai society and overall economy



The Monetary Policy Committee (MPC) maintained the policy rate at a record low of

0.50%

to encourage overall economic growth.



WHERE ARE THAI PEOPLE
ON THE PATH OF
THAI ECONOMIC RECOVERY?



Thai Economic Challenge 2021: Working Proactively to 'Resolving' and 'Reviving'

2021 remained a difficult year for many people and businesses given the prolonged COVID-19 situation since the beginning of 2020. The BOT therefore identified and addressed the key challenges with concrete policy solutions to ensure that Thai people, businesses, and the financial and economic system could weather and recover from the crisis. Under limited resources, it was essential for the BOT to strategically prioritize and drive tasks to achieve key missions with real impact.

Amid the ongoing economic uncertainties and pressing challenges, the BOT focused on 5 key challenges:

- ❑ **1. solving the debt crisis sustainably**
to help households and businesses recover from the COVID-19 crisis;
- ❑ **2. maintaining the stability of the financial system**
to ensure its functions in supporting the economic recovery;
- ❑ **3. maintaining macroeconomic stability**
to ensure the Thai economic structure remain resilient under the presence of COVID-19 and beyond;
- ❑ **4. instilling public confidence**
to become one of the most trusted organizations; and
- ❑ **5. enhancing the internal operations efficiency**
to transform the BOT into an outcome-oriented organization and to serve as an enabler for the success of the BOT's policy implementation both in the short and long term.

From 5 Key Challenges to Deliver Policies with Concrete Results for Thai Society

As a central bank, the BOT implemented various policies and measures in collaboration with groups of stakeholders and made decisions based on public interest. Throughout 2021, the BOT aimed to address the 5 key challenges namely maintaining financial system stability, maintaining macroeconomic stability, building public confidence, and enhancing organizational efficiency through concrete policies and measures, which benefitted people, businesses, financial institutions, financial system society and economy as follows:



1. Direct assistance to people and businesses

The BOT issued several measures related to debt refinancing and liquidity provision to support the vulnerable sectors while considering the severity of the COVID-19 impact at different periods of time.

the ownership at the transferred price, and to utilize their assets after their businesses return to normal. At the end of 2021, there were 242 companies undergoing the program with the asset under management worth 33,125 million baht.

The day the pandemic returned: how to reduce debt burdens and increase liquidity for the business sector?

From the beginning to the mid of 2021, the COVID-19 situation persisted and continued to adversely impact the Thai people and the business sectors at large. The existing and the new retail debtors alike were able to receive different supports from the Loan Assistance Program Phase 3 such as receiving a reduced lending rate to 2-4 percent per year, extending repayment periods for credit card and personal loans, temporarily suspending loan installments and capping limits on interest rate charged for car and motorcycle leasing loans, and providing a stepped repayment option for mortgage loans.

Moreover, businesses were able to access and acquire additional liquidity to fund their operations through the **Business Debt Relief program (Relief Loan)** under a 250 billion baht of the fiscal budget. The program was under collaboration between the BOT and the Ministry of Finance with the objective of enhancing access to credits for the businesses at a wider scale. In addition, the financial institutions joined forces by proactively providing credit assistance to the needed businesses in a more targeted and timely manner.

A new surge of COVID-19 during the mid of 2021 led the government to reenact some of the measures to prevent outbreaks in the 10 most high-risk cities by limiting mobility and certain activities. Many businesses and people were adversely impacted, and the BOT immediately took actions and collaborated with relevant parties to provide assistance through several measures. Together with the Thailand Baking Association (TBA)

and the Association of International Banks (AIB), the BOT launched a **2-month debt suspension measure for SMEs and retail customers** locating in the regulated areas or those that had been forced to shut down their businesses,

starting from the repayment period of July 2021. Under this measure, the financial institutions immediately suspended principal and interest collections to reduce the financial burdens of the impacted debtors.



Joint Press Conference: Financial Rehabilitation Measures to support business recovery post-COVID-19

The day the pandemic got improved but prolonged: focus on sustainable debt restructuring solutions and reduction of mediation cost in the financial system.

At the end of the year, the situation gradually improved, which led the government to relax some lock down restrictions and economic activities showed a return of demand. Nevertheless, the uncertainties caused by the spread of the new COVID-19 variants implied that the situation could be prolonged more than previously anticipated. The BOT continued with the targeted debt relief measures to ensure access to liquidity for people and businesses with a focus on providing sustainable and fair debt restructuring solutions. By assessing the repayment ability of each debtor, the measures assisted with financial

planning and offered flexible repayment plans depending on the debtors' expected income. To further reduce the retail debt burdens, the BOT extended the **debt consolidation program for mortgage and non-collateral retail loans from 2020** to consolidate the loans from different financial institutions and cap the interest rate charged at an annual mortgage interest rate plus 2 percent.

Additionally, to increase access to financial liquidity for retail and business sectors, **the BOT relaxed some criteria for credit card, personal loan, and digital personal loan businesses effective until the end of 2022.** Those with credit card debt or personal loans and have monthly income less than 30,000 baht were eligible for an additional lending limit by 2 times.

For those with digital personal loans, alternative data sources were utilized for credit scoring and were extended with a lending limit up to 40,000 baht with the condition to repay the loans within 12 months. By the end of 2021, there were a total of 746,986 digital P-loan recipients with an average loan value of 8,500 baht.

For the business sector, the BOT also **revised the guideline for SMEs' debt relief program** to serve those small business owners who previously could not access the assistance loan, which included the extension of a lending limit and eligible collaterals and the reduction of fees for of guaranteed loans. At the end of 2021, the total amount of 140,237 million baht worth of the assistance loans were provided to 43,523 business owners; 42 percent of which were SMEs (the average loan amount ranging from 5-50 million baht).

Overall, **the total of 5.66 million accounts from both retail and business sectors were under the BOT's debt relief measures**: 1.80 millions accounts received 2.03 trillion baht of loans from the commercial banks and non-banks, while there were 3.86 million accounts from SFIs receiving 1.50 trillion baht worth of loans (total of 3.53 trillion baht of assistance loans provided).

Moreover, other channels to receive additional assistance from the BOT were provided for the impacted people and businesses. **The Debt Exit Fastlane program** offered a hotline contact to help with a debt restricting process in case when the affected groups were not able to reach out to the creditors. From the program's inception in April 2020 till the end of 2021, there were 254,324 accounts or 75 percent of eligible debtors. As for **the Debt Clinic program**, it targeted debtors with credit /cash card loan and uncollateralized personal loan to resolve

their debt issues along with providing financial literacy tools to develop sustainable financial behaviors. The BOT adjusted the eligibility criteria for debtors from being categorized as NPL prior to February 1 to October 1, 2021. From June 2017 - October 31, 2021, there were a total of 72,151 accounts or 88 percent of those eligible under the scheme. Lastly, **the Doctor Debt program** offered consultancy on recovery for both people and businesses as well as details about different debt relief measures for retail customers and SMEs through different channels including a website: (www.bot.or.th/app/doctordebt), a chatbot, and Line official account (@doctordebt). At the end of 2021, there were 69,789 site visitors and 3,015 tickets issued from the chatbot. As for the program applicants, there were a total of 1,813 with 702 as retail users and 1,111 as business owners.

The BOT joined hands with the three key justice authorities, namely the Ministry of Justice, Court of Justice, and Office of the Attorney General and signed **an agreement to set debt mediation process and standards for the Thai financial system to provide standardized and fair solutions for both creditors and debtors**. Moreover, the BOT collaborated with the financial service providers in organizing **the Credit Card and Personal Loan's Debt Mediation Fair** as well as Auto Hire Purchase Mediation Fair to help mediating debts for people with credit card loans, personal loans or car hire purchase who faced difficulties repaying their debts due to declining income during the COVID-19 pandemic. From February 14 to June 30, 2021, there were 222,164 personal accounts or 72 percent of the total eligible accounts that were able to settle their credit card and personal loans with the creditors. While 9,631 of car hire purchase accounts, 75 percent of the total eligible accounts, were resolved from June to August 2021.



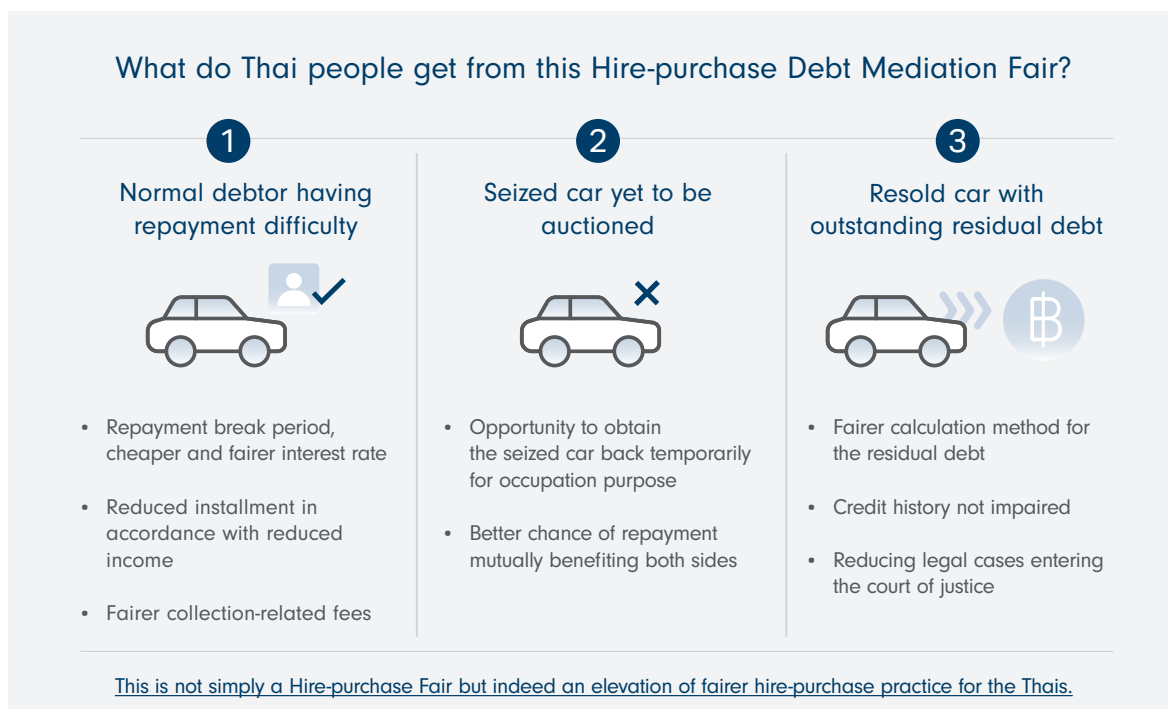
2. Maintain the financial stability and support the financial institutions' debt relief measures for the impacted sectors

The BOT aimed to maintain financial stability while enabling financial institutions to support a variety of debt relief measures.

In 2021, the BOT provided incentives for the financial institutions to adjust their debt restructuring process for the affected debtors by considering their expected repayment abilities and the debt durations. This included **providing additional flexibility in the loan classification and provision guidelines for banks** that lent additional assistance to their debtors on top of the debt repayment period extension. Moreover, **the BOT extended the period of the reduction of the Financial Institutions Development Fund fee (FIDF) rate** to 0.23 percent from 0.46 percent. This aimed to reduce the cost burden of the financial institutions so that they could continue support the business sector and people.

In the middle of 2021, the COVID-19 situation got worsened. The BOT decided to maintain the measure to limit the financial institutions' dividend payout by limiting the Dividend Payout Ratio at the level of 2020 and at the minimum of 50 percent of the first half of 2021 net profit. The measure aimed to ensure that the banking system remained resilient given high uncertainties. In addition, the BOT conducted stress tests to evaluate the capital fund level of commercial banks during the period of 2021-2023. The test results showed that the banking system stored reserves and capital above the threshold level, thus was sufficiently resilient under the crisis event. In late 2021, dividend payment measures have been relaxed by abolishing the payout ratio ceiling but maintained the limit of the 50 percent of net profit in order to strengthen the capital funds and support the continuous expansion of loan origination.

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3. Reduce the financial system's volatility and prepare for future transitions

The uncertainties stemmed from the COVID-19 pandemic continued to cause volatilities in the money and capital markets globally including Thailand. The BOT, therefore, continued to focus on reducing the volatility of the financial system to ensure its smooth functioning.

The BOT **extended the supporting period for the Corporate Bond Stabilization Fund (BSF)** to the end of 2021. The Fund served as a short-term liquidity backstop specifically for businesses with good fundamentals but facing temporary financial difficulties during the pandemic and enabled them to continue raise funds through a corporate bond issuance. The BOT also recognized the importance of maintaining the system resiliency and ensured that the markets could weather the crisis.

The BOT **revamped the financial market structure and relaxed the capital outflow controls** so that Thai people could conveniently diversify their portfolio investment abroad and could easily hedge against foreign exchange risks at affordable fees.

Additionally, the BOT **ensured a smooth transition of Thai Overnight Repurchase Rate (THOR)** as the Alternative Reference Rate in replacement of Thai Baht Interest Rate Fixing (THBFIX) after the cessation of the London Interbank Offered Rate (LIBOR). THOR data had been publicly available since April 2020 and many financial products gradually adopted THOR as a reference rate for fund raising and investment transactions, thus increasing the liquidity of the rate and the money market.

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4. Support the Thai economy and society for recovery and build public confidence

Overall, Thailand's economic outlook remained uncertain due to the persistence of COVID-19 with certain periods of more severe outbreaks and stricter control measures. Thus, the BOT continued to pursue accommodative monetary policy.

Throughout 2021, the **Monetary Policy Committee (MPC)** maintained the policy rate at a record low of 0.50 percent.

Moreover, to ensure that both monetary and fiscal policies were in sync, the BOT created proposed several policy initiatives which include 1) **increasing a national debt**

ceiling to 70 percent of GDP from 60 percent to increase flexibility for fiscal stimulus measures during the crisis, which was approved by the Fiscal Policy Committee, 2) **providing income subsidy** for 10.6 million workers with social security and freelancers residing in highly restricted areas located across 29 cities to ease financial burdens caused by the COVID-19 outbreaks, and 3) **temporarily relaxing Loan-To-Value (LTV)¹ measures on residential mortgage loans** by adjust the ceiling of LTV ratio and allowing mortgage lending at full collateral value until the end of 2022 to further stimulate the economy and support employment in the real estate sector.

¹ Loan-To-Value (LTV) is the ratio of a loan to the value of an asset purchased.

To perform rigorous economic pulse check, the BOT **developed a regional economic detection tool called BOT Regional Activity Tracker (BOT RAT)** that covered different key sectors such as tourism, labor market, consumer spending and agriculture. The tools enhanced the BOT's abilities to assess the regional economic pulse and trends as well as the well-being of people residing in different areas. In addition, interested business owners and people could utilize data from BOT RAT to make informed business decisions.

Additionally, to ensure that the BOT's policy effectiveness and instilling the public trust, the BOT **revised several internal processes based on "Think Holistically, Response Practically" principle** for formulating policy measures to solve the problem at its root cause and thoroughly consider any impacts and associated risks. Moreover, various digital

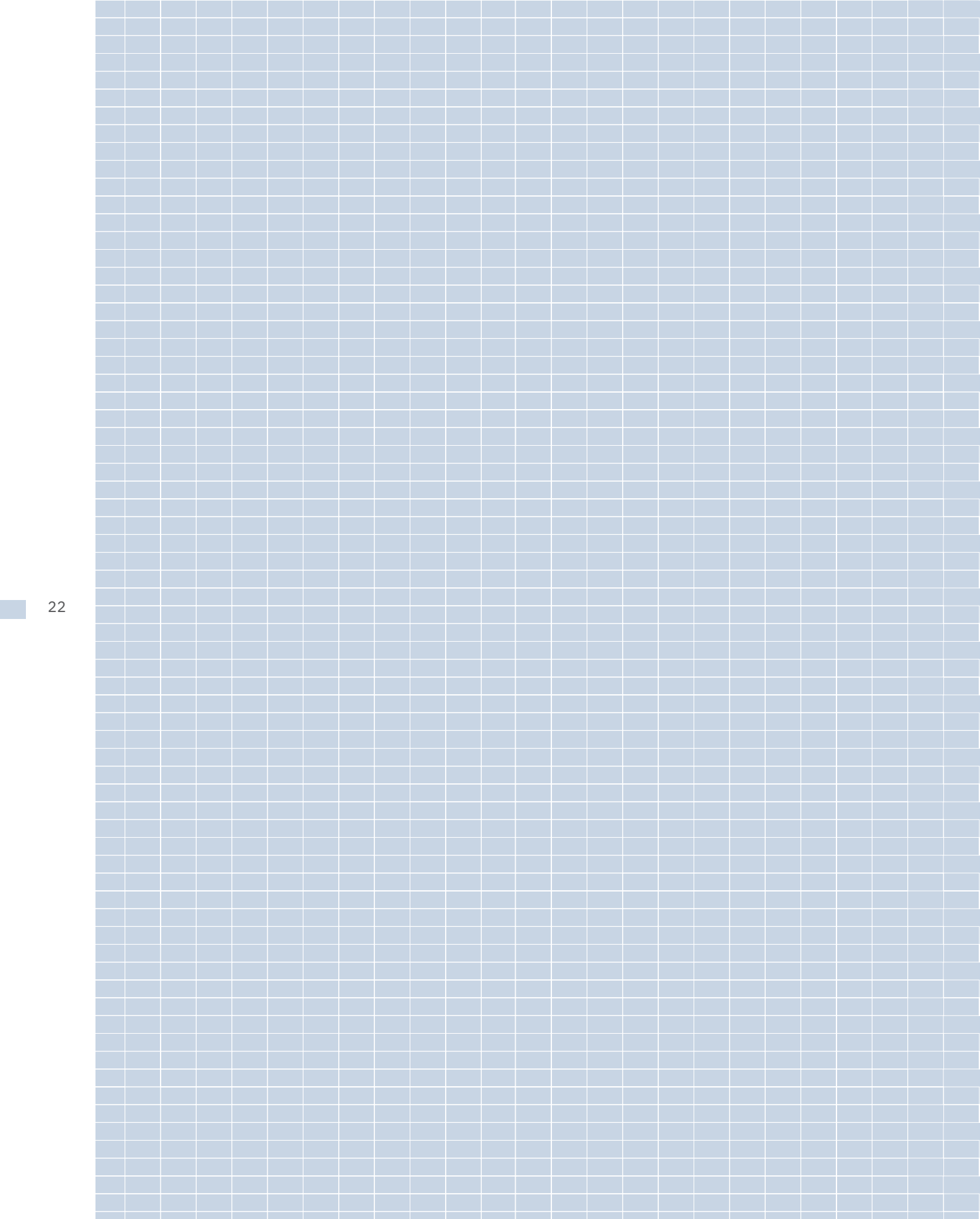
tools such as **social listening and data analytics** were used to support and scale the BOT's targeted and timely commutation approach.

To strengthen and enhance efficiency of the internal process, the BOT **improved its human resource management and development framework as well as adopted a lean management practice and technologies such as Robotic Process Automation (RPA) and collaboration platforms**. This helped support the BOT's organizational efficiency and agility in performing tasks and achieving its core mandate during uncertain times.

The implementation and measures issued by the BOT during 2021 aimed to address the 5 key challenges and to help steer Thai people, businesses, and economy through the Covid crisis and towards the recovery.



Conducting fieldwork to exchange economic experiences and opinions with the local business sector.



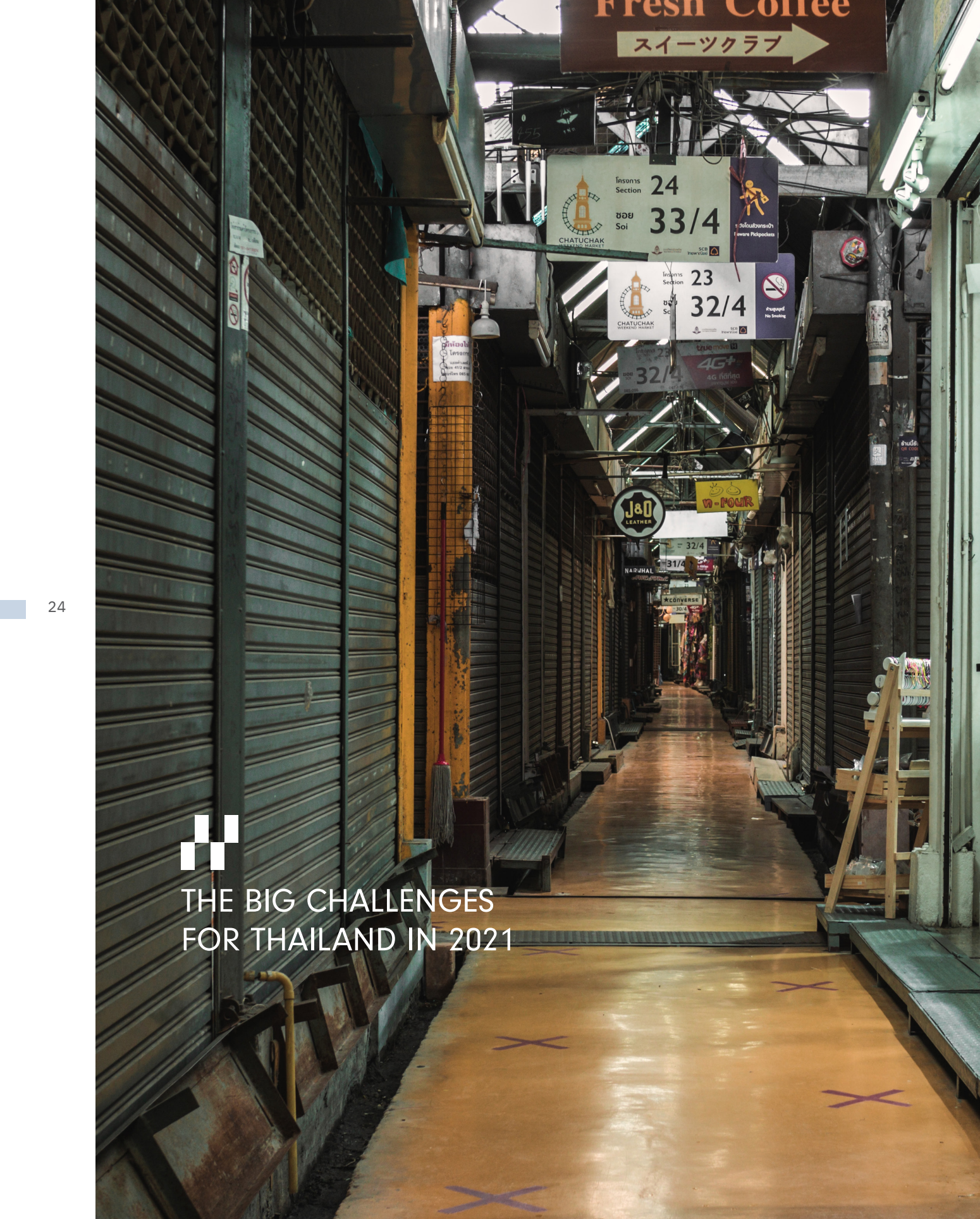


CHAPTER



WHAT WERE THE RESPONSES OF THE BOT DURING THE CHALLENGING CRISIS?

- 1 The big challenges for Thailand in 2021
- 2 The BOT and its proactive roles
in responding to the pandemic
and fostering the economic growth
- 3 The BOT's financial measures were
accommodative in addressing various problems,
flexible, and adaptive to different situations



THE BIG CHALLENGES FOR THAILAND IN 2021



Over the past two years, the Thai economy experienced an unprecedented crisis caused by the recurrence of the COVID-19 outbreak since the beginning of 2020, which led to a sharp contraction in economic activities, while the economic recovery remained slow. The GDP figures for 2020 contracted by 6.2 percent with a rebound of growth in the following year at 1.6 percent. The slow recovery was attributable to strict imposition of containment measures by the government in the mid of 2021 to curb the third wave of the COVID-19 outbreak, which as a result, dampened economic activities, especially domestic spending.

The slow recovery was also stemming from Thailand's economic structure which relied heavily on foreign tourist income, which accounted for 11.5 percent of GDP; the highest in Asia. As a result, the Thai economy, in comparison with other economies in the region, was hit harder by the COVID-19 crisis and recovered much slower, although the merchandise export sector expanded consistent with the global trade growth. As such, the level of Thailand's GDP at the fourth quarter of 2021 was still below the pre-pandemic level by 2 percent while other countries in Asia, already saw their GDP stood above their pre-pandemic levels.

In addition to a slow recovery, the economic improvement was highly uneven across sectors (K-shaped recovery). While merchandise exports performed well in line with trading partners' demand and recorded an expansion of 15 percent from the pre-pandemic level, benefits and

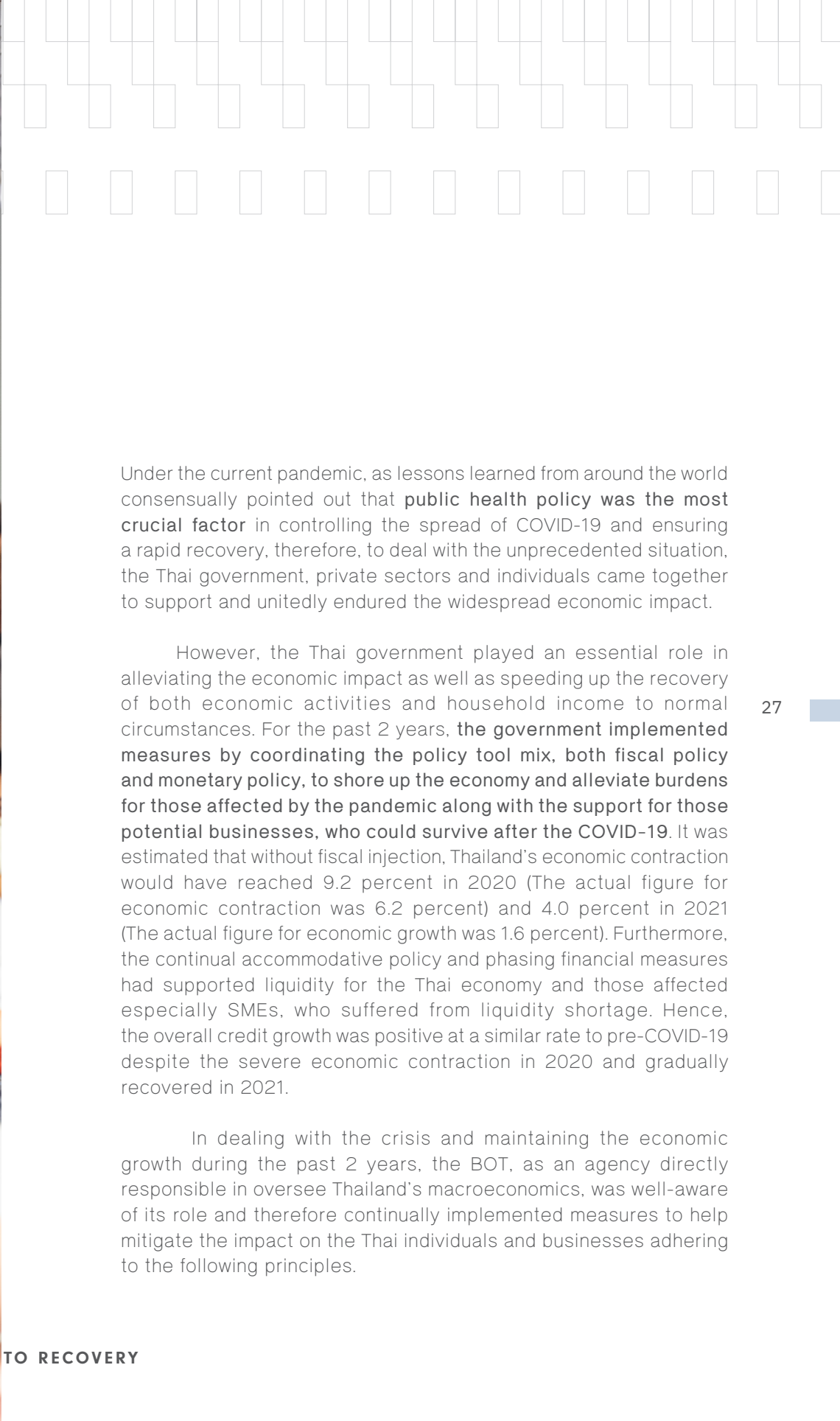
spillovers were limited to certain groups as export-related industries employ only about 8 percent of the labor force. On the other hand, the service sector, which hired over 20 percent of labors, recovered at a much slower pace, particularly those related to tourism; foreign tourist arrivals registered only 430,000 persons in 2021 despite a gradual re-opening of the country and were still much below the pre-pandemic level of 40 million persons. Under such circumstances, benefits of economic recovery were concentrated to a few groups while a large portion of labors remained fragile.

Some firms were inevitably closed down while many labors experienced negative income shock and some were laid off. In particular, small firms in the service sector were severely affected and found it difficult to adjust their businesses; their revenues suddenly dropped whereas they could not significantly cut costs and had limited liquidity. Meanwhile, labors in several sectors faced a significant income loss or even lost their jobs. This was reflected by the number of unemployed and under-employed persons that jumped to 3.2 million persons at the end of 2021, compared with 2.3 million persons before the pandemic. This contributed to a sizable income loss especially in the self-employed group. The BOT estimated the income losses around 1.8 trillion baht in the Thai economy during 2020 - 2021. With the existing high level of household debt and debt service burden, many Thai households would have a challenging time throughout the crisis.



THE BOT AND ITS PROACTIVE ROLES IN RESPONDING TO THE PANDEMIC AND FOSTERING THE ECONOMIC GROWTH





Under the current pandemic, as lessons learned from around the world consensually pointed out that **public health policy was the most crucial factor** in controlling the spread of COVID-19 and ensuring a rapid recovery, therefore, to deal with the unprecedented situation, the Thai government, private sectors and individuals came together to support and unitedly endured the widespread economic impact.

However, the Thai government played an essential role in alleviating the economic impact as well as speeding up the recovery of both economic activities and household income to normal circumstances. For the past 2 years, **the government implemented measures by coordinating the policy tool mix, both fiscal policy and monetary policy, to shore up the economy and alleviate burdens for those affected by the pandemic along with the support for those potential businesses, who could survive after the COVID-19.** It was estimated that without fiscal injection, Thailand's economic contraction would have reached 9.2 percent in 2020 (The actual figure for economic contraction was 6.2 percent) and 4.0 percent in 2021 (The actual figure for economic growth was 1.6 percent). Furthermore, the continual accommodative policy and phasing financial measures had supported liquidity for the Thai economy and those affected especially SMEs, who suffered from liquidity shortage. Hence, the overall credit growth was positive at a similar rate to pre-COVID-19 despite the severe economic contraction in 2020 and gradually recovered in 2021.

In dealing with the crisis and maintaining the economic growth during the past 2 years, the BOT, as an agency directly responsible in oversee Thailand's macroeconomics, was well-aware of its role and therefore continually implemented measures to help mitigate the impact on the Thai individuals and businesses adhering to the following principles.

The Proper Mix between Fiscal Policy and Monetary Policy

The monetary policy and fiscal policy must be closely coordinated and given importance to the appropriate outcome that each instrument may yield. For the fiscal policy, the aim was to increase purchasing power and allocate resources towards the needed sectors while the monetary policy was to stimulate the economy by providing liquidity at a reasonable cost.



Fiscal policy

In the fiscal years of 2020 and 2021, the government spent over 1.3 trillion baht to remedy and restore the economy in response to the COVID-19 outbreak. As of 2021, the government provided a variety of fiscal measures to support household and business sectors. The measures included, for instance, cash transfer measures to the most affected groups through “We Win (Rao Chana)” and “Section 33 We Love Each Other (Rao Rak Kan)” schemes, measures on household expenditure support through the reduction of basic utility charges, as well as tax measures (lowering charges for social security contributions and deferring personal income tax payment). Other measures that aimed to stimulate private consumption includes “Half-Half (Kon La Kreung),” “The More You Spend, The More You Get (Ying-Chai-Ying-Dai)” and “Travel Together (Rao Tiew Duay Kan)” schemes. In addition, the government also launched measures to increase liquidity for businesses by deferring corporate income tax payment, subsidizing both employers and employees in the social security system, and retaining employment levels in SMEs.

The continuous implementation of fiscal policy measures resulted in the government expenditures being the key driver in stimulating the economy during the pandemic. Specifically,

the transfer of funds under two Emergency Loans Decree totaling 1.5 trillion baht which was equal to approximately to 9.3 percent of GDP in 2021. Without these extra transfers, the GDP in 2021 would have been contracted by 4 percent.



Monetary policy

The BOT has continuously carried out the expansionary monetary policies in a timely and sufficient manner along with the reduction in the Financial Institutions Development Fund (FIDF) fee from 0.46 percent to 0.23 percent until the end of 2022. The aim was that the financial institutions would pass on the benefit of lower operating cost to support debtors under uncertainty circumstance. Though the monetary policy’s prominent characteristic was that it could be implemented faster than fiscal policy, however, it may take longer time to transmit, and the impact may be scattered not targeted.



Designing Measures with Well-targeted and Pragmatic Approach to Addressing the Crisis

The key success factors for the implementation of economic policy in the time of crisis are problem prioritization, designing a well-targeted measure, and understanding the policy transmission mechanisms.

In 2021, the BOT imposed measures with underlying concepts as follows:



Ensuring the normal function of financial system and financial institution system

These are core functions of the BOT under both normal and crisis circumstances. In 2021, the performance of Thai financial system and financial institution system were considered normal, reflected in the commercial bank's credit growth rate, which was higher than regional peers, while Thailand's GDP growth was at 1.6

percent (the overall credit growth of commercial banks was 6.5 percent, which was higher than many countries, e.g., Indonesia (5.2 percent), Malaysia (4.5 percent), and the Philippines (4.3 percent)). Besides, the Thai financial institution system was resilient, and the liquidity remained ample to support the affected debtors.



Utilizing government role to strengthen the market mechanism in supporting those affected debtors.

Though the credit extension and support provided by commercial banks' regular intermediary function were considered acceptable to a certain level, however, it was not yet adequate and thoroughly distributed due to severe impact and prolonged situation. Hence, the BOT did not rely solely on market mechanism but also sought government support, particularly in parts which the commercial banks were unable to properly perform, e.g., providing SMEs liquidity under a special loan program (Emergency Decree on the Provision of Assistance and rehabilitation for Entrepreneurs Affected by COVID-19 Pandemic, B.E. 2564 (2021) ('Rehabilitation Measure Decree', more detail in New Lending Facility Section). The special loan was specifically designed to support commercial banks and specialized financial institutions in providing loan facilities for affected SMEs, with limited access to liquidity, with a credit guarantee scheme through the Thai Credit Guarantee

Corporation to help mitigate credit risk. The special loan program addressed the limitations of the previous soft loan program in 2020 to ensure that more funding would be given to businesses in need.

The special loan and soft loan had played an important part to help SMEs credit growth, which was contracted since pre-COVID-19, to have a positive growth at 2.1 percent in 2021. It was estimated that without the measures, the SME credit would have slightly contracted (-0.4 percent)

Though large corporates were also affected by the COVID-19, however with more funding ability, they were more resilient to crisis. Therefore, the relief measures were targeted to mainly support SMEs and retail debtors. In 2021, large corporate and consumer loans continued to grow. (corporate and consumer loans grew at a rate of 12.8 percent and 4.0 percent, respectively)



สมาคมธนาคารไทย ผนึกกำลัง ธนาคารสมาชิก

เดินทางต้อนรับมาตรการช่วยเหลือลูกค้าที่ได้รับผลกระทบโควิด-19 เพิ่มเติม

สินเชื่อฟื้นฟู เฟสแรก
1 แสนล้าน ใน 6 เดือน
เป็นไปตามเป้า



วงเงินสินเชื่อฟื้นฟูที่อนุมัติ
98,316 ลบ.



จำนวนลูกค้าที่ได้รับวงเงิน
32,025 ราย

ความคืบหน้าโครงการ
พักทรัพย์ พักหนี้

มูลค่าสินทรัพย์ที่รับโอน
11,697 ลบ.

จำนวนลูกค้าที่ได้รับการช่วยเหลือ
82 ราย

ข้อมูล ณ วันที่ 30 ส.ค. 2564

มาตรการเพิ่มเติมเพื่อส่งเสริมการช่วยเหลือลูกค้าที่ได้รับผลกระทบ


1. รักษาสภาพคล่องและเติมเงินใหม่ให้ SME และรายย่อย

ปรับปรุงหลักเกณฑ์สินเชื่อฟื้นฟู ช่วยลูกค้า SME

ขยายวงเงินสินเชื่อ		เพิ่มการค้าประกัน ให้กับลูกค้ากลุ่มเสี่ยง
เดิม	ใหม่	
 ลูกค้าใหม่ ขอู้ ≤20 ล้านบาท <small>(รวมวงเงินจากทุกสถาบันการเงิน)</small>	ขอู้ ≤50 ล้านบาท <small>(รวมวงเงินจากทุกสถาบันการเงิน)</small>	<ul style="list-style-type: none"> • ปรับลดค่าธรรมเนียมการค้าประกันรวมสำหรับลูกค้ากลุ่มเปราะบาง* <small>* ลูกค้าที่มีวงเงินเดิมไม่เกิน 50 ล้านบาท และได้รับวงเงินไม่เกิน 15 ล้านบาท/ หรือลูกค้าใหม่ที่ได้รับวงเงินไม่เกิน 15 ล้านบาท</small> • คงค่าธรรมเนียมการค้าประกันรวมโดย ลดอัตราจ่ายในช่วง 2 ปีแรกสำหรับลูกค้ากลุ่มอื่น* <small>* ลูกค้าที่มีวงเงินเดิมมากกว่า 50-500 ล้านบาท และได้รับวงเงินมากกว่า 15 ล้านบาท/ หรือลูกค้าใหม่ที่ได้รับวงเงินมากกว่า 15 ล้านบาท</small>
 ลูกค้าเก่า 30% ของวงเงิน*	30% ของวงเงิน* หรือ สูงสุดไม่เกิน 50 ล้าน <small>สำหรับลูกค้าที่ 30% ของวงเงินเดิมไม่ถึง 50 ล้านบาท</small>	

* วงเงินที่มีกับสถาบันการเงิน ณ 31 ธ.ค. 62 หรือ 28 ก.พ. 64 แล้วแต่ยอดใดจะสูงกว่า แต่ต้องไม่เกิน 150 ล้านบาท นับรวมวงเงิน Soft Loan เดิมที่เคยได้รับตาม พ.ร.ก.

ผ่อนปรนหลักเกณฑ์สินเชื่อการค้ารายย่อย/ลูกค้าบุคคล

 บัตรเครดิต และสินเชื่อส่วนบุคคล	<ul style="list-style-type: none"> • คงอัตราผ่อนชำระขั้นต่ำสำหรับบัตรเครดิตที่ 5% ต่อปีสำหรับผู้ที่มีรายได้เฉลี่ยต่อเดือน ต่ำกว่า 30,000 บาท • ขยายเพดานวงเงิน ไม่เกิน 2 เท่า ของรายได้ • ไม่จำกัดจำนวน ผู้ให้สินเชื่อส่วนบุคคลภายใต้การกำกับฯ
 สินเชื่อส่วนบุคคลดิจิทัล	<ul style="list-style-type: none"> • ขยายเพดานวงเงินเป็น รายละไม่เกิน 40,000 บาท • ขยายระยะเวลาการชำระคืน ไม่เกิน 12 เดือน

2. ปรับปรุงโครงสร้างหนี้แบบระยะยาว เพื่อแก้ไขภาระหนี้ที่ยั่งยืน

ตามหลักเกณฑ์ส่งเสริมการปรับโครงสร้างหนี้ ของ ธปท. ดังนี้

1. สถาบันการเงินคงการจัดชั้นสำหรับลูกค้ารายย่อยและ SME ที่เข้าสู่กระบวนการปรับโครงสร้างหนี้แล้ว ได้อย่างน้อย 31 มี.ค. 2565
2. ใช้หลักเกณฑ์การจัดชั้นและการกันเงินสำรองอย่างยืดหยุ่นไปถึงสิ้นปี 2566 หากสถาบันการเงินช่วยเหลือลูกค้าออกเหนือจากการขยายระยะเวลาการชำระหนี้เพียงอย่างเดียว
3. ขยายเวลาการปรับลดอัตราเงินนำส่งเข้ากองทุน FIDF เหลือ 0.23% ถึงสิ้นปี 2565

ที่มา: ธนาคารแห่งประเทศไทย และสมาคมธนาคารไทย



Designing and implementing measures that match the Thai context without posing long-term adverse effects

Amongst the volatility and complexity of the COVID-19 pandemic, The BOT, by considering the problems and impacts on the Thai economy, implemented several measures to properly navigate through this situation, as follows:



Implementing tools that matched the situation.

The unprecedented and unconventional tools were the BOT's instruments to cope with this crisis, like those used in many countries. However, the measures were designed to address Thailand's main problems which were distributing liquidity under high credit risk circumstances and customizing debt resolution for the affected groups. There were two issues that were worth highlighting as follows:

1.1 Using the BOT's unconventional policy tools to alleviate the economic impact from the COVID-19 pandemic, the tools can be categorized into 3 groups:

Measures to support financial institutions and specialized financial institutions that provided assistance to debtors. BOT's asset classification and provision regulations were adjusted to provide incentives for financial institutions, such as lessen the burden from classification and provision. In addition, the financial institution system had consistently accumulated additional reserves. The BOT, therefore, issued a flexible guideline to reduce financial institutions cost specifically for those who sustainably aided debtors. This would also help the affected debtors, who used to have the ability to pay and had been under debt restructured before they became NPL, to maintain their credit history and can access credit in the future.

Liquidity support measures (soft loan and special loan) to encourage commercial banks and specialized financial institutions to provide credit continually and effectively during the prolonged outbreak, especially for those SMEs, who were at risk and fragile. In addition, the special loan also included a credit risk guarantee mechanism to build up banks' confidence of lending to affected SMEs.

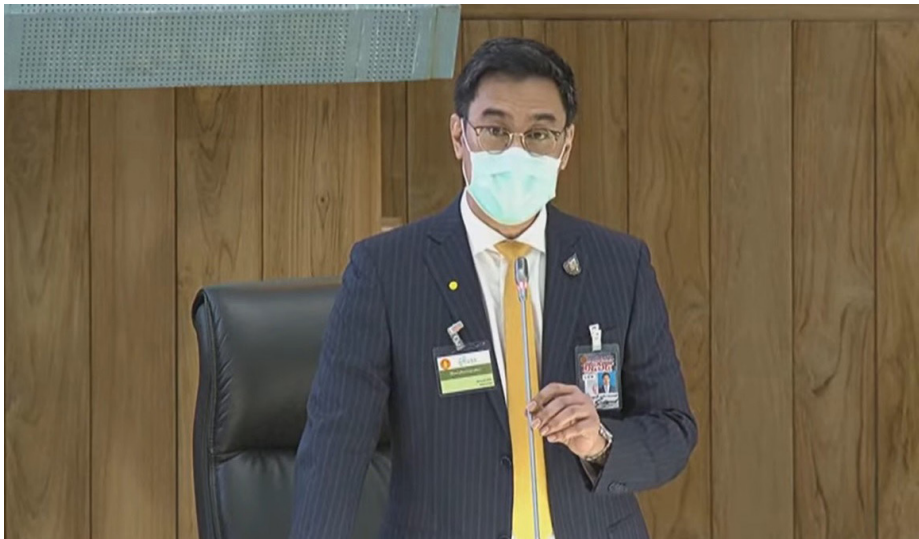
Long-term debt restructuring measure to encourage financial institutions, specialized financial institutions, and non-banks to tailor debt restructuring for each debtor's problem and debt repayment ability, which would help reduce debt burden, in targeted, long-term, and more flexible in revising the terms and conditions when the situation did not go as expected.

1.2 Quantitative Easing (QE) is not an appropriate measure under the current context of the Thai economy due to the following reasons.

The majority of Thai businesses will not gain much benefit from QE. Since QE reduces borrowing costs through the bond market, benefits will only be concentrated among large corporates that have access to the bond market. However, most of them have not experienced liquidity shortages. Meanwhile, 90 percent of SMEs and households, that rely on bank-based financing, will not benefit much from such measure.

Financing cost of the private sector has been low. The new loan rate (NLR) declined by around 100 bps. (basis points) from 3.8 percent in January 2020 to 2.9 percent in December 2021.

Liquidity in the financial system, particularly the banking system, remained ample. This could be seen from the loan-to-deposit ratio at 94.2 percent in December 2021. The figure remained low when compared to that of the pre-COVID period at 96.3 percent. In addition, the liquidity coverage ratio (LCR) was recorded at 189.2 percent, higher than the minimum requirement of 100 percent.



Dr. Sethaput Suthiwartnarueput was clarifying about the Rehabilitation Measure Decree in the meeting of senators on June 7, 2021

02

Scrutinizing cautiously the pros and cons or the unintended consequences

In designing the relief measures for debtors in high-risk conditions, though certain measures may help alleviate the burden on debtors, however, it might be harmful, especially to the debtors themselves.

1.2 Broad-based debt moratorium measures might exacerbate long-term impacts

Since (1) the interest continued to accumulate even during the period of moratorium which would lead to be a long-term debtors' debt burden. (2) it created moral hazard causing the well-performed debtors to delay repayment and that might exclude badly affected debtors from the adequate assistance, and (3) it may jeopardize the financial stability since the broad-based debt moratorium over an unduly long period would inevitably reduce the liquidity of the system as a result of deferred debt and interest payments.

2.2 Maintaining the balance between alleviating the affected debtors and the financial system stability

One of the main roles of the BOT is to supervise commercial banks to maintain the stability of the financial system, including ensuring that with limited resources commercial banks will continue to facilitate the economic growth. Thus, all aspects of the measure must be carefully scrutinized to ensure that the economy as a whole continues to perform.



Enforcing measures to be pragmatic and effective

The BOT deemed that implementing measures to be practical and effective way were important as much as issuing new measures. Hence, in order to be able to provide effective and timely response in assisting debtors, the BOT then performed as follows.



The BOT closely monitored and enforced the assistance measures to ensure that financial institutions continuously provided assistance to affected debtors, debtors had sufficient knowledge and understanding to be able to access supports in time.

1.1 Special loan: The BOT regularly monitored and hastened the progress of special loan according to financial institutions and specialized financial institutions' bookbuild as well as continually obtained feedback from entrepreneurs. As a result, the first phase for special loan reached 100,000 million baht within 4 months, faster than the previous projection of 6 months.

1.2 Long-term debt restructuring: the BOT encouraged financial institutions to provide debt restructuring programs that covered a wide range of the affected debtors in a timely manner with flexibility that suited the highly uncertain situations, and effectively helped alleviate debt burdens for debtors.

The BOT continually engaged with related stakeholders including government agencies, financial institutions, businesses sector, and public sector. The discussions were held in various types of approaches such as meeting with representatives of related government agencies and business associations, and regional field trips to visit businesses in targeted industries to gather information such as root causes, obstacles, or limitations of the current measures as inputs for designing a more effective measure.

Behind the scenes of Financial Rehabilitation Measures: the design of relief measures which began with pain points of individuals and businesses

From the end of 2020 to the early of 2021, the COVID-19 outbreak had been affecting Thailand harder and longer than expectation. As a result, the economic recovery was likely to be highly uneven or so-called “K-shaped recovery”; notably the small and medium enterprises (SMEs) in service sector which primarily depended on external demand were recovering even more slowly. The BOT noticed that the number of credit applications tended to continuously increase; the amount of credit granted to SMEs, however, was diminished.

This indicated that business sector had a demand for credits but still faced limitations to access loan facilities. Thus, the BOT realized the necessity of additional measures in response to COVID-19 aimed to address such financing gap.

As a part of process to design relief measures in response to COVID-19, the BOT arranged field trips to visit and discuss directly on effects of COVID-19 pandemic in each region as well as difficulties and limitations of the previous relief measures faced by individuals and businesses. This revealed the fact that only debt restructuring measure was not sufficient to some debtors, particularly the one whose revenue had dropped dramatically and the one who had no income. Moreover, the BOT discussed with representatives of some business associations, such as the Board of Trade of Thailand, the Federation of Thai Industries, the Thai Hotels Association, and the Thai Bankers' Association, to better understand difficulties and limitations from the business side. Eventually, the Financial Rehabilitation Measures, including the special loan and the asset warehousing scheme, were introduced with objectives not only to rehabilitate or assist businesses during the short term but also to support the post-pandemic business transformation. With the flexible and pragmatic approach designed to support various uncertain circumstances, these measures would be able to support business recovery efficiently and effectively.

Lastly, the BOT would like to express our sincere gratitude to the government agencies, private sector, financial institutions and public sector for their cooperation in sharing data and opinions which led to success in designing a rehabilitation measure that shared common goal of being well-targeted, well-timed and providing the maximum benefit to the public.



The BOT discussed with representatives of some business associations, such as the Board of Trade of Thailand, the Federation of Thai Industries, the Thai Hotels Association, and the Thai Bankers' Association, to better understand difficulties and limitations from the business side.



The BOT and the Thai Bankers' Association jointly discussed in order to alleviate the impact for debtors who suffered from COVID-19

The role of the BOT; the mediator and facilitator between borrowers and financial institutions amid the COVID-19 turbulence.

The BOT provided mediations between financial lending facilities and borrowers, giving relief measures and policies which were fundamentally tailored to alleviate the problems people and business sectors experienced during the COVID-19 outbreak. To provide fitted relief measures, the BOT proactively reviewed difficulties and limitations as commented by business sectors. In addition, The BOT consistently listened to policy feedbacks from businesses and made feasible adjustments for pragmatic concerns, according to the severity level of COVID-19 pandemic and the availability of government's policies.

Structural Economic Policy Department (SPD.), along with the 3 regional offices², representing BOT's representative in the business liaison role by regularly visiting and sharing economic outlooks with business sectors and the government. SPD and the regional offices played a crucial role as policy catalyst, gearing assistances towards businesses and people during the crisis. Furthermore, the BOT and the regional offices arranged discussions with business owners and people who received repercussions from the COVID-19 epidemic. The sectors visited including hotels, restaurants, massage and spa businesses, travel agencies, transportation agencies, retailers and wholesalers, construction companies, private schools, entertainment businesses, advertisement agencies; as well as the self-employed individuals such as farmers, hawkers, taxis and motorcycle taxis, and organizations notably Thai Chamber of Commerce, and the Federation of Thai Industries. In the past year, the BOT directly contacted with 1,200 parties³, and connected with 2,500 businesses⁴ through multiple surveys in a monthly basis.

Aside from listening to feedbacks for policy formulation, the BOT played a vital role as a facilitator and matchmaker in order to help businesses and the public to gain access to relief programs, loans, including job opportunities. Suggestions from various industries and individuals helped establish unprecedented collaborative programs and policies between the BOT, financial institutions, business owners, and private sectors as follows:

- For the purpose of alleviating financial crisis among Thai people, the BOT became a debt mediator for borrowers. Additionally, the BOT supported both financial institutions under the BOT's regulations and those outside the regulations to provide appropriate relief schemes according to different level of economic impacts.
- The BOT launched soft loan programs for SMEs in tourism sector, small restaurants, hawkers, and peddlers, including food delivery drivers through joint efforts with Specialized Financial Institutions (SFIs)
- The BOT took part in being an intermediary between LINE MAN platform and Government Saving Bank (GSB), with the aim to increase access to soft loans for small-scale restaurants. Moreover, the BOT established an information-based lending program, from noticing that information on the LINE MAN's platform can be used to reflect borrowers' debt repayment ability.
- The BOT became an intermediary between Kerry Express, Thai Hire-Purchase Association, Thai Motorcycle Enterprise Association, and Thailand Leasing

² BOT has 3 regional offices as follows: 1) Northern Regional Office (located in Chiangmai province) 2) Northeastern Regional Office (located in Khon Kaen province) and 3) Southern Regional Office (located in Songkhla province)

³ From Business Liaison Program totaling 800 companies and 400 companies that filed complaints via 1213 call center, in which the BOT followed up specifically through phone calls.

⁴ From BLP's survey - an economic and business information exchange program between the BOT and business sectors - the survey was distributed to business operators through major associations. Currently BLP Survey has monthly respondents up to 2,500 companies.

Association, with a focus on matching taxi drivers who struggled to find customers from the lack of tourists with Kerry's rising demand for goods transportation.

- The BOT collaborated between the large retailers, through its connection with Thai Retailer Association in order to initiate a program named Big Brother, a reinforcement program in which larger firms acting as loan guarantees for small and medium-sized suppliers in their supply chain. The purpose of Big Brother collaboration was to help channeling soft loans for SMEs through financial institutions that participated in the program.



[Debt relief measures and related information of financial institutions for COVID-19 pandemic](#)



Doctor Debt Program by the BOT at Chiang Mai province

04

The BOT continuously adjusted the regulations to facilitate the ongoing assistance, as well as to lessen restrictions on measure accessibility, e.g., the regulations on asset classification and provisioning, and the adjustment of the terms and conditions of special loans, in order to provide accessibility for debtors with higher risk. Moreover, the BOT also coordinated with other related agencies in supporting and incentivizing financial institutions, specialized financial institutions, and non-banks to offer debt restructuring to debtors, by lowering costs and expenditures that related to the transactions, e.g., providing tax and fee incentives for debt restructuring and debt repayment in form of asset transfer, etc.



The BOT, Office of Provincial Commercial Affairs Chiang Mai, together with 7 collaborated banks held the "Jubkoo Goo-ngo" campaign (pairing for loan campaign) at Chiang Mai province to give an advice to the restaurant entrepreneurs on how to access the loan.

BOT's actions to increase the accessibility of relief programs

01

Proactive communication approach to promote agile, immediate, and systematic relief measures.

The key mechanism of the BOT's policies transmission towards business operators and the public is through proactive communication, providing swift and direct assistance. In order to achieve such goals, the BOT worked closely together with two main target audiences, financial institutions, and borrowers.

For financial institutions, the BOT focused on delivering in-depth policy communications,

especially for provincial branches, which were the key channels to introduce policies and rehabilitation programs to borrowers. For this reason, the BOT's regional offices regularly held meetings with the Thai Bankers' Association, the Thai bankers club, and financial institutions within the area to announce the BOT's remodeled relief measures. In addition, the BOT also provided online-seminars and financial advice regarding policy context for business owners and the people on a regular basis.



The BOT arranged the clarification meeting on the debt relief measures for taxi drivers in Khon Kaen province.

02

The BOT being a facilitator for Lineman-Wongnai X GSB's lending program

Financial relief measure for restaurants on LINE MAN application was a program among BOT's multiple relief packages which was based on business operators and individuals' feedbacks. During the peak of the pandemic outbreak, restaurants and small retailers had to close down due to the strict disease control measures. These small business owners faced hardship to adapt with the circumstance, given that most people lacked the technological knowledge to respond to the escalating demand for online delivery. Moreover, the problem of impaired financial access persisted, mostly due to micro enterprises' inadequate proofs of income.

However, the BOT saw that food orders and transactions on LINE MAN application were reliable digital footprints, which indicated borrowers' debt repayment ability and could

be used as an alternative to income statement. In consequence, the BOT coordinated between GSB and LINE MAN Wongnai platform, to jointly found a project that provided affordable loans through information-based lending by utilizing the aforementioned online transactions. At the end of 2021, this program supported more than 1,400 restaurants and food delivery drivers, totaling up to 80 million baht.

Apart from GSB's financial relief program for people who received damages from COVID-19, this special lending program also provided consultations and technological knowledge for people who were interested in becoming merchants on LINE MAN's delivery platform.





THE BOT'S FINANCIAL MEASURES
WERE ACCOMMODATIVE IN
ADDRESSING VARIOUS PROBLEMS,
FLEXIBLE, AND ADAPTIVE TO
DIFFERENT SITUATIONS

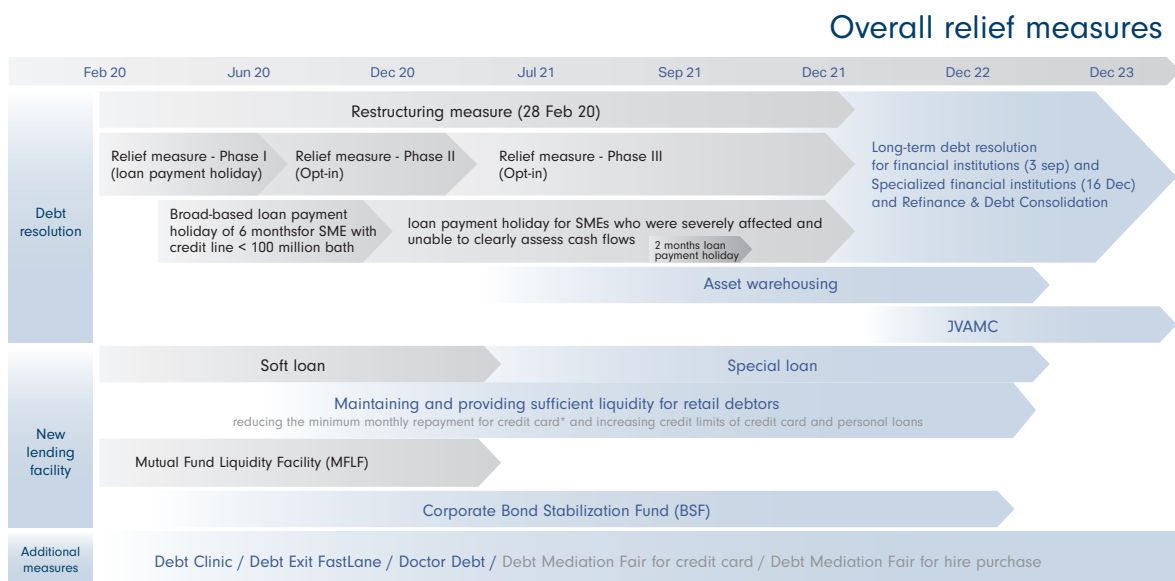
The BOT implemented a series of measures to assist all types of debtors, including retails, SMEs, and large corporations by encouraging debt restructuring measures and supporting new lending facilities, which had been adjusted to cope with specific problems arising during the development phases of the pandemic. Moreover, to ensure the effectiveness and the accommodativeness of the measures, the BOT, therefore, continuously monitored the progress of the relief measures, the implementation of new projects as well as the provision of extra channels enabling debtors to access the measures more efficiently.

Debt Resolution Measures

At the beginning of the pandemic outbreak in 2020, the BOT anticipated that despite the intensified situation of the pandemic and its effects, the situation was likely to be resolved in a short period of time. In response, the BOT urgently implemented broad-based measures to mitigate the impacts from both the pandemic and the government's lockdown measures. The first set of measures consisted of the Phase I relief measures to assist retail debtors (3 – 6 months of assistance) and the 6-month loan payment holiday measure for SME debtors which ended in October 2020.

With the prolonged impacts of the situation, as well as the uneven recovery (K-shape), the BOT, therefore, adjusted the measures to be more targeted and stated that affected debtors shall make a contact with financial institutions, specialized financial institutions, and non-banks, to request for the assistance (opt-in) instead of having financial institutions, specialized financial institutions, and non-banks provided broad-based assistance to all the debtors.

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*reducing the minimum monthly repayment for credit card until December 31, 2023



Debt resolution during the initial phase of the pandemic

The objective of the initial phase of the debt resolution was to alleviate distress and help the people and businesses continue their operations amid the intensified pandemic.

01

Phase II and III: Relief measures to assist retail debtors affected by COVID-19

urging financial institutions, specialized financial institutions, and non-banks to aid debtors who applied for the assistance, e.g., providing loan payment holiday, converting short-term loans to long-term loans, reducing installment, and settling the debt by returning the vehicle. Debtors would have to present the documents that they were affected upon applying for the assistance. Moreover, the BOT also reduced the interest rate ceiling of retail loans, as well as lowered the minimum monthly repayment for credit cards, and increased the credit limit of credit cards, revolving loans, and installment loans, to ensure that debtors would have adequate cash flows for their living.

02

Relief measure for SME debtors urging financial institutions and specialized financial institutions to expand the scope of eligible SME debtors under the loan payment holiday to include SME debtors as specified by the financial institutions or the specialized financial institutions. This measure was only applicable to debtors who were still severely affected and unable to clearly assess cash flows until December, 31 2021.

03

2-month loan payment holiday measure

providing immediate and urgent assistance to retail and SME debtors that got affected by the government's lockdown measures during July 2021.

ธนาคารแห่งประเทศไทย
BANK OF THAILAND

แนวทางช่วยเหลือลูกหนี้จากวิกฤตโควิด 19 โดยแบงก์ชาติ

- 1 มีมาตรการรองรับลูกหนี้ที่มีปัญหาต่างกัน**
 - ผลกระทบชั่วคราว**
พักชำระหนี้ / ปรับโครงสร้างหนี้ระยะสั้น
 - ผลกระทบระยะยาว**
แก้หนี้ระยะยาว (3 ก.ย.)
ปรับโครงสร้างหนี้ให้เหมาะสมกับรายได้ ไม่เสียเครดิตบูโร (ปรับก่อนเป็น NPL)
 - ผลกระทบหนัก**
คลิสิกแก้หนี้/ไกล่เกลี่ยหนี้
มีแนวทางแก้หนี้ที่เป็นมาตรฐาน
- 2 ออกมาตรการเสริมเฉพาะจุดที่ธนาคารพาณิชย์ไม่สามารถทำหน้าได้เต็มที่**
 - สินเชื่อฟื้นฟู**
เพิ่มค่าประกันผ่าน บสย. ช่วยลดความเสี่ยง
 - โครงการพักทรัพย์ พักหนี้**
เพิ่มทางเลือกใหม่ โอนทรัพย์ชำระหนี้ ให้สิทธิซื้อคืน
 - มาตรการเติมเงินผ่าน SFIs**
ดอกเบี้ยต่ำ โดยภาครัฐช่วยรับความเสี่ยง
- 3 ปรับ / เพิ่มมาตรการตามสถานการณ์ที่เปลี่ยนไป**
 - แก้หนี้เดิม**
• ออกมาตรการพักชำระหนี้
ช่วยเหลือลูกหนี้จากโควิด-ล็อกแรกและล็อก 3
• ปรับเป็นมาตรการแก้หนี้ระยะยาว (3 ก.ย.)
ปรับโครงสร้างหนี้ให้ตรงจุด เหมาะกับปัญหาแต่ละราย
 - เติมเงินใหม่**
สินเชื่อฟื้นฟู ปรับข้อจำกัดจาก soft loan เดิม
ให้กลุ่มเสี่ยงเข้าถึงสินเชื่อมากขึ้น
- 4 ผลักดันมาตรการเชิงรุกมากขึ้น เพื่อช่วยลูกหนี้ในวงกว้างขึ้น**
 - รับฟังปัญหาจากภาคธุรกิจ**
เพื่อปรับ / ออกแบบมาตรการที่ตรงจุดมากขึ้น
 - ประสานความช่วยเหลือระหว่างเจ้าหน้าที่และลูกหนี้**
เพื่อสนับสนุนการเข้าถึงสินเชื่อมากขึ้น
เช่น Lineman x Wongnai กับ ธนาคารออมสิน

Bank of Thailand



Long-term debt resolution

Amid the COVID-19 outbreak, which was severe, protracted, and longer than initially anticipated and in conjunction with the emergence of a viral mutation that led to a widespread, resulting in debt resolution with short-term assistance may not be the best solution for both debtors and financial institutions. The BOT, therefore, encouraged financial institutions to aid debtors by providing long-term debt restructuring, as well as offering alternative measures for business debtors that possessed collaterals and required more time to recover than other group of debtors.



Long-term debt restructuring measure encouraging financial institutions, specialized financial institutions, and non-banks to provide a long-term debt restructuring with flexibility for all types of debtors allowing debtors to see their debt burden and be able to make a clearer financial plan. Under this measure, financial institutions, specialized financial institutions, and non-banks would reduce installment payments reflecting debtors' plunging income, and then gradually increase the installment payments in phasing, consistent with debtors' financial projection and the promising economic outlook (step-up), so that debtors would be able to repay their debt base on their ability to pay and not turning into non-performing loans. Moreover, should there be any situation or uncertainties impacting debtors' income projection, financial institutions, specialized financial institutions, and non-banks would still be able to restructure the debt by adjusting the repayment terms and conditions to cope with the impact from the change of the situation.

In addition, the BOT also promoted a timely-fashion debt restructuring to provide aid for a large number of affected debtors in a timely manner by encouraging the use of digital technology to support the debt restructuring process, especially for those retail debtors and SME debtors. Nevertheless, for specialized financial institutions which had specific mandates, the BOT eased the regulations in case the specialized financial institutions need to urgently aid debtors by temporarily providing short-term loan payment holiday following the cabinet resolution.

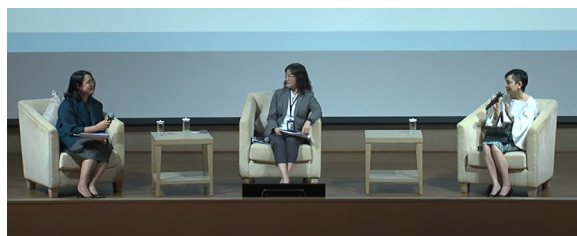


Mr. Ronadol Numnonda, Deputy Governor, Financial Institutions Stability of the BOT, and Mr. Payong Srivanich, Chairman of the Thai Bankers' Association had a joint press conference about the additional policies to enhance the support given to debtors on September 3, 2021

Refinance and debt consolidation measures

aimed to reduce the burden of refinancing of retail loans. The measure allowed retail debtors to utilize collateral from an existing residential mortgage loan to receive lower interest rates for retail loans, hence, to alleviate the debt repayment schedules. The BOT **prohibited financial institutions and non-banks from collectin prepayment fees** from personal loans under supervision and nano finances under supervision until the end of 2023.

In addition, the BOT **refined the debt consolidation measure** by expanding the scope of the measures to enable debt consolidation across different financial institutions. The measures set the interest rate for retail loans at no more than the residential mortgage rate used after the teaser rate expired, plus no higher than 2 percent per year. Furthermore, other related regulations for financial institutions and specialized financial institutions were eased to ensure the result.



Media briefing on long-term debt resolution by using refinance and debt consolidation measures

Asset Warehousing Scheme

Debtors, who had assets as collateral, were adversely affected by COVID-19 outbreak in the protracted period and required prolonged business recovery period particularly businesses in tourism sector, were allowed to utilize this scheme as an alternative tool to restructure their debts. The main features of asset warehousing scheme were to help businesses to reduce debt burden temporarily while allowing them to maintain businesses as well as further support employment. Also, debtors' collaterals would not be foreclosed to sell at the distressed price during the COVID-19 crisis.

This scheme allowed businesses to transfer collaterals on the purpose of debt repayment to commercial banks and specialized financial institutions. The embedded condition of this agreement was businesses had the first rights to repurchase the transferred collaterals back within a specific time frame (3-5 years)

at the agreed price and the first right to lease the transferred collaterals back for business operations. Additionally, the government supported debtors under this scheme by exempting taxes and fees related to asset transferring and the BOT provided low-cost fundings to the financial institutions and specialized financial institutions

Nevertheless, as debtors under asset warehousing scheme must transfer the ownership of collaterals to commercial banks or specialized financial institutions which were their creditors, this may cause concern for some debtors. Simultaneously, commercial banks or specialized financial institutions which were their creditors had a duty to maintain transferred assets and bear the risks associated with such assets. Therefore, the participation in this scheme was on the voluntary basis by both the creditor and the debtor.

Supplementary channels for the public to access debt solution

The BOT made the following supplementary channels available for individuals and businesses to access debt solution faster and easier.

- **Debt Clinic** is an infrastructure intended for resolving non-performing credit cards and unsecured personal loans, in which Sukhumvit Asset Management Co., Ltd. (SAM) acts as the single agent between the borrower and all of the participating lenders. Through SAM's one-stop service, the debtors need not contact their lenders individually, and obtain favorable debt-restructuring terms including the interest rate as low as 5 percent per annum and the repayment period up to 10 years. In addition, in 2020 and 2021, Debt Clinic provided further assistance to its Covid-hit clients through the "Dual-formula Medicine Measure" and a relaxation of some application criteria.
- **The Card Debt Mediation Fair was organized** to allow credit card and personal-loan debtors in all stages to submit online requests for restructuring their existing debts on the BOT's platform. The requests were then sent to the specified participating banks, specialized financial institutions and non-bank lenders, who had pre-agreed with the BOT on favorable debt-restructuring terms. The event was later extended to cover hire-purchase borrowers, from pre-seizure to auction stages. The exercise allowed the borrowers to negotiate repayment in accordance with their ability, and in certain conditions, to have the seized cars returned on occupation or necessity basis.
- **Debt Exit Fastlane** is a supplementary platform which helps individual and business borrowers connect with their lenders, financial institutions, specialized financial institutions, asset management companies and some hire-purchase companies, so that the debt repayment schedule may be reviewed in accordance with the debtors' ability. Previously rejected requests may also be re-considered.

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Press conference on
Credit Card and Personal
Loan's Debt Mediation Fair

**“Think Holistically,
Response Practically”**
**principle: the BOT’s
role in solving
household debt**

Since the beginning of 2020, the spread of the COVID-19 pandemic has affected a wide range of people. The BOT realized the problems and issued a set of measures to help the debtors in each period. Moreover, the BOT continually communicated with various stakeholders, including debtors, entrepreneurs, and government agencies. In addition, the BOT closely monitored the effectiveness of the relief measures to ensure that the debtors were addressed accurately, promptly, and appropriately.

STEP

1



**Identify problems/
limitations**

The COVID-19 situation remained highly uncertain. The decline and lack of income for a long period in the business and household sectors causing layoffs and the high levels of household debt could affect the loan quality of financial institutions and pressure the economic recovery.

STEP

2



Intended outcome

Retail debtors who lacked income and had household debt could receive assistance for debt restructuring and increasing liquidity to help people amid uncertain situations and safeguard the financial institutions’ stability.

STEP

3



**Suitable relief
measures**

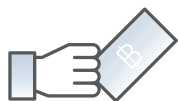
While the government continually introduced measures to help increase people’s income, the BOT also designed financial measures to reduce the debt burden of debtors accordingly.

(1) Short-term debt moratorium - Phase I - III relief measures for retail debtors and two-month loan payment holiday to aid debtors who were affected by the widespread outbreak of the COVID-19 pandemic and the government’s lockdowns. These measures were suitable for severe situations that could be resolved quickly.

(2) Long-term debt restructuring to support financial institutions, specialized financial institutions, and non-banks in **the long-term debt restructuring plan** which was tailor-made to the debtors’ ability to repay. The plan might offer a low installment repayment and gradually step up according to the expected economic recovery. The plan was intended to be **flexible with the changing situations** and able to help a large number of debtors promptly. Therefore, it was suitable for situations that tended to be prolonged and highly uncertain.

In addition to financial measures, the BOT supported debt mediation, together with the Justice Pillars, to jointly create a standardized agreement for the mediation

STEP 4



Incentivizing and alleviating the burden to expedite the relief measure

related to consumer cases, and expand the scope of debtor assistance during the COVID-19 pandemic. Moreover, the debt mediation was conducted on an online mediation platform, not only the existing Debt Clinic but also including Debt Exit Fastlane and Online Debt Mediation Fair, allowing people to join the debt mediation comprehensively.

To encourage financial institutions to assist debtors under a high degree of uncertainty, the BOT and government agencies eased the relevant laws and regulations to incentivize financial institutions to have an important role in assisting debtors, e.g., the asset classification and provisioning relief reduced the cost of provisioning, in which degree of such regulatory easing would depend on the degree of support provided to the debtors. Additionally, relaxation of the taxation law and related fees alleviated the burden on debt restructuring.

STEP 5



Hearing stakeholders' aspects to ensure that the measures meet public demand

The BOT has thoroughly considered all aspects and demands from stakeholders to effectively design relief measures. The BOT has been communicating with debtors through various social media channels, e.g. Facebook and Clubhouse, and discussing with creditors through the Thai Bankers' Association, the Association of International Banks, The Government Financial Institutions Association and related associations and clubs, such as Thailand Leasing Association, Vehicle Title Loan Trade Association, Thai Motorcycle Hire-Purchase Association, Credit Card Club, and Personal loan Club.

STEP 6



Monitoring the effectiveness of relief measures

The BOT closely monitored the effectiveness of the financial institution's relief measures to ensure that debtors were addressed and assisted effectively.

Creditors: The BOT encouraged financial institutions to develop product programs for debt restructuring and to set the target for the debt relief measures, along with closely monitoring the progress of the measures. Additionally, financial institutions were encouraged to timely and comprehensively provide proactive assistance to the debtors.

Debtors: The BOT continually communicated and promoted financial literacy to the public with the aim to provide access and increase the efficiency of the measures which would help the debtors to effectively overcome financial situations and reduce financial burden during high uncertainties, as well as to encourage financial discipline to prepare for unexpected situations in the future.

New Lending Facility

New lending facility aimed to assist SMEs and retail debtors in maintaining sufficient liquidity during COVID-19 pandemic by providing additional liquidity through special loan for SMEs, and increasing the credit limit of the credit card loans, personal loans under supervision, and digital personal loans for retail debtors.



Special loan to support SMEs that were severely affected by the COVID-19 crisis

The measure aimed to address limitations of the previous soft loan, which were designed to cope with the severe situation but would soon be recovered, to be flexible enough to withstand the uncertainty and also match the nature of the COVID-19 pandemic which had become more persistent with a high degree of risk by expanding the pool of eligible debtors to include new debtors who had never had credit line with the commercial banks and specialized financial institutions, expanding the credit limit and loan tenor, amending the interest rates, and adjusting credit guarantee scheme adequately. As a part of the loan facility, the BOT provided funding for commercial bank and specialized financial institutions at low interest rate (0.01 percent per annum) for 5 years, and the loan would be supported by a credit guarantee scheme through the Thai Credit Guarantee Corporation for 10 years. During the first 2 years, commercial banks and specialized financial institutions would charge a concessional rate of 2 percent per annum and the average interest rate over the 5 years must not over 5 percent per annum. For the first 6 months, the government would provide interest subsidy of 2 percent per annum.

As a result of continuous monitoring, the BOT revised the regulation to increase loan accessibility, especially for more risky debtors, and to reduce cost burden for SMEs. This revision would expand credit line of those SMEs with a low existing credit line or never had a credit line with commercial banks and specialized financial institutions, increasing credit guarantee rate for micro-SMEs and fragile sectors, and lowering the guarantee fees for SMEs.



Increasing credit limits of credit card, personal loans under supervision, and digital personal loans

to temporarily provide additional liquidity to retail debtors. The measures included reducing the minimum monthly repayment for credit card from 10 percent to 5 percent during 2020 to 2022 and would be gradually increase to 8 percent in 2023, and to 10 percent from 2024 onwards. In addition, the BOT also increased credit limits of credit card and personal loans under supervision from 1.5 to 2 times of monthly income or average cash flow per month for debtors whose monthly income or average cash flow per month below 30,000 baht, increased credit limit on digital personal loans to 40,000 baht and extended maturity up to no more than 12 months until the end of 2022 for the viable debtors in need of additional credit.

The Additional Measures

Besides the main measures, the BOT also implemented additional measures to alleviate the impact for affected people and businesses, and stimulate economic activities for business sectors as follows:



The temporary easing of Loan-to-value (LTV) regulations for residential mortgage loans

The BOT eased specific LTV regulations for residential mortgage loans until the end of 2022 to stimulate economic activities and support employment in the real estate and related business sectors as those were a significant sector of the Thai economy, in terms of GDP ratio and national employment. Such LTV easing would bolster the demand of home buyers who had good financial health, and also would support refinancing and debt consolidation measures by increasing the opportunity for debtors to receive additional liquidity and appropriate debt structuring under the risk appetite of financial institutions and specialized financial institutions.



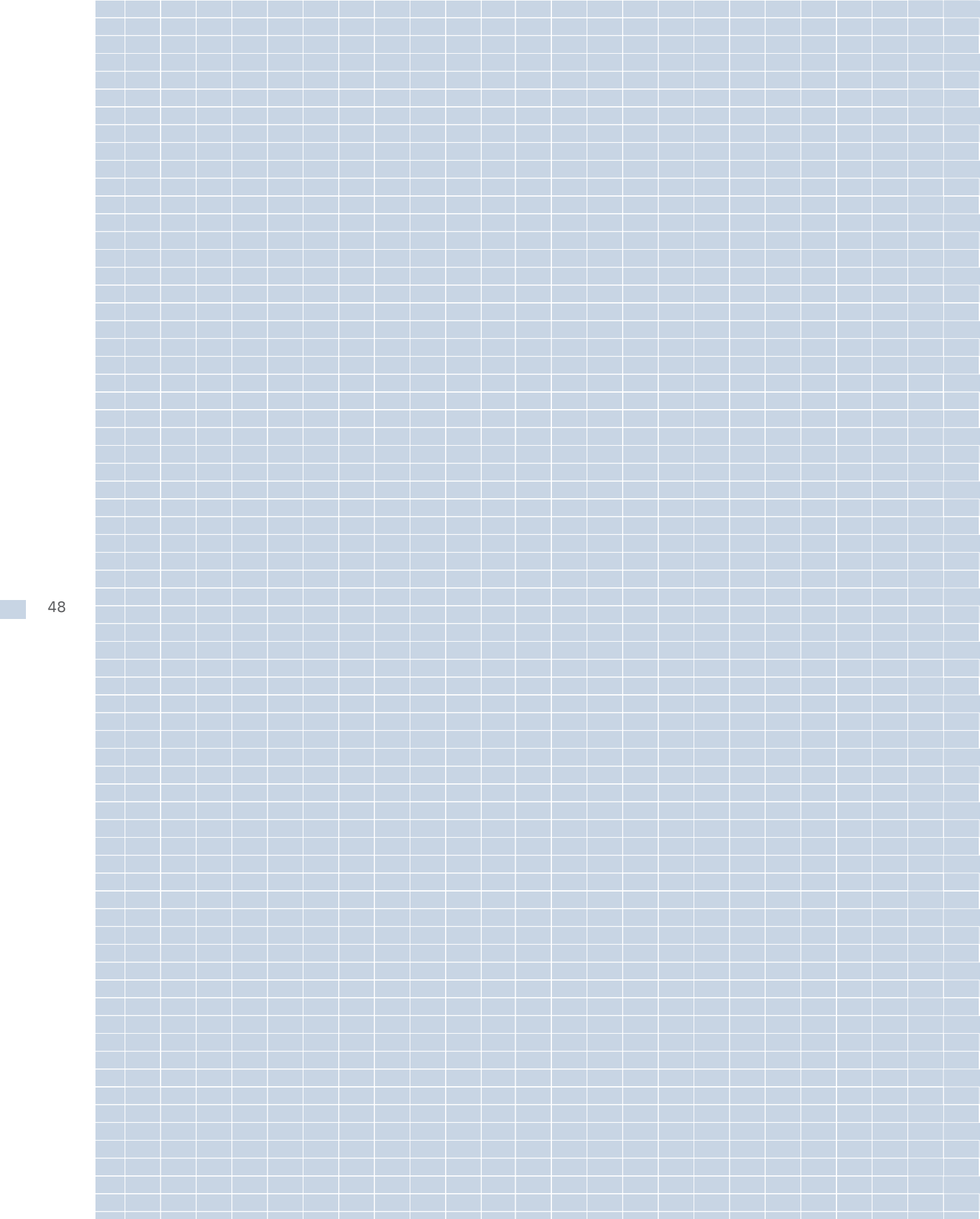
The debt consultation program

The BOT offered comprehensive debt management advice and educational resources for individuals and SMEs borrowers to encourage them successfully restructuring their debt with creditors and to recover from the difficult situation in living or running businesses during the crisis.

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The BOT together with Ministry of Finance and the Government Financial Institutions Association jointly implemented the debt consultation program called “doctor debt”, which was targeted to retail and SMEs borrowers affected by the global COVID-19 pandemic, to provide materials and advice on debt management solution, preparation for loan application, business adaptation and various financial measure from the BOT and financial institutions. Borrowers can get financial advice and debt-relief solutions via doctor debt website (www.bot.or.th/app/doctordebt) and interactive chatbot for both website and line application channel (@doctordebt), designing to facilitate those who are accustomed to chatting by social media can get the specific solution. Moreover, borrowers can also register through the doctor debt website to make an appointment free of charge with an advisor from BOT personnel, and an expert from eight financial institutions to discuss their debt management solution.





CHAPTER

KEY OPERATIONS

1 BOT's Core Responsibility

- 1.1 Creating Trust and Credibility in Carrying out the Mandate of Maintaining Economic and Financial Stability.
- 1.2 Development to Embrace Change and Create Growth Opportunities in the Future
- 1.3 Embedding Sustainable Development
- 1.4 Creating Trust and Credibility for the Public
- 1.5 Internal Excellence Strengthening

2 The Future Policy Direction



BOT'S CORE RESPONSIBILITY

Creating Trust and Credibility in Carrying out the Mandate of Maintaining Economic and Financial Stability.



Maintaining Economic and Financial Stability



Monetary Policy

The Bank of Thailand (BOT) maintained an accommodative monetary policy to support the Thai economic recovery, which remained fragile and highly uncertain. In 2021, the Thai economy faced several negative factors, especially the COVID-19 outbreak which became more severe and prolonged due to mutations of virus. Meanwhile, headline inflation was expected to increase temporarily, mainly driven by global energy prices. Given the rise in global inflation, upside risks to inflation thus increased. However, medium-term inflation expectations would remain anchored within the target range. Financial system stability remained resilient overall, but businesses' and households' balance sheets became more fragile due to recurring outbreaks.

In light of the situation, the Monetary Policy Committee (MPC) viewed that the Thai economy would need support from the continued low policy rate given that the economic recovery would remain fragile and highly uncertain. However, the MPC deemed that the most important issue for the Thai economy was the implementation of public health measures that would strike a balance between containing the outbreak and supporting the recovery of economic activities. Financial and credit measures had been expedited, which would help the affected businesses and households in a more targeted manner. This was deemed more effective than a further reduction in policy rate, which was already low and might have limited benefits given the extra accommodative financial conditions. Furthermore, lowering policy rate might cause unintended consequences on financial system stability in the long run. Therefore, the MPC voted to maintain the policy rate at 0.50 percent throughout 2021.



Maintaining the policy rate at a low level had contributed to accommodative financial conditions overall. As a result, private sector financing could continue both in the banking system and bond markets. Private sector financing costs remained low, as reflected in reference loan rates announced by commercial banks including minimum loan rate (MLR) and new loan rate (NLR). Financing volumes also expanded. Loan issuances to large corporates and SMEs continued to grow, particularly SMEs loan given support from the special loan facility. Corporate bond issuances also continued to function normally.

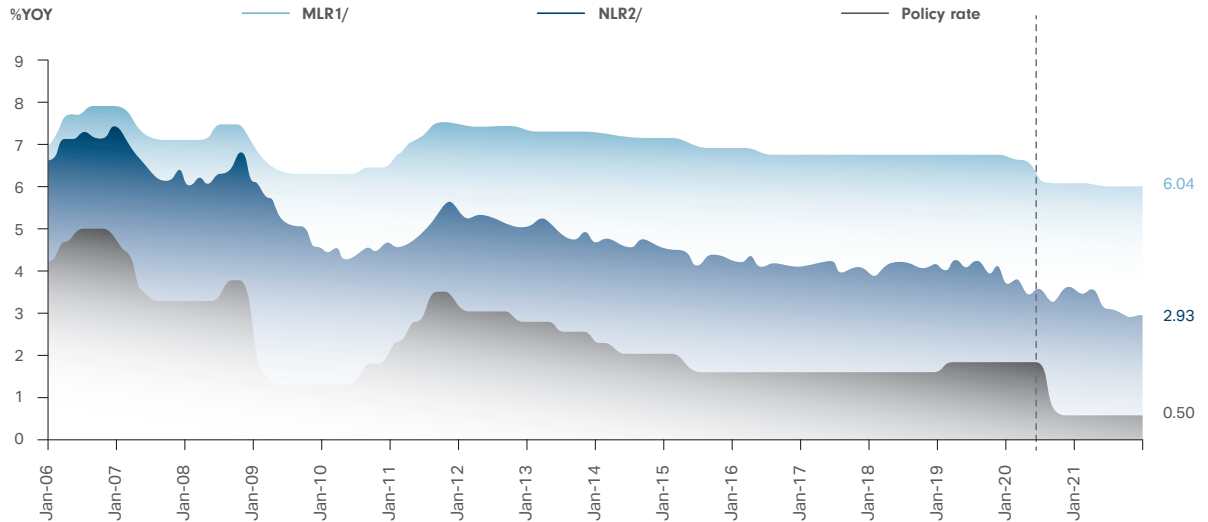
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Press conference on the MPC meeting result in 2021

In addition, the BOT expedited various financial and credit measures to distribute liquidity to the affected groups in a targeted manner so that it would not hinder the economic recovery in the period ahead. For instance, the temporary reduction in the Financial Institutions Development Fund fee (FIDF fee) to 0.23 percent was extended for another year until the end of 2022. This would allow financial institutions, as financial intermediaries, to continuously support businesses and households. Other measures included additional credits extended through the special loan facility, the asset warehousing scheme, loan moratorium and repayment reduction, and debt restructuring in a sustainable manner (the scheme launched on September 3, 2021).

Commercial bank loan rates



Remark :

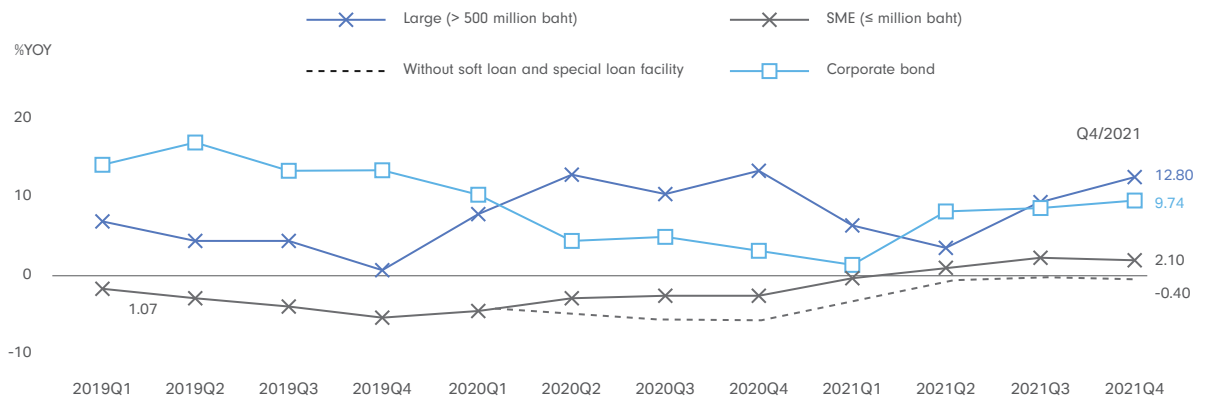
1/ Monthly average minimum loan rate (MLR) of 13 commercial banks (as of December 30, 2021)

2/ New loan rate (NLR) (as of December 30, 2021)

Source: Bank of Thailand

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Private sector financing



Source : Bank of Thailand

Monetary operations

The BOT's monetary operations are conducted to ensure that the prevailing money market rates are in line with the policy rate set by the MPC. To achieve this, the operations are designed to maintain an appropriate liquidity condition under which the banking system can meet their liquidity demand, both for the maintenance of required reserves and for settlement balances.

In 2021, excess liquidity in the Thai banking system fell mainly due to the BOT's operations and an increase in demand for currency amid the COVID-19 pandemic. As a result, total liquidity absorption declined by 212,844 million baht from the previous year. Adjustments were carried out via four open market operations instruments with details as follows:

2.1 Bank of Thailand bonds and bills issuance

The issuance of BOT bonds and bills is the principal channel used to absorb structural liquidity surplus in the system and to contribute to the development of Thailand's bond market by enhancing market liquidity and efficiency. In planning the bond issuance strategy, the BOT takes into consideration the prevailing market and liquidity conditions, as well as the government's funding plans.

In 2021, the supply of public sector debt securities continued to rise on the back of higher government funding needs to finance economic relief measures. The BOT and the Public Debt Management Office (PDMO) collaborated closely with a view to maintain an appropriate level of overall supply⁵. To this end, the outstanding amount of BOT bills and bonds was reduced by 467,740 million baht to 2,897,665 million baht at the end of the year (30,186 million baht of which was held by the BOT through bond buyback operations). This accounted for approximately 44 percent of the total outstanding liquidity absorption.

Regarding the BOT bond issuance program for 2022, maintaining an appropriate supply of public debt securities remains a key consideration. Hence, the BOT will continue to reduce supply of selected tenors to enhance liquidity for government bonds in comparable sectors. Meanwhile, the supply of floating-rate bonds (FRB) linked to the Thai Overnight Repurchase Rate (THOR) index will be raised to help promote the use of THOR as a new reference rate in derivatives and cash products and expand the choice of fixed-income instruments in the market.

⁵For more details on the BOT Bond Issuance Program for 2022, please refer to <https://www.bot.or.th/Thai/PressandSpeeches/Press/2022/Pages/n0165.aspx>

2.2 Bilateral Repurchase Transactions with Primary Dealers

The BOT uses Bilateral Repurchase (BRP) transactions with appointed BRP Primary Dealers (BRP PDs) to manage short-term liquidity fluctuations, particularly those resulting from government cash flows and seasonal factors, such as demand for currency. To enhance the signaling of the MPC's stance, the 1-day BRP transactions are conducted as a fixed-rate tender at the policy rate. Meanwhile, Term BRP transactions (7-day, 14-day, and 1-month tenors) are executed as variable rate tenders, in the form of spreads over the policy rate (Indexed BRP). Thus, the interest rates earned on these Term BRP transactions will vary with changes in the policy rate over the duration of the transactions.

BRP transactions are carried out with BRP PDs in the morning of every business day⁶. These BRP PDs serve as liquidity adjustment intermediaries between the BOT and other financial institutions, through the use of Private Repo transactions or Uncollateralized Interbank markets. This BRP PDs scheme helps support financial market development by fostering an adoption among interbank participants of market practices that are in line with international standards.

In 2021, liquidity absorption through BRP transactions declined by 5,324 million baht, following the decrease in excess liquidity. At year-end, BRP transactions totaled 2,487,763 million baht, which accounted for approximately 38 percent of the total outstanding absorption.

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2.3 Foreign Exchange Swap Transactions

The Foreign exchange swap (FX swap) transactions are used as a supplementary absorption tool, as they can be adjusted fairly flexibly according to the BOT's liquidity absorption needs and market conditions. In 2021, outstanding FX swap transactions rose by 190,201 million baht to 1,124,313 million baht or 34,040 million USD at year-end. They constituted approximately 17 percent of the total outstanding absorption.

2.4 Outright Purchases and Sales of Public Sector Debt Securities

The BOT can permanently inject liquidity into or drain liquidity from the banking system by purchasing or selling outright public sector debt securities with appointed e-Outright counterparties. In 2021, the BOT purchased a total of 106,588 million baht in public sector securities. Meanwhile, 145,920 million baht of public sector securities held in the BOT's portfolio matured during the year. In sum, outstanding securities in the BOT portfolio fell by 39,332 million baht in 2021.

⁶Except on days of MPC meetings where BRP transactions are carried out in the afternoon instead after the release of MPC interest rate decision.

In addition to open market operations outlined above, the BOT also operates end-of-day liquidity adjustment windows in the form of overnight standing facilities, which include the Lending and Deposit Facilities. Through these windows, financial institutions with liquidity deficit or surplus at end-of-day can borrow or deposit funds overnight at policy rate plus or minus 50 basis points, respectively. The interest rates on the Deposit and Lending Facilities together form an interest rate corridor that helps limit short-term volatility in the money market interest rates. In 2021, most transactions in the end-of-day liquidity adjustment windows were deposits, which averaged around 316 million baht per day.

Lastly, the Corporate Bond Stabilization Fund (BSF) remained in place in 2021. Established on April 19, 2020, the BSF was set up to provide short term liquidity (bridge financing) to fundamentally sound firms that faced temporary liquidity shocks amid the COVID-19 pandemic. It helped improve confidence in the Thai corporate bond market and support normal functioning of corporate fund-raising activities through bond issuance.

Even though no BSF assistance was provided to any business to date, the establishment of the fund achieved its objective of restoring market confidence, thereby allowing the corporate bond market to operate under normal conditions. Nevertheless, due to remaining uncertainties regarding the COVID-19 pandemic situation and Thailand's economic recovery, the BSF steering committee approved an extension of the BSF liquidity support for another year until the end of 2022, with the same lending requirements and prudent risk management standards. The extension of BSF assistance will play an important role in maintaining investors' confidence in the corporate bond market and maintain stability of the overall financial system.



Financial markets development

The global reference rate reform will result in the permanent discontinuation of LIBOR (London Interbank Offered Rate) from July 2023, and thus THBFIX (Thai Baht Interest Rate Fixing) will consequently be discontinued simultaneously. The BOT and market participants worked together to develop a new reference rate, THOR (Thai Overnight Repurchase Rate), that is calculated from interbank overnight repurchase transactions, to replace THBFIX. The BOT has published THOR since 1 April 2020.

The BOT has continually been promoting wider usage and adoption of THOR, including by issuing the BOT's THOR floating rate notes (6-month and 1-year tenors). THOR has also been increasingly adopted in the market in various types of financial products, both cash and derivatives, such as loans, debentures, Overnight Indexed Swap (OIS) and Cross Currency Swap (CCS). It is worth highlighting that some innovative features on THOR products have begun to emerge such as the ESG-linked THOR OIS transaction where cashflows depend on ESG performance.

In 2021, the depth and liquidity of THOR OIS market immensely improved, both in terms of market volume and the variety of market participants. The trading volume in THOR OIS market increased by eight folds from last year to 270,000 million baht. The BOT anticipated a steady improvement in the liquidity of THOR OIS and CCS markets which would allow market players to efficiently manage their interest rate risk.

As for the management of THBFIX legacy contracts, the BOT has been encouraging market participants to actively transition from THBFIX to THOR well before the THBFIX permanent cessation, in order to avoid the impacts of declining liquidity in the THBFIX derivative market. Active transition during periods where markets still have enough liquidity should provide robust pricing reference for the transition. In this regard, the BOT provided publications and seminars for market participants, to develop understanding of the new reference rate THOR and awareness of the active transition, which would support a smooth transition away from THBFIX.

Foreign exchange control

In 2021, the BOT continued to relax foreign exchange regulations under the comprehensive Foreign Exchange Ecosystem Development Plan. This was with an aim to allow more flexibility for residents and businesses in conducting foreign exchange transactions and enhance their resilience to exchange rate volatility. The relaxations expected to be effective in early 2022 are as follows:

4.1 Relaxing rules on foreign exchange transactions to enhance ease of doing business

Streamlining foreign exchange regulations would provide the private sector with more ease and convenience in conducting foreign exchange transactions as well as more efficiency in managing their risk. This also helped reduce transaction costs and promote transactions through electronic channels. The relaxation included allowing freer outward transfer, reducing supporting documents, and relaxing regulations on foreign exchange risk management.

มือใหม่ เริ่มบริหารความเสี่ยงจากอัตราแลกเปลี่ยน



Forward

การล็อกเรออัตราแลกเปลี่ยนล่วงหน้ากับธนาคาร



Option

การประกันค่าเงิน



Future

การทำสัญญาซื้อขายล่วงหน้าผ่านตลาดออฟเพนส์แห่งประเทศไทย (TFEX)



Foreign Currency Deposit (FCD)

การเปิดบัญชีฝากเงินตราต่างประเทศ



Natural Hedge

การจับคู่รายรับและรายจ่ายที่เป็นเงินตราต่างประเทศ



Local Currency

การใช้เงินสกุลท้องถิ่นในการค้าขายระหว่างประเทศ

4.2 Relaxing rules on conducting foreign exchange businesses for non-bank operators

The relaxation on foreign exchange businesses for non-bank operators would allow greater flexibility in conducting the businesses and facilitate adoption of new technology to improve foreign exchange services. This will provide more options for customers and promote services offered through electronic channels. The relaxation included providing more flexibility in foreign exchange license application where an operator could apply for only one license for all of its service locations and increasing the amount limits for transactions with the customers. Moreover, operators providing services using new technology would be allowed to register with the BOT to test the new services in sandboxes and money changers to provide their services through electronic channels.

In addition, the BOT introduced the Non-Resident Qualified Companies (NRQC) scheme where non-residents having specific qualifications were allowed to engage in Thai baht transactions with domestic financial institutions without having to provide proof of underlying. Anticipatory and balance sheet hedging was also allowed for management of currency risks related to their Thai baht exposure. This NRQC scheme has been effective since early 2021 and would help add market participants, especially non-residents, and liquidity in the domestic foreign exchange market as well as enhance the BOT's efficiency in market surveillance.



ธนาคารแห่งประเทศไทย
BANK OF THAILAND

FX Ecosystem

สร้างระบบนิเวศใหม่ของอัตราแลกเปลี่ยน แก้ไข 4 ปัญหาเชิงโครงสร้างของค่าเงินบาท

ปัญหาเชิงโครงสร้าง ตลาด FX ไทย

1. ไทยมีการลงทุนต่ำ

ทั้งการนำเข้าสินค้าทุน และการลงทุนสินทรัพย์
ต่างประเทศ ส่งผลให้เงินทุนเคลื่อนย้ายขาดสมดุล

5 ปีที่ผ่านมา ไทยเกินดุลบัญชีเดินสะพัดสูงถึง
8% ของ GDP ขณะที่เงินทุนไหลออกไปลงทุน
เพียง 4% ของ GDP

2. ผู้ประกอบการไทยรองรับ ความผันผวนของค่าเงินได้น้อย

จากทั้งความไม่คุ้นเคยกับธุรกรรม
และการเข้าถึงบริการที่ยังทำได้จำกัด

ปัจจุบันผู้ประกอบการป้องกันความเสี่ยง
จากค่าเงินเพียงประมาณ 19% ของมูลค่าส่งออก
และ 24% ของมูลค่านำเข้า

3. ต้นทุนการทำธุรกรรม ด้านอัตราแลกเปลี่ยนสูง

ค่าธรรมเนียมการแลกเงินและโอนเงินของไทย
อยู่ที่ 6.6% ของมูลค่าธุรกรรม ขณะที่ประเทศ
ในภูมิภาคอยู่ที่ 2-4% ของมูลค่าธุรกรรม

4. ธุรกรรมเงินบาทในตลาด ต่างประเทศมีผลต่อค่าเงินสูง

ตลาด offshore ที่มีขนาดใหญ่
ทำให้ความผันผวนของตลาดการเงินโลก
ส่งผลต่อค่าเงินบาทได้มากขึ้น

85% ของการเปลี่ยนแปลงค่าเงินบาทรายวัน
จะเคลื่อนไหวตามทิศทางสกุลเงินต่างประเทศ

แนวทางการแก้ไข ผ่านการปรับ FX Ecosystem

1

FX Investment Ecosystem



คนไทย
ลงทุนได้ง่าย

สนับสนุนให้เกิดสมดุลของเงินทุนเคลื่อนย้ายผ่านการลงทุนโดยตรง
และลงทุนในหลักทรัพย์ต่างประเทศมากขึ้น

- ซื้อ FX ได้เสรี โดยผ่านบัญชีเงินฝากเงินตราต่างประเทศ (FCD)
- ลงทุนหลักทรัพย์ต่างประเทศได้ง่าย เหมือนในไทย
- ส่งเสริมการลงทุนต่างประเทศของภาคเอกชน ทั้งการลงทุนโดยตรง
ของผู้ประกอบการ และการลงทุนหลักทรัพย์ของผู้ลงทุนสถาบัน

2

FX Regulatory Framework



ผู้ประกอบการ
บริหาร FX คล่องตัว

ปรับเกณฑ์เงินทุนเคลื่อนย้ายให้สมดุลมากขึ้น
และเอื้อต่อการทำธุรกรรมง่ายขึ้น

- โอนเงินออกได้เสรีมากขึ้น
- สามารถบริหารความเสี่ยง FX ได้เสรี
- ลดภาระเอกสารที่ต้องแสดงในการทำธุรกรรม

3

Service Provider Landscape



ผู้ให้บริการ
แข่งขันเพิ่มขึ้น

สนับสนุนการแข่งขันของผู้ให้บริการ FX ที่จะช่วยลดต้นทุน
เพิ่มความหลากหลายผลิตภัณฑ์ และส่งเสริมการเข้าถึงของรายย่อย

- ขยายขอบเขตการทำธุรกรรมและสนับสนุนให้มีผู้เล่นรายใหม่
โดยเฉพาะกลุ่ม non-bank
- ปรับเกณฑ์ให้รองรับบริการรูปแบบใหม่ เช่น ธุรกรรมออนไลน์
และ digital platform

4

Surveillance & Management



ภาครัฐ
รู้เท่าทันความเสี่ยง

ยกระดับการติดตามข้อมูล เพื่อเฝ้าต่อการดำเนินมาตรการ
รักษาเสถียรภาพค่าเงินที่ตรงจุด

- สนับสนุนให้ NR มาทำธุรกรรมในประเทศ (onshore) เช่น
โครงการ Non-Resident Qualified Company (NRQC)
- พัฒนาระบบติดตามพฤติกรรมของนักลงทุนที่อาจส่งผลกระทบต่อเสถียรภาพเงินบาท เช่น การลงทะเบียนเพื่อซื้อขายตราสารหนี้
(Bond Investor Registration)

The new Foreign Exchange (FX) ecosystem to address the structural problem of the Thai FX market and to foster potential of Thai businesses and investors

To address the structural problem of Thailand's FX market in a sustainable manner and to foster potential of Thai businesses and investors in the global market.

In 2021, the Bank of Thailand (BOT) gave priority to addressing the Thai FX market structural problems through developing the new FX ecosystem. The key was to relax foreign exchange regulations to bring about more balanced rules in support of capital movement which still have certain constraints on outflows compared to no restrictions on inflows.

The more balanced regulations would increase efficiency of the Thai FX market by allowing exchange rate to better adjust in line with economic fundamentals. This would also enable Thai economy to withstand rising volatilities in the global market going forward.

The aim of the new FX ecosystem was not only to adjust the imbalance of regulations regarding the capital movement but also to provide greater flexibility and efficiency of Thai businesses and investors in conducting foreign exchange transactions as follows:

1

Greater opportunity for Thai investors to undertake foreign portfolio investment



Under the new FX ecosystem, Thai investors would have greater access and more flexibility in diversifying their portfolio investment. Rules and processes were relaxed and simplified, including allowing foreign currencies to be freely purchased for deposit into a Foreign Currency Deposit account (FCD), increasing foreign portfolio investment limit for retail investors to 5 million USD per year and abolishing the investment limit altogether for investment through domestic investment agents. Such relaxations would facilitate Thai investors with greater choice of investment according to their risk preferences.

In addition, the BOT encouraged domestic market players to offer FX-denominated investment products in Thailand, such as Exchange-Traded Fund (ETF) and Depositary Receipt (DR), by allowing securities companies and commercial banks to offer FX investment products without amount limit. Moreover, gold trading in USD can also be offered online through various service providers. These measures would facilitate retail investors with more alternatives to diversify their investment in both overseas and domestic markets.

2

Enhance flexibility in FX risk management for Thai corporates



Exchange rate risk is one of the most obvious risks for international trade. The appreciation of Thai baht will diminish exporters' profits while the depreciation of Thai baht will impose higher costs on importers. Besides, high fluctuation in exchange rate could lead to fluctuation in prices and also affect sales. Therefore, to facilitate and encourage FX risk management among corporates, the BOT is in the process of relaxing foreign exchange regulations to:

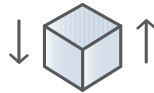
- 1) simplify related rules and processes.
- 2) allow hedging of anticipated foreign exchanges revenues or expenses longer than 1 year.
- 3) allow hedging of foreign exchange exposures arising from domestic payment for goods whose price is linked to the global market (such as for those in the supply chain of exporters/importers or having FX-linked exposures) and hedging of balance sheet exposures.
- 4) allow FX hedging on behalf of other resident affiliated companies.
- 5) allow commercial banks to use Know-Your-Business process with their customers instead

of requesting underlying documents with each FX transaction.

6) provide greater flexibility for Thai residents to conduct foreign exchange transactions (purchase, sell and transfer of FX) for both cross-border and domestic transfers.

3

Promote competition among FX service providers which would lead to lower costs and more product choices.



Competition among FX service providers in the Thai market is considered quite low with 99 percent of the volumes concentrated among commercial banks and costs of FX transaction in Thailand is relatively higher compared to other countries in the region. One of the reasons could be because non-bank FX services have been quite restricted.

The BOT is currently considering adjusting regulations to accommodate new types of FX services for non-bank, and expand scope of activities to encourage new providers as well as promote technology and innovation, such as online transactions and electronic platforms. This will increase variety of FX products, enhance access for customers, as well as reduce costs in terms of fees and time in conducting transactions.

4

Enhance liquidity in domestic FX market



At present, the size of the offshore Thai baht market is approximately as large as an onshore market with high tendency to grow in the future. The substantial size of the offshore market could lead to Thai baht being more volatile as a result of external factors as well as higher risks to stability.

In response to this issue, the BOT allowed greater flexibility for non-resident companies to conduct onshore transactions with commercial banks. The aim was to increase liquidity of onshore foreign exchange market, enhance market intelligence and surveillance system which could support targeted policy measures during the crisis.

Amid global volatilities and uncertainties, the development of FX ecosystem is deemed to be a vital step of structural reform; not only would it benefit overall Thai economy but also unlock Thai investors' potential as well as build competitive edge and enhance resiliency of Thai businesses in the global market.

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Media Briefing on FX ecosystem

Reserve management and operations

In 2021, the global economy and financial markets were driven by three main factors, namely (1) intermittent and divergent economic recovery due to the recurring spreads of COVID-19, (2) inflation risks that resulted from supply disruption and energy crisis, and (3) monetary policy uncertainty, especially that of the FED. Against the said backdrop, commodity prices were elevated while sell-offs in bond markets reflected the prospect of global monetary policy normalization.

The BOT closely monitored such developments and rebalanced our investment portfolio accordingly based on the principles of prudence, security, and liquidity of official reserves. Subject to investment constraints and guidelines as mandated by the Board, reserve management also sought to ensure reasonable earnings on the funds invested. The BOT placed great emphasis on diversification of investment risks while regularly expanding the number of eligible countries and types of securities in our investment universe. Moreover, the BOT continued to improve our analytical capabilities and tools to align with the international best practice, including introducing the sustainable investment framework that combines environmental, social, and governance (ESG) considerations in investment decisions.

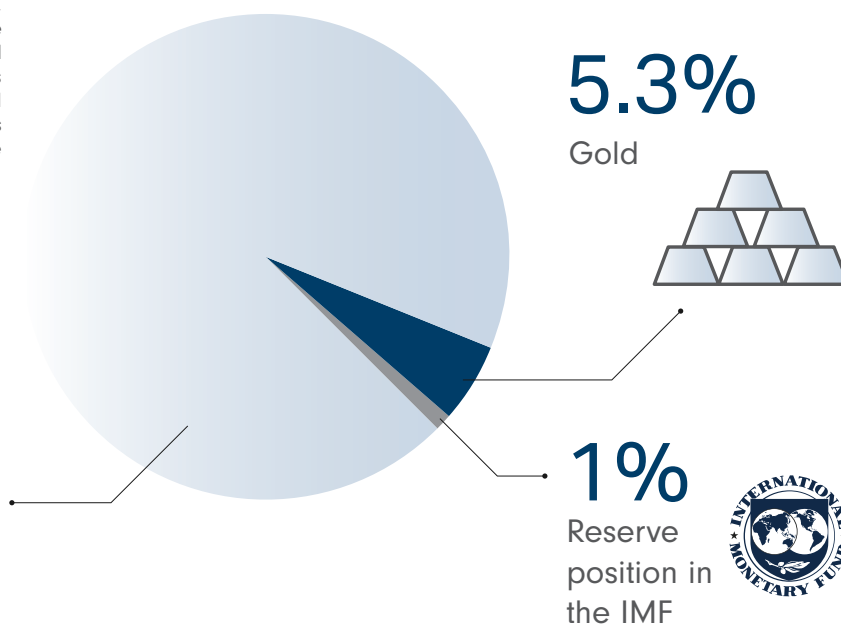
International reserves are well diversified

The BOT manages international reserves by the principles of prudence, security, liquidity, and reasonable earnings given the acceptable level of investment risks. The BOT places great emphasis on diversification and risk management of the invested funds as well as timely reporting of the reserve position.

93.8%

Foreign currency reserves*

(Developed market currencies and more than 10 emerging market currencies)



Remarks: as of May 2021

*distributed according to the proportion of Thailand's international trade and investment risk diversification.



The Supply-side and economic restructuring operations

The supply-side and economic restructuring operations of the BOT are to monitor, analyze, and gauge the current stage of the real sector of the Thai economy as well as acknowledge the rapidly changing situations closely, comprehensively, accurately, and timely, especially in people's behavior in response to COVID-19. All gathered information is to support the Monetary Policy Committee (MPC) on its policy decision and to push forward the economic restructuring policy through the coordination with related stakeholders. Such operations include several sectoral dimensions, namely the agricultural sector, manufacturing sector, service sector, and labor market, as well as an area-based dimension that is operated by the three regional offices: the Northern Regional Office, the Northeastern Regional Office, and the Southern Regional Office.⁷

In addition, the monitoring and analysis of the Thai economy can contribute to businesses and households' planning and decision-making. In 2021, the BOT enhanced the economic assessment process, both in sectoral-based and area-based dimensions, to incorporate more useful information and tools that corresponded to the current situations and challenges. This did not only support monetary policy decision, which was based on timely and appropriate information, but it was also useful for pushing forward the economic restructuring policies that helped unlock limitations of Thailand's potential growth in the long term.



Sectoral-based dimension

To monitor **the agricultural sector** timely, comprehensively and accurately, the BOT coordinated with the Office of Agricultural Economics (OAE) to improve the forecasting process of important main crop production, including rice, cassava, sugarcane, rubber and palm oil, to enhance the accuracy of farm income assessments, which represented the majority of the population in the Thai economy. New and high quality data was analysed collectively, particularly satellite imagery data, i.e., (1) the Drought Risk Index (DRI) of the Geo-informatics and Space Technology Development Agency (GISTDA), which could reflect the risk of drought in each region; (2) the level of water in the dams of the Hydro-Informatics Institute, which indicated the sufficiency of water for agriculture; and (3) crop prices of OAE, which were displayed by area and had high frequency to help reflect constant changes in price. In addition, the BOT adopted new technology-machine learning-to increase the accuracy in forecasting crop production.

⁷ The Northern Regional Office, the Northeastern Regional Office and the Southern Regional Office are in Chiang Mai, Khon Kaen and Songkhla provinces, respectively.

As for **the labor market**, COVID-19 severely affected employment situation, and the deteriorated economic activity caused many businesses to lower their labor costs by cutting employment or working hours, which directly impacted non-farm income. Thus, the BOT assessed the change in labor income before and after COVID-19 by classifying it by status and sector, and tracking the dynamics and labor mobility from telecommunication operators' data to understand such phenomena that changed rapidly and varied across different groups of labor. This would help authorities design and push forward related policies to help the targeted groups. Furthermore, the BOT utilized payment data to reinforce the tracking of high-income groups and freelancers, as well as incorporated social listening data, which was gathered from several social media platforms and contains daily frequency to increase coverage and rapidly reflect consumer and employment confidence.

In **the manufacturing sector**, the BOT was also aware of economic restructuring issues that affected business and labor income, such as climate change and technology adoption, which would have an impact on the manufacturing sector in the future, in addition to monitoring the manufacturing sector with the Manufacturing Production Index (MPI). The BOT conducted in-depth studies on megatrend issues, such as the transition of the automobile industry towards electric vehicles (EV) and the development of key strategic industries in Thailand, i.e., the future food and electronics industries, etc., to timely monitor such structural changes.

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In **the service sector**, which was severely impacted by COVID-19, the BOT developed indicators to track the activities. In addition to the current indicators, the BOT applied high-frequency data, such as payment transaction data, to reflect types of spending and durations of using applications to render services or make any transactions related to service activities, such as booking hotels and ordering food delivery. These indicators would help track service sector activities better and more comprehensively.

Apart from quantitative data, **the BOT also utilizes qualitative information from conducting fieldwork to exchange economic experiences and opinions with the business sector.** This is known as the Business Liaison Program (BLP), which has begun in 2004 to get the reflections from all related stakeholders, especially businesses and trade associations, and government organizations, by incorporating the related data and presenting them to the MPC for its policy decisions. In the meantime, **the BLP is not only a channel to communicate the BOT's policy implementation and financial measures; it is also another channel for the BOT to listen to the opinions, concerns, and recommendations from households and businesses that are directly impacted by the BOT's policies.** The understanding of an uneven recovery among different occupations and sectors could help design and improve policies and measures to be the most adequate and well-targeted. In 2021, the BOT conducted field interviews and met with more than 900 firms, covering key important sectors such as wholesale and retail, manufacturing, service, real estate, etc.

The BOT also coordinated with businesses to develop economic indicators that can deeply analyze businesses more comprehensively and cover more

area-based issues. These indicators were, firstly, the Hotel business operator Sentiment Index (HSI), which was coordinated with Thai Hotel Associations. This indicator reflected hotel and accommodation business operations by province. Secondly, the Business Sentiment Index (BSI), which aided in the tracking of business conditions and adaptation during COVID-19. Thirdly, the Retailer Sentiment Index (RSI), with the collaboration of the Thai Retailers Association and grocery stores in large cities, has been expanding samples since its inception in 2019 to include more food providers and retail businesses in other provinces, and lastly, the Relationship Manager Sentiment Index (RMSI), which reflected confidence in both urban and rural households, was derived from a survey of relationship managers at the Bank for Agriculture and Agricultural Cooperatives (BAAC) and all branches of government-saving banks. Furthermore, the BOT is currently developing a Construction Sentiment Index (CSI), which has been jointly constructed with the Thai Contractors Association, to help reflect construction business conditions, which was expected to be published in 2022.



Area-based dimension

Three regional offices of the BOT, which represent the central banks of each region, have played an important role in monitoring, analyzing, and tracking regional economic activities by considering both quantitative and qualitative evidence, as well as incorporating area-based issues. This is to support the BOT's operations and monetary policy implementation at the regional level appropriately and well-targeted.

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To assess the impact of COVID-19, the BOT required even more timely and rapid information and tools. Therefore, **the BOT enhanced the process of monitoring regional economic activities and the well-being of regional households by initiating the BOT Regional Activity Tracker (BOT RAT) with high-frequency and rapid indicators.** Examples of BOT RAT indicators were Facebook Movement Range, which exhibited people's mobility in the region, classifying them into each district; road transportation, which reflected tourism conditions within the region through the transportation of 4-wheeled vehicles; transportation, which showed regional transportation and commerce with 6-to 10-wheeled trucks, extracted from real-time cameras on the principal highways; and lastly, online shopping, which illustrated people's interests in online shopping. BOT RAT can very well indicate economic conditions and help businesses plan their future operations, as well as be useful for the public interest.

In addition, the BOT's regional offices also **play a role in facilitating and developing local areas** by being thought and research pioneers by providing insightful information as well as recommendations on economic and financial issues that link to the region and are beneficial for people in the local areas. The BOT hands on help to elevate the way of life of households and businesses and provides support for sustainable regional economic

growth. Hence, the BOT conducted **research and studies, both in terms of short articles and in-depth analyses, to provide a stock of knowledge that would be useful for regional development.** The short articles were mostly on topics that were of public interest, such as plant-based meat, which helped elevate the world and Thai food industry, and the China-Laos high-speed railway, all of which had impacts on Thailand. The articles were released timely and remained in focus for a particular time. As for in-depth studies, the focus was on ongoing issues that were impactful in the long term, such as the change in regional economic structure. These articles and studies were provided in an easy-to-read-and-access format and were regularly published on the BOT website. Questions and opinions were also welcomed to exchange views with the article's writers.



The push for policy implementation

BOT cooperated with stakeholders in order to push the policy implementation to pave the way for economic restructuring in the key following aspects:

66

3.1 Agriculture

BOT initiated a sandbox project called “Social Lab”, which cooperated with government organizations and the private sector, consisting of the Rice Department, BAAC, Q Box Point Company Limited⁸, and Slig Company Limited⁹, to incentivize farmers to change their farming behavior following academic principles and apply more technology to farm management. This would help reduce costs and increase productivity, which eventually resulted in better farm income and well-being. Technology adoption could also be developed to implement credit scoring (the criteria used to assess loans to farmers), which could incentivize farmers to produce crops following principles and best practices in addition to only relying on physical factors (i.e., drought and water level) that the BOT and BAAC recently pushed forward.

Moreover, the BOT also connected its operations and integrated information from several organizations, including the Thai People Map and Analytics Platform (TPMAP) and Farmers’ Data at Household Level Development Project, which were jointly developed by the BOT, BAAC, OAE, Department of Agricultural Extension (DOAE), and the National Electronics and Computer Technology Center (NECTEC), to help better design the related policies that were appropriate and targeted.

⁸ Q Box Point Company Limited is the Farmbook application developer, a smartphone application that is used to record each process of growing rice and can lead to productivity enhancement.

⁹ Slig Company Limited has initiated an experiment to grow rice following academic principles, which has been found successful and can be an example of an area management to connect all supply chains with markets. This also proves that farmers have a better quality of life.



3.2 Labor

The BOT proposed the labor market restructuring policy design by cooperating with alliances, including Eastern Economic Corridor (EEC), Ministry of Labor, Thailand Professional Qualification Institute (TPQI), Ministry of Higher Education, Science, Research and Innovation, and the Office of National Economic and Social Development Council (NESDC), to conduct a White Paper proposing the restructuring of the labor market by learning from international experience and providing recommendations on the mechanism of Thailand's labor market development, in terms of data infrastructure, measures to incentivize labor, and cooperation between related organizations. This would lead to more targeted policy designation and help labor more specifically with the E-Workforce Ecosystem that links all data for upskilling, finding jobs, and receiving job claims.

3.3 Regional sustainable development

The BOT realizes that economic strength at the regional level, especially being a cushion for migrant workers and constructing a firm foundation for further development, is key for the Thai economy to survive uncertainty and volatility amidst crises. Hence, the BOT, NESDC, Ministry of Finance, and Board of Trade of Thailand collaborated to revise the mechanism of the Social Investment Fund, which was used to create jobs after the Asian Financial Crisis in 1997, in order to use funds appropriately and align with the current situations. Such ongoing collaboration thus utilized the strength of the private sector in project management, the understanding of the needs of the local area, the cooperation between regional government officers and universities, and the participation of the financial sector to manage the risk of the project.

3.4 Proposal for the assessment of conducting the development plan from policy level towards actions

In collaboration with NESDC, the National Statistics Office (NSO), and the Offices of Small and Medium Enterprise Promotion (OSMEP), the BOT developed the indicators of Total Factor Productivity. Supplementing the indicators that the government currently monitored, this collaboration aimed at utilizing business and financial data in tandem with survey data and registered data to directly connect the policies with the operations, as well as to provide an indication of the progress as indicated in the 13th Economic and Social Development Plan.

The BOT's fieldwork giving an advice to agriculturists in Khon Kaen province to use Farm Today application, one of Social lab campaign



Maintaining financial institutions system stability



Issuance of regulations and policy guidelines for the supervision of financial institutions

The BOT issued and revised regulations for financial institutions taking into account the fragile and high-uncertain economic situation caused by the COVID-19 pandemic, in order to incentivize financial institutions to provide appropriate assistance to debtors, to ensure the safety and soundness as well as good risk management of financial institutions, and to promote the efficiency of the financial institution's business operations to be in line with the changing environment in the future.

The BOT continuously monitored the effectiveness of the regulations in order to adjust the policy direction to suit various circumstances by adhering to the principles of maintaining the stability of the financial system and the overall economy as follows:

1.1 Financial institutions' supervision during the COVID-19

1) Regulation on asset classification and provisioning

The BOT extended the period for the application of asset classification and provisioning relief from the end of 2021 to the end of 2023. This aimed to provide incentive for financial institutions and specialized financial institutions (SFIs) to continue assisting debtors via long-term debt restructuring as per each debtor's repayment capability, by reducing their debt burden instead of solely extending the loan term. Financial institutions would be able to promptly classify the restructured loans to performing (or stage 1) and also classify the new loans as stage 1 if it deemed that the debtors would honor the payment conditions under the new agreement or contract. Moreover, financial institutions could utilize the new effective interest rate to calculate the present value of the restructured loans. In addition, financial institutions were not required to calculate the expected credit loss for the unused credit lines.

For SFIs, the BOT eased classification criteria to allow SFIs' debtors to be classified as "pass" upon the completion of debt restructuring. Furthermore, SFI's debtors who were granted the debt moratorium by the Cabinet resolution or by SFIs along with interest reduction were allowed to maintain their current classification.

2) Regulation on credit cards, personal loans under supervision and digital personal loans

The BOT temporarily issued measures to ease debt repayment burden as well as to maintain and provide new liquidity to retail debtors on credit

cards, personal loans under supervision and digital personal loans as follows: (1) reducing the minimum monthly repayment for credit cards until the end of 2023; (2) increasing the credit limit on credit cards and personal loans under supervision for debtors whose monthly average income or average cash flow per month below 30,000 baht and increasing the credit limit on digital personal loans until the end of 2022; (3) not setting restriction on the number of credit providers for personal loans under supervision until the end of 2022; and (4) extending the maturity on digital personal loans until the end of 2022.

3) The supervision of residential mortgage loans and other related loans (Loan-to-Value: LTV)

The BOT temporarily relaxed LTV regulations from October 20, 2021 to the end of 2022 in order to stimulate the economy through the real estate sector and related business sectors, which were crucial to the country's economy. This aimed to increase the opportunity for capable home buyers by allowing the LTV ratio up to 100 percent of residential mortgage loans and other related loans, covering loans and refinances which were ordinarily regulated with the LTV ratio of less than 100 percent.

However, the BOT will closely monitor the development of the property market to ensure that there is no excessive speculation and over-indebtedness.



4) Dividend payment policy of financial institutions for 2021

The results of the bank's capital adequacy assessment under stress test scenarios showed that Thai banking systems remained resilient to withstand adverse impact. However, due to protracted and high uncertainties of the pandemic, financial institutions had essential roles in continually supporting credit and economic activities during the beginning of economic recovery. Hence, the BOT deemed it necessary to issue preventive measures to strengthen bank's capital by extending the dividend payment restriction. For the first half-year net profit of 2021, financial institutions were allowed to pay interim dividends not exceeding the past dividend payout ratio rate and no more than 50 percent of their 2021 first half-year net profit. Later, the restriction for dividend payment

for the yearly net profit of 2021 was relaxed by unwinding the dividend payout ratio limit, not exceeding the previous payout rate.

However, the BOT still emphasized that financial institutions should adopt cautious consideration on dividend payment according to their performance and risks that may arise in the future.

1.2 The supervision of stability and sound risk management of financial institutions

1) The supervision of finance companies and credit foncier companies' financial business groups

The BOT revised regulations on the supervision of financial companies and credit foncier companies' financial business group to ensure appropriate supervision of financial business groups in accordance with their scopes of businesses and risk management by setting out that the companies within a financial business group shall operate financial businesses within scope of business of finance companies and credit foncier companies. A subsidiary that operated asset management business was allowed to purchase non-performing loans only from companies within its financial business group. In addition, a subsidiary that operated supporting businesses shall provide services only to companies within the group.

These regulations were in accordance with other related policies and regulations of the BOT, which mainly focused on financial institution's stability, efficiency, and appropriately and fairly serving needs of customers.

2) Regulations on corporate governance

The BOT amended the regulation on the prohibited characteristics of directors and senior executives of the financial institutions, financial institutions' parent companies, and subsidiaries undertaking financial business. This served to create alignment with the supervisory regulations applicable to other financial service providers under the BOT's supervision. The substance of this amendment was to broaden the coverage of prohibited characteristics to cover offences concerning the undertaking of financial and payment system business, counterfeiting and alteration according to the Criminal Code, and computer-related offences. This included prohibiting persons who were removed from their position of director, manager, managing partner or person with power of management of a financial and payment system business operator from assuming positions. The regulation came into effect on May 25, 2021

In addition, starting from February 3, 2021, the preapproval process for an appointment of directors, managers, or a person holding equivalent position would be required only for those whom the BOT has never granted approval to hold such positions at the nominating financial institution or financial institution's parent company.

3) Regulation on data governance

The BOT established the policy statement on conducting data governance throughout the organization to ensure that financial institutions would have at hand the data with high levels of quality, security, privacy and benefits to business operations of financial institutions while upholding the data protection and customers' best interests. The aforementioned policy contained five principles regarding data governance, notably (1) data governance policies, (2) data governance structure based on the three lines of defense principle, (3) management throughout the data life cycle, (4) data security and privacy and (5) management of data issues. The policy was issued by September 27, 2021, to be served as guideline for financial institutions to implement onwards.

4) The entire business transfer of Thanachart Bank Public Company Limited (TBANK) to TMB Bank Public Company Limited (TMB) to increase the overall strength of the bank.

The acquisition of TBANK by TMB was completed on July 5, 2021 when the entire business was transferred and TMB was renamed as TMB Thanachart Bank (ttb). TMBThanachart hence became a larger bank, having a greater connectedness with the rest in the banking system and providing a greater volume of essential financial services as well as servicing a larger number of customers. Therefore in 2021, TMBThanachart was designated as a domestic systemically important bank (D-SIB) in addition to the existing 5 D-SIBs¹⁰. All D-SIBs were required more rigorous supervisory measures to maintain financial stability and business continuity to customers.

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Upon the completion, TBANK returned commercial banking business license to the Ministry of Finance and changed its name to TBCO Public Company Limited.

5) Enhancing operations of SFIs

The BOT issued additional regulations to enhance efficiency, security, and sustainability of SFIs in conducting the businesses relating to their mandate. The regulations included (1) reverse mortgage, (2) telebanking and digital banking channel, (3) operational risk management, (4) Business Continuity Management (BCM) and Business Continuity Plan (BCP), (5) compliance, (6) internal audit, (7) accounting and financial reporting, and (8) sustainable debt restructuring guidelines.

1.3 Enhancing operational efficiency of financial institutions

1) The approval of an auditor

The BOT amended the regulations on the approval of an auditor to reduce unnecessary processes and enhance efficiency, while still adhering to the key supervisory principles regarding the auditor qualifications and

¹⁰ The existing 5 D-SIBs consist of Bangkok Bank, Krung Thai Bank, Bank of Ayudhya, Kasikorn Bank, and Siam Commercial Bank.

maintaining the independence of an auditor. The BOT allowed a supervised PICO finance company and a supporting businesses company within a financial business group to use a different audit firm from the financial institution. An offshore subsidiary within the solo consolidation shall comply with laws and regulations of the regulators of that country and the name of auditor and audit firm of the subsidiary shall be notified to the BOT.

In addition, the BOT had no longer required the notification of the appointment of auditors who were approved to the BOT before proposing to the shareholders' meeting. Instead, the notification of a resolution arising from a shareholders' meeting on the annual appointment of auditors shall be reported to the BOT once the meeting was held for that year. These regulations shall come into effect on January 1, 2022.

2) Adding a channel for finance companies and credit foncier companies to pay or repay deposits

The BOT revised the regulations on accepting deposits of money or accepting money from the public in order to facilitate customers by adding a channel for finance companies and credit foncier companies to pay or repay deposits by transferring money into the payee's account, in accordance with the written contract between the finance company or credit foncier company and the payee. This was an addition to the earlier regulation that only permitted payment or repayment by cheques or via the BAHTNET service of the BOT. The policy came into effect on August 13, 2021.

3) Endorsement of foreign directors and employees working in financial institutions and representative offices of foreign financial institutions

To facilitate the development of the financial institutions system and to alleviate the operational burden on financial institutions as well as other related government agencies, starting from September 28, 2021, the validity period of the endorsement for those foreign directors and employees who exceeded general quota was changed from no more than two years to no more than five years.

02

Supervision and examination of financial institutions

Amid the COVID-19 pandemic, The BOT placed importance on ongoing supervision of financial institutions (FIs) to ensure that FIs remained resilient and capable of playing an importance role in facilitating assistances for the Thai people and businesses adversely affected by the outbreak. In addition, the BOT further developed supervisory systems, tools, and data to increase efficiency of ongoing supervision and to support significant risk monitoring of FIs in response to the rapid change of technology. The BOT also placed emphasis on FIs' awareness of sound risk culture as well as collaboration with other supervisory agencies to share information and determine regulatory frameworks accordingly.

2.1 The supervisory stress test of Thai commercial banks

The BOT required Thai commercial banks to conduct stress test taking into account the impact of the COVID-19 outbreak situation that would affect the financial position, stability and liquidity of the banks during the 3-year period (2021 - 2023), according to the BOT supervisory scenarios (baseline scenario and severe scenario). The stress test result suggested that overall Thai commercial banks remained resilient with sufficient capital fund and liquidity to cope with the impact of COVID-19 situation. Moreover, the BOT was in the process of encouraging SFIs to accordingly conduct stress test as an efficient risk management tool to strengthen SFIs' stability and increase efficiency of supervisory framework for SFIs in general.

2.2 The assessment of banks' provision under Thai Financial Reporting Standard No. 9 (TFRS 9)

The BOT monitored the risk of credit portfolio of Thai commercial banks, based on the report of asset classification and provisioning under TFRS 9, by reviewing the classification, Probability of Default (PD), Loss Given Default (LGD) and provision both at the bank level and consolidated banking group basis. Through the in-depth examination of the models of FIs including Thai commercial banks, foreign bank branches and SFIs, the supervisors recommended and followed up the model development to ensure that FIs had efficient process and model to set aside appropriate provision.

2.3 The development of ongoing supervision tools

The BOT continuously emphasized the development of supervisory tools, systems, and data to increase the efficiency and effectiveness of ongoing supervision with the progress as follows:

1) Regulatory Data Transformation (RDT) Project for credit data

The project initiated for the development of credit data set structure to provide the BOT more sufficient data to support the ongoing supervision, introduction of policy responses and measures, and reduction of FIs' reporting burden in the long run. The BOT closely coordinated with FIs to receive feedback on the new data model and to encourage them to prepare for the development of data submission system.

2) The development of supervisory tools and systems to support ongoing supervision and risk monitoring

In 2021, the tools and systems that were successfully developed included (1) market risk dashboard phase 3 for monitoring FIs' credit derivatives products. (2) credit risk dashboard phase 3 for analyzing debt restructuring and debt resolution according to BOT regulations and guidelines. (3) market conduct phase 2.1 for tracking complaints from financial service consumers. (4) payment dashboard phase 2 for monitoring compliance risk and operational risk in financial service providers.

2.4 The enhancement of risk culture in FIs

The BOT issued the guideline on risk culture in FIs on November 11, 2021 to encourage FIs to strengthen sound risk culture focusing on four main areas: (1) tone from the top, (2) accountability, (3) effective communication and challenges, and (4) incentives and HR practices. The BOT planned to assess FIs' risk culture in the second half of 2022 onwards.

2.5 Examination and monitoring of FIs' financial position, performance and risk management

TABLE: NUMBER OF FIs EXAMINED BY THE BOT IN 2021

Financial Institution	Number of FIs	
	Examination Plan in 2021	Examination completed
Thai Commercial Banks / Retail Banks	14	14
Finance companies / Credit Foncier companies	3	3
Specialized Financial Institutions (SFIs)	7	7
Foreign Bank Branches	6	6
Asset Management Companies	4	4
Non-banks operating credit card business and personal loans	4	4
Total	38	38

Throughout 2021, the BOT examined and monitored the operation of FIs including submission of transmittal letters to FIs, based on ongoing supervision process and mostly conducted at the BOT's office due to the COVID-19 situation. The BOT examination focused on (1) follow-up issues (2) measures to assist borrowers impacted by the COVID 19 situation and the events affecting Thailand's economy (3) oversight functions (4) FIs' stability (5) credit quality and (6) transmission of benefit from FIDF fee reduction to FIs' customers.

In addition, the BOT conducted model validation for risk weighted assets and capital calculation according to the BOT notifications to ensure that FIs had appropriate risk management tool and capital calculation.

The overall banking system remained resilient with high levels of capital fund, loan loss provision and liquidity to serve an important role in assisting borrowers and accommodating loan demand to support economic recovery amidst uncertain COVID-19 situation. Credit assistance measures, along with revisions to regulations on loan classification and provisioning, helped alleviate the deterioration of bank loan quality.

2.6 The coordination with other supervisory agencies

During 2021, the BOT collaborated with many other supervisory agencies to enhance the smooth and efficient supervision and regulatory framework.

1) The development of interagency collaboration framework for crisis management

The BOT coordinated with the Securities and Exchange Commission (SEC) and the Office of Insurance Commission (OIC) to develop interagency playbook for crisis management and run crisis simulation exercise to ensure the smooth collaboration among the three regulators.

2) The coordination for consumer protection

The BOT collaborated with SEC and OIC to share supervision guideline and complain issues for the interrelated products such as unit linked insurance plan, and to determine the legal process for punishment in case of regulatory breach.

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Moreover, the BOT coordinated with other regulatory agencies to promote the aligning consumer protection policies to be in place. For example, the notification of the Debt Collection Supervisory Committee Re: Determination of rates, fees or expenses in debt collection and the drafted notification of the Committee on Contracts Re: Prescribing hire-purchase for car, motorcycle, tractor and agricultural machinery business as the contract-controlled business under the Office of Consumer Protection Board's regulation. In addition, the BOT continued to provide knowledge and training on market conduct to businesses, the Thai people, and other government agencies.

3) Supporting and collaboration on saving cooperative supervision

The BOT participated in drafting Ministerial Regulations under Section 89/2 of the Cooperative Act for risk monitoring of saving cooperatives. The BOT was in the process of expediting the five regulations to become effective. Furthermore, the BOT collaborated with the Ministry of Finance, the Cooperative Promotion Department, and the Department of Cooperative Auditing to develop the supervisory framework for saving cooperatives, including large saving cooperatives which were systematically important Institutions by focusing on corporate governance and quality of examination.



Maintaining payment systems stability



Enhancing efficiency and strengthening stability in payment systems

One of the BOT's missions is to oversee payment systems to promote their stability, reliability, continuous development, and capability to support economic and financial activities in all sectors.

The BOT implemented the payment systems policy to enhance efficiency, mitigate risks, and protect consumers. It also strengthened the oversight of payment systems in accordance with the international standards. The key activities in 2021 were as follows:

1.1 The issuance of regulation and guidelines to support financial innovation

The BOT reviewed regulation and guidelines under the Payment Systems Act B.E. 2560 (2017) by applying the Regulatory Impact Assessment (RIA) process and hearing with related stakeholders. As a result, the payment-related regulation improvement plan can divide into 3 phases: (1) short-term phase for preparing frequently asked questions (FAQ) and reviewing some regulations, (2) intermediate phase for revising other regulations which will process in 2022, and (3) long-term phase for drafting and revising regulations along with impact assessment. These improvement plans aimed to help reduce regulatory burden and add more flexibility in business operations, keep pace with widely accepted technology advancement, and changing risk environments. Besides, the BOT issued the Policy Guideline on Know Your Merchant (KYM), effective on January 1, 2022, for imposing to enhance the payment service providers' standard practices in having appropriate procedure for knowing merchant business and managing associated risks. It also helped enhancing safety and reliability for increasingly digital payments usage.

Furthermore, the BOT was in the process of revising the Policy Guideline for Standardized Thai QR Code for Payment Transaction to support new payment transactions such as MyPromptQR and cross-border QR Payment and drafting the regulation of payment system providers for Imaged Cheque Clearing and Archive System (ICAS) service to ensure adequate risk management with no impact on payment system stability.

Moreover, the BOT encouraged financial infrastructure development and financial innovation through regulatory sandbox regime, which facilitated financial service providers' (both banks and non-banks) limited-scope testing of new technologies with actual customers to control potential risks, while being closely monitored by the BOT before allowing full-scale launch. Furthermore, the BOT issued a number of guidelines on the application of certain technologies in the context of financial services to help guide financial service providers.

These included the Guideline for Blockchain Technology Adoption in Financial Services, as the BOT foresaw the importance of and the opportunities that blockchain technology would bring in enhancing efficiency of financial services and supporting financial innovation and financial system in Thailand. Key characteristics of Blockchain are its decentralized nature that allows transparent and reliable data management that is secure, trusted, and immutable with less process involved, resulting in reduction of data verification cost and increase in operational efficiency. Blockchain can also be further leveraged on to develop diverse range of financial services.

At present, Thailand's financial industry increasingly adopted blockchain technology for use cases like validation of financial transaction data, cross-border remittance, electronic letter of guarantee issuance and also other financial infrastructure projects. The BOT's Guideline for Blockchain Technology Adoption in Financial Services was launched on June 4, 2021 to provide guiding principles for financial service providers in adopting blockchain technology for their businesses, while still taking into account proper risk management to ensure trust and security for the consumers.

Guideline for Blockchain Technology Adoption in Financial Services



Blockchain Business Application

Understand benefits and limitations of Blockchain for Financial Institutions's businesses.

- Assess Blockchain project feasibility
- Define Blockchain business strategy
- Evaluate cost effectiveness for Blockchain project
- Select Blockchain platforms that suit business needs



Blockchain Governance

Govern Blockchain network and project effectively

In case Financial Institutions is a Blockchain network participant

- Govern Blockchain project based on business priorities and risk levels
- Monitor fraudulent transactions
- Manage related risks including 3rd Party risks

In case Financial Institutions is a Blockchain network operator

- Define operator roles and responsibilities
- Set IT security standards for the network and participants
- Establish on and off boarding standards
- Define cyber resilience plans



IT Risk Management

Manage Blockchain IT-related risks

- Securely design and develop Blockchain systems
- Assess security of Blockchain systems regularly
- Manage Blockchain system access controls
- Maintain and backup on-chain and off-chain data based on criticality
- Emphasize on key management
- Monitor transactions and logs periodically
- Establish BCP and IT DRP



Legal Risk Management

Manage personal data on Blockchain based-on customer's right and privacy

- Arrange agreements between participants and network operators
- Store personal data on off-chain
- Perform data protection impact assessment
- Comply with related laws and regulations such as AML/CFT and PDPA

1.2 The supervision and examination of the payment business providers

The BOT consistently supervised and examined the business providers who were granted licenses or registration certificates under the Payment Systems Act B.E. 2560 (2017). In 2021, the BOT examined 12 important payment business providers, and supervised the other payment providers by offsite-monitoring techniques¹¹. Meanwhile, the BOT also developed risk-based monitoring and ongoing supervision tools for closely and continuously analyzing and monitoring risks, such as financial risk, compliance risk, and operational risk to ensure that business providers had security and adequate risk management, which was in line with the international standards, and operate with an appropriate level of consumer protection.

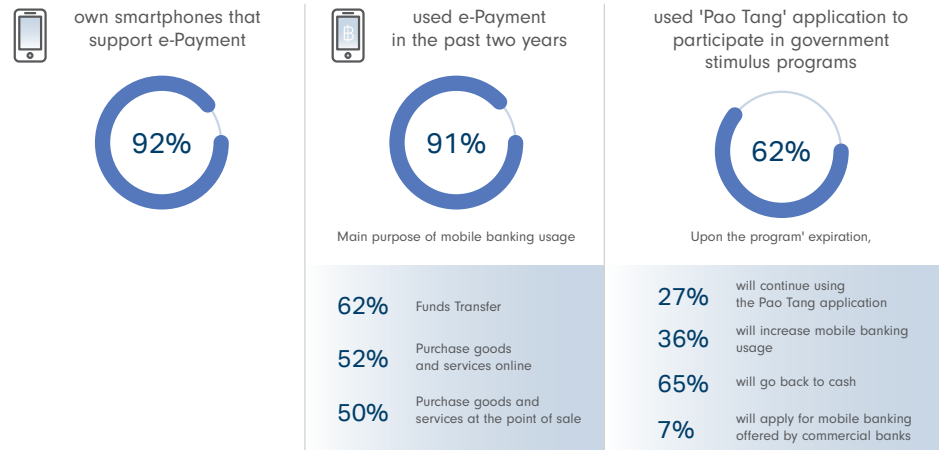
The BOT enhanced public confidence for boosting digital payments by strengthening the security of using debit card and credit card through online channel. Moreover, the BOT emphasized on promoting understandings of payment supervisory, encouraged using payment services from licensed or registered payment business providers, drafted measures to prevent unauthorized payment business providers, and promoted the entrance of new payments business providers to sustain growing demands and add choices for digital payment. In 2021, 15 business providers acquired licenses, at the end of 2021, there were 136 business providers, 133 licensed business providers and 4 registered business providers (1 business provider was under both license and registration certificate)

In addition, the BOT promoted the financial sector's preparation for compliance with the Personal Data Protection Act B.E. 2562 (Personal Data Protection Act: PDPA) by collaborating with other financial regulators and Office of the Personal Data Protection Commission (PDPC). The BOT pushed forward the preparation of the Thai financial sector to comply with the PDPA laws, provided the financial sector's perspectives on supportive legislations under the PDPA. In 2021, the BOT arranged for banks, non-bank business providers under supervision to conduct the PDPA self-assessment survey to assess their readiness for compliance with the PDPA legal requirements before the enforcement on June 1, 2022, and enhanced public understanding with PDPA continually. Moreover, PDPC, the BOT, and other financial regulators also provided the smooth functioning in PDPA related issues in order to enhance strong collaboration when the PDPA comes into force.

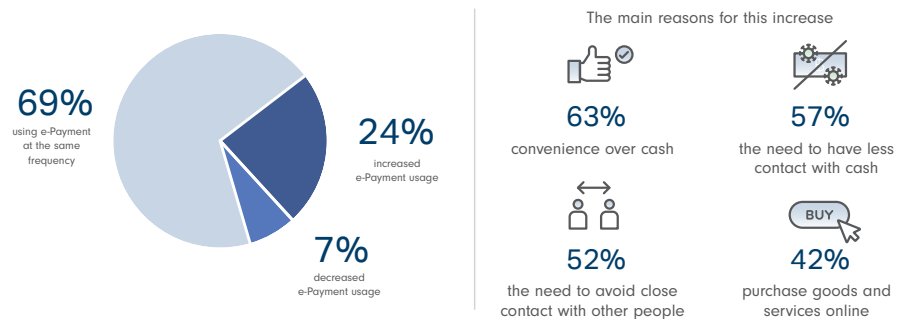
¹¹ offsite monitoring is a regular examination technique through papers, data, reports receiving from business providers, including monitoring and supervisory tools as well as hold a meeting with some business providers if necessary.

Significant Survey Result from Payment Diary 2021

Most people



The impact of the COVID-19 pandemic on e-payment usage



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1.3 The promotion of understandings in using digital payments

The BOT launched the occasional paper of Thai's consumer payment behavior (The Consumer Payment Diary Survey Project), to better understand Thai consumers' payment behavior both in cash and digital payment and help identify target groups and strategies to promote digital payment usage, which published through various channels such as the BOT website, media's publications, and social media platforms.

Moreover, the BOT also promoted the understandings of payment services through mass media continually, and provided knowledge about Thailand's payment systems development by publishing Payment Insight: Bi-monthly report on essential topics related with payment services and new financial technologies, such as e-money, cross-border payment, biometric technology, payment data visualization and payment diary survey results.

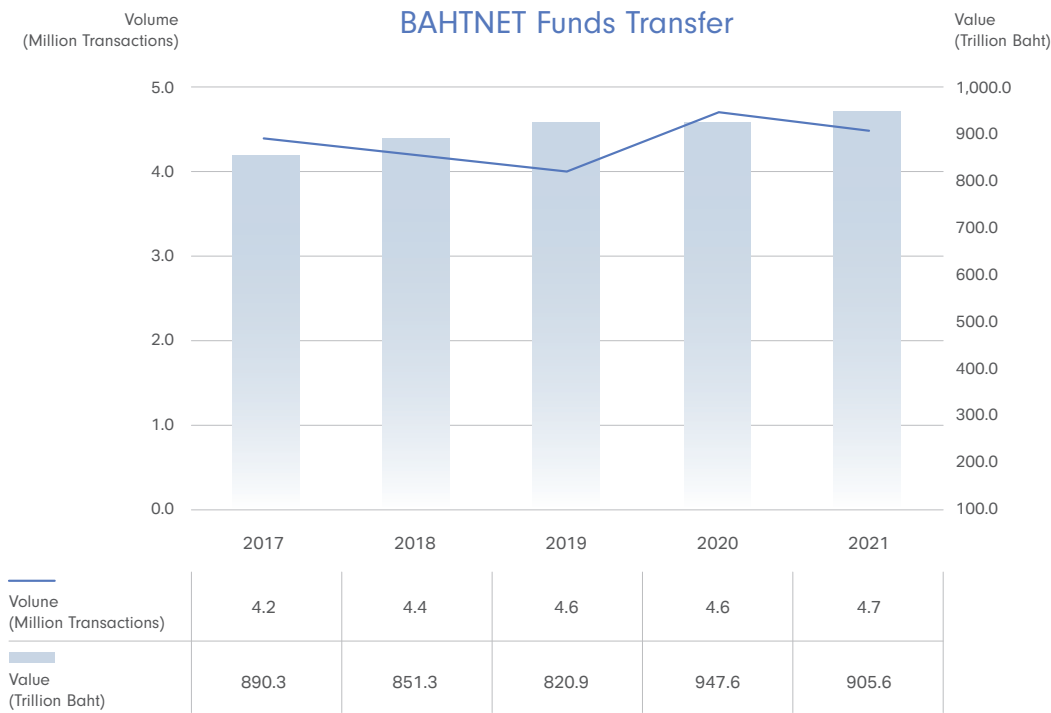
1.4 BOT's payment system services

In 2021, the BOT established BAHTNET and ICAS's operational guidelines used specifically for BAHTNET and ICAS participants in the event of COVID-19 pandemic. These guidelines provided action guidance in emergency situations and enabled the participants to prepare for all circumstances. The participants were required to comply with the guidelines from August 2021 onwards. In addition, the BOT circulated "Guidelines for using BAHTNET and ICAS clients' systems outside the office under the emergency situation of the COVID-19 outbreak" for the participants to consider establishing security measures and managing risks that may arise from working outside the office.

The results of payment system services in 2021 could be summarized as follows:

1) BAHTNET (Bank of Thailand Automated High-value Transfer Network)

At the end of 2021, BAHTNET had a total of 59 participants, including 56 direct participants and 3 associate participants. The participants consist of 18 Thai commercial banks, 11 foreign bank branches, 6 finance and securities companies, 16 specialized financial institutions / government agencies / other institutions, and 8 BOT's internal departments.



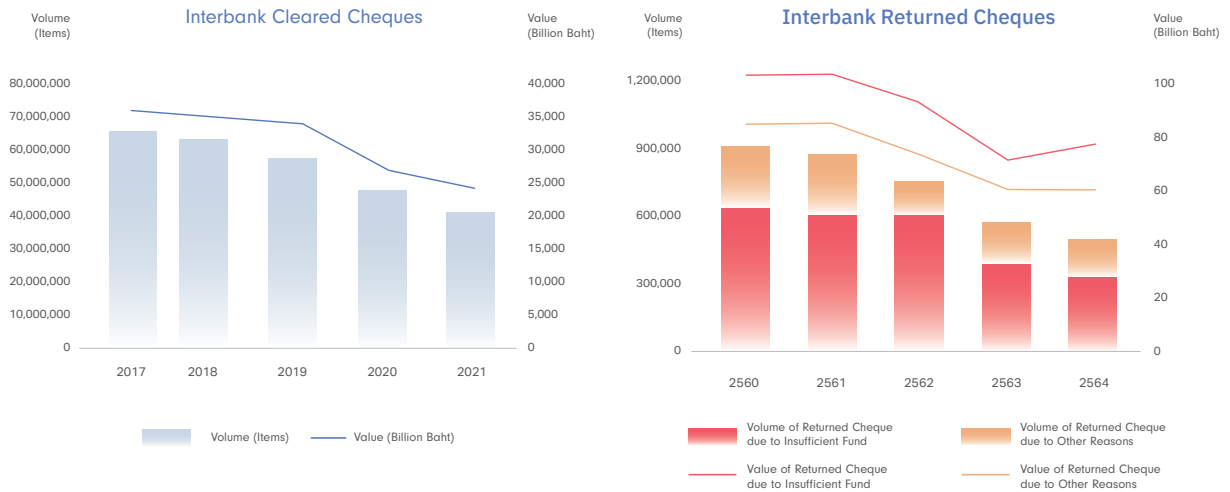
Source: Payment and Bond Department, Bank of Thailand

In 2021, the total volume of funds transfer via BAHTNET was 4.7 million transactions with the total value of 905.6 trillion baht, a 4.4 percent decrease from the previous year due to the decline of bilateral repurchase and foreign exchange transactions.

For foreign exchange transactions that simultaneously delivered Thai baht and US dollars (Payment versus Payment: PvP) via Hong Kong's PvP USD CHATS system, the total volume was 1,925 transactions, a 12.8 percent increase from the previous year, and the total value was 4,719.7 billion baht, a 16.2 percent increase from the previous year.

2) ICAS (Imaged Cheque Clearing and Archive System)

At the end of 2021, ICAS had a total of 35 member banks, consisting of 18 Thai commercial banks, 11 foreign bank branches, and 6 specialized financial institutions. The total number of bank branches (including sub-branches) was 9,055.



Source: Payment and Bond Department, Bank of Thailand

Over the past five years, interbank cheques cleared through ICAS continued to decline. In 2021, the total volume and value decreased by 13.7 percent and 8.9 percent respectively. The proportion of returned cheques and returned cheques due to insufficient funds slightly increased from 0.48 percent and 0.26 percent, to 0.56 percent and 0.31 percent, respectively.

1.5 BOT Wholesale Payment Roadmap

BAHTNET is a payment system operated by the BOT. It is the financial infrastructure that is significantly important to the stability of the nation's payment system, serving large value funds transfer in the form of Real-Time Gross Settlement (RTGS). BAHTNET is operated in accordance with Principles for Financial Market Infrastructures (PFMI), an international standard issued by the Committee on Payments and Market Infrastructures (CPMI) and the International Organization of Securities Commissions (IOSCO).

Looking forward, BAHTNET system must be able to support all sectors, with regards to technological advancement, changes in financial innovation, including public sector's policy and BOT's strategic plan, aiming to support economic growth and elevate the competitiveness of the country. To this regard, as the operator of BAHTNET system, the BOT must continually enhance the system to serve the needs of users with open standards that will support wider access, keep up with new innovations, while serving strong security through risk management approaches that comply with international standards.

The BOT set the development direction for the BAHTNET system to elevate its services to meet the needs of all sectors, to support innovations, and to support for increased transaction volume. The direction consisted of 3 major plans as follows:

1) BAHTNET ISO 20022 : The BOT was currently implementing ISO 20022 international message standard in BAHTNET with the objectives to facilitate interoperability with other important payment infrastructures, improve the smoothness of both domestic and cross-border payment transactions, and support richer remittance information, such as the purpose of transactions and tax information. The development would enable transaction reconciliation and verification to be more precise. Currently, the BOT and BAHTNET participants were developing and preparing for system testing, with the plan to go live in 2022.

2) BAHTNET Offline : The BOT developed BAHTNET Offline, a contingency plan prepared to support BAHTNET operation in event of a total disruption to BAHTNET system. This may be caused by events such as cyberattacks, terrorisms, or natural disasters. The aim was to ensure the continuity of the nation's payment system, and to avoid interruptions or broad impact to the financial system.

The BOT developed the process, tools, and guidelines to support the operation of the contingency plan, which were tested with all stakeholders. It was expected that the plan will be ready for use in 2022.

3) BAHTNET API Hub : The development of infrastructure, that enabled connection to BAHTNET system using API technology, would support an exchange of funds transfer messages and data in BAHTNET system. The development of API Gateway would enable access to various BAHTNET API Services using common standards that supported straight-through processing (STP). Consequently, BAHTNET participants would be able to access data in real-time, and able to interface their systems to establish automation processes, thus, reducing operational risks and support greater efficiency in systems' connections. The project is planned to launch in phases starting from Q4/2023.

BAHTNET API Hub is expected to start from supporting core functions of BAHTNET services, such as funds transfer, information inquiry and report. It will then extend to support other business needs, such as near real-time third-party funds transfer, and other financial innovation. The BOT expects BAHTNET API Hub to be the main STP channel for BAHTNET participants in the future.

02

Fraud prevention in BAHTNET system

The BOT issued a guideline on maintaining the security of client computers for BAHTNET participants, which was effective from August 2021. The intention was to provide guidance to the participants in preventing, detecting, and mitigating damages from fraud threats. To ensure that the participants were consistently

prepared to cope with such risks, the BOT enquired the participants to maintain and report the status of security management system according to ISO/IEC 27001 standards. In an addition, the BOT would regularly provide knowledge sharing on wholesale payments fraud for BAHTNET participants.

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03

Technology and cyber risks management in the Thai financial sector

In the past few years, financial technology developed rapidly with the emergence of varied financial services, together with the exponential growth of both volume and value of transactions via mobile banking applications. Given the rapid digitalization in the financial sector, the BOT enhanced the supervision of financial institutions and significant e-payment service providers to ensure that every

user would receive convenient, secure, and reliable financial services. The results reflected as information technology and cyber risk management of financial institutions and e-payment service providers were lifted equivalently to international standards. This laid the groundwork for the growth of transaction volume and diversified financial services in the future.

In 2021, the BOT published the IT risk management framework and Cyber hygiene guideline for e-payment service providers subsequently from the enact of IT risk management notification which was enforced on financial institutions in 2019. Furthermore, guidelines on data governance and implementation of blockchain technology for financial services were issued aimed to be principles assisting financial institutions on data management and secure use of technology. All these set a foundation as the trend of using data analytics was rising and the use of blockchain technology was spreading. Thus, financial institutions and e-payment service providers can provide innovative services and fulfill higher expectations from customers.

Moreover, in 2021, the BOT also issued 3 different self-readiness assessment guidelines which were the Cyber Resilience Assessment Framework (CRAF) version 2.0, the Technology Risk Readiness Assessment and Cyber Hygiene Readiness Assessment. All guidelines would enhance the IT and Cyber risk management capability of both financial institutions and e-payment service providers, thus the customers, partners, and regulators can be ensured that everchanging IT and cyber risks were controlled sufficiently.



Press conference on the guideline for blockchain technology adoption in financial services

BANK OF THAILAND

A stable, smooth, and secure mobile banking application is the essence of providing financial services in the new normal era. Last year, the BOT prioritized empowering financial institutions to develop information technology system capabilities that supported mobile banking applications. Statistics on the availability of systems of each financial institution were also publicized to create healthy market competition as customers can select financial services freely and other financial institutions can observe and improve their system continuously.

At the same time, the development of staff's readiness is crucial in boosting the financial sector's immunity to prevent, detect, and response to cyber threats. The BOT, Securities and Exchange Commission (SEC), and the Office of Insurance Commission (OIC) were working together to promote awareness among the board of directors in the financial sector every year. This was to help the board of directors more understand the importance of IT and cybersecurity risk management, share their visions and set the direction to keep up with the advancement of business accordingly. With collaboration from the Thai Bankers' Association, the BOT provided state-of-the-art technical knowledge to the technical staff which particularly included an understanding of supply chain risks. The BOT also participated in the Thailand's National Cyber Exercise 2021 which was organized by National Cyber Security Agency (NCSA) to build immunity against cyber threats in the entire perspective of Thailand.

Going over and above, the BOT also emphasized building new staff by holding activities and events for students, thus they can understand businesses in the financial sector. Cyber-related job opportunities were created, and everyone can be employed upon graduation.

หลักเกณฑ์การกำกับดูแลความเสี่ยง IT สำหรับผู้ประกอบธุรกิจ e-Payment

ทำไมต้องมีหลักเกณฑ์?

- 1 มีการนำ IT มาใช้ในการให้บริการด้านการชำระเงินมากขึ้น
- 2 มีจำนวนผู้ใช้งานและปริมาณธุรกรรมเพิ่มขึ้นอย่างก้าวกระโดด
- 3 แนวโน้มของภัยคุกคามทางไซเบอร์เพิ่มสูงขึ้น
- 4 ผู้ประกอบธุรกิจ e-Payment เชื่อมโยงกับผู้เล่นที่หลากหลายใน Ecosystem และเชื่อมต่อกับผู้ให้บริการภายนอก

ปริมาณธุรกรรม e-Payment (จำนวนครั้ง/คน/ปี)



จำนวนลงทะเบียนพร้อมเพย์ปี 63



ข้อมูล ณ 30 พ.ย. 63

ผู้ใช้บริการจะได้อะไร จากการปรับหลักเกณฑ์ครั้งนี้?

สร้างความมั่นใจให้กับผู้ใช้บริการ

ลดความเสี่ยงและเพิ่มความปลอดภัย
ให้กับผู้ใช้บริการและระบบการชำระเงิน

หลักเกณฑ์ความเสี่ยงด้าน IT สำหรับผู้ประกอบธุรกิจ e-Payment

1. การรักษาความมั่นคงปลอดภัย ของระบบเทคโนโลยีสารสนเทศ ขั้นต้นที่จำเป็น (Cyber Hygiene)

ผู้ประกอบธุรกิจทุกราย ต้องดำเนินการภายใน 3 เดือน
ด้วยมาตรการขั้นต่ำ 6 ข้อ ในการป้องกันภัยคุกคาม
ทางไซเบอร์ที่สำคัญ

มีผลบังคับใช้ตั้งแต่วันที่ 29 เมษายน 2564

1 การตั้งค่าระบบให้มีความปลอดภัย (Security Baseline and Hardening)

2 การป้องกันระบบจาก Malware (Malware Protection)

3 การบริหารจัดการช่องโหว่ (Security Patch Management)

4 การจัดการสิทธิสูงของระบบ (Privilege User ID Management)

5 การพิสูจน์ตัวตนอย่างปลอดภัย (Multi - Factor Authentication)

6 การทดสอบหาช่องโหว่ อย่างน้อยปีละ 1 ครั้ง (Vulnerability Management & Pentest)

2. การบริหารจัดการความเสี่ยง ด้านเทคโนโลยีสารสนเทศ (IT Risk Management)

เฉพาะผู้ประกอบธุรกิจที่เข้าเงื่อนไขตามหลักเกณฑ์นี้
ต้องดำเนินการภายใน 1 ปี ประกอบด้วย 3 ส่วนสำคัญ
มีผลบังคับใช้ตั้งแต่วันที่ 29 มกราคม 2565

1 IT Governance

ดูแลให้มีธรรมาภิบาลด้าน IT ที่ดี
และมีการบริหารความเสี่ยงด้าน IT ที่เหมาะสม

2 IT Security

รักษาความมั่นคงปลอดภัยด้าน IT อย่างรัดกุม

3 IT Project Management

บริหารจัดการความเสี่ยงของการดำเนินโครงการด้าน IT
ที่มีนัยสำคัญอย่างมีประสิทธิภาพ

Development to Embrace Change and Create Growth Opportunities in the Future

Leveraging on technology advancements, the financial sector should have services that better meet consumer needs, operate efficiently, lower business costs and are safe and secure for users. The BOT, therefore, focused on developing important building blocks including (1) support for digital financial services, (2) accommodative environment and infrastructure for digital finance which will lead to innovation and better financial services, and (3) regulatory data transformation for financial institutions to better utilize data and lessen reporting burden on financial institutions.



Support for digital financial services



Digital lending

1.1 Digital personal loan

As some customers were still unable access credit through formal channels despite various financial service providers offering retail lending products in Thailand's financial system. The BOT thereby issued the Circular Re: Rules, Procedures and Conditions for the Undertaking of Digital Personal Loan Business in September 2020. This circular aimed to encourage lenders to digitize end-to-end lending processes and leverage alternative data, e.g. the records of buying and selling products or services on e-commerce platforms as well as the behaviors of mobile phone usage, instead of proof of income, to assess the borrowers' ability or willingness to repay the loan. Consequently, those who did not have regular income, those without proof of thereof, or those without collateral would be able to better access credit at formal financial institutions faster and more conveniently.

As of December 2021, the BOT granted Digital Personal Loan Business to 7 service providers, 4 of which started their operations totaling 746,986 customers and 3,867.85 million baht of total loan outstanding.

1.2 Digital factoring ecosystem

The use of factoring in Thailand has been limited because there are concerns of double financing (one invoice is used to secure financing from multiple factors) and forged invoices.

Digital Personal Loan
สินเชื่อส่วนบุคคลดิจิทัล

คือการปล่อยกู้วงเงินขนาดเล็กผ่านช่องทางออนไลน์

กู้ได้เท่าไร?

- ไม่เกิน 20,000 บาท
- อัตราดอกเบี้ย ไม่เกิน 25%
- ชำระคืนภายใน 6 เดือน
- ไม่ต้องจ่ายค่าธรรมเนียม หากชำระคืนเงินกู้จนครบกำหนด

ขยายวงเงิน รายละไม่เกิน 40,000 บาท
ชำระคืนภายใน 12 เดือน จนถึง 31 ธ.ค. 65

ข้อดี

- ผู้ที่ไม่มียารายได้ประจำ หรือผู้ที่ไม่สามารถพิสูจน์รายได้ มีโอกาสเข้าถึงสินเชื่อในระบบได้ง่ายขึ้น
- อนุมัติสินเชื่อรวดเร็วได้ทุกที่ ทุกเวลา ผ่านช่องทางออนไลน์

ข้อมูลทางเลือกประกอบการอนุมัติสินเชื่อ

เช่น ประวัติการชำระค่าน้ำ ค่าไฟ ค่าโทรศัพท์ ข้อมูลการซื้อของออนไลน์

ตรวจสอบรายชื่อผู้ให้บริการ
ที่อยู่ภายใต้การกำกับของแบงก์ชาติได้ที่

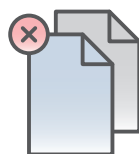
These concerns cause factors to limit their factoring services only to SMEs who are first-tier suppliers of large corporates who have a close relationship with the factors, or to charge significantly high costs for such financing. To cope with the issue, the BOT developed a centralized database system called “Central Web Service: CWS” to provide an invoice checking service so that factors can verify whether an invoice was already used for financing. CWS helped reduce risks associated with factoring processes and provide greater opportunities for SMEs to access funding at lower costs.

As of December 2021, 7 factoring platform providers and factors joined and connected their systems to the CWS. Additionally, the BOT and the Electronic Transactions Development Agency (ETDA) worked together to develop a digital invoice standard for factoring business transactions. This standard was released in July 2021.

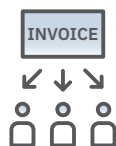
Why do we need Digital Factoring?

Small-sized sellers cannot access to Factoring, or they may access it at a high cost

because factors concern about :

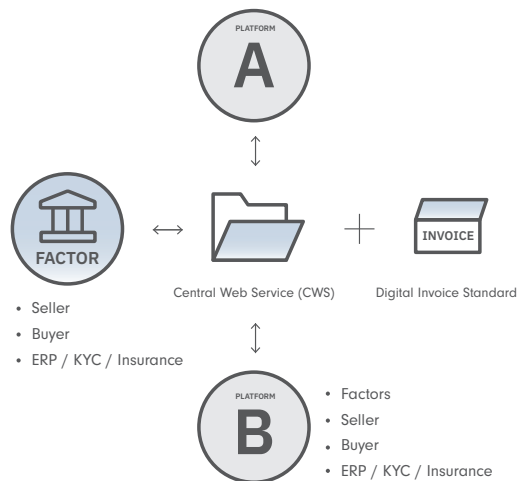


Fraudulent invoice for financing



Double invoice financing

Digital Factoring Ecosystem encourages more various players



87



Digital payments

Technology advancement and the COVID-19 pandemic are important catalysts for the shift in Thai consumers' behaviors towards digital platforms. At the end of 2021, usage of Thai digital payments increased from 202 times per person per year in 2020 to 312 times per person per year. This continued to show an upward trend, especially for mobile banking transactions which gained

popularity with the highest growth rate of 67.5 percent from the previous year. In addition, PromptPay registration rose by more than 12.4 million numbers from 56.2 million numbers in 2020 to 68.6 million numbers in 2021. An in-depth analysis of PromptPay transactions showed that the volume of transactions averaged at 36.2 million transactions per day, equivalent to an average value of 112.6 billion baht.

At the end of December 2021, PromptPay hit a new high of 42.4 million transactions per day. Most PromptPay transactions averaged at 650 baht per transaction, decreasing steadily from the past years. These lower-value transactions point to increased PromptPay usage for daily spending. In contrast, the volume and value of cash withdrawal in 2021 dropped by 8.8 percent and 10.5 percent, respectively, compared to the previous year. Similarly, the volume and value of cheque payments continued to decline from the previous year by 16.2 percent and 12.4 percent, respectively.

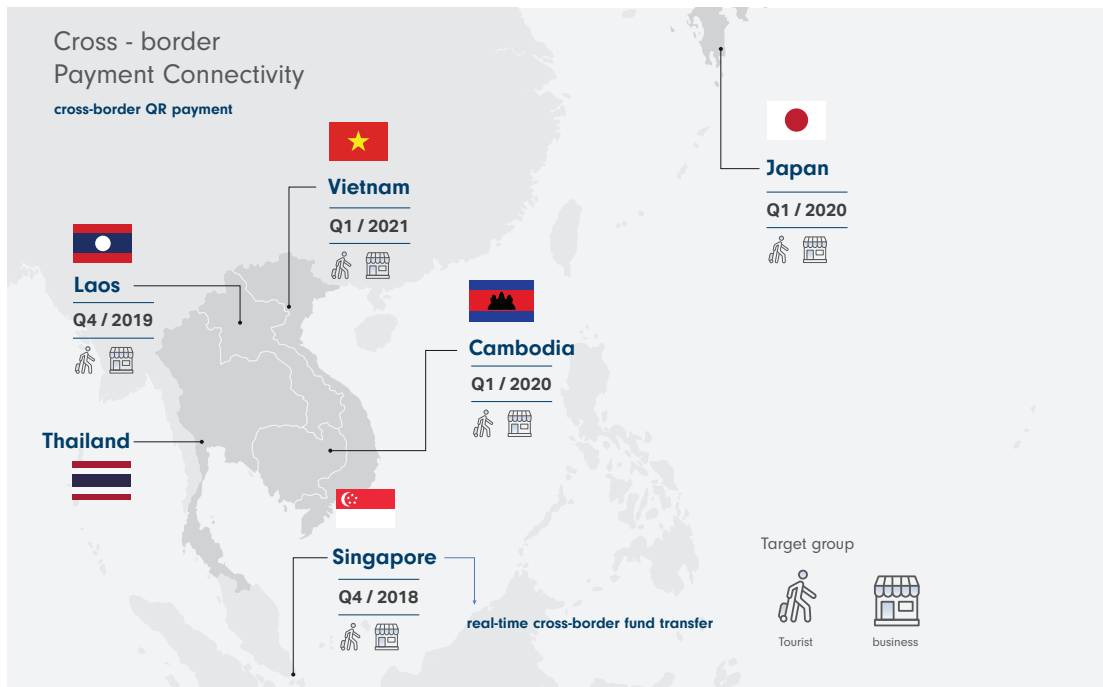
The shift in behaviors towards online platforms was partly because of the government's stimulus package through digital payment, the Revenue Department's tax refunds via PromptPay and that the business sector now can transfer funds via internet banking up to 2 million baht per transaction.

Seeing growing domestic digital payment adoption, the BOT also prepared for additional infrastructure development focusing on cross-border payment and Central Bank Digital Currency (CBDC). Key activities were as follows:

2.1 Cross-border payment

The BOT continually promoted cross-border payment connectivity for both payment and transfer services through the ASEAN Payment Connectivity Plan. The plan aimed to provide more convenient, secure, and faster

services with lower fees. Not only did it facilitate cross-border transactions for the public, but it also supported international trade and tourism, remittance sent by migrant workers as well as economic activities.



2021 was a critical step for cross-border payment connectivity. The BOT encouraged payment business providers to enhance interoperable QR payment linkages with Vietnam, Malaysia, Indonesia, and Singapore,

enabling customers to pay for goods and services. Moreover, being the first of the world's real-time transfer, the launch of Thailand's PromptPay and Singapore's PayNow linkage allowed customers to make

real-time transfers. The experience was now similar to how domestic PromptPay and PayNow transfers were made. Funds now flowed securely with fast, and cheaper than the current international remittance services.

In the following phase, the BOT along with stakeholders will continue to push

forward the cross-border payment connectivity both in ASEAN and other countries by encouraging more payment business providers, enhancing services from QR payment to remittance and expanding to new corridors. This initiative will offer greater convenience and support economic activities in the ASEAN region as well.

2.2 Central Bank Digital Currency (CBDC) studies and development

The BOT recognized the importance and potential of digital currencies as they gained momentum in adoption and significant roles in economic activities. Therefore, the BOT initiated the development of Central Bank Digital Currency or CBDC as a financial innovation with potentials for enhancing payment system efficiency as well as enabling financial, business and retail sectors to access and develop digital financial applications.

Since 2021, the BOT focused on studying and developing Retail CBDC—a digital form of cash. Retail CBDC was aimed to serve as a safe and secure digital currency for payment accessible by all and as a digital financial infrastructure enabling financial service providers to develop financial innovation with convenience, efficiency and reasonably low cost. To develop Retail CBDC backed with a secure and efficient system for wide public adoption, it was important to engage with stakeholders and assess its implications from all angles, such as monetary policy, financial stability and the roles of financial intermediaries and the central bank. The BOT, therefore, invited the public and related parties to join force in the development of Retail CBDC for financial innovation and digital transformation. In April 2021, the BOT published a directional paper “The Way Forward for Retail Central Bank

Digital Currency in Thailand”, which outlined key policy principles and design of Retail CBDC and opened for public comments and feedback. Later, a research paper on Retail CBDC and its implications on Thailand’s monetary policy and financial stability was published in August 2021. As for Retail CBDC development project, the BOT aimed to conduct a small-scale pilot test by the end of 2022.

Additionally, the BOT continued to explore the possibilities of adopting Distributed Ledger Technology (DLT) to develop Wholesale CBDC for cross-border payment. In 2021, with the Hong Kong Monetary Authority (HKMA), the BOT built on the outcome of Project Inthanon Phase 3 and expanded the collaboration with other central banks under the new project named “Multiple Currency CBDC Bridge” or mCBDC Bridge. By joining forces with the Digital Currency Institute of the People’s Bank of China (PBC DCI), the Central Bank of the United Arab Emirates, and BIS Innovation Hub Hong Kong Center, the multi-currency CBDC prototype was developed and could make cross-border payments without a need for intermediaries and interoperate in real-time 24/7. The central banks were in the process of evaluating the outcome and considering an appropriate scope for future applications and implementation with commercial banks and users.

From Project Inthanon to CBDC – the development of central bank digital currency in Thailand

The BOT is one of the first central banks that recognizes the significant impact of digital currency technologies and their potential in revolutionizing the future of finance. Thus, the BOT initiated plans to explore, experiment, and adopt these technologies with key objectives to enhance the national financial infrastructures both in the short term and long term. One of the important milestones was the development of the infrastructure supporting digital currencies with Project Inthanon.

Project Inthanon began in 2018 to experiment and develop Wholesale Central Bank Digital Currency (Wholesale CBDC) for interbank transfer and settlement. With the 8 leading financial institutions, the BOT tested the capabilities of Distributed Ledger Technology (DLT) to enhance efficiency and reduce costs of payments. The Project laid a foundation in which the BOT built on developing and adopting CBDC for other use cases as follows:

1

Wholesale CBDC for cross-border payment: the BOT collaborated with other central banks, including the Hong Kong Monetary Authority (HKMA), the Digital Currency Institute of the People's Bank of China (PBC DCI), the Central Bank of the United Arab Emirates, with support from the BIS Innovation Hub Hong Kong Center to launch a project named "Multiple Currency CBDC Bridge" or mBridge. The project aimed to test multi-currency CBDC for real-time international payments that could operate 24/7 without relying on corresponding banks, potentially reducing risks such as settlement, credit and operational risks and enhancing the overall efficiency. The results from the project showed that the time of transfer could be achieved within seconds as compared to 3-5 days with a traditional channel. Building on the outcome, the BOT and the fellow central banks continued to study and consider policy implications, business models, and system designs for future implementations.

2

Retail CBDC: In preparation for building a payment infrastructure for retail and business sectors which was inclusive and could support digital financial innovation, the BOT planned to experiment and develop Retail CBDC, in line with other central banks' directions. The issuance of Retail CBDC would entail impacts on people and the overall financial system. Thus, the BOT carefully considered different implications and gathered feedback from the public and private sectors from publishing papers in early 2021. In addition, the BOT collaborated with SCG and Digital Ventures Company Limited (DV) in 2020 to experiment with the use of corporate CBDC for supply chain management. Currently, the BOT is developing Retail CBDC in preparation for a small-scale pilot. The pilot is part of a long-term development project with a vision of Retail CBDC as an infrastructure capable of supporting future digital finance. In addition, appropriate designs, associated risks, and other impacts must be thoroughly assessed before the BOT can decide on launching Retail CBDC to the public.



ธนาคารแห่งประเทศไทย
BANK OF THAILAND

การพัฒนาโครงการ CBDC ของไทย

Inthanon Phase 1

ทดสอบระบบครั้งแรก

ส.ค.-ธ.ค. 2561

สร้างระบบการชำระเงินต้นแบบ

โดยใช้ CBDC ในการรองรับการโอนเงิน
ระหว่างสถาบันการเงินในประเทศ

Inthanon Phase 2

ทดลองใช้ให้ครบวงจร

ม.ค.-ส.ค. 2562

พัฒนาระบบต้นแบบให้รองรับการส่งมอบและ ชำระราคาพันธบัตร ธปท. ในลักษณะ DVP*

จำลองวงจรชีวิตของพันธบัตรให้ใกล้เคียงกับโลกความจริงมากยิ่งขึ้น
โดยแปลงพันธบัตรให้อยู่ในรูป Token และใช้ประโยชน์จาก smart contract

Inthanon-LionRock Phase 1

เชื่อมระบบกับต่างประเทศ

ก.ย.-ธ.ค. 2562

ขยายขอบเขตการใช้ CBDC ไปสู่การชำระเงินข้ามประเทศ ระหว่างสถาบันการเงิน

พัฒนาร่วมกับธนาคารกลางของฮ่องกง

พัฒนาระบบต้นแบบการชำระเงิน CBDC ในภาคธุรกิจ

ทดสอบเรื่องการกำหนดเงื่อนไขต่าง ๆ และเชื่อมต่อ
กับระบบ B2P ซึ่งเป็นระบบจัดซื้อจัดจ้างของภาคเอกชน

BOT-SCG-DV Project

มี.ย.-ธ.ค. 2563

Inthanon-LionRock Phase 2 (m-CBDC Bridge)

ขยายขอบเขตทดสอบโครงการจาก phase 1

ร่วมมือกับธนาคารกลางจีนและสหรัฐอเมริกาเพื่อ
พัฒนาโครงสร้างพื้นฐานสำหรับการโอนเงินระหว่างประเทศ

ขยายขอบเขตสกุลเงิน

ก.พ. 2564 - ปัจจุบัน

ขณะนี้อยู่ระหว่างการศึกษาระบบ CBDC สำหรับรายย่อย (2564-2565)

Retail CBDC

*Delivery versus Payment คือ การชำระราคาและส่งมอบหลักทรัพย์กระทำในเวลาเดียวกัน



Bank of Thailand



Accommodative environment and infrastructure for digital finance

01

Digital bank statement service (dStatement)

The BOT recognized the necessity to enhance digital financial infrastructures, especially an infrastructure that enabled an exchange of financial information between financial institutions, to help customers get faster financial services, get lower costs, and be able to utilize their data more conveniently. Regarding this, the BOT pushed forward the development of a financial information exchange service for sending and receiving bank statement data directly between banks in a machine-readable digital format called “dStatement”.

02

Digital identity infrastructure: National Digital Identity (NDID)

The BOT, in coordination with relevant government and private sectors, developed the National Digital Identity (NDID) platform as an important infrastructure to support data exchanges among participants for identity verification and authentication. Some examples of services that leverage on NDID platform included account opening at banks and securities companies, credit report requests for lending, and electronic personal income tax filing and tax deduction verification. Customers, therefore, would be able to transact or apply for services from financial, non-financial, and government entities digitally with ease, speed and security.

As of December 2021, 10 commercial banks and 1 non-bank were testing biometric technology for identity verification and authentication via NDID platform in the BOT's regulatory sandbox. More than 4 million customers already registered the NDID service.

The dStatement service allowed financial service customers, who needed to submit their bank statement as supporting documents for applying for financial products or services such as loans, to request and send their bank statement data directly from one bank to another bank under their own consent. The service made the process faster, cheaper, safer, and significantly more efficient than the traditional way that customers needed to visit a bank branch to request for a paper-based bank statement.

Participating financial institutions were expected to launch the dStatement service from January 2022 onwards.

03

Promoting development of financial innovation with regulatory sandbox

The BOT puts an emphasis on promoting development of financial innovation by allowing service providers to test new technology under BOT's regulatory sandbox regime within a well-defined and limited environment to contain risks and protect consumers. In 2021, there were 45 projects in the regulatory sandbox, while 29 projects already exited the regulatory sandbox and began offering services to the public. Some examples of the projects in BOT's regulatory sandbox included cross-verification of identity through NDID platform, use of biometrics technology for e-KYC, peer-to-peer lending platform, electronic letter of guarantee issuance using blockchain technology under BCI (Thailand) Company Limited that helped enhance operational efficiency and reduce issuance time from 3-7 days to 1- 8 hour(s), and real time cross-border remittance.

Moreover, the BOT increased flexibility of sandbox testing by allowing banks and non-banks to test their innovations under own sandbox regime for use cases that would not become common infrastructure, would not require common standards among service providers or did not required by law or regulation to enter BOT's regulatory sandbox.

04

Enhancing payment infrastructure to support digital business activities

Business digital payments are considered the infrastructure to support end-to-end digital processes for businesses. Sellers can receive and reconcile payment transactions through an electronic channel with convenience, speed, and security. The e-Tax invoice and e-Receipt are automatically issued, sent, and received via a platform after a successful payment. Meanwhile, buyers can make payment electronically and interbank funds transfer as well.

The project development consisted of 2 platforms: (1) digital trade and payment infrastructure, currently being developed and expected to operate in the second half of 2022 and (2) digital supply chain financing service which aimed to improve access to funding at reasonable costs, especially for SMEs businesses through data linkage platform providing services to check for double financing on invoices and shorten the credit process. The latter platform started operating in December 2021 and will in the future be connected to other digital platforms including CWS.



Regulatory Data Transformation (RDT)

The BOT initiated the Regulatory Data Transformation (RDT) project, with the aims of improving the efficiency and the usability of the regulatory reporting process. In addition to reducing the burden of regulatory reporting of financial institutions in the long-term, RDT would also help enhance the data infrastructure available to policy makers, enabling deeper analysis of the economy and better targeted relief policies for businesses and individuals affected by various economic situations.

Program Implementation Process

Regulatory Data Transformation : RDT



Redesign reporting structure to align with the information maintained by financial institutions



Reduce financial institutions' data preparation processes



Set up a joint working group with financial institutions

Data Guillotine



Reduce, discontinue and stringent assessment for future data requests taking into account cost-effectiveness of data collection

Financial innovation



through my shop's journey

What does the Bank of Thailand (BOT)'s policy on financial innovation have to do with a shop's typical day-to-day business?

To open a bank account for my shop, I can do it online through my cellphone without having to visit a bank branch and present the documents. I can easily do this by downloading a mobile banking app, filling in information and providing relevant consent, and taking a photo to safely verify my digital identity through the **NDID system**.

My customers can pay me by scanning a **QR code** or transferring through **PromptPay**. Payment is fast and I need not worry about giving change or paying transaction fees. Moreover, my customers from other countries such as Singapore, Vietnam, Cambodia and Indonesia **can pay using their own country's respective mobile banking applications**. During the pandemic, digital payment could also mitigate risks from the COVID-19 when compared to using cash.

The transactions made through digital payment allow me to check transaction history, both income and expense, and to easily create an income statement. Through a mobile application,





Using QR code is very convenient as I don't have to go to bank at the end of the day or prepare change for the customers. It is safe for me because I don't have to carry cash or touch the banknotes and coins. All I need is only mobile phone.



I can also use this statement to apply for a **digital personal loan** as lenders can better evaluate my ability to pay based on my shop's transaction history. The credit line can be as small as 1,000 baht which has helped my shop manage liquidity better. Loan application is very convenient because the process is completely paper-less and fully digital without the need to visit a branch. Also, loan decisions are made just within a couple of hours.

When dealing with suppliers, I can use an **electronic invoice** to apply for financing as factors can conveniently validate this electronic invoice against double financing. This can be done through the **Central Web Service (CWS) in the digital factoring ecosystem** where factors are more confident to approve a loan and thus giving me a higher chance to access credit.

Starting in 2022, I can **request a bank statement and directly send it to another bank to support my loan application in a machine-readable format through dStatement**. With a plan to expand business and register my shop as a company, I will also be able to use **corporate digital ID** by having business partners or signatories verify their identities to perform business transactions such as invoicing, bill payment and e-tax invoice through the Smart Financial and Payment Infrastructure for Business.

Not only does technology make financial transactions more convenient, digital footprint generated by such transactions also becomes big data which will be utilized to create financial innovation. New financial services will be available to serve customer needs better and improve access to financial services with lower costs.

The journey of my shop is only part of the story. Financial innovation is making Thai consumers receive more convenient, faster and better financial services. The BOT therefore focuses on leveraging on technology to drive financial innovation by developing infrastructure and fostering the regulatory environment to embrace technology. Already seen through my shop's journey, we can use our cellphones to open savings accounts, pay for goods and services, receive payment and manage liquidity anywhere and anytime 24/7.

Embedding Sustainable Development



Sustainable banking

The BOT has been promoting sustainable banking practices to encourage the internalization of Environment, Social, and Governance (ESG) considerations in business operations of Thai financial institutions. This is to ensure that the institutions can play a significant role in allocating resources to support business's transition towards sustainability. The environmental aspect, particularly on climate change, became a prevalent issue for all sectors. According to the recent report from the UN Intergovernmental Panel on Climate Change (IPCC), the impact of climate change will be more frequent and more severe globally. These include, for examples, the rise in global sea level from melting ice sheets, droughts from heat waves, and floods from extreme rainfall, which all will affect Thai well-being and economy¹². Financial sector is thus required to overcome these challenges by building capacity and knowledge and developing tools, and guidelines to appropriately assess the environmental impact of their exposure. **In 2021, the BOT expedited Thai financial institution system's readiness and set policy direction as follows:**

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Setting common policy direction for the financial sector

The BOT and other members of the Working Group on Sustainable Finance¹³ were committed to implementing the 'Sustainable Finance Initiatives for Thailand' announced in August 2021. The initiatives cover (1) developing a common and practical green taxonomy; (2) improving the ESG data environment and disclosure; (3) implementing effective incentives for sustainable finance products; (4) creating demand-led products and services; and (5) building human capital in sustainable finance.



Setting a standard to categorize sustainable economic activities

The BOT and other members of the Working Group on Sustainable Finance established a standard to classify economic activities according to their environmental performances (green taxonomy). The standard would assist financial institutions in developing their sustainable financial policies and products that were in line with Thailand's environmental priorities and

¹² Climate-related risks include (1) physical risk; economic losses from natural disasters and (2) transition risk; the risk from adjustment process towards a low-carbon economy (e.g. government policy on fossil fuel reduction)

¹³ The Working Group on Sustainable Finance comprises the Fiscal Policy Office at the Ministry of Finance, the Securities and Exchange Commission, the Office of Insurance Commission, the Stock Exchange of Thailand, and the BOT.

international standards. The green taxonomy was being designed in close consultations with key industries and stakeholders and its first phase will be launched in 2022. At the same time, the BOT collaborated with the regional counterparts to develop the ASEAN taxonomy for sustainable finance. The ASEAN taxonomy would provide a common building block for ASEAN members' green transition and adoption of sustainable finance that best reflected the region's economic and social structures.

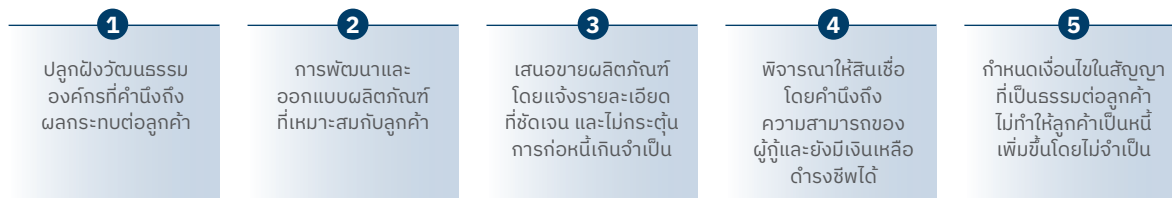


Incorporating environmental factors into supervisory framework

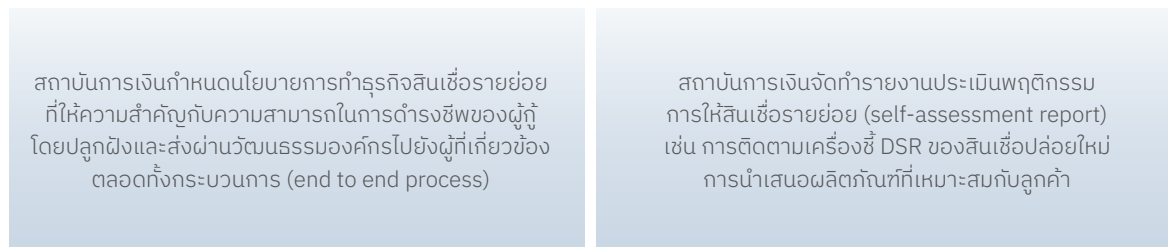
The BOT conducted a self-assessment exercise for commercial banks to evaluate the overall progress in implementation of the Sustainable Banking Guidelines-Responsible Lending. The assessment results showed that most of Thai Banks made concrete steps to incorporate sustainability into their strategy and business plan. However, tools and processes for environmental and climate-related risk assessment could be further improved to meet international standards. In this regard, the BOT will issue standard practices in 2022 to set a supervisory expectation on internalizing environmental and climate-related issues for the banking industry.

แนวนโยบายการให้สินเชื่อรายย่อยอย่างเหมาะสม ที่สอดคล้อง อยู่ในทุกกระบวนการพิจารณาให้สินเชื่อของสถาบันการเงิน

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ให้สถาบันการเงินตอบสนองต่อแนวนโยบายฯ โดย



ประโยชน์ ที่จะได้รับ



ลูกค้า

ได้รับสินเชื่อที่สอดคล้องกับความสามารถในการผ่อนชำระ ไม่สับสนเสีย
งที่ติดกับดักหนี้ มีเงินคงเหลือ
หลังชำระหนี้เพียงพอต่อการดำรงชีพ
และมีฐานะการเงินเข้มแข็งขึ้น



สถาบัน
การเงิน

สินเชื่อปล่อยใหม่โดยรวมมีคุณภาพ
ดีขึ้น สถาบันการเงินมีความเสี่ยง
ด้านเครดิตลดลง และระบบสถาบัน
การเงินมีเสถียรภาพในระยะยาว

04

Integrating environmental impacts into financial stability and macroeconomic assessment

The BOT included ESG risks as part of the revised guideline on application of the supervisory review process under Pillar 2 of the Basel capital framework, which will come into effect on January 1, 2022. Going forward, the BOT will enhance the evaluation of banks' exposure to climate-related risks through scenario analysis and stress testing, as well as incorporate environmental factors into macroeconomic models and analysis into the risk impact assessment on the Thai economy and economic sectors.

05

Strengthening collaboration with international stakeholders

The BOT collaborated with key stakeholders to promote internalization of environmental and climate-related opportunities and risks into the financial business practices. In 2021, the BOT jointly organized capacity building workshop for financial sector on green taxonomy with World Wide Fund for Nature (WWF) and Climate Bond Initiatives (CBI). Furthermore, the BOT consistently exchanged knowledge with the Network of Central Banks and Supervisors for Greening the Financial System (NGFS) and supported the development of best practices to strengthen the BOT's role in promoting green financing as well as environmental and climate risk management. The BOT also set out the sustainability commitment in accordance with the NGFS Glasgow Declaration at the 26th United Nations Climate Change Conference (COP26).



Dr. Sethaput Suthiwartnarueput made a speech on "Creating a Resilient Future with Sustainable Banking" at Sustainable Thailand 2021 event (UN and Government Pension Fund)



Data governance

The BOT formulated a **Data Governance Policy** to govern the roles and responsibilities of BOT executives and employees in terms of data management over data-life cycle, covering data collection, data usage, data disclosure and data destruction. The **Governance Committee (DGC)** was formed and responsible for determination of data management policy and standard including personal data according to Personal Data Protection Act B.E. 2562. The BOT also gave precedence to data subjects' privacy, as well as proper data security safeguards based on risk management principles.

In 2021, the BOT published the **Personal Data Privacy Policy** to assure people and the public that the BOT, as a data controller, emphasized the fundamental principles of data protection-viz., the necessity, the proportionality, and respecting the fundamental rights of data subjects stated in Constitution Law, in accordance with international standards. The BOT adhered the Personal Data Privacy Policy to implement the central bank mandates, including financial institution and payment system supervision, as well as other business operations for the benefit of legitimate interests.

In addition, the BOT encouraged and promoted the fully efficient utilization of data by means of the campaign for work with data-driven mindset, the reduction of data redundancy, the enhancement of data security safeguards, the encouragement of data linkage and exchange, and the improvement of data quality and data governance standards as well.

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Financial consumer protection

Access to fair financial services is a fundamental right of Thai citizens. Therefore, for the past years, the BOT was consistently committed to creating a fair and responsible environment of financial services for consumers; especially by providing sufficient and accurate information to consumers which aided them in choosing suitable financial services and helped them solve problems regarding unfair financial services. In this environment, financial service providers' treating customers with fairness would strengthen the confidence of consumers and support their business sustainably in the long run.

In 2021, the BOT implemented key policies to protect the financial customers as follows:

Providing the customers with sufficient and accurate information on financial services, as well as their rights and responsibilities, enabled them to make well-informed decisions.

Since 2018, BOT has published comparative information on products' features and fees through a website of the Financial Consumer Protection Center (FCC) 1213. In 2021, additional information was published to cover new financial products and services, such as small and medium-sized enterprise loans, hire purchase for cars and motorcycles, title loans, nano finance under supervision, and electronic money, making a total of 18 financial products.

Since 2019, the BOT has released comparative information on service quality¹⁴. Currently, the BOT is working on enhancing and expanding the disclosure by including more financial services providers. The project is expected to be available to the public in 2023.

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Besides, the BOT continuously and thoroughly communicated a valuable information to the public. The BOT and three regional offices conveyed the basic information on financial services, rights and responsibilities in using financial services, summaries of market conduct guidelines and regulations, debt relief measures, and channels which customers can seek assistance to three target groups as follows:

1) Government agencies, the private sector and the media. To be a mediator of communication to reach debtors in each area, the regional offices organized conferences to pass on the measures and organized classes on financial knowledge, as well as collaborated with various entities and networks, such as Provincial Public Relations Offices, Provincial Offices for Local Administration, and entrepreneurs' associations, in promoting the recent BOT's relief measures.

2) Financial service providers. To enhance responsible and fair services to customers, the regional offices regularly organized meetings with branches of financial institutions in the region, aiming to create a right understanding of regulatory rules and to implement them properly.

3) Vulnerable customers and low income households. To inform about channels of contact for assistance relating to various relief measures and promote financial literacy which can be applied in a daily life to create a financial immunity, such as awareness of financial fraud, personal finance management, debt management, and rights and responsibilities as the customer of financial service providers; the regional offices constantly communicated this information through online meetings, television, community radio stations, interviews, radio spots, video clips, podcasts and articles in local online media.



¹⁴ A quality-of-service information was published on <https://www.1213.or.th/th/aboutfcc/Pages/providerstats.aspx>

Encouraging the financial service providers to treat customers with fairness under the “4-non” principles: non-coercive, non-fraudulent, non-intrusive and non-exploitative

In 2021, the BOT conducted regular examinations and gave recommendations to ensure that financial service providers complied with market conduct regulations. In addition, the BOT conducted a thematic examination on the imposition of default interest and debt payment hierarchy, which became effective for all types of debtors in mid-2021, to ensure that the financial service providers had appropriate practices in line with an intention of promoting financial discipline by considering the debtors' ability to repay and debt burden.

The BOT encouraged the financial service providers to conduct a fair lending process, notify the customers about their rights and responsibilities at every step, and help the customers to alleviate debt problems especially during a pandemic situation. Consequently, the

BOT released a guideline for fair lending on October 4, 2021. This guideline compiled related regulations and laws in which the financial service providers must comply. It is principle-based with examples that can be used to apply to debtors, guarantors, and outsourcers. It comprised an end-to-end process starting from a development and offering of loan products with reasonable conditions and prices, a credit risk management that did not place an undue burden on debtors, debt collection with an appropriate behavior and charged with a declared rate, the debt relief measures and debt mediation, a fair litigation that complied with the laws, a sale and transfer of debts to other creditors along with providing the debtor's information, and defining an installment plan that aligned with the debtor's ability to pay.

Ensuring that customers' problems were being taken care of, while considering their complaints to enhance guidelines and supervision.

Since its establishment in 2012, the Financial Consumer Protection Center (FCC) has played a role in safeguarding the Thai citizens to be treated properly and fairly by the financial service providers. The FCC ensured that customers' problems were being taken care of effectively. The customers can seek for an advice or submit complaints about financial services with the FCC through numerous channels, such as telephone number 1213, the FCC website (www.1213.or.th), letters, or contact in person at the FCC and all three regional offices (Chiang Mai, Khon Kaen, Songkhla provinces). In 2021, the FCC played an important role in recommending and providing information on the debt relief measures and debt mediation to help mitigate the impact of the

COVID-19; as well as informing the customers about the rights and responsibilities, and the BOT regulations and best practices to promote the financial literacy.

Key issues raised from various complaints would be used to consider improving the regulations and continually enhancing the supervision of financial service providers, for instance a clear and standard setting on pricing, service charges, fees, and premiums would allow customers to receive fair services at justifiable prices. Such complaints led to the drafting of key principles, including (1) charging for an actual cost and no redundant billing (2) using a proper calculated basis in accordance with the costs

(3) refunding a portion of unused service by pro-rata basis based on an unused period while informing the customer about this condition and channels of refund (4) not burdening customers by requiring them to pay fees that were unrelated to their benefits (5) disclosing information in a transparent, clear, accurate, and up-to-date manner and (6) supervising price setting by business partners acting on behalf of financial service providers to ensure customer fairness.

In addition, the BOT revised the regulation on a practice related to deposits and loans for financial institutions and specialized financial institutions which was opened for public hearings twice in 2021. Currently, the draft regulation was being revised in accordance with the opinions received and was expected to be effective in early 2022.



Financial literacy promotion

The prolonged COVID-19 pandemic has adversely affected households, particularly those with high indebtedness, income shortfall, and insufficient savings. Meanwhile, financial fraud has also continued its rising trend. In response, the BOT put effort into building the public financial immunity and strengthening their resilience accordingly.

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The promotion of financial literacy to the general public.

The BOT promoted access to debt relief advice and other relevant financial matters, such as debt management and financial fraud alert through its online and offline platforms, including those of strategic partners. In 2021, the BOT reached over 27 million online users while leveraging offline channels to reach wider audiences, such as releasing financial literacy radio spots on FM100 (Jor Sor 100) and FM95 (Luk Thung Mahanakhon).

Moreover, the BOT fostered an environment conducive to financial literacy at the BOT Learning Center through permanent exhibitions, Prince Vivadhanajaya library materials, BOT archives, and activities such as “Financial Journey with the BOT”, online game-based activities allowing students from secondary schools across the country to practice simulated decision making on financial management and saving. The series of inspirational talks “Story Sharing 2021” featuring renowned speakers’ experience on personal and entrepreneurial financial management during the outbreak, such as “Debt Talk with the Money Coach” (a series of the case study on debt management discussed by a financial advisor) and “How Businesses Thrive During the COVID-19” (a series of startups sharing their experience on overcoming the crisis) were held. The “FinLit TeachRoom” offered audiences lectures on comprehensive personal financial management topics presented by financial experts.

Realizing the importance of public financial immunity enhancement, the BOT strengthened collaboration with strategic partners from the public and private sectors in promoting financial literacy to various target groups. For the public sector, the key driver in government administration and perceived role model, the BOT worked with the Office of the Civil Service Commission on incorporating financial literacy in the e-learning platform used as part of an orientation program for newly-hired government staff. Furthermore, the BOT conducted online training sessions on financial planning and investing for the Government Pension Fund members. For low-income households whose well-being reflects the country's development, the BOT aimed to build their financial immunity relying on channels of strategic partners closely-tied to this target group such as Government Savings Bank, Bank for Agriculture and Agricultural Cooperatives, National Village and Urban Community Fund Office, and Department of Health Services Support under the Ministry of Public Health (working through the Village Health Volunteers or Or Sor Mor). The BOT also worked closely with the private sector, the main engine of the country's production capabilities and competitiveness, on financial literacy promotion. For example, such collaboration included promotion of delivery services providers in their financial education program, which involved over 500,000 drivers.



Financial skills development for the workforce to encourage desirable financial behavior.

The BOT continuously conducted financial skills development programs for the workforce which was key to economic growth. Followings are the two leading projects.

The financial literacy competition project “Fin. Dee We Can Do!!! Season 3” targeted vocational college students nationwide. In this season, the project was fully delivered online and successfully reached 197 vocational colleges, exceeding the initial target of 120 colleges. Most of the participants focused on solving their financial pain points and developed solution suiting their contexts by raising awareness on saving, tracking daily expenses, and managing money by cutting down spending and earning extra income. Moreover, participants on the role model track, whose project was awarded from the previous season, also extended their financial literacy project to the network colleges, surrounding community, etc. Thus, financial education was embraced by schools, teachers, and change agent students who would be particularly benefited from growing to a financial literate adult, capable of promoting financial literacy in the future.

The financial literacy project in workplace “Fin. Dee Happy Life!!!” targeted the working-age population. The project was entirely operated online and promoted through a virtual open house for the first time. Series of online training sessions, counseling, and evaluation were offered to participants throughout the period. The project was successfully scaled up this year, surpassing the expected quantity and quality goals. **Quantitative results:** In 2021, the project engaged 83 organizations in both public and private sectors nationwide and trained 728 financial trainers (Fin. Trainers) that were able to disseminate financial literacy contents to their colleagues in a total of 36,905 persons. In particular, 3,689 participants who accomplished intensive workshops shown, as expected, a promising behavioral change in saving habits and debt management. **Qualitative results:** Participants showed improvement in financial



The winners for Fin. Dee We Can Do!!! Season 3 project (for Central and Northern region)



The training session of Fin. Dee Happy Life!!! project for the participants

knowledge and behavior and developed desired attitudes toward saving, such as setting saving goals and building contingency saving. In addition, they acquired a more profound understanding of debt management: comparing loan interest rates and conditions before taking out a loan, evaluating their debt status regularly, designing debt settlement plans, and knowing how to reach out for debt negotiation with financial institutions or debt relief measures issued by the BOT - “Debt Exit Fastlane,” “Debt Clinic,” etc. Consequently, they would be able to pay off debt.

Furthermore, in 2021 the BOT launched a special award, “The Role Model of Sustainable Financial Education in Workplace,” to recognize and support an organization that displayed good practices and commitment to financial literacy promotion even after joining the project in 2019.



The academic collaboration of developing financial literacy promotion infrastructure.

To promote financial literacy among Thai citizens, it was essential to consolidate support from relevant stakeholders in channeling financial literacy via content and platform suitable to each target group. The focus was to allow people to get a hand on experience that would lead to behavioral change and financial discipline, and hence, public financial resilience in the end.

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In collaboration with the Stock Exchange of Thailand (SET), the BOT developed **e-learning materials designed specifically for vocational education** on the SET online platform, which was expected to engage at least 100,000 views. In addition, the BOT participated in developing the financial literacy program **“Money Matters” for the Thammasat Secondary School**, which was taught to the 11th-grade class in 2021. The program could potentially be included as a standard curriculum adopted by its network and schools registered under the Office of Basic Education Commission nationwide.

In addition, the BOT collaborated with Chiang Mai Rajabhat University in designing financial literacy program for students (1st – 5th year) **“New (financially smart) Gen Teacher.”** The program aimed to tackle teachers’ debt issues by providing students pursuing the teaching profession with relevant financial lessons and an online assessment designed to evaluate their financial knowledge before graduation. The program was potentially being adopted by seven other Rajabhat Universities in Northern Thailand. Moreover, The BOT and the Rice Department, under the Ministry of Agriculture and Cooperatives, developed **a financial literacy program for farmers** to encourage appropriate financial planning and management of individuals and households.



Towards sustainable development of banknote production

Banknote Management Group (BMG), Bank of Thailand, is a part of production industry with its major role in design, printing and distributing Thai banknote to public. With its goal to ensure sufficient supply of clean and secure banknotes in circulation, The BMG needs to plan and control the value chain from raw material, printing process, storage, distributing to public via banking system to destruction unfit banknotes. All the processes need to use energy and resources while generating wastes, which are considered as a part of the wide spreading and intensifying global warming problems nowadays.

The BMG addressed the concern on these issues by taking into consideration environmental factors in its operation along with efficient resource management. The BMG also elevated its sustainable practices as part of key strategic direction through Environmental and Social responsibility, and Governance (ESG). In 2021, BMG focused on environmentally friendly operation and process improvement through banknote production, energy management and material selection.

Environmentally friendly production

1.1 Streamlining production and lay-out rearrangement for energy reduction

Since the Note Printing Works has been operated for decades with many old-modeled machines on the line, BMG thus reorganized its line of production (streamline) to increase its productivity with more cost-effective. By replacing the old machines with highly efficient ones, this could increase more than 15 percent of overall resource and energy efficiency.

There are over 500 times in daily operation to transport production material via "Power pallet trucks." The BMG therefore decided to rearrange its production lay-out by reducing working space of machine and its continued step for more time and energy saving. This could reduce more than 50 percent of the working distance of those power trucks.

1.2 Improving production process and resource reduction

For resource and energy reduction, the BMG **adjusted some of the processes** from managing each batch sizes and waiting for the full batch to **Just-in-time approach** which could increase production efficiency, reduce resource and energy consumption, reduce time between each process as well as reduce material moving and storing between the processes.

Moreover, **banknote packaging improvement** was another way to keep the goal towards resource reduction. BMG gradually discontinued using Polypropylene strapping Band for banknote packaging. From this project, it could reduce more than 500,000

meters of the strap per year, equal to the same distance from Bangkok to Khon Kaen.

The temperature and humidity control were of essential because they directly affected quality of banknote printing process. These two factors must be in the certain threshold to control print distortion and to get the right position of each printed element on the sheet. Therefore, **BMG planned to upgrade the chiller system** by replacing with newly technology and more efficient one, Oil Free Magnetic Bearing Chillers. With its suitable size and energy-saving specification, the new chiller system was expected to save energy about 1.5 percent of total energy consumption.

02

Resource efficiency (energy/water/waste management)

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2.1 Renewable energy

The BMG was targeting to reduce energy consumed by the production processes. The solar system has been used since 2020 for the printing work and reduced the electricity consumption about 400,000 kilowatts hour per year or about 1.72 million baht of the electricity cost per year. This also helped reduce the greenhouse gas emission of at least 215 Ton CO₂e per year (-3.37 percent per year). In 2021, the additional solar system was installed to gain the highest proportion of alternative energy consumption as required by law within 2022.

2.2 Efficient waste management system

The BMG has been managing wastes from the production, i.e. shredded banknote and wastewater, according to the international standards and continuously verified by Environmental management system (ISO 14001). The waste separation was also promoted for the appropriated destruction.

The shredded banknote was given to the waste-management companies to use as fuel for energy. On the other side, the treatment, quality improvement and reusing the wastewater from banknote production were implemented to reduce using the new water. Moreover, the BMG was controlling over the quality of wastewater released to the environment as required by law that there was no complaint from the nearby communities for the environmental issue.

Green house gas emission reduction (carbon footprint)

In 2021, the working team was established to study and collect the data of greenhouse gas emission from the paper banknote in five denominations; 20 50 100 500 and 1000 baht and to be verified as the carbon footprint of product (CFP). The study followed a life cycle assessment to find the greenhouse gas released at all stages through life cycle of banknotes from raw materials, production, distribution into circulation, usage and return to the BMG for destruction and treatment to waste. This could be assessed in term of Carbon Dioxide Equivalent, which led to the further policy implementation of greenhouse gas reduction.

The five denominations of paper banknotes were verified for the carbon footprint of products on December 2, 2021. The BMG aimed at using these CFP data to improve or adjust these processes to reduce greenhouse gas released from the organization and banknotes in the future.



Water turbine powered by solar cell equipped at the Banknote Management Group office



The solar cell installed at the rooftop of the Banknote Management Group building

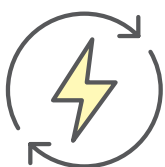


Sustainability operations within the BOT

Global warming and climate change are important and urgent aspects of sustainable affecting all sectors. It is the risk that brings global cooperation and considers reducing greenhouse effect gas emissions. Therefore, the BOT set goals in line with accelerating the implementation of Paris Agreement that required decisive actions by national authorities to reduce their GHG emissions drastically, the BOT targeted to sustain the temperature rise below 1.5°C, and reduce to net zero GHG emission by the year 2050 as per contribution to the whole Thailand's goal to net zero GHG emission by the year 2065.

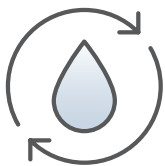
Efficient and environmentally friendly resource management (Green Facility)

To become a low-emission greenhouse gas organization. The BOT supported efficient energy management operations, as BOT is in the sector that emitted up to 70 percent of Thailand's greenhouse gas emissions, simultaneously focusing on using resources cost-effectively to reduce environmental impacts as follows:



1.1 Electrical power management

The BOT replaced the Data Center's Air Handling Unit (AHU) and managed the air conditioning system supplied to the system office 24 hours at night. Solar Roof Tops were installed. All fluorescents were changed to LED tubes, allowing to reduce energy consumption by 3.3 million kWh and save 14 million baht in electricity charges.



1.2 Water system management

The BOT swapped toiletries with all sensor systems and adjusted the flow rate of water to all faucets, sinks and toilets in all buildings, as well as effective effluent management. The treated effluent was used in plants watering. Moreover, water meters were installed outside the building to calculate the amount of water used and water control management, such as to monitor water used for water planting, car washing, or engineering systems purposes, including reducing the frequency of pool cleaning and tracking daily leakage and water use, allowing to reduce water consumption by 64,700 cubic meters and save a total of 1 million baht.



1.3 Efficient waste management

The BOT established procedures to manage all types of waste, including infectious waste which numerous increased during the COVID-19 pandemic. BOT-wide guidelines were being used to reduce waste, with apparent and adequate placement of bins, while also raising awareness by encouraging employees to dispose wastes from the right type from the source, starting from within the pantry room in their departments and the canteen, as well as at home, more and more refusing to buy or to use single-use plasticware. The BOT also run upcycling projects paper, such as using leftover paper as an education book, and using A4 wrapping paper as a medicine bag, etc.

The BOT arranged appropriate waste disposal according to the type of waste in corporate with the community enterprises in Suphanburi province to reprocess waste into energy and new use materials which has a volume of 88,400 kgs.

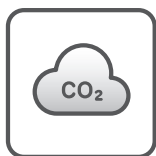


1.4 Paper usage management

The BOT focused on paperless meetings, using electronic documents in workflows such as using electronic internal records (called BOT-Memo), submitting works to authorize via e-mails, setting the copy machines to a 2-page copy printing system. This reduced paper consumption by 16,990 kgs or saved money in total amount of 554,000 baht.

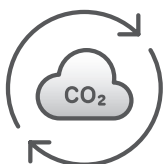


Energy and environmental conservation promotion program



2.1 Carbon label registration project

BOT head office was certified as a low carbon footprint organization based on the carbon footprint registration from Thailand Greenhouse Gas Management Organization (Public Organization) on August 26, 2021 for 4 consecutive years, total volume (scopes 1 and 2) 7,813 tons of carbon dioxide equivalent emission.



2.2 Zero carbon offsetting

BOT head office has been registered as a carbon neutral organization by the Thailand Greenhouse Gas Management Organization (Public Organization) since 2017, with the support of carbon credits from Mittraphap Company. Bio-Power (Dan Chang) Co., Ltd., Suphanburi province and community enterprises, a group of biogas users, Tha Manao Subdistrict, Chai Badan District, Lopburi Province, those were collaboration to push towards a low carbon economy.



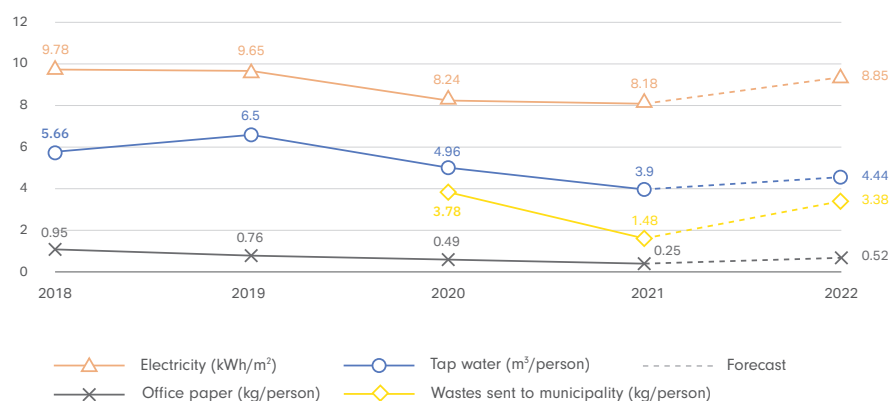
2.3 Green Office Project

The BOT has been certified as the green office from the Department of Environmental Quality Promotion on September 20, 2021. The head office and Northern Regional Office met the excellent assessment criteria (gold) and the Northeastern Regional Office passed the very good assessment criteria (silver).

Environmental performance

From the above plans and performance measurement. The COVID-19 pandemic, most staffs were working from home, leading to better performance in 2021 than goal, with greenhouse gas emissions falling by 25 percent compared to a 4 percent decrease in target from 2020 or a decrease of 43 percent compared to base year 2017.

Operating Results in 2018-2021 and Target in 2022

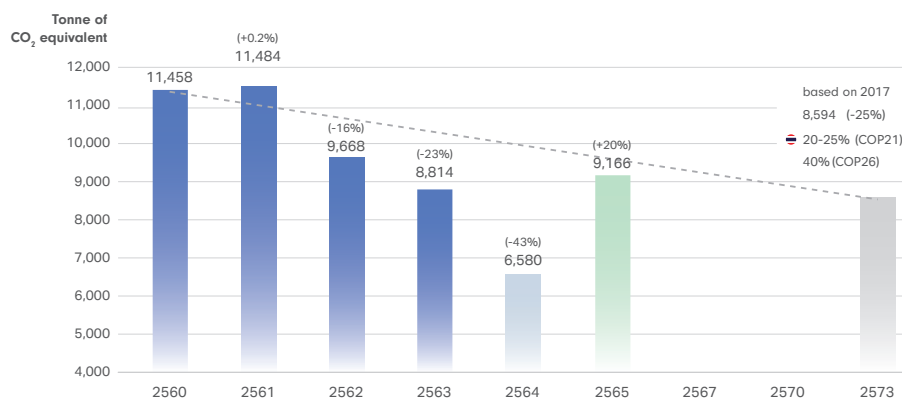


Towards environmental targeted goals.

The BOT set goal to reduce Greenhouse Gas (GHG) emission at the BOT's head office, Northern Regional Office, and Northeastern Regional Office (Southern Regional Office is now under renovation of office building) to no less than 20 percent to the target (net zero GHG emission by the year 2030), and to reduce GHG not less than 25 percent compared to the base year 2017.

Moreover, the BOT targeted to conduct green mindset behaviors to all BOT staff in order to drive the BOT to Green Community Sustainable Society.

Greenhouse Gas emission at the BOT's head office, Northern Regional Office and Northeastern Regional Office



Creating Trust and Credibility for the Public



The BOT listens, understands and stays up-to-date, moving towards targeted and active communication

2021 was another year that the BOT faced a difficult challenge in terms of communication during the aftershock stage from the COVID-19 pandemic, combined with rapidly changing global environments including increases in the variety of financial threats, digital trends, and sustainability. Therefore, the best and only available choice for the BOT was to communicate with an open mind, listen, and cooperate in building networks with other agencies so that the general public would understand and trust in the implementation of the BOT's policies.

The BOT is fully aware that active listening is an important key to understand and keep up with the problems and lead to effective communication. In addition to listening through various channels such as call centers, websites, and direct surveys, the BOT utilized social media listening tools to monitor specific points or problems. Furthermore, this allowed the BOT to listen to opinions from the public and business owners impacted from COVID-19 on whether they understood and could access the BOT's measures. The BOT then utilized data analytic tools to analyze such information.

To ensure strategic and targeted communication, the BOT utilized the data obtained to plan its communication strategy in a customer centric manner to set the appropriate messages, methods, channels, frequencies as well as partners to communicate to different target groups. Furthermore, the BOT published various forms of media and adjusted the contents so that they were easier to understand. The BOT also utilized a wide coverage of media channels such as mainstream media like television, newspaper, news website, including social media such as Facebook, Twitter, Instagram, and expanded upon existing forms of media, such as Line, Spotify, and Blockdit, all of which were well-received from the users.

In terms of communication to the grassroot community, the BOT cooperated with the Ministry of Interior to communicate through community leaders and radio stations. In addition, the BOT's 3 regional offices still act as main pillars for active community outreach and close coordination with local media to arm local communities with financial knowledge and warn them of any financial threats.

As for expanding partnership, in addition to mainstream and social medias, the BOT also elevated cooperation with key strategic stakeholders including public, financial, and private sectors by continuously developing Stakeholder Relationship Management (SRM) since 2020. SRM was an important tool for the BOT to create understanding, listen to problems, opinions, and recommendations, and act as a medium from key stakeholders. In this regard, the BOT set up 14 important stakeholders central database¹⁵ so that SRM could access information on a wide basis. Furthermore, the BOT established strategic cooperation plans with stakeholders to foster cooperation and policy implementation with strategic partners as targeted.

Going forward, the BOT's communication will still face various challenges, ranging from a broader scope of objective which includes new objective and a variety of impacted groups, as well as increasing public reliance on the central bank's mandates. Furthermore, the media ecosystem is undergoing important changes. On the one hand, the general public's increasing usage of online media is becoming the mainstream way for news consumption. On the other hand, in a world where anyone can act as the media, there is an abundant and rapid increase in fake and fraudulent news. Therefore, the BOT's communication mechanisms, as the closest source to the general public, must work harder, be more active and open in listening to public opinions, communicate to the point, and cooperate with all relevant sectors to promote the effective implementation of various policies for the highest benefits of the Thai economy.

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¹⁵ Comprising of Fiscal Policy Office, Thai Bankers' Association, Securities and Exchange Commission, Revenue Department, Association of International Banks, Thai Chamber of Commerce, Federation of Thai Industries, Specialized Financial Institutions, Office of Insurance Commission, Public Debt Office, Office of the National Economic and Social Development, Association of SMEs, and Thai National Shippers' Council

Cyber theft: risk you can avoid



The spread of the COVID-19 pandemic has led to increased technology usage by the Thai population, including payments, receiving government transfers, work, and various other aspects of their personal lives. Studies showed that the digital transition will occur 5 times faster and will only take 2 years as opposed to previous estimates of more than 10 years before we would witness this level of technological usage in the financial sector.

In 2019, prior to the COVID-19 pandemic, statistics showed that Thai people carried out 8,985 million transactions via e-payment, and these transactions increased exponentially to 13,400 million and 18,520 million in 2020 and 2021 respectively (data as of November 2021). Nonetheless, the faster than expected transition could create more financial victims, especially for those who are unprepared or unable to adapt to technology, the most often of which is “Phishing.”

Phishing is a form of data theft where culprits pretending to be financial institutions, organizations, or trustworthy individuals send fake SMSs or e-mails to trick victims into filling out their personal or financial information. Cyber thieves will then use such information for fraudulent purposes. The lies they tell will adapt according to the situation, for example “you received payment from the government”, “Bank of Thailand has provided you with a loan”, or “the bank is seizing your credit card please provide the following information...”. If you are familiar with or have received such messages, it could

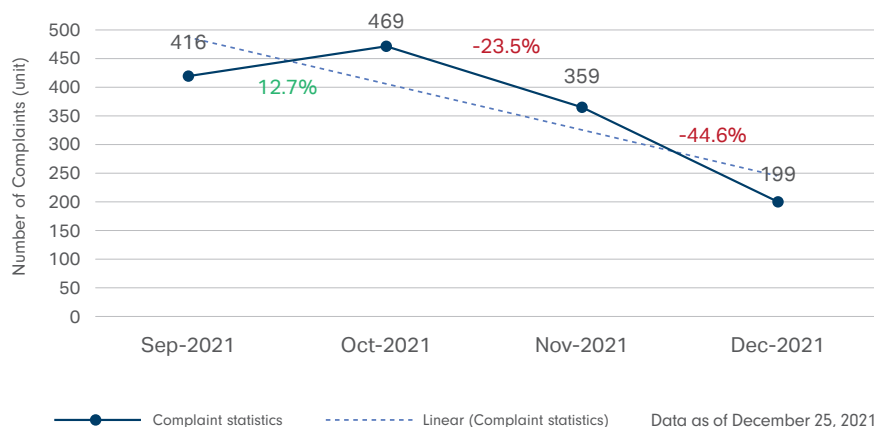
mean that you were a target of Cyber Theft.

Between September to December 2021, the BOT received a total of 1,443 complaints regarding such fraudulent loans via call centers and emails. More than 50 percent reference the Bank of Thailand (BOT) as part of their scam (data as of December 25, 2021).

The BOT, as a regulatory organization that has been falsely impersonated, is not complacent over what happened. Therefore, the BOT has cooperated with the Office of the National Broadcasting and Telecommunications Commission (NBTC), financial institutions, and mobile phone service providers in preventing such fraudulent SMS at its source, monitoring and establishing preventive measures for other forms of fraud as well as promoting active communication and financial literacy to arm the general public against these thieves. These active actions have contributed to a statistical decline in complaints filed with the BOT in the second half of 2021.

Statistics regarding fraudulent online loan applications complaints between September - December 2021

Between September to December 2021, the BOT received a total of 1,443 complaints regarding such fraudulent loans via call centers and emails. More than 50 percent reference the BOT as part of their scam.



¹⁶ The Economist: The World In 2021 indicated that within 3 months, online sales expanded at a pace that was previously expected to take 10 years to accomplish.

For those who had already fallen victim to such frauds, the BOT in cooperation with relevant agencies worked to alleviate such impact on the public. For example, in case of a BIN attack, or what many refer to as “Money-Sucking Apps”, which received plenty of media attention during the end of 2021, the BOT coordinated with financial institutions to quickly return lost money to impacted customers within 5 business days. Furthermore, each bank elevated their preventive and resolution measures by increasing detection coverage of suspicious activities to those with low and frequent transactions, increasing surveillance of international transactions, informing customers of all transactions, and

increasing public awareness of preventive measures whereby banks would immediately contact clients for additional information immediately should they detect suspicious transactions. These measures have helped to lower the number of fraudulent transactions.

In addition, the BOT, together with Thai Bankers’ Association pushed all card network service providers to implement additional measures for verification before making payments with debit cards for all online stores, particularly those abroad. This also included the usage of new technology to continuously prevent and detect new financial threats.

Awareness of cyber threats is easier than you think. Although it is commonly believed that cyber threats are inseparable from technology and represent a concern, nonetheless, everyone can easily prevent such threats.

Notice SMSs or emails received whether the sender, title, and message are suspicious or not. If unsure, contact the agencies referenced prior to conducting any transactions.

Do not click on links. Do not download files from untrustworthy sources. Do not use links connected to various emails or websites to access online banking accounts.

Avoid jailbreaking or rooting your smartphones because there is a high risk that data will be stolen.

Install legal virus protection programs on computers and smartphones and audit and update operating systems consistently.

Do not use public WiFi. Online transactions, in particular, should be accessed through internet provided by smartphone service providers.

Prioritize setting up passwords that are hard to guess and not too short as well as change your password every 3 or 6 months.

Logout every time when not in used.

Avoid linking debit cards to untrustworthy websites or applications and set appropriate monetary limits.

PHISHING TACTICS

The principle behind Phishing is to scare or alarm victims so that they are more susceptible to deceit and follow any instructions. The most common forms are emergency SMSs or e-mails. For example, claiming that the sender is a financial institution who are about to freeze your account, or that there are abnormalities with your account. They could also claim to be government agencies and require your personal or financial information so that they can provide government support or payments, and then send a link to a near perfect replica website so that the people will fill out the information before they realize the scam.

Once clicked on the link, victims will be connected to a fake website with characteristics similar or nearly identical to the real website. If victims provide data in such websites, these criminals will obtain your username and password, and will trick victims to fill out OTP thereby allowing them to access financial applications.



The BOT's international cooperation

The BOT played active roles in enhancing international financial cooperation in order to preserve economic and financial stability in Thailand and the region, which helped strengthen the BOT's recognition at the international level.



The BOT's participation in international organizations and international fora

Throughout 2021, the BOT actively participated in international fora and was regularly invited to share insights and contribute to both regional and global policy discussions. The BOT's key contributions and initiatives cover policy responses to COVID-19 crisis, payment connectivity, financial innovations, especially the development of Central Bank Digital Currency (CBDC), and regulatory and supervisory technology, including big data applications.

Additionally, the BOT was instrumental in shaping regional policy stances. For instance, the BOT reiterated the need for the International Monetary Fund (IMF) to adopt the Integrated Policy Framework (IPF)¹⁷ that considered unique circumstances of emerging market economies, faced with challenges in safeguarding economic and financial stability amid a highly volatile environment. Moreover, the BOT also pushed forward and presented the Policy Note on Capital Flow Safeguard Measures that reflected the ASEAN's perspective on the IPF to the IMF Managing Director. This was part of the BOT's effort to call for more flexible policy recommendations from the IMF, following the upcoming review of the IMF's institutional view on the liberalization and management of capital flows that would take place at the beginning of 2022.



Dr. Sethaput Suthiwartnarueput
at the Governor Talks with IMF

¹⁷ Integrated Policy Framework (IPF) is characterized by deployment of a mix of policy tools such as monetary policy, macroprudential measures, FX intervention, and capital flow management

Regional financial cooperation

2.1 Sustainable financing in ASEAN

The BOT, as the co-chair of ASEAN Senior Level Committee on Financial Integration, worked with financial sector regulators in the region to establish the ASEAN Taxonomy Board (ATB) in order to define a credible classification system for sustainable activities. The ATB released the ASEAN Taxonomy for Sustainable Finance - Version 1 as a standard framework that initially focused on climate change and a key building block that facilitated capital allocation from financial sector to sustainable economic activities in an efficient and transparent manner under the same standard framework. In addition, a Learning Roadmap was developed to provide capacity building for financial sector regulators in promoting sustainable finance in ASEAN.

2.2 Qualified ASEAN Bank: QAB

The BOT recognized the importance of QAB establishment between Thailand and other ASEAN countries under the ASEAN Economic Community Blueprint, which aims to expand the banking network to effectively facilitate trade and investment between Thailand and other ASEAN countries on the reciprocal basis. In 2021, the BOT concluded QAB bilateral negotiations with the Bank Negara Malaysia (BNM), allowing up to three banks to be established in the other jurisdiction. As Malaysia was one of Thailand's most significant trading partners in ASEAN, the implementation of QAB would support financing for businesses that operated across both countries, promoted competition and widened the range of financial services, as well as improved the quality of financial products to better serve the needs of businesses and consumers. Going forward, the BOT plans to pursue QAB negotiations with other key trading partners in ASEAN.

2.3 ASEAN Payment Connectivity

The BOT, together with ASEAN central banks and participating ASEAN financial institutions continued to develop cross-border payment linkage as part of the ASEAN Payment Connectivity initiative. In 2021, the BOT collaborated with the Monetary Authority of Singapore (MAS) in establishing the linkage of Thailand's PromptPay and Singapore's PayNow real-time retail payment systems, which would facilitate retail payment between the two countries.

¹⁸ In conjunction with the 26th Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP26) in November 2021

¹⁹ Existing banks are included. Currently, there are two Malaysian banks operating in Thailand, while only one Thai bank in Malaysia. As a result, one Malaysian bank and two Thai banks can be newly established as QABs in the other jurisdiction. The BOT and BNM are now officially accepting QAB applications.

²⁰ Customers of participating banks in Thailand and Singapore will be able to transfer funds across the two countries by using just a mobile number.

The BOT also developed a cross-border QR payment linkage with the State Bank of Viet Nam (SBV), Bank Negara Malaysia (BNM) and Bank Indonesia (BI). These linkages would help facilitate cross-border retail payments, which would further benefit regional tourism sector once the international travel resumes to normal.



03

Promotion of local currency usage

The objective was to provide alternatives for business operators to use local currencies for cross-border trade and investment transactions, which could reduce reliance on major currencies and increase efficiency of their exchange rate risks management. Significant developments in this area were as follows:

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3.1 Enhancement of the local currency settlement framework between Malaysian Ringgit and Thai baht

Bank Negara Malaysia (BNM) and the BOT agreed on the further expansion of the ringgit-baht settlement framework, which additionally provided foreign exchange policy flexibilities and allowed Malaysians and Thais residing in either country to utilize the framework. Additional qualified commercial banks (Appointed Cross Currency Dealers: ACCD) in both countries were also appointed to provide financial services under the expanded ringgit-baht settlement framework. This would further facilitate settlement of trade and direct investment, and enhance the cross-border QR payment between two countries. The enhancement came into effect on December 1, 2021.

3.2 RMB-THB Bilateral Swap Arrangement (BSA)

The BOT and the People's Bank of China (PBC) signed the RMB-THB BSA in 2011, to provide liquidity support in promoting the usage of local currencies in trade and direct investment settlement between Thailand and China, in an amount up to 70,000 million renminbi, or 370,000 million baht. Since its establishment, the BSA has been continually renewed²¹. In December 2021, the PBC activated the BSA to draw Thai baht liquidity from the BOT in order to provide liquidity to a Chinese financial institution in support of a Chinese business' cross-border transaction.

²¹ The BSA was most recently renewed in 2020.

Participation in Free Trade Agreement (FTAs)

The BOT, in collaboration with other Thai financial regulators, concluded its financial service liberalisation negotiations under the ninth package of the ASEAN Framework Agreement on Services (AFAS). Most members committed to deeper and broader liberalisation by removing restrictions on regional trade in services in various sectors, to a greater extent than under other agreements. For Thailand, cross-border money transfer services were liberalised to provide more options for consumers, and to support the implementation of technologies in enhancing the efficiency and security in service provision, as well as to promote access to financial services.

Furthermore, the BOT was participating in the negotiations under the ASEAN-Australia-New Zealand Free Trade Area, in the areas of trade in services, investment, and electronic commerce, in order to enhance the Agreement's alignment with recent trends in trade in services and investment²².



Dr. Sethaput Suthiwartnarueput at the ASEAN+3 Finance Ministers' and Central Bank Governors' Meeting (AFMG+3)



Mr. Mathee Supapongse, Deputy Governor, Monetary Stability of the BOT at the ASEAN+3 Meeting

²² Negotiations on the Agreement formally began in April 2021, with an aim to conclude all negotiations within 2022.



Knowledge building and academic networking

The BOT recognizes contributions to evidence-based policymaking through knowledge building and academic networking, as well as the expansion of networking to private sectors, which will lead to effective knowledge adoption and implementation. In 2021, Puey Ungphakorn Institute of Economic Research (PIER) and other departments within the BOT, together with their academic alliances, expanded their work on many fronts as follows:

01

Knowledge creation and dissemination

The BOT disseminated more than 190 research studies by the BOT and outside researchers through various channels, including PIER Discussion Papers (full research papers), PIERspectives (knowledge synthesis papers), aBRIDGEd (short articles digested from full research papers for wider audience), Focused and Quick (FAQ) articles, and short OP-ED articles published in popular columns such as “Sedthasart Khao Tha”-ThaiPublica Online Column, “Jaeng See Bia”-Bangkok Biz News Column, “Bang Khun Phrom Chuan Kid”-Thairath Newspaper Column, and “Ruam Duay Chuay Kid”-Prachachat Newspaper Column. Furthermore, interesting data sets were visualized via PIER Statistics, and could be further analyzed by any audience with an interest in the subject.

promoting evidence-based policies, such as the socioeconomic research “Different but Same Same: Affective and Ideological Polarization in the Thai Context” to help alleviate current conflicts of opinions in the Thai society, and the research on Thailand's pension reform to address the country's problems of inadequate, unsustainable, and fragmented old-age income schemes.

In 2021, the BOT also awarded 8 PIER research grants to outside researchers both for research projects that supported the BOT's operation and for research projects that extended the frontier of economic knowledge. In addition, the BOT continuously developed Thailand's Integrated Database for Economics (TiDE), an integrated and user-friendly database platform for Thai economics data that public users can access at no cost. (<https://tide.pier.or.th/>)

During the COVID-19 pandemic, media briefings were held online with the goal of bringing research to a wider audience and

BOT SYMPOSIUM 2021

โครงการสร้างเศรษฐกิจสังคมไทย : ความเปราะบางท่ามกลางความเปลี่ยนแปลง

“ท่ามกลางสังคมไทยที่มีความหลากหลายและประชากรที่เพิ่มขึ้น การพัฒนาเศรษฐกิจไทยจำเป็นต้องอาศัยความร่วมมือจากทุกภาคส่วน โดยเฉพาะอย่างยิ่งจากภาคเอกชนที่มีศักยภาพสูง”

“โลกที่เปลี่ยนแปลงอย่างรวดเร็ว การปรับตัวของภาคธุรกิจและภาคประชาสังคมเป็นสิ่งจำเป็น การทำงานร่วมกันของภาคส่วนต่างๆ จะช่วยให้ประเทศไทยก้าวทันโลกและสร้างสังคมที่ยั่งยืน”

“เทคโนโลยีไม่ใช่อุปสรรค แต่เป็น enabler ที่ช่วยให้เกษตรกรสามารถเข้าถึงตลาดและเพิ่มผลผลิตได้”

“การสร้างความเปราะบางทางเศรษฐกิจจะนำไปสู่ความยากจนและปัญหาสังคมอื่นๆ ที่ตามมา”

สุพริศร์ สุวรรณิก
ผู้อำนวยการสถาบันนโยบายและวิจัยทางเศรษฐกิจ
ธนาคารแห่งประเทศไทย

เทวฤทธิ์ วงศ์วานิช
ผู้อำนวยการศูนย์วิจัยและพัฒนาระบบเศรษฐกิจ
ธนาคารแห่งประเทศไทย

นครินทร์ วงศ์ไพฑูริย์
รองผู้จัดการฝ่ายวิจัยและพัฒนาระบบเศรษฐกิจ
ธนาคารแห่งประเทศไทย

ปัทมา จันทน์
ผู้อำนวยการศูนย์วิจัยและพัฒนาระบบเศรษฐกิจ
ธนาคารแห่งประเทศไทย

Providing national academic platforms

The BOT organized the annual BOT Symposium under the theme “Building a Resilient Thailand” in 2021, aiming to present evidence-based policies in a variety of areas to address the challenges brought by the looming megatrends. Due to the COVID-19 situation, the Symposium was held online and open to the public, with over 18,000 attendees. The high-quality research papers presented at the Symposium were designed to be easily accessible and relevant to general audience.

Furthermore, as a part of collaboration between PIER and the IMF Capacity Development Office in Thailand (CDOT), the CDOT-PIER joint seminar series was launched with the goal of encouraging knowledge exchange and disseminating knowledge to the public. In addition, PIER Research Exchange forums, the standard platform for fostering high-quality research, exchanging ideas, and strengthening the network of economists from within and outside the BOT, were held 17 times in 2021.

Building academic networks and connecting researchers with policy makers

The BOT has been building academic networks on a regular basis, both domestically and internationally. Since its inception in 2015, PIER has had over 250 academics, economists, and researchers in economics-related fields of study from various public and private institutions producing and presenting research, as well as exchanging ideas and knowledge. Meanwhile, the BOT has been steadily expanding its international networks, as evidenced by PIER's collaboration with J-PAL Southeast Asia to establish a regional research network.

In addition, the BOT expanded its collaboration with other institutions to make use of research knowledge, such as the field study program “Developing Sustainable Agricultural Insurance and Credit with Technology and Behavioral Insights” to enhance a more effective and sustainable nation-wide crop insurance and credit system, under the collaboration among six institutions: PIER, Department of Agricultural Extension at the Ministry of Agriculture and Cooperatives (DOAE), Geo-Informatics and

Space Technology Development Agency (Public Organization) (GISTDA), Digital Economy Promotion Agency (DEPA), Bank for Agriculture and Agricultural Cooperatives (BAAC), and Thai General Insurance Association (TGIA).

The BOT organized field-specific policy forums for relevant stakeholders including policymakers, businesses, and entrepreneurs to exchange perspectives and policy recommendations. PIER, in particular, contributed to the policy dialogue on the topic of “Sustainability,” also known as the “ESG: Environmental, Social, and Governance.” In May 2021, PIER and the United Nations Thailand co-organized the event “Thailand's Sustainable Green Growth: Embedding Resilience,” which was followed by the “Policy Forum: Discourse for Sustainability” series throughout the year. The useful comments and practical recommendations from participants for both public policy and private use are available on the PIER website. (<https://www.pier.or.th/forums/discourses-on-sustainability>)

Internal Excellence Strengthening



Human resource management and organization development

The BOT is aware of rapid changes and more complexities in the economy, society, technology and the financial system. Therefore, the direction of the organization, roles, mission, as well as the preparation of employees' skills and knowledge to support future jobs through various operations was set as follows:



Strategic manpower plan

The BOT developed a strategic manpower plan as a guideline for recruitment, human resource development, the organizational structure review, and the change of working style supporting the future challenges. Also, BOT designed a program enhancing our leaders' potential, knowledge, experience, and leadership competency to efficiently drive the organizational strategy and mission. Additionally, the BOT was implementing a new human resource and organizational management system (HR Platform) to enable the more effective HR and organizational management by utilizing HR data to its full efficiency.

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Recruitment

The BOT implemented the active recruitment strategy through various channels, aiming to ensure that the right workforce to meet the organization's needs was recruited. Recently, the BOT focused on recruiting talent who was qualified with the future skills in the field of Artificial Intelligence (AI), machine learning, software engineering, as well as high potentials who can learn and work in a multidisciplinary field. Furthermore, the BOT also approached the expertise or high-experienced candidates from industries to support our work in every aspect. The BOT was primarily looking for the talent who possessed not only technical expertise, but also the desirable characteristics such as keening on learning, adapting, being flexible and ready to work with a sense of purpose by upholding the common good as a key.

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Human resource development

The BOT was leveraging staffs' potentials to carry out challenging missions and adapt to changes by focusing on their digital literacy and mindset development. These developments covered technological and digital applications, data analytics, new knowledge, and skills to support agile working, as well as essential soft skills, such as teamwork and collaboration, and analytical and critical thinking. Meanwhile, sharing forums with external experts on future knowledge were also organized to foster reinforcing environment of learning organization.

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Performance management and career advancement

The BOT placed great importance on motivating employees to drive mission and key strategies of the organization. In order to accomplish the mission, clear organizational goals were set and connected it to the employees' mission and their work through the performance management system. As for performance appraisal, the BOT focused on employees' value contribution towards the organization, desirable behaviors according to the organizational core values, and leadership skills. Additionally, in 2021, the BOT encouraged employees with extensive skills in digital technology and innovation to gain opportunities for career growth that are aligned with their solid expertise, in addition to managerial career paths.

05

Staff care for strengthening employee engagement

Ensuring a well-being of our employees was the utmost priority during the work from home (WFH) period of the COVID-19 pandemic. The BOT continued to focus on adapting our work environment, policies, and benefits to support our employees' well-being as follows:

- Offering COVID-19 vaccine for employees
- Providing Antigen Test kits (ATK) for screening staff before entering the office
- Rendering telemedicine service to provide our employees with essential medicines
- Providing mental support through an employee assistance program (EAP) via application
- Encouraging virtual exercise and recreational activities to help employees stay physically and mentally healthy at home
- Providing various equipment and supporting expenses for our employees to help them work from home effectively

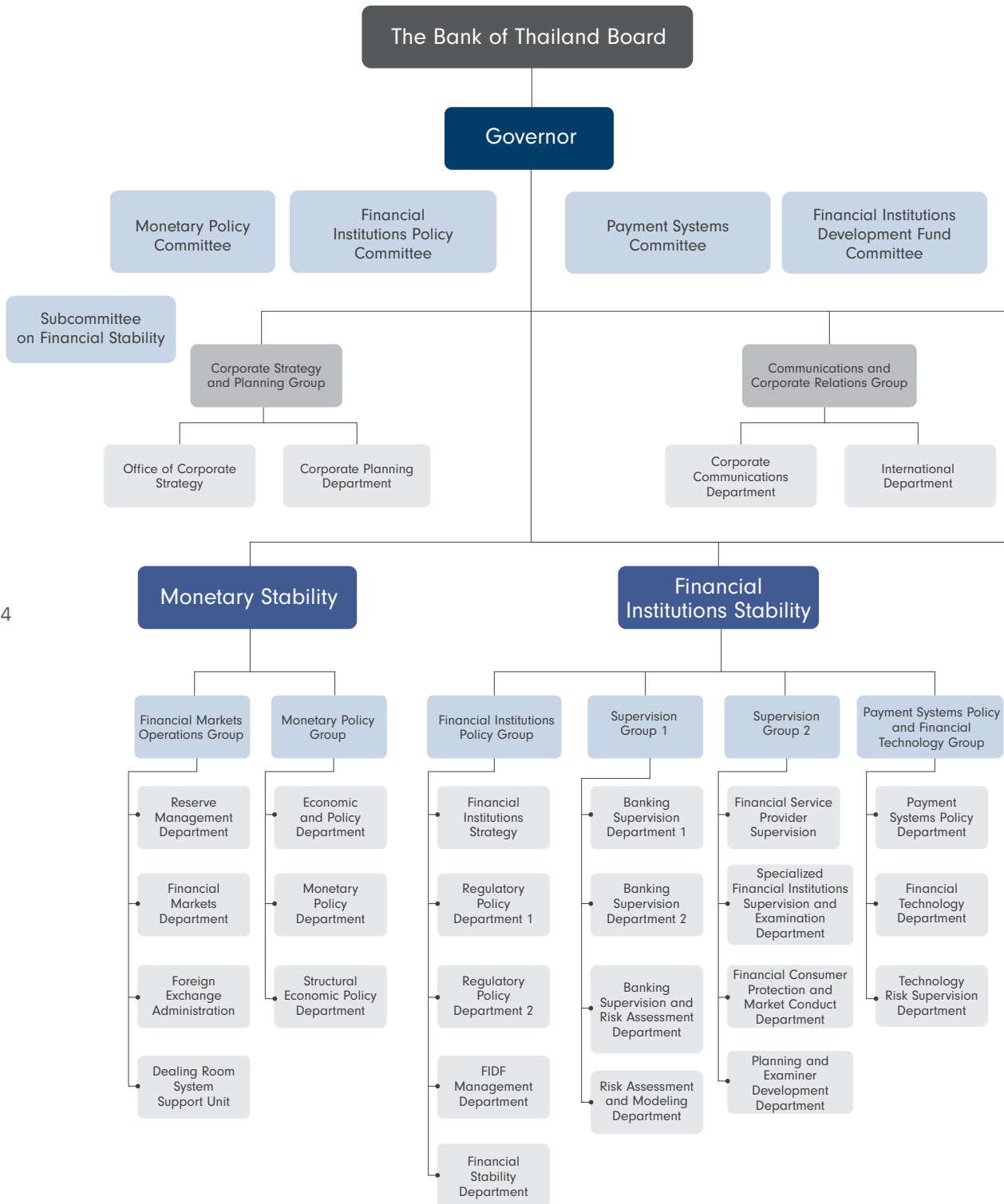
In addition, the BOT regularly conducted employee engagement surveys throughout the year to help us get insights for continuous improvement in our way of working and fostering a positive WFH environment. Moreover, constant communication with our employees through various channels was another essential tool in communicating key organizational policies and maintaining strong working relationships at all levels at the BOT.

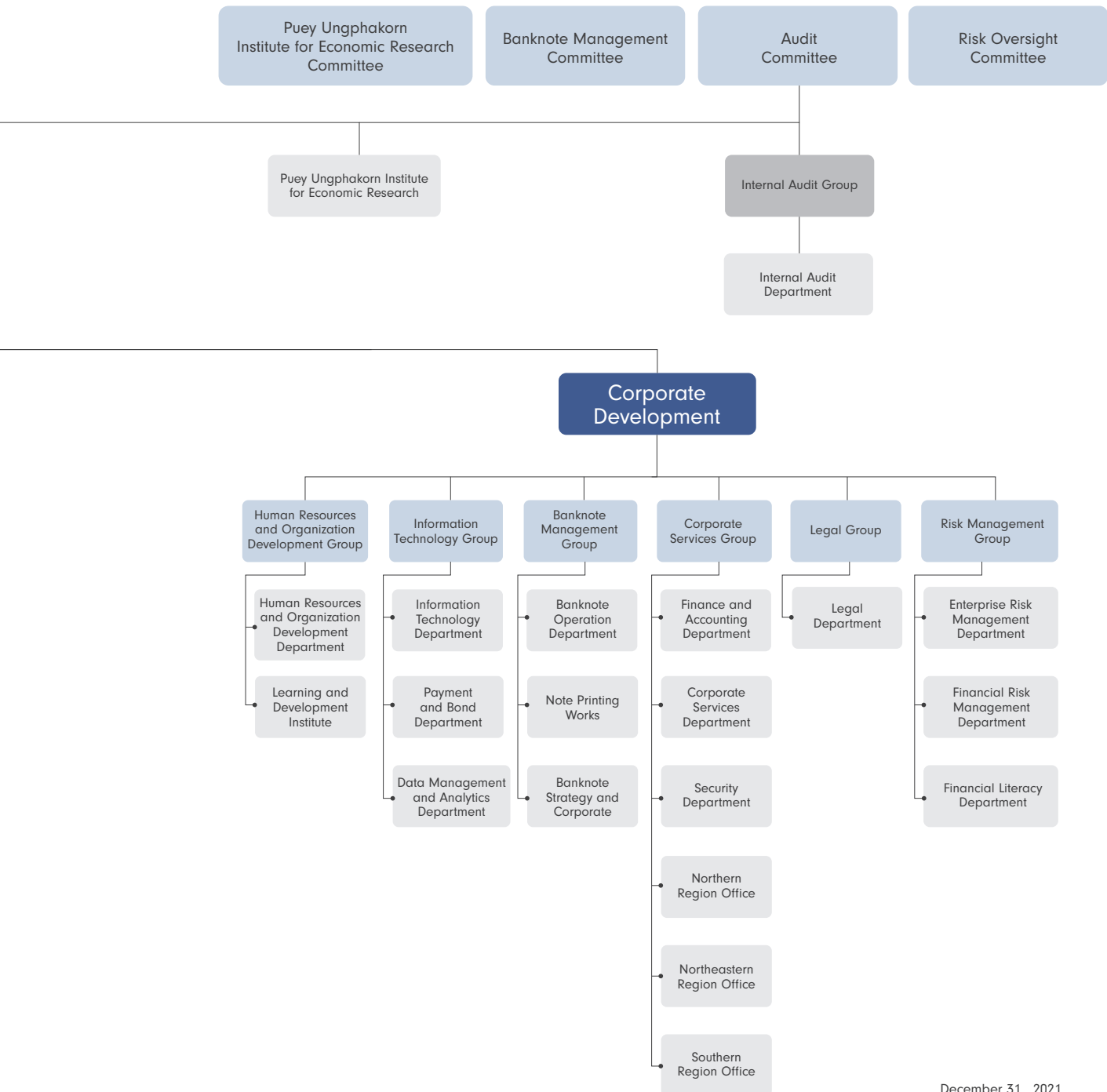
06

Way of working and culture

The BOT was promoting cross-functional collaboration through various joint projects and open platforms that enabled employees from different departments to work closely together on special assignments. These opportunities paved the way for employees to broaden their work knowledge and experience in challenging work environment. This would ultimately become a key mechanism in leveraging their skills and expertise to achieve the goal of the organization as the One BOT.

Bank of Thailand Organization Chart







Information technology management and data management

According to the BOT 3-year strategic plan 2020-2022, the BOT emphasized leveraging technology and data in every work process, and significantly applied new IT tools and data platforms during 2021 which were widely accepted by employees, especially during work from home period.



Information technology

Due to COVID-19 epidemic, the BOT needed to change to a hybrid working model along with new technologies. Increasing efficiency of IT systems was another critical mission to support the new style of work. Technologies and tools that could help reinforce the employee's work-life as well as strengthen the security system were explored.

1.1 BOT digital organization transformation

The BOT adopted to the new way of working both onsite and from home by applying digital collaboration tools. Throughout 2021, the BOT continuously enhanced work processes using the new streamlined and standardized solution to cope with the VUCA world, while taking care of the BOT's missions. There were 5 domains of transformations that were being pursued as follows:

1) Moving towards a digital workplace from a hybrid working model

The BOT's employees were familiar with the collaboration tools and rapidly adopted newly released features. For example, sharing and coauthoring documents, setting up and managing VDO conference meetings, and replacing manual work with a Robotics Process Automation (RPA) which saved more than 7,000 man-days a year. The BOT also began using digital signatures with the signing of the financial contracts with the custodians and the external fund managers (EFM) since Q2/2021. Applying digital signatures to all documents was expected to be valid within the next year.

2) Data-driven organization with evidence-based decision-making

Planning to acquire transactional data for the purpose of supervisions and regulations (Regulatory Data Transformation), the BOT prepared various infrastructures by revamping and expanding the data system to process big data. The utilization of the data and tools altogether was maximized while applying supervision technology to calibrate the regulations to be more precise in a timely manner. It was aimed to reduce the workload for both the BOT and other related organizations.

3) Moving to cloud platform

It was planned to increase the BOT's efficiency by using cloud platforms that were of de facto standards and user-centric by design. In 2021, the BOT was in the process of buying a new HR platform and was expected to be launched by early 2023. For the next year, it is planned to explore the new ERP platform and service management platform for our public services.

4) Cultivate digital mindset and strengthen new capabilities

Employees are the most valued asset for the BOT. The 'Digital First' project helped the staff to cultivate digital mindset and strengthen their capabilities with new tools. The employees were provided with opportunities and spaces to freely try and learn in order to expose their hidden potential. More than 20 projects were submitted to the Digital Champion Challenge in 2021. Online courses and workshops in the Digital Learning Board platform and self-learning platform, were utilized and well attended throughout the year.

5) Highly secure with leading cyber security management

The BOT was continuously strengthening the cyber security system. In 2021, the Security Operation Center (SOC) was upgraded by applying Security Orchestration, Automation and Response (SOAR) technology to ensure that new threats would be detected and responded in time. The BOT also enhanced our threat hunting system, patch management system, and network management system. Lastly, a new backup system dedicated to cloud platforms was also implemented to be always ready for service.

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Award Ceremony for the winners of the BOT's Digital Champion Showcase Competition

BOT digital innovation

The BOT was awarded IDC Future Enterprise Awards: 2021 Best in Future of Digital Innovation from the IDC Digital Transformation (DX) Summit Singapore event, which was held on October 7, 2021. The IDC Future Enterprise Awards recognized outstanding organizations that had made critical breakthroughs in digital transformation. BOT's digital transformation project was selected with regards to the development of DLT Scripless Bond Project. The project utilized innovation and technologies to transform the issuance process of government bond, which resulted in greater efficiency and cost reduction for all stakeholders.

The success of the project was the result of closed collaboration between the BOT and all related parties, namely the Public Debt Management Office, Thailand Securities Depository Co., Ltd., Thai Bond Market Association, Bangkok Bank, Krungthai Bank, Kasikorn Bank, and Siam Commercial Bank. They collectively revised and redesigned the processes, to improve efficiency and reduce the repetition of unnecessary operations. The utilization of Smart Contract also supported verification of data, which significantly helped lower overall costs of bond issuance for all stakeholders. It also enabled investors to receive bonds much faster, from up to 15 days previously, down to only 2 days and able to purchase bonds with their full rights from a single selling agent bank. At the end of 2021, the DLT Bond Platform supported 10 series of government savings bonds, worth over 160 billion baht.

1.2 Enhancing, stabilizing and securing IT services

In 2021, the BOT upgraded BAHTNET with ISO 20022 message standards, allowing more related information to be sent with payment instructions. This enhancement improved linkages of processes across the industry, supporting end-to-end digital transformation. The BOT also explored new solutions for cheque and cash via decentralized management to increase flexibility and reduce operational risk. Moreover, in order to be up to date and ready to handle emerging financial innovation, the digital currency along with other innovative financial technologies was being explored. Lastly, to ensure that our IT services were always available, stable, and secure, the main Data Center, which also increased our efficiency while reducing power consumption, was renovated.

1.3 Supporting the BOT measures during COVID-19

Since 2020, the BOT has actively focused on handling the COVID-19 crisis, issuing measures and policies to relieve people's debt and sustain Thailand's economy. The BOT introduced many new channels for citizens to contact and get advices on measures, including an informative website and chatbot. A new measure to help SME called 'Asset Warehousing' was issued. Finally, a business continuity plan and processes were prepared to ensure that the BOT could continue to provide critical services safely.

2.1 Enhancing data management and data governance standard

1) Regulatory Data Transformation (RDT)

The BOT initiated the RDT program to establish a new granular-level regulatory reporting standard, which was more closely aligned existing data and business models of financial institutions. Regulatory Data Transformation, once fully operational in 2023, will not only simplify the process and reduce the burden of regulatory reporting by financial institutions, but also enhance the BOT's policy making to be more targeted and more responsive to economic situations. In 2021, the BOT, in collaboration with 29 financial institutions, developed a new granular credit data model, that could be adaptable to changing regulatory needs and more compatible with financial institutions' existing operations. Moreover, to support an expected increase of regulatory data, the BOT enhanced its data acquisition capability and data submission through Application Programming Interface (API).

The BOT's Regulatory Data Transformation was recognized internationally, receiving the 2021 Pioneer Award from the Central Banking journal (United Kingdom) for its widespread impact and its potential influence on regulatory reporting at other central banks.

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2) Data strategy and data governance

In 2021, the BOT adjusted its data management practice to be in accordance with the Data Governance for Government Framework with an emphasis on data utilization, while strengthening data security and data privacy protection. The BOT also implemented a centralized data catalog system (BOT Data Catalog) to help facilitate and manage data usages in a centralized and systematic way.

Additionally, the BOT analyzed all its regulatory reporting requirements using cost-benefit analysis, weighing the trade-off between the benefits derived from data usage and the costs/efforts to data providers. As a result of this initiative, 16 regulatory reporting requirements, which were deemed no longer suitable for the current economic situations, were dropped from reporting requirements. On the data security front, the BOT expanded its scope of Data Leak Prevention (DLP) scheme to include sensitive information and personal identifiable data (PID), ensuring that no sensitive data were transmitted or shared with unauthorized personnel, and adhering compliance with the upcoming Personal Data Protection Act (PDPA).

2.2 Promotion of data-driven policy making

Micro-level data together with machine learning techniques were utilized to address critical policy-related questions during the COVID-19 crisis and to enhance the economic monitoring processes. Examples of micro-level data usages by the BOT in 2012 are as follows:

1) Analysis of household and business debts

The BOT integrated multiple debt-related databases to attain a more completed view of debtor's situations, and its impact on the overall financial system. The composite indicators were constructed for monitoring the effectiveness of various debt relief measures, including debt restructuring, extension of lowered minimum payment period, debt moratorium, as well as refinancing and debt consolidation. Additionally, the BOT also developed a credit scoring model for determining default risks of debtors based on a comprehensive viewpoint comprising data contributed by all financial institutions.

2) Financial literacy analysis

The BOT analyzed micro-level data from Thai financial literacy competency survey together with the Thai household socio-economic survey to better understand the financial literacy of Thai population. The relationship between financial behavior, literacy and liquidity of different demographics were examined. Our study indicated that the overall Thai population had improved in all aspects of financial skills, albeit about 12 percent of the samples constituted the vulnerable group who lacked financial literacy and had experienced liquidity problems. To better formulate strategies for promoting financial literacy, machine learning techniques were used to pinpoint relevant demographic and behavioral factors contributing to financial vulnerability.

3) Monitoring economic activities with micro-level data

The BOT utilized micro-level data together with machine learning techniques to help assess various economic activities during the pandemics. Weather forecast, reservoir level, satellite images, and rice prices were used for the short-term and the long-term forecast of provincial-level rice production. Itemized customs data and company-level credit facility data were combined with traditional export indicators to improve the accuracy of export forecast. Additionally, the combination of mobile phone usage and employment data from the Social Security Office were used to monitor labor mobility during the COVID-19 pandemic.



Principles of Regulatory Impact Assessment (RIA) or “Think Holistically, Response Practically”

The BOT has continuously adopted the Principles of Regulatory Impact Assessment (RIA) or “Think holistically, Response practically” concept before issuing of policies, rules, and other regulatory actions. In 2021, the BOT applied these principles in many areas of our duty as the followings

Issuing policies and measures under the RIA principle or “Think holistically, Response practically” concept which included the relieved measure for households and SMEs affected by COVID-19. The BOT considered several policy options and listened to key stakeholders’ opinions, including government agencies (such as Ministry of Finance and Small Industrial Credit Guarantee Corporation (TCG)), financial institutions and business representatives including SMEs Federation, Thai Chamber of Commerce, Federation of Thai Industries as well as entrepreneurs from hotel and restaurant industry

Reviewing and improving regulatory data reporting. In order to reduce burden and cost of financial institutions in data reporting, the BOT studied incurred cost of reporting via cost-benefit analysis and reducing the requirement on any redundancy and obsoleted data. To date, 23 notifications relating to data reporting and 16 datasets were revoked. In addition, the Regulatory Data Transformation (RDT) project was set up to reduce the burden of the financial institution in the longer term. The project focused on adjusting data reporting format to micro-level data that closely matched to the data collection standard of the financial institutions. This would help reduce the burden of data processing, which previously had to be prepared in the fixed format specified by the BOT. Upon the completion of RDT project, it is expected to reduce the cost of data reporting by 50 percent.

Finishing the BOT Instruction Manual in response to the Act on Legislative Drafting and Evaluation of Law B.E. 2562 (2019)²³. According to the law, the BOT already initiated the evaluation process for the Commercial Asset Management Companies Act, B.E. 2541 (1998) and Credit Information Business Operation Act, B.E. 2545 (2002) and completed the public-hearing process for the amendment of the law.

Shifting mindset and working habit by building knowledge, understanding and raising employees’ awareness through various channels using “BOT 7 questions” of the “Think holistically, Response practically” concept that everyone must answer before issuing policies or measures. Plus, the BOT internal “Value for Money (VfM)” assessment process of budgeting was applied this concept. This VfM process had its standard for scrutinizing and reviewing the necessities and prioritizing the BOT’s projects for cost-effective and efficient budget allocation. As a result, BOT’s budget expenditures for the year 2022 decreased by 817 million baht or 5.6 percent from the previous year.

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²³ The BOT aimed to complete regulatory impact assessment (RIA) on 10 acts and Decrees under the supervision of the BOT by 2025.



The Future Policy Direction

Policy Implementation to Recover from COVID-19

In the next years, it is expected that Thailand's economic activities will begin to recover due to several factors including the gradual easing measures to control the spread of COVID-19, the reopening for tourism, and the wider distribution and accessibility of the vaccines. However, **the recovery outlook remains uncertain** due to several factors such as the COVID-19 mutations, the lingering households and business debts, the uneven recovery (K-shaped recovery), and the accelerating inflation rate. Furthermore, there remains challenges from **the disruptive digital technology trends as well as the environment and sustainability trends** concerning climate change. These two major trends will have considerable impacts on lives of individual, business operations, the financial system, the economy, and the society in the future.

To create equal economic opportunities for the Thai individuals and businesses and to ensure that they can adapt and thrive at their fullest potentials post-COVID sustainably, the BOT needs to formulate policies that are in accordance with the future changes and trends, develop key digital financial infrastructures, communicate and collaborate with related stakeholders to drive policy impact, and enhance the potential and efficiency of the organization for the BOT to be the key supporter of the Thai economy's future growth.

In 2022, BOT continues **to prioritize helping debtors especially retail lenders, SME owners and new entrepreneurs to ensure that they have adequate liquidity proportionately to**

their capabilities to support their recovery. The BOT will continuously issue necessary measures and targeted liquidity provisions to support debtors such as debt restructuring programs, a revision of regulations that may hinder loans approval process, as well as the proposal to set up the liquidity facility for the capital market. Moreover, to ensure the stability of the financial system and its roles in supporting the functioning and the recovery of the Thai economy, the BOT will issue additional measures to ensure that the financial institutions can efficiently manage their NPLs, as well as provide regulatory recommendations and collaborated with related organizations to support debt mediation and rehabilitation processes.

In addition, BOT will **focus on developing long-term policies to support the changing economic and financial landscape.** To meet this goal, BOT will review policy frameworks, regulations, and monetary policy instruments to ensure their suitability and effectiveness in the changing context and environment. Moreover, the BOT will provide supervisory guidance for financial service providers in order to mitigate potential systemic risks in the financial system. Also, the BOT will revamp the FX ecosystem to enable a more efficient and economical foreign exchange and risk management practices for retail and business sectors. Lastly, the BOT will issue policy guidelines and supporting tools to help the transition towards a more sustainable banking practices and the movement towards the green economy.

Repositioning Thailand's Financial Sector for a Sustainable Digital Economy

Technological advancement and environmental changes have shaped the global trends at an unprecedented pace, impacting all sectors including the financial sector. The BOT recognizes the significant impact brought by the changes, which presents both opportunities to develop better financial services and risks to the stability of the financial system. Inequality could also be exacerbated if some stakeholders were left unprepared to adapt to such changes.

With regards to the new financial landscape, the BOT expects the financial sector to: **(1) leverage on technological advancement** to drive innovation and provide inclusive financial services and consumer protection in a level playing field and competitive environment; **(2) facilitate the transition of businesses and households in adapting to a digital economy as well as in effectively managing environmental risks**; and **(3) be resilient to significant and emerging risks**, without transmitting them to the system or consumers at large, while the BOT proposes **a more flexible regulatory framework that bares minimum regulatory burdens to the financial service providers**. Key policy directions include:

1) Leveraging on technology and data to drive innovation and better financial services through 3 Open's: (1) Open Competition to allow for the setting up of virtual banks and the extension of business scope and increase flexibility for existing players; (2) Open Infrastructure to allow more players to access key infrastructure at fair and reasonable costs. Key infrastructure includes the payment system, the retail central bank digital currency and the credit guarantee mechanism suitable for diverse funding needs;

and (3) Open Data to allow consumers to conveniently share their data stored at one service provider with other service providers for their own benefits under the Open Banking initiatives and to connect financial sector's databases with other sources for better analytics and development of financial innovations and services.

2) Managing the transition towards sustainability by (1) steering the financial sector to incorporate environmental risk assessment into their business operations and to support the transition of businesses away from environmentally unsustainable activities without disrupting the economy; and (2) supporting the households to make a smooth transition through promoting financial and digital literacy as well as preventing unsustainable over-indebtedness, e.g. ensuring responsible retail lending practices by accounting for debt serviceability and promoting end-to-end debt resolution mechanism to help heavily-indebted households.

3) Shifting from stability to resiliency in terms of supervisory framework to better address emerging risks. The BOT aims to achieve a balance in promoting innovation, while safeguarding the financial and economic stability. This includes (1) applying a risk-proportionality principle to the supervision of service providers according to their risk profiles and the complexity of their products and services; (2) minimizing unnecessary regulatory burden or cost to the service providers; and (3) strengthening supervision of emerging risks, e.g. risks that come with new financial technologies as well as the supervision of systemically important service providers.

Public Policy and Organizational Transformation

Affected by COVID-19, many Thai people and businesses are still in need for financial assistance and the BOT is expected to continue with necessary measures to relieve their economic problems. Meanwhile, the BOT's policies and implementations become more interconnected and complex and require collaborations with other stakeholders. Thus, to enhance the public's understanding and confidence as well as the policy effectiveness, **the BOT will focus on public engagement and targeted communications regarding its measures and policies.** In order to better reach the target groups and appropriately take into account of the present context, it is important that the BOT strategically communicates about its policies to enhance the public's understanding and to instill their confidence in the BOT's abilities to conduct the policies efficiently and effectively.

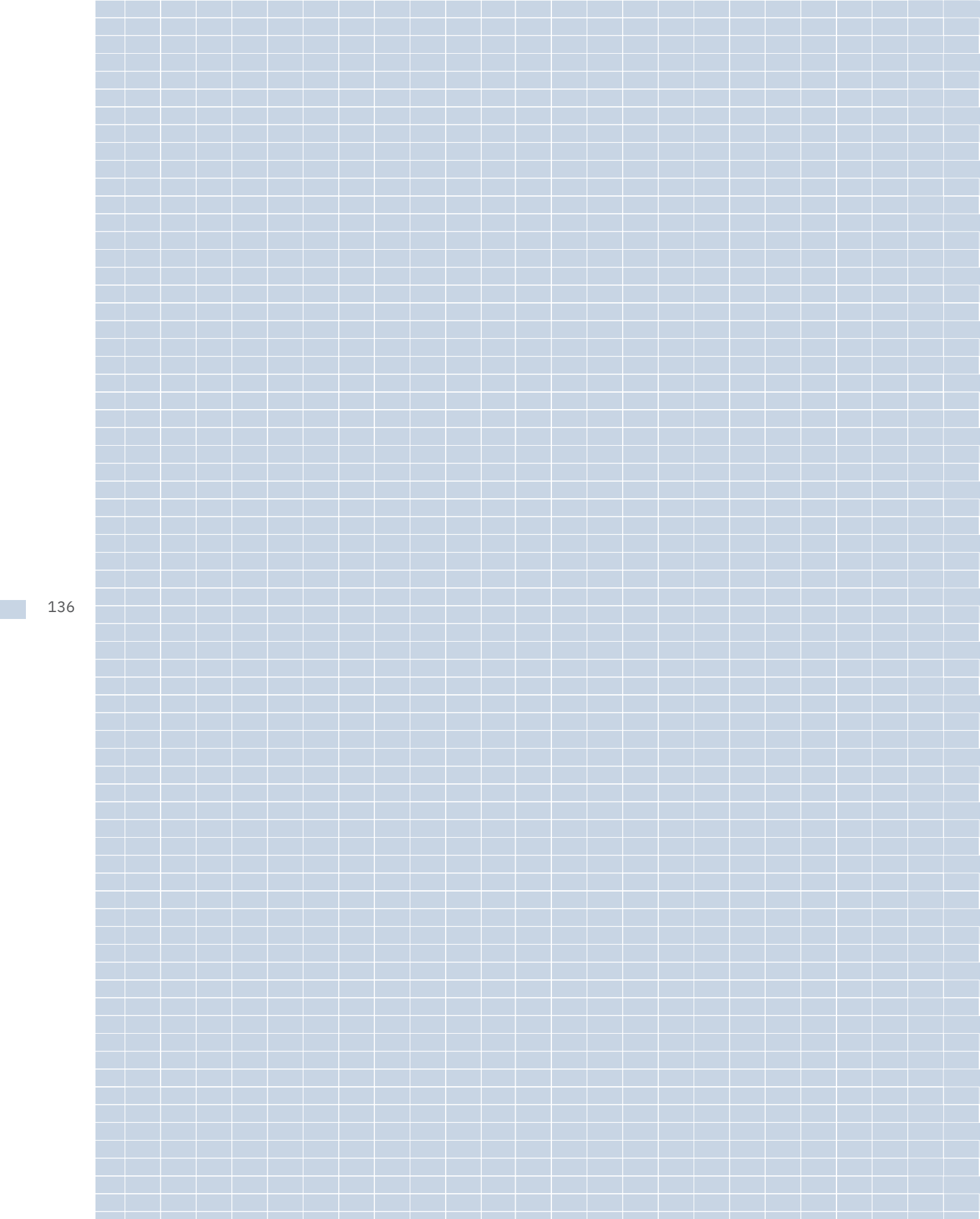
Moreover, the BOT executives will be supported with communication trainings so that they can proactively engage and welcome feedbacks from relevant stakeholders and drive policy outcome collaboratively and effectively. In addition, the BOT will form strategic alliance with partnered organizations and develop a platform that will allow the BOT executives to conveniently communicate and connect with external parties.

Furthermore, the BOT will **transform and become a more digital-driven organization operating with aligned visions and directions as One BOT and ready for any current and future challenges.** To achieve this, the BOT plans to develop a human resource management system which will allow the BOT staff to develop personally and professionally to reach their full potentials, equip with necessary knowledge and skills for future works, and ultimately contribute to the success of BOT's missions.

In addition, the BOT aims to adopt a more efficient, lean and automated working processes and to provide user-friendly tools, operating systems, and data sources with high standards and securities in order to help accelerate data-driven analysis and support internal collaborations among working groups and departments.

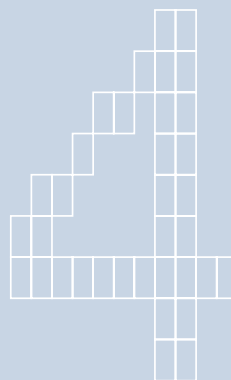
Lastly, to ensure the BOT's policies are strategically executed and in line with the organization's common goals, it is essential to transform the BOT to be the one of the most trusted organizations and ready to support Thailand's inclusive and sustainable economic development going forward.







CHAPTER

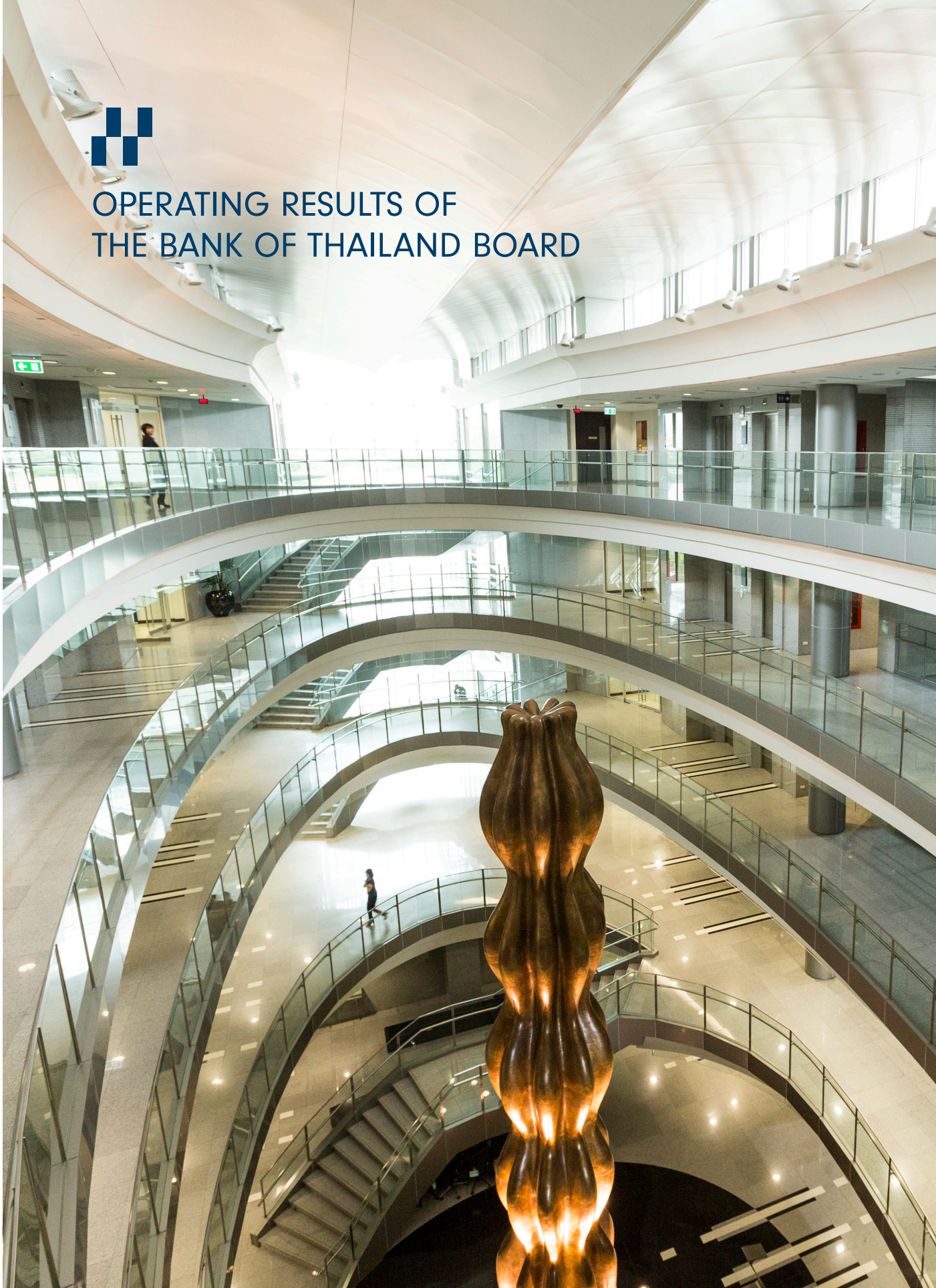


CORPORATE GOVERNANCE AND RISK MANAGEMENT

- 1 Operating Results of
the Bank of Thailand Board
- 2 Corporate Governance
- 3 Enterprise Risk Management
- 4 Promulgation and Revision of Laws Related
to the BOT's Operation
- 5 Audit Committee Report
- 6 Risk Oversight Committee Report
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OPERATING RESULTS OF THE BANK OF THAILAND BOARD





The Bank of Thailand Annual Report 2021 serves as the report of the Bank of Thailand Board to the Minister of Finance in accordance with Section 57 paragraph 2 of the Bank of Thailand Act. The report outlines the result of the Bank of Thailand's operations in the previous year along with the Audit Committee's report, the auditor's report, and financial statements as of December 31, 2021. The Bank of Thailand Board is authorized under Section 25 of the Bank of Thailand Act to oversee the Bank of Thailand's overall activities and operations to achieve the objectives set forth in Section 7 of the Bank of Thailand Act with the exception of activities and operations under the purview of the Monetary Policy Committee (MPC), the Financial Institutions Policy Committee (FIPC), and the Payment Systems Committee (PSC).

There remained a number of headwinds in carrying out the BOT's mandate in promoting stable economic and financial environment as well as inclusive and sustainable development. The prolonged and uncertainty surrounding the spread of COVID-19 led to a slow and uneven economic recovery across different sectors. Other headwinds included rapidly changing consumer behavior stemming from digital progress, increasing service providers, and increasing environmental and sustainability concerns, all of which had important implications for the BOT in taking care of the financial system and ensuring policy transmission mechanism effectiveness.

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The Bank of Thailand Board prioritized carrying out the BOT's mandate of maintaining Thai financial stability, supporting inclusive and sustainable economic recovery, and being prepared to adjust to the new financial landscape. These objectives, along with elevating internal risk management and good governance to increase trust and credibility with the public and increase organizational efficiency, were important issues for the BOT as the country's central bank amid an economic crisis and rapidly changing financial sector.

Operations to Support the Economic Recovery and Accommodate the Change of Financial Landscape

The Bank of Thailand Board along with the 3 policy committees consisting of the Monetary Policy Committee (MPC), the Financial Institutions Policy Committee (FIPC), and the Payment Systems Committee (PSC) along with the Bank of Thailand Audit Committee and the Risk Oversight Committee (ROC) were fully aware of the importance for the BOT to carry out its operations in accordance with its main objectives. These included both short-term and long-term objectives. The short-term objectives included alleviating the debt crisis, maintaining financial system and macroeconomic stability so that the economy could recover from the devastating impact of COVID-19. Meanwhile, long-term objectives included adjusting the BOT's long term strategic direction towards being more active, direct intervention, agile, and broad base, suitable for the changing financial landscape in the future, as well as creating trust and credibility with the public and promoting organizational efficiency which were the foundation for successful policy implementation for the BOT.

The Bank of Thailand Board played an important role in promoting more direct and appropriate financial measures to assist

businesses impacted from the spread of COVID-19. Primary examples included the Soft Loan and Asset Warehousing programs to assist employment, the business sector, and support the recovery and transformation of the business sector to adapt to new economic environments amid the crisis. These measures emphasized flexibility in covering a broad range of problems and afflicted groups as well as amending the conditions of the Corporate Bond Stabilization Fund (BSF) to stand ready to provide any assistance under highly uncertain situations.

Under the rapidly and vehemently changing financial landscape from technological progress, which would result in a variety of financial products, services, and service providers, the Bank of Thailand Board promoted an increase in the BOT's mandate to support the digital economy. The Bank of Thailand Board emphasized financial system resiliency, creating a balance between regulation, and supporting innovation, and preventing exploitation of regulatory arbitrage while bolstering the preparation for important developments in the future direction of central banking, such as sustainable finance and Central Bank Digital Currency or CBDC.

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Increasing Efficiency in Official Reserves Management.

In the regulation and management of official reserves, the Bank of Thailand Board emphasized principles of discretion, flexibility, and consistency with the investment framework and stipulated risk management, as well as seeking appropriate risk adjusted returns. In this regard, given uncertain and highly volatile global financial and economic environments, the Bank of Thailand Board reviewed the official reserves risk management framework to be more in line with excellent international standards and expanded the scope of investment in equity instruments to diversify short term risks for better returns.

Promoting International Policies.

The Bank of Thailand Board was aware of the importance of carrying out policy and cooperation with international organizations to maintain Thailand's roles and involvements in the cooperation to resolve the pandemic and support global economic development. Primary examples included supporting the International Monetary Fund's (IMF) debt forgiveness program for low-income countries as well as renewing the Bilateral Swap Agreement between the BOT and Japan's Ministry of Finance to expand the scope of financial assistance between Thailand and Japan, and promote the stability of regional financial assistance mechanisms.

Organizational Risk Management.

Amid the prolonged spread of COVID-19 and rapidly and vehemently changing financial sector, which may impact the operations of the BOT, the Bank of Thailand Board implemented active risk management through elevating the risk from implementation of policies and new financial measures and elevating organizational and personnel risk in supporting the BOT's objectives that will become broader, deeper, and more complicated. In this regard, the Bank of Thailand Board had supported the BOT in expediting capacity building within the organization, particularly in increasing the efficiency of the BOT's management and supporting organizational delegation to promote flexibility and agility within the office. Furthermore, the Board has promoted capacity building for BOT personnel to equip them with the necessary skillsets in line with the evolving direction of central banking in the future.

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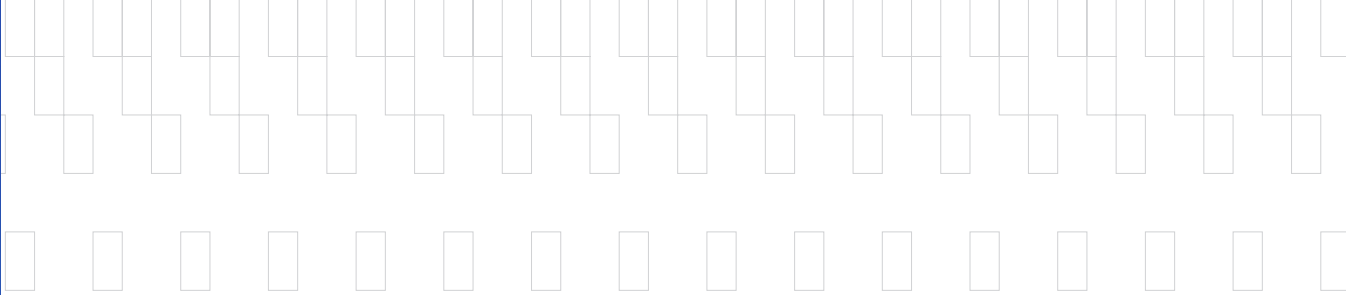
Promoting Organizational Good Governance.

The Bank of Thailand Board prioritizes the promotion of organizational good governance, which is at the heart of creating credibility and trust from the public. The Board had reviewed the operational governance framework for the BOT and coordinated with the BOT's 3 Policy Committees to increase transparency and efficiency, as well as amending the BOT's Code of Conduct and Ethics which management and personnel must follow, in line with the Ethics Standard Act B.E. 2562.



CORPORATE GOVERNANCE





The BOT is mandated as the national central bank, under the oversight of the BOT Board, supervises overall activities covering planning, budgeting, and asset management, with the objective of maintaining monetary, financial institutions system and payment system stabilities. In order to fulfill this objective, the Monetary Policy Committee (MPC), the Financial Institutions Policy Committee (FIPC), and the Payment System Committee (PSC) have been set up and assigned with the function of independently making policy formulation. These three Committees meet the BOT Board annually as well as hold joint meetings among themselves to keep up with relevant developments and set direction and collaborate on cross-cutting related issues relevant to current situations. Moreover, there are other sub-committees, such as Financial System Stability Sub-committee, to assist in screening issues for the policy committees.

The Audit Committee carries out its operations consistent with corporate governance and maintains effective processes for internal control and audit according to the BOT Act B.E. 2485, as amended by the BOT Act (Issue 6) B.E. 2560. In addition, the BOT Board has appointed the Risk Oversight Committee (ROC) and Corporate Governance Committee (CGC). For the ROC, its mandate is to advise on the Bank's overall risk management framework and risk management process as well as adequacy of the Bank's risk control systems in response to the changing external environment. In 2021, ROC recognized the importance of policy implementation risk from new Financial Rehabilitation Measures, including risk management in response to emergency situation to enable the continuously discharge of its mission.

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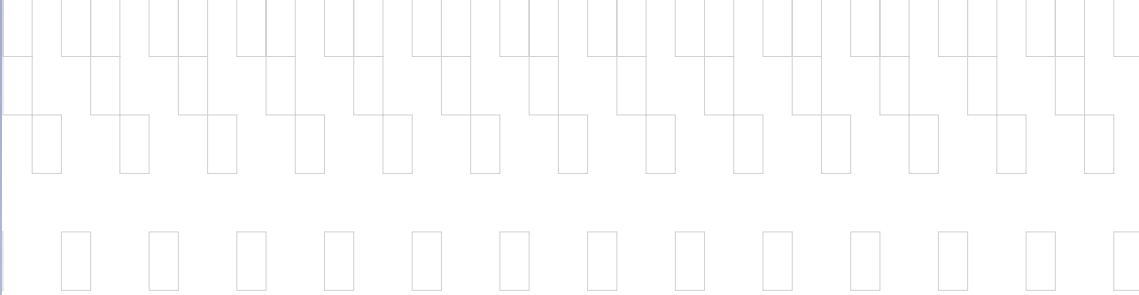
CGC oversees corporate governance matters under the BOT's board purview to institute good corporate governance policies and practices within the BOT. In addition, with increasing challenges from constantly changing environment, CGC reviewed the oversight structure and is of the view that the governance structure, as set up under the BOT Act, is effective and appropriate for its mandate as the central bank.

The BOT also enhanced its corporate governance by participating in the Integrity and Transparency Assessment (ITA) Program, held by the National Anti-Corruption Commission (NACC). The forum provides opportunity for stakeholders, both inside and outside the BOT, to assess the integrity and transparency of the BOT's operations. Report of the assessment is available on the BOT website for public scrutiny. In 2021, the BOT's assessment result scored 94.48, ranking level A for three consecutive years with improving score in each year. The BOT used the results and recommendations from the assessment to improve and strengthen its operation efficiency and transparency.



ENTERPRISE RISK MANAGEMENT





Enterprise Risk Management

The BOT carried out various measures and policies, to enable the economy to timely respond to COVID-19 pandemic. The BOT, moreover, focused on laying down a foundation for Thailand's financial landscape. Looking ahead, these are the key agenda for the BOT's operations and challenges, and concern business, financial and public sectors. The BOT, therefore, rigorously developed operational processes and risk management, adhering to appropriate governance structure and aligning with the framework for formulating new policies and guidelines. This risk management practice served as guidelines for the BOT's operations that took into account principles, roles, legal frameworks, stakeholder's opinion, options and their impacts including the readiness of its personnel, operating system and communications. In 2021, the BOT assessed the enterprise risks in all aspects, and launched effective measures as well as appropriate action plans to manage the risks.

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Furthermore, the BOT took steps to ensure the readiness of technological systems and cybersecurity in supporting operations during COVID-19 pandemic. The BOT managed third-party risks arising from the use of service providers or business partners to provide continuous services with emphasis on confidentiality and safety. In addition, the BOT developed and enhanced the capabilities of executives and personnel, and continually reviewed and adjusted its organizational structure and working processes, to enable it to respond and address new issues.

Financial Risk Management



Key risks affecting the financial statements of the BOT

In its role as the central bank, the BOT had a responsibility in implementing monetary policies and maintaining the stability of Thai baht to give confidence to the public that the economic and financial stability of the country would be maintained. Carrying out these duties incurred key and unavoidable risks inherent in the BOT's financial statements, namely foreign exchange rate and interest rate risks.

Foreign exchange rate risk to the financial statements of the BOT arose as a result of the BOT holding for a large part in its balance sheet financial assets that were denominated in foreign currencies while carrying liabilities predominantly denominated in Thai baht. Interest rate risk existed when the interest expense incurred from the conduct of monetary policy was different from the income the BOT received from investment in foreign markets.



Financial risk management of the international reserves

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Management of international reserves took into consideration not only the safety, liquidity, and return of the investment, but also risks in the investment. The objectives of the international reserve management were as follows:

- 1) To have international reserve with adequate stability and liquidity for the implementation of monetary and exchange rate policy.
- 2) To maintain the value of the international reserve and prepare liquidity in foreign currency to be used as buffers for balance of payment deficit in both normal and crisis conditions.
- 3) To maintain the global purchasing power of the international reserves.
- 4) To be the backing of the banknotes issued as specified by the Currency Act.

The BOT had in place risk management framework and guidelines, an important part that contributed to the international reserve management achieving its objectives, to address

key financial risks namely market, credit, and liquidity risk. These framework and guidelines were consistently reviewed to ensure that the management of international reserve management at the BOT were up to the international standard and regarded as comparable to those of other central banks.

Having in place the risk management framework and guidelines, one of the key contributors that helped reduce the negative impact of potential losses to the value of the international reserve as well as its financial statements, the BOT, by the Financial Risk Management Department (FRMD), engaged in the monitoring of new developments in financial markets and instruments as well as changes in regulations in invested markets. The purpose of these engagements was to ensure that the relevant developments or changes continued to be applied to risk management and compliance work at the BOT.

Operational Risk Management

Operational risk management encompassed the risk of losses resulting from inadequate or failed internal processes, people, and systems or from external events. To ensure effective management of operational risk, the BOT continued to enhance risk management tools to keep up with the changing environment and developed a platform that digitalized key risk information, as well as integrated the process and relevant information across the 3 lines of defense according to the Governance, Risk, and Compliance (GRC) concept. Additionally, the BOT deployed the following risk management tools:



Control Self-Assessment (CSA)

The BOT required all departments to annually conduct the CSA in order to identify, assess, and analyze risks and their mitigating actions and existing controls associated with their business operations and strategic initiatives, including statutory and BOT's mandatory assessment. The assessment results, in turn, were used to develop the enterprise risk mitigation measures, thereby helping improve the efficiency and effectiveness of work processes.

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Operational risk incident reporting

The BOT required any department incurring any loss and responsible departments to report the loss incident or the near-miss event through the in-house Risk Management System (RMS).



Key Risk Indicators (KRIs)

The tools were employed to monitor the BOT's material risk exposures encompassing all aspects of enterprise and top risks. Key risk results, action plans, and progress together with the respective outlooks were reported to RMC and ROC on a quarterly basis.



Business Continuity Management (BCM)

The BOT established the Business Continuity Management Policy which described objectives and framework for Business Continuity Management System (BCMS) within the BOT, and kept on improving its business continuity management capabilities. The BOT was recertified under the international standard ISO 22301: 2019 Business Continuity Management Systems for the critical payment systems, by which the BOT was both the operator (BAHTNET and ICAS) and internal users.

In 2021, the BOT continued to activate its business continuity plan in response to the COVID-19 pandemic. The BOT closely monitored the situations, set up response processes, allocated budget and resources, especially IT resources, to ensure employees' health and safety and continuity of its operations in addition to establishing an additional alternative site within the premise.

Additionally, the BOT implemented various prevention, detection, and mitigation measures to reduce risks arising from COVID-19, adhering to safe workplace guidelines, regulatory measures, and recommendations issued by the Ministry of Public Health. For instance, the BOT provided vaccines for all employees, their families, and outsourced staff, and supplied COVID-19 Antigen test kits for all employees working onsite. As a result, all critical operations have been operated without interruption, and more importantly, all BOT employees are safe from any severe COVID-19 infection.

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Information Technology Risk Management

The BOT identified, analyzed, and monitored key IT risks as well as ensured compliance with IT-related regulations and standards according to IT Risk Management Framework. The IT Risk Management Sub-committee assisted the Risk Management Committee in monitoring and approving IT risk management policies and associated practices, as well as monitoring and controlling risks at the appropriate level.

In 2021, the BOT issued additional guidelines including the Third-party Risk Management Implementation Guideline to manage IT risks arising from the use of service providers or business partners. There was a system interconnection or an access provision to the BOT critical data, and Technology Usage Guideline for the relative departments within the BOT to adopt, according to their technology

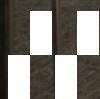
needs and risks within the given standard. Also, in response to the rising magnitude, complexity, and unpredictability of cyber threats, the BOT continuously enhanced its cyber resilience capabilities. These included putting in place secure Work from Home platform, enhancing Advance Threat Protection systems, automating security incident detection and response mechanism (Security Operation Center-SOC), as well as performing regular red teaming exercise. On the personnel aspect, the BOT enhanced its employee's digital mindset and capabilities through increasing cyber risk awareness and organizing Cyber Security Incident Response exercises for both operational level and executive level. The BOT also expanded collaboration network to exchange cyber threat intelligence with relevant organizations.



Compliance Risk Management

The BOT developed a database on BOT-related legislations for risk monitoring and assessment as well as mechanism for monitoring, testing, and surveillance of operational compliance.

Moreover, the Enterprise Risk Management Department (ERMD) developed the Data Protection Risk Management Framework and enhanced its Data Leak Prevention (DLP) System to ensure effective data protection in compliance with Thailand's Personal Data Protection Act B.E. 2562 (2019). The ERMD also continuously raised awareness of personal data protection for the BOT's employees. Furthermore, the ERMD formulated Personal Data Privacy Policy to promote the understanding among data subjects and the public, regarding the objectives, principles and measures on personal data protection employed by the BOT. Lastly, the BOT was also planning to evaluate this framework to be consistent with the international standards.



PROMULGATION AND REVISION OF LAWS RELATED TO THE BOT'S OPERATION

Since the COVID-19 outbreak was prolonged from 2020 to 2021 and affected the economic and financial system stability in a wider aspect and longer than originally anticipated, the credit risk of the debtors in the financial system thereby increased. Despite the fact that the government had implemented several measures to assist the debtors, especially those who were the business operators severely affected by the outbreak, still needed time and further assistances to help their businesses recovered. Thus, it was deemed necessary to have additional measures in place to provide assistance, support the recovery for business operators and prevent the business sector from liquidity shortage or in defaults which could ultimately affect the financial stability and economic security of the country. To address this, the BOT proposed the Emergency Decree on the Provision of Assistance and Rehabilitation of Business Operators Affected by COVID-19 Pandemic, B.E. 2564 (2021) for Cabinet's approval through the Minister of Finance. According to such emergency decree, the BOT shall have the power to implement the following measures:

Measure to Promote the Granting of Credit to Business Operators (so-called "Soft Loan Facility for Businesses") totaling 250 billion baht.

The BOT is empowered to grant loans to financial institutions so that they may use such fund for lending to high-potential business operators who are affected by the COVID-19 crisis. This measure aimed to expand the pool of eligible borrowers to include both new and existing borrowers; expand credit limit; expand loan tenor; and amend the interest rates to better support business recovery. Furthermore, the loan facility would be supported by a credit guarantee scheme through the Thai Credit Guarantee Corporation and receive additional exemptions or reductions on relevant fees.

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Measure to Promote Acceptance of the Transfer of Property as Security for the Repayment of Debt (so-called "Debt Restructuring through Asset Warehousing with Buy-Back options") totaling 100 billion baht.

The BOT is empowered to grant loans to financial institutions by supporting the transfer of assets as collateral of a business operator who is a debtor of a financial institutions. The program aimed to temporarily reduce the outstanding debt and interest burden for business operators that would take time to recover. Business operators whose assets were transferred may have the rights to repurchase their collaterals at the agreed transferred price and lease their assets from financial institutions to continue business operation so as to protect the business operators from lack of liquidity or in default. Relevant public agencies would also support the program by providing exemptions or reductions on relevant fees.



AUDIT COMMITTEE REPORT

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Audit Committee Report 2021

The Bank of Thailand Audit Committee (the AC) comprises three non-executive members of the Bank of Thailand Board (the Board) and two external experts. The Assistant Governor of the Internal Audit Group serves as secretary of the AC.

In 2021, the AC held 16 meetings. The AC members and their number of meeting participation were as follows.

Mr. Manas Jamveha 16/16	Chairman
Mr. Pakorn Nilprapunt 13/16	Member
Mr. Subhak Siwaraksa 15/16	Member
Mr. Sorasit Soontornkes 16/16	Member
Mrs. Pimpana Srisawadi 16/16	Member

The AC performs its roles and responsibilities as stipulated in the Audit Committee Charter as well as additional assignments from the Board in order to assist the Board in overseeing the Bank of Thailand (BOT) and its agencies. The AC seeks to help ensure that the BOT carries out its tasks in accordance with good governance principles, appropriate risk management and effective internal control. The AC also ensures that the internal auditors fulfill their responsibilities with independence and objectivity to achieve the efficiency and effectiveness of internal audit work.

Under the prolonged COVID-19 pandemic which has impacted the country, the AC oversaw and guided internal audit activities to support the BOT's plan to expedite the implementation of the new measures to cope with situation and adjust the internal operations to ensure the continuity of its operations, aiming to deliver the BOT's mission of maintaining economic, financial institution system, and payment system stability. The AC, thus, focused on auditing the BOT's measures to support households and businesses affected by COVID-19, the readiness of financial safety net, the readiness of the

BOT to comply with the Personal Data Protection Act, as well as information technology and cyber security. These audit works promoted good governance, appropriate risk management and sufficient internal control under the new environment, which in turn contributed to the achievement of the BOT's strategic objectives and mission.

The task carried out and reviewed by the AC in 2021 can be summarized as follows:

1. Review of Financial Statements

The AC reviewed accounting policy and the financial statements of the BOT, the Currency Reserve and the Banknote Operations. The AC viewed that the process of accounting and financial statements preparation was under prudent and effective internal control. The financial statements fairly presented the financial condition and performances in all material aspects, and were reliable by observing Thai Financial Reporting Standards, appropriate accounting practices for central banks, as well as relevant regulations. Information disclosure was also adequate, appropriate and useful to users.

2. Supervision and Improvement of Internal Audit

The AC reviewed audit reports submitted according to the 2021 audit plan and was of the view that the internal audit works were effective, beneficial and able to add value to the BOT. Examples of which include the work on measures to support debtors affected by COVID-19, the readiness of financial safety net, data governance to comply with the Personal Data Protection Act, cyber security for dealing room system, compliance with SWIFT Customer Security Programme, compliance with Information Security Standard and Business Continuity Management Standard, as well as governance and assessment of high-value project.

The AC continued to emphasize on performance audit to identify opportunities to improve the efficiency and effectiveness of the organization's operation. In addition, the AC focused on the utilization of database and technology to enhance the efficiency and effectiveness of internal audit activities. The AC also paid attention to the skill development of the internal audit resources to keep abreast of and be properly equipped for the increasing challenges of technology disruption as well as new financial and economic landscape.

3. Coordination on Risk Management

In 2021, the AC and the Risk Oversight Committee held two joint meetings to exchange views on the enterprise risks, risk management and 2022 audit plan. The two committees also exchanged relevant information regularly to ensure that internal audit activities are appropriate and contribute to effective control of the key risks of the BOT.

4. Meetings with the BOT Governor

In 2021, the AC met with the BOT Governor and the Deputy Governors twice to discuss the issues on internal audit approach and 2022 audit plan which aligns with the BOT's enterprise risks and strategic plan. This is to ensure that the audit activities continued to be relevant, effective, and able to support and add value to the BOT

5. Meetings with the External Auditor

The AC met with the external auditor (State Audit Office of the Kingdom of Thailand: SAO) twice in the absence of the BOT management, to exchange views on the financial statements of the BOT, the Currency Reserve and the Banknote Operations, as well as the compliance audit of some BOT operations. Discussion also covered the change in work process of BOT and SAO during COVID-19 circumstance.

6. Reporting of the AC Work

The AC prepared and submitted its work reports to the Board and the Ministry of Finance on a quarterly basis, in accordance with the provisions of Section 55 of the Bank of Thailand Act B.E. 2485, as amended by the Bank of Thailand Act (No. 4) B.E. 2551.

Summary of the AC's Opinion

In an effort to fulfill its responsibilities based on scope and authority as per the Audit Committee Charter, the AC endeavored to do its best in applying knowledge, ability, experience and skills of individual committee member towards conferring independent and impartial opinions and recommendations to the Board, the BOT management and officers, while taking into account the interests of all stakeholders. The AC has received good cooperation from both the BOT management and the audited departments. As such, the audit recommendations had been discussed and implemented.

Overall, the AC concluded that the Board, the Policy Committee, the BOT management and officers were committed to perform their duties, in order to achieve the BOT's objectives, evidenced by the BOT's timely and effective response to the COVID-19 pandemic. Thus far, the BOT has been able to implement the measures to maintain economic and financial stability. Furthermore, the BOT operated under good governance, prudent risk management including fraud risk management, effective internal and financial control, and compliance to foster effectiveness, efficiency, transparency and credibility of the organization. The audit results were in accordance with best principles and beneficial, ensuring that the BOT's operational processes efficiently accomplish the mission and strategic plans set forth.



(Mr. Manas Jamveha)

Chairman of the Audit Committee Bank of Thailand



RISK OVERSIGHT COMMITTEE REPORT





Risk Oversight Committee Report 2021

The Risk Oversight Committee (ROC) consists of five members; at least three are non-executive directors of the BOT Board and two external experts, with Assistant Governor, Risk Management Group as secretary. In 2021, Mr. Lersak Chuladesa completed his term. The present ROC members are:

Mr. Subhak Siwaraksa	Chairman
Mr. Rapee Sucharitakul	Member
Mr. Nontigorn Kanchanachitra	Member
Mr. Achporn Charuchinda	Member
Mr. Sak Segkhoonthod	Member
Miss Nawaporn Maharagkaga	Secretary

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Last year, COVID-19 pandemic was still highly contagious and widely spread. The BOT consequently had to extend various relief measures to continually support recovery of Thai economy especially small and medium enterprises and the public while at the same time, maintain the stability of Financial and Financial Institutions Systems. The BOT attached great effort in managing significant enterprise risks, including policy implementation risk, i.e. preparing people, process, and system to support BOT policy tasks. The Bank strengthened readiness of the organization in responding to internal and external risks, the trends of which became more complex and intensified. Through implementing these measures, the BOT were able to better operate effectively under new environment and new challenges.

Furthermore, the Bank also could continually carry out its important risk management tasks, particularly in cyber risk.

In 2021, ROC convened 11 times and held joint meeting twice with the Audit Committee to discuss the BOT risk management framework and directions as well as the 2022 Audit Plan. Every three months, ROC reports its contribution to the BOT Board. The summary of key contributions in 2021 are as follows:

1. Enterprise Risk Assessment:

The ROC reviewed 2021 Enterprise Risk Assessment and improved Enterprise Risk Management (ERM) process. The revised processes enabled risks to be identified in more details, with more accuracy and better responses, consistent with Control Self-Assessment (CSA) and international standards. The ROC also reviewed 2022 enterprise risks covering significant risks that must be handled in order to cope with rapid changing environment, which includes more complex role for central banking, increasing cyber threats, clearer public communication, readiness of its personnel for new ecosystem, as well as managing those enterprise risks to the appropriate level.

2. Financial Risk:

The ROC regularly monitors financial risk management of foreign reserves, including reviewing objectives and structure of investment portfolios, to ensure that the BOT's foreign reserve management practice met international standards by:

- taking into consideration various aspects, including capital security, liquidity and return when making decisions.
- holistically managing different types of risk to ensure safety of foreign reserves
- putting in place contingency plan to cope with increasingly volatile global financial market.
- increasing flexibility in managing risks, which were resulted from volatile global financial market.

The ROC also recommended the BOT to regularly review risk management framework to be consistent with market situation, select appropriate risk measures, and perform stress testing under forward-looking scenarios.

3. Operational Risk from Repositioning Thailand's Financial Sector for a Sustainable Digital Economy:

The ROC reviewed the policy's operational process, in which revealed that the process aligned with the guidelines and procedures. Furthermore, it monitored operational issues arisen from those policy tasks, as well as the adjustment needed to support the measures to meet the objectives.

4. Information Technology risk:

The ROC monitored the effectiveness of cyber risk prevention and the enhancing of cyber threat's detecting capability, focusing on international cyberattacks with constantly changing form and format. Provided views on directional IT risk management framework which is in line with the standards and international practices. Moreover, The ROC ensured that the BOT's operations comply with such framework.

5. Human Resource and Organization Development (HROD):

The ROC monitored HROD risks, emphasized on preparing the readiness of the BOT for the changing roles, functions, and operations, particularly on the scope and complexity arisen from the development of the financial landscape. It provided opinion on the risk management relating to the organizational structure and operational processes, so as to timely and effectively respond to the numerous expanding tasks. Moreover, the ROC adjusted the BOT's operational scope to align with its new mission and supported the setting of compensation rates to be competitive with the market so as to retain and attract potential personnel.

6. Operational Risk:

The ROC monitored risk management under the existing framework to respond to changing situations, using variety of mechanisms such as CSA. Also included were the incidents reporting of operational risks. The ROC followed up on risk through Key Risk Indicators which employ Risk Dashboard to report on key risks and risk tendency, and managing business continuity according to ISO 22301:2019. Moreover, The ROC provided recommendations on preparation for handling COVID-19 pandemic to ensure the safety of the staff and the BOT to carrying out its mission uninterruptedly. The ROC also adjusted the format and schedule for activation of the 2021 Business Continuity Plan which has to be consistent with situations.

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In conclusion, the ROC carried out its mandate within the scope, functions, and responsibility in the Charter. To oversee overall risks of the organization under the mandate of the BOT Board, the ROC concluded that the BOT conducted risk management effectively, appropriately and consistent with corporate governance, and be able to discharge its mission under rapidly and continually changing environment.



THE BOT'S MISSIONS AND FINANCIAL STATEMENTS



As a central bank, the BOT's missions differ from that of business entities. Therefore, the central bank's financial statements are unique and distinct from other businesses', and so interpreting the BOT's should take into account its missions as a central bank.

Missions of the Central Bank

The BOT's missions cover the following two key aspects:



Maintaining economic stability

Section 7 of the Bank of Thailand Act B.E. 2485 (1942), amended in B.E. 2561 (2018), stipulates that the central bank has a role to "...maintain monetary stability, financial institution system stability and payment systems stability", in other words, the overall economic and financial stability.

The BOT's mission is similar to that of other central banks, which is to maintain both internal and external economic stability. Internal stability refers to preserving the value of the Thai baht and Thai assets to prevent them from being depreciated by inflation, and also preventing economic bubbles or vulnerabilities in the financial system that could lead to a future financial crisis. External stability refers to the monitoring and oversight of the movements in the value of the Thai baht, to ensure that it is in line with economic fundamentals and not excessively volatile, so as to maintain Thailand's purchasing power in the global economy and keep foreign debt levels low, as well as to ensure sufficient levels of international reserves to cushion the impact from volatilities in the global financial and capital markets.

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Printing and issuing banknotes for circulation in the economy

Section 14 of the Currency Act B.E. 2501 (1958), amended in B.E. 2545 (2002), stipulated that "The BOT has power to print, manage, and issue banknotes..." In ensuring that the Thai baht and Thai banknotes would be widely accepted, Thailand must implement credible monetary and macroeconomic policies, and also hold credible assets to back up the value of the Thai baht. On this, Section 26 of the Currency Act stipulates that "For the purpose of maintaining the stability of the currency, the BOT shall maintain a currency reserve, hereinafter to be called the Currency Reserve". In printing and issuing banknotes in circulation, the BOT has to hold foreign assets of equal value to the newly-issued banknotes, which could be gold, foreign assets, or domestic assets, but are currently all foreign assets.

These two key missions are interconnected and are fundamental factors for robust and stable economic growth.

The Bank of Thailand Account and the Currency Reserve Account

In order to deliver on the above two key aspects of the BOT's missions, the law requires the BOT to segregate its transactions into the following two accounts:



The Bank of Thailand Account

The Bank of Thailand Account is the account associated with the mission to safeguard economic stability. Looking at the simplified Bank of Thailand Account, the asset side consists mostly of international reserves in foreign currencies, which account for over 85 percent of total assets, with the remainder consisting mostly of Thai government bonds. On the right side, the liabilities largely consist of BOT bills and bonds from monetary policy operations to safeguard economic stability, and deposits from financial institutions and the government. All such liabilities are denominated in Thai baht.

The Bank of Thailand Account	
Asset	Liabilities
>85% International reserves	BOT bills and bonds Deposits from financial institutions and government
<15% Thai government bonds	Equity



The Currency Reserve Account

The Currency Reserve Account is the account associated with the mission to print and issue banknotes for circulation in the economy. The asset side consists entirely of international reserves, which are held to back up the issuance of banknotes, as required by law. Meanwhile, the liability side consists of Thai baht banknotes in circulation. In other terms, the banknotes that the public uses for spending in the economy are considered the central bank's liabilities.

The Currency Reserve Account	
Asset	Liabilities
100% International reserves	Banknotes in Circulation
	Equity

Distinctive Characteristics of the Central Bank's Financial Statements



The assets and liabilities have a currency mismatch

The central bank's assets are mostly foreign assets or international reserves, whereas the liabilities are mostly denominated in the country's local currency, or the Thai baht, resulting in a **currency mismatch between the central bank's assets and liabilities**. Therefore, in preparing the BOT's financial statements, the foreign assets need to be revalued to Thai baht at every year-end. Such revaluation is done to hypothetically indicate **how much Thai baht would be gained if all the foreign assets were liquidated**. As a result, the profit or loss figures as shown in the financial statements are mostly a **"valuation gain/loss"**.

Having a revaluation every year-end means that changes in the foreign exchange rates could significantly influence the figures in the financial statements, especially when there is a high proportion of foreign assets. To illustrate,

if the BOT has 280 billion US dollar of foreign assets and the Thai baht depreciates by one baht, a valuation gain of 280 billion baht would be immediately recognized. On the contrary, if the Thai baht appreciates by one baht, a valuation loss of 280 billion baht would be immediately recognized.

Although revaluation measures the value of assets in terms of Thai baht, in reality, the BOT's level of international reserves in foreign currencies remains unaffected and available to be used as a cushion against external volatilities. Hence, although the BOT's financial statements may show losses in some periods, it is not a cause for concern because it could be attributable to a valuation loss. When looking at the BOT's past financial statements, profits can be seen in some years, and losses in others, mainly as a result of the revaluation of assets.

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International reserve management aims to preserve its long-term value in terms of foreign currencies

The central bank's mission is to **safeguard economic stability**, which requires a long-term and forward-looking perspective rather than focusing on temporary economic trends. Likewise, in the management of international reserves, **the BOT invests in assets worth owning for the long-term value, along with suitable risk diversification**. Consequently, short-term volatilities may be observed. Furthermore, because international reserves comprise foreign currencies and assets, gold, and reserves at the IMF, their returns need to be evaluated based on their **"returns in terms of foreign currencies"**, since the central

bank must ultimately keep international reserves readily available and adequate. On the other hand, **financial statements are prepared within a pre-determined timeframe** (usually annually), resulting in misaligned timeframes between that of financial statements and that of measuring returns from international reserve management.

In addition, **the management of international reserves usually entails adjusting investment allocations to be in line with the global economic outlook**, in order to diversify risks and improve long-term returns, rather than in pursuit of profit.



The central bank's liabilities are distinct from that of business entities

The BOT's liabilities arise from (1) printing an adequate quantity of banknotes to meet the needs of the economy and (2) safeguarding economic stability and preserving the value of the Thai baht and Thai people's assets from deteriorating. Hence, the BOT's liabilities are not intended to benefit any specific group, company, or even the BOT itself, but rather are liabilities arising from operations for the benefit of the Thai public at large. This is what distinguishes the BOT's liabilities from **businesses' liabilities**, which arise for the purpose of spending or investing for the businesses' own private benefit.

The BOT, as the central bank, has liabilities that are for the benefit of the country as a whole. The first element of such liabilities is banknotes in circulation, which serve as a medium of exchange that is widely accepted as legal tender, paving the way for other economic activities and

trade or exchange of goods and services. The second element is financial institutions' deposits at the central bank, as the central bank serves as an intermediary of the financial institution system for interbank payments as well as for the financial institutions' own liquidity management. The third element is government deposits, or treasury reserves, used for the government's cash flow management across different time periods. The final element is liabilities resulting from the operations on the mission to safeguard economic and financial stability. When there is surplus liquidity in the financial system, the central bank issues central bank bills or bonds to absorb the excess liquidity (increasing liabilities). Conversely, when there is a liquidity shortage in the financial system, the central bank redeems those bills and bonds in order to inject liquidity into the system (decreasing liabilities).

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Pursuing profits is not the central bank's mission

The BOT is a non-profit organization whose mission is to safeguard economic and financial stability. Therefore, any profit or loss in the financial statements is not indicative of its performance in delivering on its mission as a central bank. Moreover, since the BOT implements policies for the benefit of the general public, the BOT is well aware that it must exercise caution and consider the cost-effectiveness of its operations.

Losses in a central bank's financial statements are not uncommon. Many central banks, such as those of Switzerland, Singapore, Australia, Israel, and Chile, have experienced financial losses. Such losses, however, do not impair their ability to deliver on their central bank missions, so long as the central bank continues to implement policies that are justified and appropriate in maintaining the country's economic stability, and earn the confidence of all sectors,

including the general public, businesses, as well as domestic and foreign investors. In the BOT's case, although past financial statement figures have shown losses, the financial market and investors have remained confident in the BOT's operations.

Furthermore, the correlation between a country's economic conditions and the central bank's financial statements is often an inverse relationship. To illustrate, in years when the global financial markets rebound, emerging markets such as Thailand would face increased capital inflows. This, together with the Thai economy's robust and stable growth, would cause the Thai baht to appreciate, which, in turn, would lead to losses in the BOT's financial statements. Moreover, during years in which Thailand's economy had performed well, domestic interest rates would be higher than those earned from bills and bonds that were issued to safeguard economic stability. As a result,

the BOT's interest expenses from issuing debt securities to maintain economic stability will be likely to surpass interest incomes from investment. Conversely, when economic growth is stalled due to headwinds such as the COVID-19 pandemic, or crises induced by other domestic factors such as

political uncertainty, disasters, etc., the Thai baht would depreciate, leading to profits in the BOT's financial statements. Such profits, however, would not signify a healthy economy, nor would they benefit the people.

The BOT's Annual Financial Performance

In 2021, the Bank of Thailand Account and the Currency Reserve Account recorded profits, largely owing to changes in the foreign exchange rate, as the Thai baht has depreciated against almost all major currencies. Furthermore, investment allocations for international reserves have been adjusted to correspond with the global economic outlook, as well as to effectively diversify risks in order to enhance returns on investment.



Are the BOT's financial losses a concern?

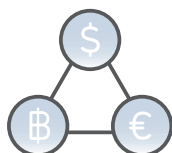
1 Why does the BOT's financial performance record profits in some years, and losses in others?



The BOT's annual profit or loss is determined by changes in the Thai baht's valuation, due to a **unique characteristic of the BOT's financial statements**, in which its assets are mostly international reserves in foreign currencies. At every year-end, these foreign assets must be revalued to Thai baht, resulting in a valuation gain or loss.

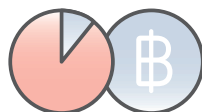
Hence, profits or losses in the financial statements do not impair the BOT's ability to deliver on its missions as a central bank, so long as it continues to implement policies that are justified and appropriate in maintaining the country's economic stability and also, importantly, earn the confidence of all stakeholders involved.

2 If the BOT records a financial loss, would it impair its international reserve position?



The BOT's profits or losses each year are mostly a **result of valuation gains or losses** from revaluing assets in foreign currencies or "international reserves" into Thai baht. For example, if the BOT has 280 billion US dollar of foreign assets and the Thai baht depreciates by one baht, a valuation gain of 280 billion baht will be immediately recognized. Conversely, if the Thai baht appreciates by one baht, a valuation loss of 280 billion baht will be immediately recognized. In either case, **the BOT's international reserves position remains unchanged** at 280 billion US dollar.

3 Are the BOT's liabilities counted as public debt?



The BOT's liabilities arise from its operations to deliver on its missions, such as issuing bills and bonds to ensure sufficient liquidity in the financial system, printing banknotes for circulation, or accepting deposits from financial institutions. **In carrying out its central bank missions, liabilities may increase in some periods, together with an increase in assets. Therefore, this does not impose additional fiscal burden, nor does it count as public debt** that the government must oversee.

For Thailand, the Public Debt Management Act, B.E. 2548 (2005) does not count the BOT's liabilities as public debt. Similarly, almost all other countries do not count the central bank's liabilities as public debt.

For further information on the roles and responsibilities of the BOT, please refer to the article on the BOT's Missions and Financial Statements.



The Bank of Thailand Board

as of December 31, 2021



Mr. Poramettee Vimolsiri
Chairman



Mr. Sethaput Suthiwartnarueput
Deputy-Chairman



Mr. Mathee Supapongse
Member



Mr. Ronadol Numnonda
Member



Miss Vachira Arromdee
Member



Mr. Danucha Pichayanan
Member



Mr. Pornchai Thiraveja
Member



Mr. Nontigorn Kanchanachitra
Member



Mr. Manas Jamveha
Member



Mr. Pakorn Nilprapunt
Member



Mr. Rapee Sucharitakul
Member



Mr. Subhak Siwaraksa
Member



Mrs. Suwanna Chuerboonchai
Secretary



Miss Pornpen Sodsrichai
Assistant Secretary

The Bank of Thailand Executives

as of December 31, 2021

Mr. Sethaput Suthiwartnarueput
Governor

Mr. Mathee Supapongse
Deputy Governor, Monetary Stability

Mr. Ronadol Numnonda
Deputy Governor,
Financial Institutions Stability

Miss Vachira Arromdee
Deputy Governor, Corporate Development

Miss Nawaporn Maharagkaga
Assistant Governor,
Risk Management Group

Mrs. Chantavarn Sucharitakul
Assistant Governor, Communications and
Corporate Relations Group

Mr. Woraporn Tangsaghasaksri
Assistant Governor,
Corporate Services Group

Mr. Jaturong Jantarangs
Assistant Governor, Supervision Group 1

Mr. Somboon Chitphantom
Assistant Governor,
Banknote Management Group

Miss Siritida Panomwon Na Ayudhya
Assistant Governor, Payment Systems
Policy and Financial Technology Group

Mrs. Alisara Mahasandana
Assistant Governor,
Financial Markets Operations Group

Mr. Titanun Mallikamas
Assistant Governor, Corporate Strategy
and Planning Group

Mr. Dej Titivanich
Assistant Governor,
Information Technology Group

Mr. Amporn Sangmanee
Assistant Governor, Internal Audit Group

Mrs. Nawaron Dejsuvan
Assistant Governor, Human Resources
and Organization Development Group

Mrs. Thanyanit Niyomkarn
Assistant Governor, Supervision Group 2

Mrs. Roong Mallikamas
Assistant Governor,
Financial Institutions Policy Group

Mr. Piti Disyatat
Assistant Governor,
Monetary Policy Group

Mrs. Suwanna Chuerboonchai
Assistant Governor, Legal Group

Design Concept for Annual Report



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Design concept for Annual Report 2021 is inspired by the BOT Learning Center building façade, in which its design is exquisitely mixed between the applied Thai pattern and modernity. Furthermore, the use of continuous step pattern depicts the forward-moving pace and the resiliency to embrace incurring changes.

Contact

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Bank of Thailand



Names, Adresses
and Websites
of Financial Institutions



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Bank of Thailand Channel



@bankofthailand



