# RISK FACTORS AND RISK MANAGEMENT

Bangkok Bank recognizes that effective risk management is fundamental to good banking practice. Accordingly, the Bank has established guidelines for managing risk in each area of our business to ensure that proper risk management mechanisms are in place. Over the past few years, the Bank has been proactively identifying, monitoring and analyzing major risk factors which could affect our financial operations and, where necessary, adjusted our organizational structure and risk management processes accordingly. This is to ensure that our risk management system is effective, in line with international standards and in accordance with the principles of Basel.

The Risk Oversight Committee, the Board of Executive Directors and senior management all play significant roles in prescribing and reviewing the efficacy of the risk management policy and system. They also define the risk management strategy, and monitor and control the Bank's risk to be at an appropriate level, in compliance with the risk management policy approved by the Board of Directors.

The Bank's risk management process comprises the identification of significant risks which may potentially impact the Bank's business operations, the assessment of each type of risk, the monitoring and control of risks to an appropriate level, and the reporting of the status of each type of risk to the relevant parties so as to enable them to manage and/or handle the risks in a timely manner.

The key principle of risk management is based on each business unit being responsible for continuously managing its relevant risk exposures and ensuring each risk remains within the approved limits and is in compliance with the overall risk management policy approved by the Board of Directors, while the Risk Management Division is responsible for monitoring and controlling the overall risks on a regular basis.

The operating environment and major risks that may affect the operations of the Bank, as well as the Bank's management of these risks, are as follows.

## 1) Uncertainties in global and domestic conditions

One of the major risks to the world's economy is the spread of the Coronavirus Disease 2019 (Covid-19) in many countries including Thailand. Despite positive signs of vaccine development reported in late 2020, distribution of the vaccines in early 2021 remains sluggish and mostly concentrated in developed countries. Furthermore, effectiveness of the vaccines on the new strains or variants of the virus is still in question. If the vaccines prove to be ineffective against the novel strains, cases may surge again, triggering the reintroduction of restriction measures, such as travel bans or curfew announcements in many countries. Economic activities may halt, especially in the private consumption and tourism sectors. Governments may need to implement fiscal stimulus, resulting in a higher level of public debt that may challenge the government's ability to stimulate the economy in the future. Such extreme measures could cause liquidity problems for businesses, leading to a wave of defaults. These risks will affect the recovery of the global and Thai economy.

International trade and global supply chain uncertainties, especially from the United States (US) and China trade policies, present another major threat to the global economy. With Joe Biden swearing in as the new president of the US, trade tensions between the US and China will likely lessen. The US trade policies will likely gear toward enhancing multilateralism rather than trade protectionism as under the Trump administration. However, competition for world leadership between the two countries will likely continue. This will continue to be one of the factors affecting world trade in the coming year.

Another risk to the world's economy is geopolitical uncertainty. Uncertainties in the Brexit process were among the main factors dragging confidence worldwide for the past few years. Despite the United Kingdom (UK) coming to an agreement with the European Union (EU) at the end of 2020, the Bank will still closely monitor negotiations between the UK and the rest of the world. Furthermore, there are other political uncertainties threatening the global economy, such as conflicts in the Middle East, protests in several countries, and Angela Merkel's term in Germany nearing an end. These events would determine the conditions for the European region in the coming year.

The Thai economy still faces downside risks from the weak tourism sector and private consumption that has yet recovered from the pandemic. The "new wave" of Covid-19 cases that Thailand has been facing since late December 2020 presents a critical threat to consumer and business confidence. Together with the dimmed outlook on the tourism sector, the pace of recovery for the Thai economy is likely to be incremental for the coming periods. Furthermore, the strength of the baht remains one of the threats that could very well harm the already fragile economy. Also, household debt has recently reached historic highs, hindering domestic private consumption, particularly among middle to low income households.

To manage risks stemming from the uncertain global environment and domestic economy which could affect our business operations and those of our customers, the Bank sets several processes to ensure the efficiency of risk management such as

following the situation, keeping in touch with clients, monitoring debtors' loan qualities and evaluating the concentration of credit risks on regular basis. This includes forecasting macroeconomic conditions to assess impacts from the uncertainties setting an allowance for expected credit loss, and conducting an Internal Capital Adequacy Assessment Process (ICAAP) to ensure capital adequacy. Furthermore, the Bank has established a recovery plan to systematically prepare for future difficulties in keeping with prudent accounting principles.

## 2) Regulatory changes

### – Principles of the Basel III framework

The Bank of Thailand (BOT) has enforced its regulatory capital requirements for commercial banks according to the Basel III framework, which has covered regulatory capital requirements and liquidity risk management standards since 2013.

Under this framework the BOT requires banks to preserve additional capital, in both quantitative and qualitative terms, to support losses that may occur in normal times as well as under stressed scenarios in order to support and maintain the stability of the financial system. Significant recent revisions to the requirements include: a new minimum capital ratio, an increase in the quality of capital to an appropriate level, and an expansion of the coverage of risk-weighted assets so they are more comprehensive and reflect real risks. From January 1, 2019, the BOT has required commercial banks to set aside additional capital as part of the Capital Conservation Buffer of more than 2.50 percent. Moreover, the BOT requires the Bank, which is classified as a domestic systemically important bank (D-SIB), to have additional Common Equity Tier 1 capital to meet the Higher Loss Absorbency (HLA) requirement by 1.00 percent from January 1, 2020 onwards. As at December 31, 2020, the Bank and Group had adequate capital for such buffers.

The Leverage Ratio guidelines, which will take effect in 2023, aim to control on- and off-balance sheet transaction volumes by ensuring Tier 1 capital as a percentage of total exposures is no lower than 3 percent. The Bank has already prepared for compliance with the guidelines.

With regard to the Basel III Liquidity Framework, the BOT has imposed the guidelines on Liquidity Coverage Ratio (LCR) since January 1, 2016. The minimum requirement for LCR was set at 60 percent for 2016 and mandated to rise in equal steps annually until reaching 100 percent on January 1, 2020. The BOT recently imposed guidelines for the Net Stable Funding Ratio (NSFR) with the minimum requirement of 100 percent, effective on July 1, 2018. As at December 31, 2020, the Bank and the Group had maintained both ratios above the minimum requirements.

Apart from the guidelines mentioned above, the Bank has closely monitored the other risk management guidelines, including guidelines already announced by the Basel Committee on Banking Supervision (BCBS) and/or any other regulators which the BOT is considering adopting in Thailand, such as the Countercyclical Buffer and Interest Rate Risk in the Banking Book, and guidelines expected to be enacted by the BCBS in the future such as Basel III: Finalizing Post-crisis Reforms. These guidelines may impact the Bank's capital requirements and business strategy. The Bank has therefore continuously monitored these revisions and the enforcement schedule from the BOT, and has studied and assessed their impacts, in order to properly prepare for the new guidelines.

### – New or revised financial reporting standards

The Bank's financial statements have been prepared under the Thai Financial Reporting Standards (TFRS) which are currently adopted according to International Financial Reporting Standards (IFRS) with a one-year delay from the equivalent IFRS effective date except for the Group of Financial Instruments Standards that were first adopted with a two-year delay. Effective from January 1, 2020, TFRS were revised to align with IFRS (Bound Volume 2019), resulting in new and revised financial reporting standards relating to the Bank, for which the significant changes in principle can be summarized as follows:

#### Group of financial instruments standards

These standards establish the principles in relation to the classification and measurement of financial instruments based on the consideration of the contractual cash flow characteristics and the business model. It extends the scope of the items, which are subject to expected credit losses to cover loan commitments and financial guarantee contracts. Recognition of allowance for doubtful accounts uses the expected credit loss model. As a result of this, the allowance for doubtful accounts is recognized at the initial date of transaction rather than waiting until the impairment indicator has incurred (Incurred Loss). The measurement of expected credit loss is derived from the historical loss on an unbiased basis and takes into account forward-looking factors throughout the transaction's lifetime. The expected credit loss measurement concept may lead to volatility of impairment loss in accordance with the model in each accounting period. In addition, it establishes the hedge accounting principle to align with the risk management strategy and disclosure requirements on financial instruments to enable users of financial statements to evaluate how significant financial instruments may impact the financial position and performance.

Group of Financial Instruments Standards have a broad impact on financial institutions, particularly in terms of their lending business and risk management. The financial impact of Group of Financial Instruments Standards adoption on January 1, 2020 is summarized in the note to financial statements no. 4.

### Thai Financial Reporting Standard No. 16 Leases

This standard replaces the existing lease accounting standard under Thai Accounting Standard No. 17 by introducing a single lessee accounting model which requires the lessee to recognize all long-term leases in the statement of financial position as a right-of-use asset and lease liability. However, there is no impact on lessor accounting as a lessor continues to recognize the leases as a finance lease or operating lease. The financial impact on the first-time adoption of TFRS 16 is summarized in the note to financial statements no. 4.

## 3) Credit risk

Credit risk is the risk that arises from the inability of borrowers or counterparties to perform their obligations under contractual agreements in relation to the Bank's lending, investment and other contractual commitments – for example, the borrower's failure to repay principal and/or interest as agreed with the Bank. In addition, there are other related risks under credit risk such as credit concentration risk, reflecting large borrower concentration, industry concentration risk, and country and transfer risk. The Portfolio Management unit is responsible for managing these risks.

Credit risk factors are those which may affect the ability of borrowers to fully repay loans, and include factors which may affect the Bank's ability to resolve non-performing loan.

**The key risk factor in 2020-2021 is the Covid-19 crisis,** which has resulted in the disruption of global demand and supply chains. Countries around the world have taken measures to prevent or reduce the spread of the disease by implementing travel restrictions, subsequently causing the world economy to enter a global recession. Solving the problems of the global economy and returning to normalcy will take time, so the end of this crisis is unpredictable.

**The Thai economy is still at high risk** because the economy mainly depends on foreign sectors especially the tourism and export sectors that were severely impacted by this crisis. Along with the changes in global economic and social structures, lifestyles have also transformed into a New Normal. For instance, dependency on digital technology is increasing and there is a tendency to aggravate the loss of competitiveness of the country. In addition, the Covid-19 pandemic has affected private consumption, which continues to be pressured by the low purchasing power factor as the household debt is high. Therefore, the Thai economy in the next phase will depend primarily on government consumption and investment.

Given all of the above factors, the Bank's business operations in the next phase must emphasize monitoring the risks of our debtors or counterparties, as well as providing assistance and risk mitigation to some debtors or counterparties that have been affected by this crisis.

In managing credit risk, the Bank has established credit underwriting processes which include the formulation of credit policy, credit risk ratings for customers, and the establishment of different levels of delegation of authority for credit approval, depending on the type of business and/or the size of the credit line. In considering the approval of loans in general, the Bank considers the purpose of the loan and assesses the repayment ability of the applicant, taking into account the applicant's operating cash flows, business feasibility, management capability and collateral coverage. The Bank performs credit reviews which include reviewing credit risk ratings on a regular basis. In order to effectively monitor and manage its credit risks, the Bank has set up the following divisions:

- **Risk Management Division** is responsible for analyzing and reporting to management the status of various risks of the Bank, as well as proposing recommendations for the review of the overall risk policy of the Bank in anticipation of, and in compliance with, new rules, regulations and international standards. The division is also responsible for overseeing the management of each type of risk to comply with the Bank's risk management policy.
- **Credit Management Division** is responsible for managing risks related to credit extension by supervising and monitoring credit extensions in accordance with the Bank's credit policies. The Credit Management Division comprises the Credit Policy unit, the Credit Acceptance unit, the Portfolio Management unit, the Risk Asset Review unit, the Special Asset Management unit, the Loan Recovery and Legal unit, and the Bank Property unit. The functions of each unit are summarized below:
    - ***Credit Policy unit*** oversees the credit policy framework and coordinates the improvement and adjustment of the credit policy. It is also responsible for disseminating the credit policy, credit standards and credit processes; for monitoring and overseeing exceptional cases which are inconsistent with the credit policy; and for gathering various inputs which may be used for improving the credit policy.

- *Credit Acceptance unit* oversees the quality of credit extensions to ensure they are in line with the credit policy and credit underwriting standards; reviews the appropriateness of loan structures as well as results of customers' credit risk ratings; promotes the development of a good credit culture; and maintains a systematic and reliable credit extension process.
- *Portfolio Management unit* is responsible for analyzing and making recommendations for adjustments to the portfolio structure; recommending the appropriate portfolio composition and the provision of reserves for loan losses at the portfolio level; developing and overseeing credit risk management tools and methodologies; constructing credit databases; and overseeing related management standards.
- *Risk Asset Review unit* is charged with reviewing credit quality and credit management processes, assessing the adequacy of loan loss reserves, and evaluating compliance with credit policy, regulations and credit underwriting standards.
- *Special Asset Management unit* is responsible for managing non-performing loans, and for determining and executing strategies for the resolution and restructuring of troubled loans.
- *Loan Recovery and Legal unit* is responsible for taking legal actions, negotiating loan settlements, and seizing collateral for sale by public auction.
- *Bank Property unit* is responsible for managing and selling foreclosed assets obtained from loan recovery processes and from legal actions.

For the credit process, credit applications are first considered by the business units and then submitted to the Credit Acceptance unit. The unit conducts additional analysis to help mitigate credit risk by ensuring that the proposals comply with the Bank's credit policies in areas such as credit underwriting standards, credit risk rating and collateral appraisal. A specific unit has been set up to manage and resolve non-performing loan. The Bank also has an independent unit to review credit quality and credit management processes; assess the adequacy of loan loss reserves for non-performing loans; evaluate the effectiveness in complying with credit policy, regulations and credit underwriting standards; and assess the appropriateness of portfolio composition, the adequacy of capital and the effectiveness of stress testing as specified by the Bank and the BOT. All the above units report on a regular basis to senior management, the Board of Executive Directors and the Risk Oversight Committee.

The Bank has established different measures to control credit risk. For example, the Bank has instituted limits on the amount of total credit extended, contingent liabilities and investment in a group of borrowers, an industry and a country. All of this will limit the loss of capital due to an economic downturn. Moreover, the Bank monitors and reports on these aspects to senior management, the Board of Executive Directors and the Risk Oversight Committee to ensure that there will be adequate capital to safeguard the continuity of business operations in difficult times.

The Bank has established a risk management policy for intra-group[1] transactions, in accordance with the consolidated supervision principles of the BOT, which cover guidelines and limitations for intra-group transactions and their risk management. The intra-group transaction policy stipulates that companies in the Bank's financial business group shall manage, control and monitor the transaction volumes to be within the intra-group transaction policy of the Bank (as a parent company) and to be consistent with the guidelines of the BOT and/or other relevant regulators. The companies in the Bank's financial group shall report intra-group transactions to the Risk Oversight Committee of the Bank's financial group and to the Bank's Board of Directors on a regular basis so that potential problems can be monitored and pre-empted before serious damage occurs.

The ratios of the Group's asset quality show the Bank's stability compared to the industry, with adequate reserves for losses from credit risk. The ratios as at December 31, 2020 and December 31, 2019 were as follows:

| | Dec 31, 20 | Dec 31, 19 |
|---|---|---|
| Ratio of allowance for expected credit losses to loans and accrued interest receivables /1 | 8.2% | 8.4% |
| Ratio of loans written off to loans and accrued interest receivables | 0.9% | 0.5% |
| Ratio of non-performing loans to total loans/2 | 3.9% | 3.4% |
| Ratio of accrued interest to loans and accrued interest receivables | 0.2% | 0.2% |
| Ratio of allowance for expected credit losses to non-performing loans /1, /2 | 186.8% | 220.2% |

/1 Allowance for expected credit losses are calculated from allowance of loans, interbank and money market items, loan commitments financial guarantee contracts
(Before the adoption of the TFRS 9, calculating from allowance for expected credit losses of loans)
/2 Including interbank and money market lending

[1] The Group comprises 13 companies as follows: 1) BANGKOK BANK PUBLIC COMPANY LIMITED (as the parent company) 2) BANGKOK BANK BERHAD (BBB) 3) BANGKOK BANK (CHINA) COMPANY LIMITED (BBC) 4) PT BANK PERMATA TBK 5) SINSUPTAWEE ASSET MANAGEMENT COMPANY LIMITED (STAM) 6) BBL ASSET MANAGEMENT COMPANY LIMITED (BBLAM) 7) BUALUANG SECURITIES PUBLIC COMPANY LIMITED (BLS) 8) BBL (CAYMAN) LIMITED 9) BUALUANG VENTURES LIMITED 10) BSL LEASING COMPANY LIMITED 11) BBL NOMINEES (TEMPATAN) SDN. BHD.12) BANGKOK CAPITAL ASSET MANAGEMENT COMPANY LIMITED and 13) PT SAHABAT FINANSIAL KELUARGA

In addition, Thai Financial Reporting Standard No. 9 "Financial Instruments" (TFRS9) was adopted from January 1, 2020, replacing the "incurred loss" model or provision reserved for damages that have occurred, with an "expected loss" model or provision reserved for "expected" damage that may occur. This new model means that although a debtor may not yet become overdue, if there are signs that credit risk has increased significantly, the Bank is required to have provisions, or allowance for Expected Credit Loss (ECL), to accommodate the expected damage if the debtor misses any payment during the remaining term of the loan agreement. It also requires the Bank to consider economic factors in the past, present and future under various assumptions and situations as well as other factors that may affect the debtor's repayment, and may result in changes to the Bank's provisioning in any period of time even though the overall asset quality of the Bank is unchanged.

This classification from 2020 onwards has been amended to three stages according to TFRS9. Stage 1 (Performing) covers loans with no significant increase in credit risk. Stage 2 (Under-Performing) covers loans where credit risk has increased significantly. Stage 3 (Non-Performing) covers loans considered to be impaired or to be non-performing loans. The more stringent rules result in the definition of loans in Stage 2 (Under-Performing) having a wider scope than Special Mention (SM) loans, which cover debtors who have not yet started to become overdue. It is therefore possible to see how changes in classification resulting from the amendment of the standard will affect the asset quality ratio. The Bank continuously and closely monitors risks of debtors and counterparties in accordance with the Bank's credit risk management principles.

However, the current economic situation and the Covid-19 pandemic which has affected the Thai and the global economy, has caused an economic recession that may affect the overall credit quality of the commercial banking system. The Bank continues to maintain close control of credit underwriting and risk management and sets aside the appropriate level of provisioning against expected credit loss. This will enable the Bank to handle credit demand and economic volatility while supporting the recovery of economic activities going forward.

#### Credit concentration risk

Credit concentration risk is the risk of the Bank making lending, investment and other contractual commitments to any borrower or sector at very high volumes. If losses occur, this will significantly affect the status and operations of the Bank. There are three types of concentration risks: large borrower concentration, industry concentration, and country and transfer risk.

Large borrower concentration is controlled by limiting the lending, investment and other contractual commitments to any one borrower or project to no more than 25 percent of the Bank's total capital. The Bank also sets a limit of three times its total capital on the total sum of lending, investment and other contractual commitments to any group of borrowers that exceeds 10 percent of the Bank's total capital. These two limits are required by the BOT and the Bank is in compliance.

To control industry concentration risk, the Bank aggregates exposures into industry and sub-industry categories based on economic factors, determines the worst-case scenario level of loss in each industry, and then calculates the lending limit to any industry to be at an acceptable level to limit damages to the Bank's capital in the event of a serious incident with major implications on certain sectors. The Bank also monitors, reviews and reports exposures and business conditions of each industry to ensure that the diversification in the portfolio will support the Bank's solid business growth.

For country and transfer risk, the Bank evaluates the riskiness of a counterparty's country with an assumption that their economic, social and political issues are worse than usual conditions. Then, together with business requirements, the Bank determines the country limit to limit damages to the Bank's capital in cases where events in a foreign country adversely affect the Bank's financial interests. The Bank also monitors, reviews and reports exposures and business conditions of every major country regularly to ensure the Bank has optimal exposure allocations.

### 4) Market risk

Market risk is the risk of losses in on- and off-balance sheet positions of the Bank arising from movements in market prices such as interest rates, foreign exchange rates, equity prices and commodity prices.

The Bank's market risk arises from financial services activities provided to customers and/or financial institutions. These involve buying and selling foreign exchange and debt securities, as well as financial derivative transactions, such as foreign exchange forward contracts, cross currency swaps and interest rate swaps. The Bank manages market risk arising from customer-driven transactions to be at acceptable levels by hedging or reducing the risk exposure. Market risk exposures also arise from the Bank's own asset and liability positions.

The primary objective of market risk management is to manage the risks resulting from changes in market factors to be at acceptable levels and in line with the overall risk management policy of the Bank. The Bank has established a market risk management policy and specified market risk measurement metrics and limits, taking into consideration the nature and complexities of various financial activities. The following committee and units are mainly responsible for managing, monitoring and controlling market risks:

- **Asset-Liability Management Committee** (ALCO) is responsible for establishing and reviewing policies and guidelines for asset and liability management and market risk management, as well as monitoring and controlling these risks to be at acceptable levels and in compliance with the risk management policy set by the Risk Oversight Committee.
- **Treasury division** is responsible for executing the trading strategy for the Bank through buying and selling financial products such as foreign exchange, bonds and derivatives instruments, as well as managing the Bank's foreign exchange risk, interest rate risk and liquidity risk to be within the limits set by ALCO's guidelines and at levels acceptable to the Bank.
- **Market Risk unit,** which is part of the Risk Management Division, is accountable for identifying, assessing, monitoring, reporting and controlling risk positions against specified limits. The Market Risk unit reports to ALCO on a regular basis and is responsible for proposing the enhancement of market risk policies, measurement metrics and limits in response to changes in the operating environment, the Bank's business plans and the complexities of financial activities.

The Covid-19 pandemic is one of the major factors affecting the global market in the past year. The spread of the virus spiraled out of control in the first quarter of 2020 and prompted many countries around the world to impose social distancing and lockdown measures to limit the spread. Several central banks took unprecedented monetary expansion to mitigate the economic impact of the pandemic, including emergency interest rate cut, asset purchases and liquidity injection into the economies. The fear of a global economic recession during late first quarter triggered financial market turmoil and raised demand for US dollar liquidity. The central banks then helped contain the shortage by injecting the large scale of USD liquidity into the market. For the remaining quarters of the year, the Covid-19 situation had begun to subside and the global economy showed some signs of recovery, However, a new wave of the outbreak emerged in many countries, leading to another lockdown. Many central banks, therefore, are likely to keep their interest rates low for a long period of time.

Risk factors which affected the Bank's position and need to be monitored going forward include (1) The Covid-19 pandemic situation which continues to threaten global economic recovery until coronavirus vaccines can be produced and distributed to the global population adequately, (2) US policies under a new president's administration which may affect economies, politics, and international trade relations, (3) US-China trade and technology tensions, (4) Fiscal balance deficit and sovereign debt levels in many countries, especially major economies, which have increased considerably since the start of the Covid-19 crisis, (5) Negotiations on a post-Brexit trade deal between the UK and EU, and (6) Uncertainty surrounding political events in Thailand which could lead to downside risks to Thaiand's economic recovery. These factors may increase the volatility of international fund flows and the financial markets, and subsequently cause volatilities in exchange rates, interest rates, security prices and commodity prices.

The Bank segregates market risk management into two parts: the trading book and the banking book, which are classified according to the purpose of entering into the transaction.

### 4.1 Market risk in the trading book

The trading book position includes positions of financial instruments that the Bank holds for a short period with an intention to trade, resell and benefit from the difference between the buying and selling prices; to benefit from arbitrage opportunities; or to hedge other positions in the trading book. The Bank's main traded market risks are interest rate risk and foreign exchange risk.

Interest rate risk in the trading book arises when the Bank holds interest rate-related financial instruments with an intention to trade, speculate for a short-term profit or hedge other positions in the trading book. These trading exposures include debt securities, foreign exchange forward contracts, interest rate swaps and currency swaps, etc. Changes in interest rates affect the fair value of these positions and may result in gains or losses for the Bank.

Foreign exchange risk arises when the Bank executes a foreign currency transaction which may lead to an overbought or oversold position in a particular currency. These transactions include foreign currency exchange, investments, loans, borrowings, financial commitments, and foreign exchange-related derivatives. The Bank may incur gains or losses as a result of movements in foreign exchange rates.

The Bank manages traded market risk primarily through a series of limits, such as Value-at-Risk (VaR) Limit, Present Value of a

Basis Point Change (PV01) Limit and Maximum Loss Limit. Risk exposures are monitored and reported to senior management, the Board of Executive Directors and the Risk Oversight Committee on a regular basis. VaR is a statistical technique for estimating the potential losses on risk exposures as a result of movements in market rates and prices over a specified time horizon and at a given level of confidence.

The Bank also performs market risk stress testing on our trading book position on at least a quarterly basis to determine the potential losses from extreme market movements or crisis events. This stress testing enhances the Bank's understanding of our risk exposures and vulnerabilities as well as facilitating proactive risk management.

By using the historical simulation approach, the average VaR of the trading book for a one-day holding period, with a 99 percent confidence level, was Baht 500 million in 2020.

### 4.2 Market risk in the banking book

The Bank's banking book is subject to interest rate risk and equity price risk which can be described as follows:

#### (1) Interest rate risk in the banking book

Interest rate risk in the banking book normally arises when the repricing and/or maturity schedule of assets, liabilities and off-balance sheet positions are not matched, or when the movements of reference interest rates on assets and liabilities are not correlated, negatively affecting Net Interest Income (NII) and/or Economic Value of Equity (EVE).

To control interest rate risk in the banking book, the Bank has established a NII Impact Limit (being the Cumulative NII Impact within one year) and an EVE Impact Limit, assuming interest rates rise and decrease immediately by one percent.

The Bank manages interest rate risk by adjusting our asset and liability structure in line with forecast interest rate trends, taking into consideration the changes in NII and EVE. The Bank may deploy plain vanilla derivatives, such as interest rate swaps and cross currency interest rate swaps, to hedge or mitigate interest rate risks to be within the risk tolerance limit, based on ALCO's risk management guidelines. The Bank also performs stress testing for interest rate risk in the banking book on a quarterly basis in order to understand its vulnerabilities and potential negative impact on NII under various stress scenarios. Results of the stress testing are used to determine alternative balance sheet strategies more suited to the business environment in order to achieve the business return target under an acceptable level of risk.

The impact of a one percent interest rate increase on the Group's NII as at December 31, 2020 and December 31, 2019 was as follows:

Million Baht

| Currency | Dec 31, 20 | Dec 31, 19 |
|---|---|---|
| THB | -1,713 | -123 |
| USD | 1,084 | 1,802 |
| OTH | 683 | 521 |
| **Total NII Impact** | **55** | **2,200** |

#### (2) Equity exposure in the banking book

Equity price risk is the risk associated with equity price changes resulting in the deterioration of investment value affecting the Bank's capital.

Objectives of the Bank's equity investment in the banking book are to enhance income in terms of dividends and capital gains under a medium to long-term investment horizon, and to support our core banking business by establishing good relationships with customers and creating networks of strategic investment partners, as well as using securities for debt repayment under debt restructuring agreements. The Bank's equity price risk arises from various types of investments in both domestic and overseas markets in order to diversify risk, to enhance returns, and to support the development of the Thai capital market, such as investments in property funds and infrastructure funds.

The Bank has established an equity investment and risk management policy as a guideline for assessing, monitoring and controlling equity price risk. Risk measurement techniques for the assessment of equity price risk are categorized by equity type. The Bank performs equity price risk stress testing on at least a quarterly basis in order to assess maximum potential losses from extreme market movements or crisis situations, as well as controlling the ratio of equity investment exposures to total capital in accordance with BOT regulations and the Bank's internal guidelines.

## 5) Liquidity risk

Liquidity risk is the risk that the Bank is not able to meet financial obligations when they fall due. The purpose of the Bank's liquidity risk management is to maintain sufficient funds to meet present and future financial obligations while managing the use of the funds to generate an appropriate return in line with prevailing market conditions.

Liquidity risk factors mainly comprise the structure of the sources and use of funds, competition among financial service providers, including banks and non-bank businesses to increase market share of deposits, especially low-cost deposits and retail deposits, by providing digital deposits via online banking channels. In addition, the shift of customers' investment behaviour towards searching for yields amid a low interest rate environment and the expansion of the Bank's foreign currency assets also present a risk.

The Bank manages liquidity risk in accordance with policies and principles established internally by ALCO and with relevant regulatory requirements. The Treasury Division is in charge of managing the Bank's day-to-day cash flow and liquidity position, monitoring money market conditions and interest and exchange rate movements and forecasting rate trends, as well as executing liquidity management strategies in accordance with ALCO guidelines. The Market Risk unit of the Risk Management Division is responsible for identifying, assessing, monitoring, reporting and controlling liquidity risks against specified limits. The Market Risk unit reports to ALCO regularly, at least once a month.

The Bank has diversified funding sources. Its major funding source is customer deposits which are well diversified in terms of customer type, deposit type and maturity. Moreover, the Bank manages liquidity in major currencies such as the Thai baht and US dollar by using domestic and international money and capital markets, including swap and repurchase markets. The Bank aims to balance the cost of liquidity against liquidity risks as deemed appropriate, based on market conditions and acceptable risk levels. The Bank also closely manages short-term and long-term liquidity positions, including the consideration of foreign short-term and long-term borrowings to meet customers' foreign currency loan demands in both domestic and overseas operations, as well as planning for capital fundraising as market conditions permit.

In addition to funding diversification, the Bank maintains high-quality liquid assets which can be liquidated or realized as needed in order to meet its financial obligations under both business-as-usual and crisis situations. The Bank maintains a liquidity reserve ratio in accordance with the requirements of the BOT and other regulatory authorities in the countries where it has an international presence, as well as in accordance with ALCO guidelines.

The Bank assesses, monitors and controls liquidity risk through a variety of measurements such as the loan-to-deposit ratio, cumulative cash flow positions under business-as-usual and crisis scenarios, Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR). The Bank's average LCR in the fourth quarter of 2020 was 291 percent, which was computed from month-end LCR in the quarter. The Bank's LCR is above the regulatory minimum requirement of 100 percent.

The Bank also has in place an early warning system which provides alerts of any looming liquidity crisis, from both internal and external factors, that will allow for the prevention of liquidity risk crises and/or for proactive liquidity risk management. The Bank conducts liquidity-risk stress tests whereby the stress scenarios incorporate both internal and external liquidity risk factors. Liquidity-risk stress scenarios can be classified into three categories: (i) bank-specific crisis, (ii) market-wide crisis, and (iii) a combination of both. Under each stress scenario, the assumptions of cash inflows and outflows are specified differently from those under the business-as-usual scenario, such as abnormal customer deposit withdrawals and overdraft drawdowns, inaccessibility to the money market, sales of the Bank's liquid assets at below-market prices due to the decrease in market liquidity of such assets, and contingent support for companies in the financial group. The results of liquidity-risk stress tests performed in 2020 showed that the Bank has continued to maintain a sufficient amount of excess liquidity under all three crisis scenarios.

The Bank has a liquidity contingency plan that outlines the roles and responsibilities of management and relevant departments, as well as having early-warning indicators and an action plan that enables the Bank to promptly cope with crisis events and successfully restore the situation to normal. In addition, the Bank has its Global Medium Term Notes (GMTN) Program which enables the Bank to access medium- and long-term funding from the capital market in a timely and flexible manner.

## 6) Operational risk

Operational risk is the risk of loss from inadequate or failed internal processes, people and systems, or from external events. This includes legal risks, but does not include strategic risks and reputation risks.

Operational risk factors are primarily composed of internal factors and external factors.

*Internal factors* are:

- The efficiency of the Bank's internal processes and internal control systems, including operational processes supporting business operations and processes for taking care of its personnel.

- The adequacy, qualifications and efficiency of the Bank's personnel, including efficiency in the quality of customer service and customer care, understanding of the Bank's products and services that tend to become more complex, and the suitability of products and services sold to customers.
- The Bank's operating systems, in terms of their capability to support the Bank's business operations; and their complexity which may inflict risks.

*External factors* are:
- Actions by outsiders such as theft or embezzlement of assets or data, money laundering, etc.
- Catastrophes, natural disasters and civil disorders that might cause damage to the Bank's assets. Emerging diseases, epidemics or pandemics that might cause a business interruption or disruption or alter the bank's normal business operations.
- New laws and regulations, or changes to laws and regulations, in Thailand and overseas, which are likely to become more demanding causing significant changes to internal processes and operations in order to comply with the new laws and regulations.

The Bank understands that good operational risk management is vital to sustainable business success, particularly in the current environment where uncertainties, both domestic and international, prevail. The Bank therefore places great importance on effective operational risk management that provides sufficient coverage for all aspects of its operations and is well prepared to deal promptly with any unpredictable event, including compliance with regulations in Thailand and overseas which have become more demanding.

Furthermore, the Bank pays close attention to the quality of customer service and customer care, suitability of products and services sold, reinforcements in system security, information systems, and all electronic/digital channels as well as risk management of fraud related to bank products and services such as credit cards, ATM cards and electronic services to ensure customer confidence. In relation to new product and service launches, the product and service risks must be well analyzed, assessed and controlled to be at an acceptable level, and the appropriate risk control procedures must be in place.

The Bank's operational risk management includes defining, assessing, monitoring, mitigating and controlling risk. Each unit in the Bank is directly responsible for managing its operational risk and for establishing measures to mitigate, monitor and control the risk to the designated level by allocating appropriate resources and establishing an organizational culture for managing operational risk.

A key principle underlying the Bank's operational risk management is to educate staff throughout the Bank by providing them with a consistent understanding of operational risk, and to cultivate a sustainable operational risk culture as part of day-to-day business activities across the Bank through Operational Risk Management Tools, e.g. Risk Control Self-assessment (RCSA), so that they are able to accurately and completely identify the operational risks, assess the risks, analyze details of the risks, assess the effectiveness of controls, find appropriate solutions to mitigate risks, and implement the selected solutions to minimize risks. This is followed by the systematic monitoring of progress, the measurement of potential risks, e.g. Risk Monitoring Information (RMI) and Loss Data collection, and the use of reporting systems as key elements of compiling and analyzing preventive and control measurements, and/or effectively diminishing the Bank's operational risk, and regular reviews of the entire process.

The Bank has the Operational Risk Management Committee (ORMC), comprising senior executives from various business and support units, which is responsible for supporting and overseeing the functioning of the Bank's operational risk management and business continuity management to comply with the Bank's policy.

The Bank has a dedicated unit for operational risk management under its Risk Management division, which is responsible for the operational risk management system, such as monitoring and supporting every unit in implementing the operational risk management framework at the unit level, managing operational risk at the organization level, reviewing operational risk management in the process of product and service development, calculating the capital required for operational risk under the Basel framework, and maintaining and analyzing data on the operational risk loss data system. The Operational Risk unit coordinates with the Compliance and Audit and Control division, by information sharing, and by analyzing and setting controls to enhance the efficiency of operational risk management and the Bank's internal controls.

The Bank has implemented Business Continuity Management (BCM) to enhance our resilience and capability in responding to unexpected interruptions. The Bank has adopted a BCM Policy which has been approved by the Board of Directors and has also defined standards and a BCM framework for developing a Business Continuity Plan which is reviewed and updated in accordance with potential threats, as well as being tested on an annual basis.

## 7) Information technology risk

Information technology (IT) risk is the potential risk from using technology which will have an impact on a system or operation, and the risk from cyber threats.

Key IT risk factors of the Bank are composed of internal factors and external factors. Internal factors are the Bank's systems, in terms of their capability, their complexity and the adoption of technology for the Bank's business operations; the issue of system and data security, especially information related to the personal data management; the accuracy and completeness of data processing; personnel knowledge of new technologies and development of competency in using new technologies; and the adequacy of the Bank's personnel regarding IT risk awareness and understanding, including malicious and inadvertent insiders. External factors are more diversified, rapid and complex forms of IT risk and cyber threats. Moreover, current risks from changes in the business-chain environment that rely on technology, the linkage between business information and business risk information related to technologies, and data security management in operating businesses become factors for creating business opportunity as well as risk due to the transformation of the business landscape in the era of digitalization.

The Bank is aware of the risks arising from the use of IT and the importance of information security and cybersecurity. The Bank has developed an IT Risk Management Policy and updated the Information Security Policy to cover cybersecurity. Moreover, the Bank has enhanced the readiness of our IT governance and IT risk management throughout the Bank by putting in place a framework for the following areas: strengthening cybersecurity to meet the most up-to-date standards and covering new technology management; assessing cyber risk and making appropriate adjustments to the assessment framework according to each situation; regularly building awareness and understanding of cybersecurity with staff and customers; developing contingency plans to rapidly and effectively handle different forms of cyber risk to reduce its impact; and collaborating with external organizations to further strengthen the Bank's readiness to both effectively prevent and handle cyber risk.

## 8) Capital adequacy risk

Capital is an important source of funding for any financial business. Therefore, effective capital management reflects the financial strength, and reliability of financial institutions.

Capital structure, according to the regulations on capital requirements under the principles of the BOT's adoption of Basel III, is revised into Common Equity Tier 1 capital, Additional Tier 1 capital and Tier 2 capital.

- Common Equity Tier 1 capital comprises:
    1) Paid-up share capital
    2) Premium (discount) on common shares
    3) Legal reserves
    4) Reserves appropriated from net profit
    5) Retained earnings after appropriations
    6) Non-controlling interest classified as Common Equity Tier 1 capital
    7) Other reserves
    8) Deductions such as goodwill, intangible assets and deferred tax assets
- Additional Tier 1 capital consists of non-controlling interest classified as Additional Tier 1 capital
- Tier 2 capital consists of:
    1) Long-term subordinated debt instruments subordinated to depositors and general creditors
    2) General provisions for normal assets not exceeding 1.25 percent of credit risk-weighted assets
    3) Non-controlling interest classified as Tier 2 capital

In adopting Basel III, the BOT has relaxed the new requirements for subordinated debt instruments classified as Tier 2 which do not meet the criteria for qualification under Basel III regarding capability for loss absorbency of the Bank at the point of non-viability, i.e. they are not convertible to common shares and cannot be written off upon the authority's decision to provide financial support to the Bank. The BOT requires capital to be phased out at 10 percent p.a. from 2013 to 2022.

The Group's capital position as at December 31, 2020 and December 31, 2019 were as follows:

| | | Million Baht |
|---|---|---|
| | **Dec 31, 20** | **Dec 31, 19** |
| Tier 1 capital | 431,381 | 406,529 |
| Common Equity Tier 1 capital | 407,621 | 406,463 |
| Additional Tier 1 capital | 23,760 | 66 |
| Tier 2 capital | 70,686 | 72,211 |
| **Total capital** | **502,067** | **478,740** |

Capital adequacy risk factors cover the type, quantity and quality of the Bank's risk assets as well as the Bank's earnings' capacity. In times of severe economic and financial difficulties, the quality of the Bank's assets, including its investments, may deteriorate. The value of the Bank's assets and/or investments and/or collateral may also decline, thereby increasing the Bank's risk weighted assets. As a consequence, the Bank's earnings may also be affected, resulting in a reduction of capital and leading to a corresponding decline in its capital adequacy ratio.

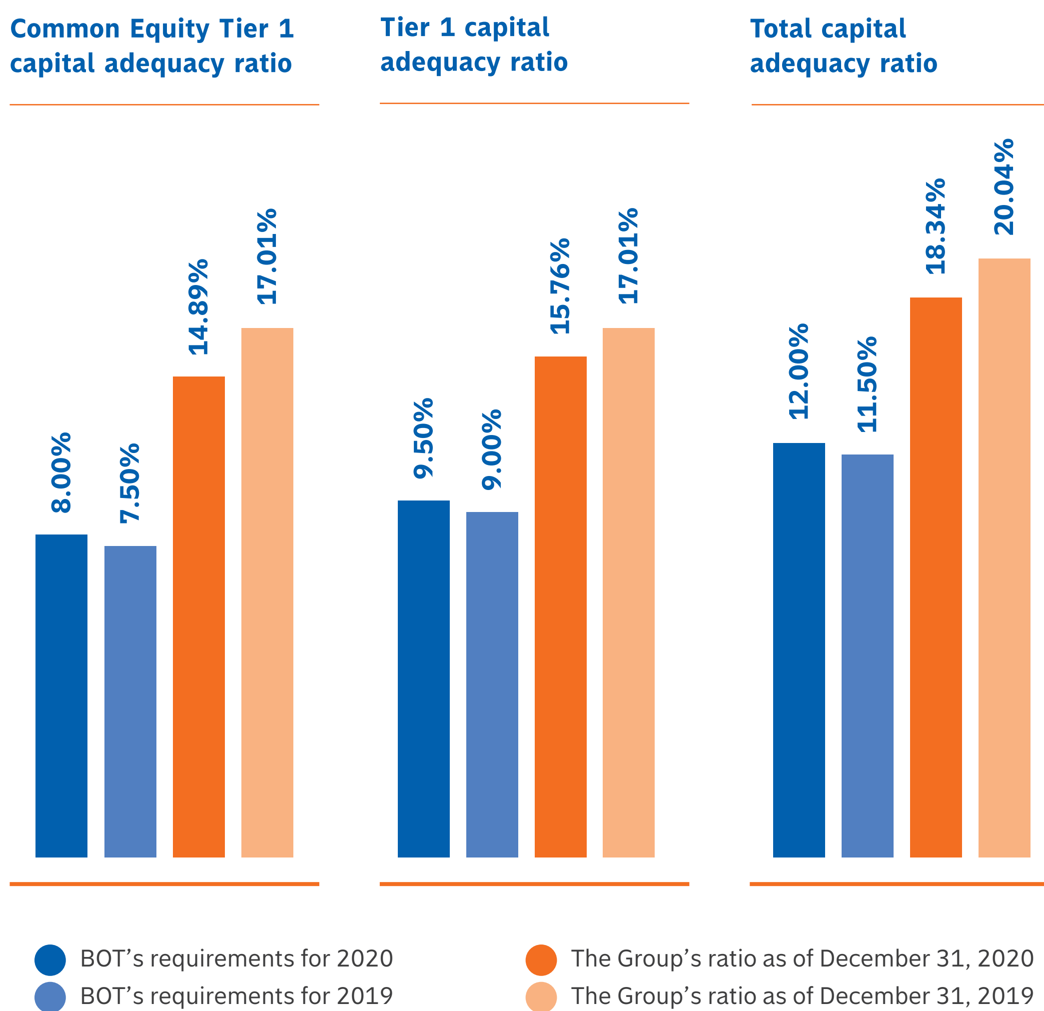
The objective of the Bank's capital management policy is to maintain an adequate level of capital to support growth strategies within an acceptable risk framework, as well as to meet regulatory requirements and market expectations.

In compliance with the BOT's supervisory review process guidelines, the Bank's capital management process assesses the overall risk and capital adequacy under the Internal Capital Adequacy Assessment Process (ICAAP). The process covers projected assessments of all substantial risks to the Bank's operations, so that the Bank can effectively manage its risks and have a sound capital base for business operations under normal and stress scenarios.

The Standardised Approach (SA) is currently used to measure credit risk, market risk and operational risk for computing regulatory capital requirements under the BOT's Basel III.

Under the principles of Basel III, the BOT requires that commercial banks registered in Thailand and their groups must maintain three minimum capital adequacy ratios: A Common Equity Tier 1 capital adequacy ratio of no less than 4.50 percent, a Tier 1 capital adequacy ratio of no less than 6.00 percent, and a total capital adequacy ratio of no less than 8.50 percent. The aforementioned minimum ratios have yet to include the Capital Conservation Buffer of more than 2.50 percent which came into effect on January 1, 2019. Moreover, the BOT requires the Bank, which is classified as a domestic systemically important bank (D-SIB), to have additional capital to meet the Higher Loss Absorbency (HLA) requirement, which raises the required Common Equity Tier 1 ratio by 1.00 percent from January 1, 2020 onwards. Consequently, from January 1, 2020, Common Equity Tier 1 ratio, Tier 1 ratio and total capital ratio must be more than 8.00, 9.50 and 12.00 percent, respectively, of the total risk-weighted assets.

As at December 31, 2020, the Group's Common Equity Tier 1 capital adequacy ratio, its Tier 1 capital adequacy ratio and its total capital adequacy ratio were 14.89 percent, 15.76 percent and 18.34 percent, respectively, whereas at December 31, 2019 the ratios were 17.01 percent, 17.01 percent and 20.04 percent, respectively. Consequently, the Bank's capital is at a level that provides such additional buffers.


Common Equity Tier 1 capital adequacy ratio
8.00%
7.50%
14.89%
17.01%
Tier 1 capital adequacy ratio
9.50%
9.00%
15.76%
17.01%
Total capital adequacy ratio
12.00%
11.50%
18.34%
20.04%
BOT's requirements for 2020
BOT's requirements for 2019
The Group's ratio as of December 31, 2020
The Group's ratio as of December 31, 2019