CAPITAL ADEQUACY RATIO DISCLOSURE

31 December 2021

Contents

1. Scope of CAR calculation

As at 31/12/2021, the Bank has three (03) subsidiaries as follows:

- Techcom Securities Joint Stock Company (main business: securities investment)
- AMC – Techcombank (main business: debt and asset management)
- Techcom Capital Joint Stock Company (main business: fund management)
- When calculating the consolidated CAR as at 31/12/2021, the Bank uses the data in its consolidated financial statement (the Bank and its three subsidiaries as mentioned above).

At the time of this report, the Bank does not have a subsidiary in insurance business (not included in the consolidated CAR calculation).

2. Owner's equity structure:

Techcombank's owner's equity includes:

Main components of tier-1 capital:

- Charter capital (contributed capital)
- Reserves for increasing charter capital
- Reserves for professional development
- Financial reserves
- Retained earnings
- Share premium

Main components of tier-2 capital:

- 80% general provision in accordance with SBV's regulations on the classification of assets, provision level, risk provisioning method and use of provisions by credit institutions and branches of foreign banks.
- Minorities interests

Table 1 – Capital

Unit: million VND

Item	31/12/2021	
	Single	**Consolidated**
Tier 1 capital	**84,534,553**	**92,194,573**
Tier 2 capital	**1,986,414**	**2,927,221**
Deduction from capital	**1,052,262**	**-**
Capital	**85,468,706**	**95,121,794**

3. Capital Adequacy Ratio:

3.1 CAR calculation process

Techcombank has developed an automated program for CAR calculation on a monthly basis. In addition, Techcombank has issued a Regulation on CAR management and a CAR calculation process in compliance with Circular 41/2016/TT-NHNN, which provides for detailed responsibilities and mandates of stakeholders in the inputting of data, calculation, review and reporting on CAR as well as early warning thresholds in CAR management.

3.2 Capital planning

Techcombank proactively manages its CAR in compliance with SBV's regulatory requirements while maintaining its competitive advantage in its business operations. This is achieved by considering and adopting suitable measures to stabilize and grow owner's equity, such as retaining earnings to increase its Tier-1 capital.

Table 2 – CAR, risk-weighted assets, required capital by types of risk (*)

Unit: million VND, %

	Item	31/12/2021	
		Single	**Consolidated**
A	Credit risk weighted assets	497,418,462	529,968,457
B	Counterparty risk weighted assets	5,222,150	5,222,150
C	Capital requirement for operational risk	5,067,944	5,600,766
D	Capital requirement for market risk	2,190,043	2,190,043
E	Total risk-weighted assets = (A) + (B) + [(C)+(D)]*12.5	593,365,447	632,575,722
	Capital ratios		
F	Tier-1 capital ratio	14.25%	14.57%
G	CAR	14.40%	15.04%

(*) format as per SBV requirement in Circular 41/2016/TT-NHNN (appendix 5).

4. Credit risk:

4.1 Credit risk management policy

4.1.1 Credit risk management strategy:

Pursuant to regulations and guidances of Laws and State Bank of Vietnam, especially Circular No.13/2018/TT-NHNN and Circular No.40/2018/TT-NHNN that amends and supplements some contents of Circular No.13, Techcombank has developed, improved and implemented a comprehensive risk management framework, with credit risk being one of the material risks that the Bank focuses on. Based on the bank-wide Risk Management Policy, regulations on credit risk management (including credit counterparty risk) have been established, ensuring that credit risk is identified, assessed, measured, monitored and controlled effectively, enabling Techcombank to achieve its plans and objectives while complying with regulatory requirements.

Credit risk management at Techcombank is performed based on the orientation of principles: High-level supervision of the BOD and CEO; Comprehensive credit risk management; All credit activities are conducted within the scope of internal document system on Credit Risk Management Regulation, Credit Orientation and Credit Granting Process for each customer segment; Develop, improve systems to measure and control credit risk; Develop credit risk management strategy in compliance with regulations of Laws and SBV; Control conflicts of interests in credit granting activities.

Related to Techcombank's credit risk management structure, credit risk management policy stipulates three main components: (i) The BOD is the highest-level authority in credit risk management, through the advisory and consulting role of the Board Risk Committee (BRC) and supervision on the basis of Risk Appetite; (ii) Risk management tools and methods, including organizational structure – to ensure effective deployment of risk management activities (such as Executive Risk Committee, Credit Committees and levels of credit approvers, other committees having the function of credit risk management and making decisions on credit risk management, Risk Management Division) and other tools and methods; (iii) Risk Management Culture emphasizes that all employees have the rights and responsibilities in risk management.

In addition, credit risk management policy also specifies details of the credit risk process, from risk identification, measurement, acceptance, debt classification, risk provisioning and mitigation, to risk monitoring and controlling, which helps to lay out the direction and guidance in credit risk management across the Bank, ensuring close alignment with Techcombank's process on credit granting and debt management. The Bank is especially keen on developing and improving techniques and methods to measure and quantify risks as well as credit risk stress testing to ensure compliance with not only SBV's regulatory requirements but also to be on par with international best practices and standards such as IFRS, Basel II, Basel III, …. All of these contents have been documented in Techcombank's policies and regulations on credit risk management, especially the Appendix on Credit risk measurement models governance, under the Regulation on Credit Risk Management, has established minimum principles and standards in the development, validation, implementation, application and review of credit risk measurement models.

The Regulation on Credit risk management at Techcombank also establishes requirements on controls of limits and prudential ratios in bank's credit activities, ensuring the compliance with the Law on Credit Institutions No.47/2010/QH12 and its amendments and with Circular No.22/2019/TT-NHNN which specifies prudential ratios and limits in the operations of banks and branches of foreign banks.

4.1.2 Internal credit rating system:

The internal rating system consists of financial and non-financial indicators used to measure the risk and the customer's ability not to repay debt as agreement based on qualitative and quantitative assessments. From that, the rating results will be used to support the making-decision process for credit granting, pricing, analyzing for ratings movement and reduction of credit quality …

The rating process is developed to ensure the compliance with regulations on the credit risk measurement models governance stipulated at the Regulation on Credit risk management, establishing the implementation orders and procedures as well as responsibilities of relevant units in customer credit rating at Techcombank. In which, Business Units are mainly responsible for collecting customer information and inputting data into the system, ensuring the accuracy and authenticity of customer information, Risk Management Division is responsible for assessing customer information and proof documents, approving ratings/ requesting re-ratings/ adjusting customer ratings according to the regulated authority.

Information of Techcombank's internal credit rating system is always available and can be provided upon request by Internal audit, external audit and other regulatory agencies for independent audit/inspection purposes.

4.1.3 Measuring, monitoring and controlling credit risks

Techcombank measures credit risk through risk measurement models such as Credit rating/Probability of Default (PD), Loss Given Default (LGD), Exposure at Default (EAD), Expected Loss (EL) and Expected Credit Loss (ECL). These models are built, developed and validated according to the credit risk measurement models governance under the Regulation on Credit risk management, at the same time, close to the good international standards like IFRS, Basel II, Basel III...

Regarding debt classification and credit risk provisioning, Techcombank has automatic debt classification on Globus T24 software and uses the debt classification results as basis for credit risk provisioning, which fully meets the related requirements of the SBV.

4.1.4 Credit risk policy and process

The Bank has built a system of documents and processes throughout the customer's journey, from identifying, proposing to grant credit, appraising, approving credit and debt management until customer's debt settlement at Techcombank. From the high-level documents issued by the Board of Directors, CEO and Divisions have issued subordinate documents to concretize and guide in more details on the roles and responsibilities of individuals, divisions and units involved in credit risk controlling. Specifically:

- Regulation on standards for credit activities: Set out the minimum principles and requirements that need to be ensured when designing, issuing and implementing detailed contents of credit activities at Techcombank. The regulation is the basis for issuing credit granting processes as well as developing credit solutions/products for customers.
- Credit granting process for each customer segment: procedures for granting credit to customers, including detailed guidance on how to analyze, assess and appraise credit risk of customers.
- Post-disbursement control process/Debt management process for each customer segment: procedures, contents, principles and responsibilities of units in monitoring and controlling each credit facility after they are disbursed. These processes specify the frequency of credit risk controlling, minimum frequency of on-site examinations on the customers to collect information for effective risk control. Through such post-disbursement checks and controls, Techcombank can quickly identify and detect warning signals of deteriorating credit quality that may negatively affect customer's ability to perform its credit obligations to Techcombank, then timely implement solutions to mitigate credit risks for the Bank.
- Collateral valuation process: in addition to the guidance on collateral valuation, the documents also specify when to conduct periodic collateral re-valuation to ensure that the collateral value is not falling compared to the original valuation and necessary measures to be taken of the collateral falls in value.

4.1.5 Credit appraisal:

Credit risk management regulations have stipulated high-level requirements and principles for credit grating appraisal, helping to fully convey the provisions of the Laws, SBV, especially at least the following contents:

- Identify the related person of customers, total outstanding of credit granting to customers, customers and his/her related person;
- Base on the customer's credit rating (if any), also including credit ratings from other credit institutions and foreign banks' branches;
- Assess the completeness of documents, legal status and recoverability of collateral in case of credit granting with collateral;
- Appraise the ability to fulfill obligations and commitments of the guarantor in the case of credit extension with guarantee from a third party.

More detailed standards, requirements and guidelines for credit appraisal are also issued by Techcombank to ensure the effective operations of the above contents and requirements.

After the appraisal process, Techcombank proposes suitable credit granting to customers based on their financial capacity, business plans, investment projects and capital usage to submit to the competent authorities for approval according to regulations.

4.1.6 Collateral management

Techcombank has developed system of documents on collateral management which clearly separates the role of governance and execution in Techcombank to ensure strict compliance with regulatory and SBV's requirements, while mitigating potential risks that may adversely impact the Bank's benefit:

- BOD promulgated the Regulation on collateral management at Techcombank in order to establish long-term development orientation for collateral management, which clearly and fully states the framework of collateral management, governance principles and collateral management tools to ensure compliance with law, governance orientation and international standards.
- CEO developed and promulgated Regulation on receipt and management of collateral to execute the requirements from BOD to establish the orientation for implementating specific processes development, instructions and detailed documents for receiving and managing, valuating collateral, clarify the role and responsibilities of related parties. This regulation is the basis for related units to deploy and/or use to develop specific solutions on receiving, managing and valuating appropriate type of collateral that are suitable for each type of collacteral/type of customer/type of industry/ economic sector.

4.2 List of independent credit rating agencies to be used when calculating CAR

In the CAR calculation, Techcombank is using the credit rating provided by the following agencies: Moody's, Standard & Poor and Fitch Rating. These are accepted by the SBV in accordance with Circular 41/2016/TT-NHNN.

4.3 List of collateral, third-party guarantee, netting on-balance sheet balance and credit derivative products eligible for mitigating credit risk

At the moment, the Bank has not applied the following credit risk mitigation techniques: on-balance sheet balance netting, third-party guarantee and credit derivatives.

Where collateral is used as a means of mitigating credit risk, the collateral must belong to the following list:

- Cash, valuable papers, passbook issued by credit institutions or branches of foreign banks;
- Gold (standard gold, physical gold, jewelry gold convertible to 99.99 gold);
- Valuable papers issued by or guaranteed by Vietnamese Government or the SBV;
- Debt securities issued by foreign governments, public entities of foreign governments that are rated BB- or above by independent credit rating agencies;
- Debt securities issued by corporations rated BBB- or above by independent credit rating agencies;
- Shares listed on HCM or Hanoi Stock Exchange;

The mitigation of credit risk by using collateral is conducted in accordance with Techcombank's Regulation on CAR and Process for CAR calculation from time to time.

4.4 Claims, risk weights corresponding to credit ratings and total risk-weighted assets by each selected credit rating agency

Table 3 – Claims, risk weights corresponding to credit ratings and risk-weighted assets by selected credit rating agency

Unit: million VND

	Credit rating (S&P's, Fitch)	Credit rating (Moody's)	RW	Single	Consolidated
Claims from governments and central banks, PSEs, municipal governments	AAA, AA+, AA, AA-	Aaa, Aa1, Aa2, Aa3	0%	-	-
	A+, A, A-	A1, A2, A3	20%	-	-
	BBB+, BBB, BBB-	Baa1, Baa2, Baa3	50%	-	-
	BB+, BB, BB-, B+, B, B-	Ba1, Ba2, Ba3, B1, B2, B3	100%	-	-
	Under B- or un-rated	Under B3 or un-rated	150%	-	-
Claims from foreign finance institutions or Vietnam branches of foreign banks	AAA, AA+, AA, AA-	Aaa, Aa1, Aa2, Aa3	20%	282,768	282,768
	A+, A, A-	A1, A2, A3	50%	2,761,126	2,766,786
	BBB+, BBB, BBB-	Baa1, Baa2, Baa3	50%	3,067,371	3,067,371
	BB+, BB, BB-, B+, B, B-	Ba1, Ba2, Ba3, B1, B2, B3	100%	2,404,858	2,404,858
	Under B- or un-rated	Under B3 or un-rated	150%	1,239,566	1,239,566
Claims from local credit institutions (original tenor of 3 months or more)	AAA, AA+, AA, AA-	Aaa, Aa1, Aa2, Aa3	20%	-	-
	A+, A, A-	A1, A2, A3	50%	-	-
	BBB+, BBB, BBB-	Baa1, Baa2, Baa3	50%	-	-
	BB+, BB, BB-	Ba1, Ba2, Ba3	80%	7,895,522	7,895,522
	B+, B, B-	B1, B2, B3	100%	9,553,673	9,553,673
	Under B- or un-rated	Under B3 or un-rated	150%	7,781,812	8,563,280
Claims from local credit institutions (original tenor of less than 3 months)	AAA, AA+, AA, AA-	Aaa, Aa1, Aa2, Aa3	10%	-	-
	A+, A, A-	A1, A2, A3	20%	-	-
	BBB+, BBB, BBB-	Baa1, Baa2, Baa3	20%	-	-
	BB+, BB, BB-	Ba1, Ba2, Ba3	40%	3,977,153	3,985,457
	B+, B, B-	B1, B2, B3	50%	4,452,032	4,452,656
	Under B- or un-rated	Under B3 or un-rated	70%	2,913,540	2,919,457
Total				**46,329,419**	**47,131,395**

4.5 Credit risk-weighted assets

Table 4 – Credit risk-weighted assets

Unit: million VND

	Risk-weighted assets	Single	Consolidated
I	Cash, gold, equivalents	-	-
II	Claims on VN government, SBV, State Treasury, Central Cities' People's Committees, Bank of Social Policy	-	-
III	Claims on DATC and VAMC	630,893	630,893
IV	Claims on international financial institutions	-	-
V	Claims on foreign governments and central banks	-	-
VI	Claims on foreign PSEs, local governments	-	-
VII	Claims on financial institutions	46,329,419	47,131,395
1	Foreign financial institutions and Vietnam branches of foreign banks	9,755,689	9,761,349
2	Local credit institutions	36,573,730	37,370,045
VIII	Financial lease	-	-
IX	Non-performing loans	1,929,207	1,929,207
X	Loans for securities trading	3,046,422	27,046,163
XI	Loans secured by real estate	120,043,976	120,043,976
1	Loans secured by commercial real estate	87,942,659	87,942,659
2	Loans secured by non-commercial real estate	32,101,317	32,101,317
3	Loans secured by mixed real estate	-	-
XII	Claims on SMEs	91,519,264	91,519,264
XIII	Specialized lending	33,975,397	34,812,504
XIV	Claims on corporates	154,227,459	160,123,571
1	Corporates with financial statements	132,068,873	137,964,984
2	Corporates without financial statements	19,473,904	19,473,904
3	Corporates of less than 1 year old	2,684,682	2,684,682
XV	Mortgage loans	8,535,837	8,535,837
XVI	Retail credit portfolio	19,535,468	19,535,468
XVII	Receivables from sale of non-performing loans	-	-
XVIII	Equity instruments, share purchased from enterprises	615,826	1,004,016
XIX	Purchases of accounts receivable of finance companies and financial leasing companies	-	-
XX	Other assets	17,029,293	17,656,165
	Total	**497,418,462**	**529,968,457**

4.6 Risk-weighted assets for counterparty credit risk

Table 5 – Risk-weighted assets for counterparty credit risk

Unit: million VND

	Risk-weighted assets	Single	Consolidated
I	Cash, gold, equivalents	-	-
II	Claims on VN government, SBV, State Treasury, Central Cities' People's Committees, Bank of Social Policy	-	-
III	Claims on DATC and VAMC	-	-
IV	Claims on international financial institutions	-	-
V	Claims on foreign governments and central banks	-	-
VI	Claims on foreign PSEs, local governments	-	-
VII	Claims on financial institutions	4,179,398	4,179,398
1	Foreign financial institutions and Vietnam branches of foreign banks	1,288,512	1,288,512
2	Local credit institutions	2,890,886	2,890,886
VIII	Financial lease	-	-
IX	Non-performing loans	-	-
X	Loans for securities trading	-	-
XI	Loans secured by real estate	-	-
1	Loans secured by commercial real estate	-	-
2	Loans secured by non-commercial real estate	-	-
3	Loans secured by mixed real estate	-	-
XII	Claims on SMEs	19,133	19,133
XIII	Specialized lending	-	-
XIV	Claims on corporates	1,023,619	1,023,619
1	Corporates with financial statements	819,509	819,509
2	Corporates without financial statements	180,685	180,685
3	Corporates of less than 1 year old	23,424	23,424
XV	Mortgage loans	-	-
XVI	Retail credit portfolio	-	-
XVII	Receivable from sale of non-performing loans	-	-
XVIII	Equity instruments, share purchased from enterprises	-	-
XIX	Purchases of accounts receivable of finance companies and financial leasing companies	-	-
XX	Other assets	-	-
	Total	**5,222,150**	**5,222,150**

4.7 Credit risk-weighted assets by industry

Table 6 – Credit risk-weighted assets by industry

Unit: million VND

	Industry	Single	Consolidated
I	**Individuals and household businesses**	**107,464,070**	**131,463,810**
II	**Economic entities**	**376,165,842**	**383,701,035**
1	Agriculture, forestry and fishery	1,333,055	1,422,724
2	Mining	1,670,501	1,891,047
3	Manufacturing and processing	55,139,975	56,532,044
4	Production and distribution of electricity, gas, hot water, steam and air conditioners	5,139,603	5,428,682
5	Water supply; management and treatment of waste water and solid waste	82,639	82,639
6	Construction	19,360,270	19,474,097
7	Wholesale and retail; repairing automobiles, motorbikes and other powered vehicles	58,497,591	58,971,449
8	Logistics (transportation and warehousing)	10,639,361	10,887,275
9	Accommodation and restaurants	3,977,299	4,009,959
10	Information and communication	764,443	764,443
11	Finance, business and insurance	45,701,185	46,948,440
12	Real estate	167,358,940	170,553,270
13	Professional activities, science and technology	500,507	732,483
14	Financial services and support services	439,999	439,999
15	Activities of the Communist Party, civil society, regulators, public security and national defense, compulsory social assurance	630,893	630,893
16	Education and training	378,042	380,054
17	Healthcare and social safety net	217,150	217,150
18	Art and entertainment	37,661	37,661
19	Other services	4,290,727	4,290,727
20	Informal domestic workers in households activities	6,000	6,000
21	Activities of international organizations	-	-
III	**Other assets**	**13,788,550**	**14,803,612**
	Total	**497,418,462**	**529,968,457**

Table 7 – Counterparty credit risk-weighted assets by industry

Unit: million VND

	Industry	Single	Consolidated
I	**Individuals and household businesses**	**-**	**-**
II	**Economic entities**	**5,222,150**	**5,222,150**
1	Agriculture, forestry and fishery	216	216
2	Mining	672	672
3	Manufacturing and processing	494,002	494,002
4	Production and distribution of electricity, gas, hot water, steam and air conditioners	-	-
5	Water supply; management and treatment of waste water and solid waste	-	-
6	Construction	3,248	3,248
7	Wholesale and retail; repairing automobiles, motorbikes and other powered vehicles	140,952	140,952
8	Logistics (transportation and warehousing)	13,709	13,709
9	Accommodation and restaurants	-	-
10	Information and communication	818	818
11	Finance, business and insurance	3,317,355	3,317,355
12	Real estate	252,337	252,337
13	Professional activities, science and technology	-	-
14	Financial services and support services	-	-
15	Activities of the Communist Party, civil society, regulators, public security and national defense, compulsory social assurance	-	-
16	Education and training	-	-
17	Healthcare and social safety net	-	-
18	Art and entertainment	-	-
19	Other services	998,843	998,843
20	Informal domestic workers in households activities	-	-
21	Activities of international organizations	-	-
III	**Other assets**	**-**	**-**
	Total	**5,222,150**	**5,222,150**

4.8 Credit risk mitigation

Table 8 – Risk-weighted assets (on-balance sheet and off-balance sheet) eligible for credit risk mitigation (single)

Unit: million VND

	Classification	Total RWA before risk mitigation	Collateral	On-balance sheet netting	Guarantee	Credit derivatives	Total RWA after risk mitigation
1	Claims on government	630,893	3,502	-	-	-	630,893
2	Claims on financial institutions	46,329,419	-	-	-	-	46,329,419
3	Claims on Corporates	291,607,538	8,557,709	-	-	-	282,765,774
4	Loans secured by real estate	120,233,139	215,629	-	-	-	120,043,976
5	Mortgage loans	8,542,488	12,150	-	-	-	8,535,837
6	Individuals	24,536,151	1,160,865	-	-	-	23,394,805
7	NPL	1,930,085	602	-	-	-	1,929,207
8	Other assets	13,788,550	-	-	-	-	13,788,550
	Total	**507,598,264**	**9,950,456**	**-**	**-**	**-**	**497,418,462**

Table 9 – Risk-weighted assets (on-balance sheet and off-balance sheet) for credit risk mitigation (consolidated)

Unit: million VND

	Classification	Total RWA before risk mitigation	Collateral	On balance sheet netting	Guarantee	Credit derivatives	Total RWA after risk mitigation
1	Claims on the government	630,893	3,502	-	-	-	630,893
2	Claims on financial institutions	47,131,395	-	-	-	-	47,131,395
3	Claims on Corporates	298,340,756	8,557,709	-	-	-	289,498,992
4	Loans secured by real estate	120,233,139	215,629	-	-	-	120,043,976
5	Mortgage loans	8,542,488	12,150	-	-	-	8,535,837
6	Individuals	48,535,891	1,160,865	-	-	-	47,394,546
7	NPL	1,930,085	602	-	-	-	1,929,207
8	Other assets	14,803,612	-	-	-	-	14,803,612
	Total	**540,148,259**	**9,950,456**	**-**	**-**	**-**	**529,968,457**

5. Operational risk:

5.1 Operational risk management policy

According to the Bank's risk management policy, operational risk is among material risks. In operational risk management, Techcombank manages 10 types of operational risk together with reputation risk and strategy risk. 10 types of operational risk include the followings:

- External rules and regulations: Potential loss caused by non-compliance with governing laws or regulations, or due to the changes in governing laws or regulations, or due to changes in the interpretation or application of governing laws;
- Legal liability: Potential risk or penalty following a lawful request for compensation to any unit or individual in the Bank;
- Legal enforceability: Potential risk caused by failure to protect legitimate interests of the Bank or difficulties when exercising the rights of the Bank;
- Damage to asset: Potential risk or damage to physical assets and other assets due to natural disasters and other events;
- Safety and security: Potential risk or damage to the health or safety of employees, customers or third parties that arises from internal misconducts or external events
- Internal fraud or deceitfulness: Potential risk caused by employee action aiming at deceiving, misappropriation of assets or violation of governing laws or the Bank's policy;
- External fraud: Potential risk caused by external criminal act such as fraud, thief and other crimes;
- Information security & technology risk: Potential loss due to the application of technology in banking operations or from unauthorized access, use, disclosure, interruption, modification of information;
- Execution, delivery and process management: Potential loss resulting from failure in implementing an established process or weaknesses in process design;
- Model & data risk: Potential loss due to significant differences between the outputs of risk measurement models and actual experience, or omissions in data collection, analysis and management.

The strategy and basic principles adopted by the Bank in managing operational risk are:

- The BOD is the highest-level authority accountable to developing "top-down messages" to promote the risk management culture.
- The BOD and BOM establish corporate culture based on consistent and strong operational risk management culture and ensure that operational risk management culture is fostered and maintained in all activities of the Bank.
- All units and individuals in the system have rights and obligations to manage risk, therefore, they are obliged to giving account, reporting and controlling risk in their operations.
- The Bank develops, executes and maintains a consistent operational risk management structure which is fully translated to its general risk management processes.

All operational risk management activities of the Bank is based on the operational risk appetite indicators and limits approved by the BOD. Such operational risk appetite indicators and limits must be well aligned with the Bank's risk appetite and reviewed on a yearly basis. The BOD approves and reviews operational risk appetite indicators and limits to ensure alignment with the nature and level of operational risk acceptable to the Bank.

The execution of operational risk management policy is translated to the governance, structure and implementation of operational risk management:

- Establish and operate Operational Risk Management subcommittee under Risk Committee, which is in charge of managing and governing all matters relating to operational risk in the system to ensure that operational risks are identified, assessed and mitigated in a timely and consistent manner in accordance with the Bank's Risk management policy, governing laws and such operational risk is managed by decisions/ approval.
- Articulating and completing the 03-line-of-defense model against operational risk:

+ ***First line of defense***: All employees of Techcombank are responsible for identifying, evaluating, mitigating, managing, handling and reporting risks in their operations. The Head of Unit is the first person who is fully liable to operational risk control at the unit, following the approved operational risk limit;

+ ***Second line of defense***: Operational Risk Management – Risk Management Division and other units independently managing and supervising operational risk management shall develop the Risk Management Policy, internal regulations on risk management, risk measurement tools and systems, collaborating with the first line of defense in identifying, controlling, mitigating risk and complying with governing laws;

+ ***Third line of defense***: Internal Audit shall review, evaluate independently and objectively the completeness, alignment, effectiveness of internal control system of the bank as per regulations on the operations of audit and risk management.

5.2 Business Continuity Plan

Every 6 months, BOD and BOM meetings will be held for reporting crisis management plans, including business continuity plan. The Bank must hold rehearsal sessions for different scenarios. BOD and BOM shall also participate in such sessions.

This plans include business continuity plan, disaster recovery plan, data recovery plan as well as fire prevention and fighting plan…

The Bank adopts the high-level Policy on Business Continuity Management with all units and individuals. The business continuity plan shall be tested on a regular basis and Business Continuity Management shall analyze the result and report to the Board of Management.

The Business Impact Analysis shall be carried out annually. Based on this analysis, material units/ activities are identified, for which, back-up plans are established.

Back-up premise shall be tested every 06 months by evacuating staffs from Head Office to the back-up premise. So far, all of the test conducted at the back-up premise have been successful.

All departments at Head Office and branches have their contact tree established in the business continuity plan and each employees is informed of the people they need to contact. The testing of contact tree shall be carried out every 06 months and the Bank has achieved 80-90% of its plan for contact tree, evacuation and back-up premise. Currently, the Bank is testing the contact format using SMS and auto call in case of emergency to enhance the effectiveness of its contact tree.

The Bank developed its crisis management plan, describing severe crisis incidents which may have impacts on Techcombank's operations, in which, threats to safety of employees, assets and business continuity, customer's faith and reputation of the Bank must all be controlled effectively.

Crisis Management Plan (CMP) is the combination of the following materials:

- Business Continuity Plan which is assessed and developed for the following incidents:
  + Environment: natural disaster (flood/ Earthquake/ storm/ epidemic …) and severe disruption to infrastructures (electricity/ telecommunication…)
  + Political and social events: war/ terrorism/ riot …
  + Criminal: kidnapping/ blackmailing/ murder/ explosion or fire
- Liquidity provision plan which is assessed and developed for business incidents: strike/ liquidity issues/ reputation issues/ loss of important materials, information or data
- IT disaster recovery plan and reaction plan for information security incidents which is assessed and developed for IT incidents such as: loss of connection/ inactivity of material systems, cyber-attacks to data and IT.

5.3 Operational risk capital requirement

Table 10 - Operational risk capital requirement, Business indicators and components of business indicators

(Unit: million VND)

Items on Income Statement	Item	Single			Consolidated		
		01/01/2021 to 31/12/2021	01/01/2020 to 31/12/2020	01/01/2019 to 31/12/2019	01/01/2021 to 31/12/2021	01/01/2020 to 31/12/2020	01/01/2019 to 31/12/2019
│Interest and similar income – Interest and similar expenses│	**IC**	**25,721,683**	**18,170,167**	**14,002,548**	**26,698,613**	**18,751,210**	**14,257,844**
Interest and similar income	IC1	34,141,267	28,300,917	24,731,538	35,503,251	29,001,913	25,020,397
Interest and similar expenses	IC2	8,419,584	10,130,751	10,728,990	8,804,638	10,250,703	10,762,553
Fees and commission income + Fees and commission expenses + Income from other activities + Expense of other activities	**SC**	**13,887,628**	**13,968,681**	**11,934,092**	**16,919,494**	**16,191,273**	**13,443,610**
Fees and commission income	SC1	5,316,840	3,823,314	3,361,680	8,239,494	6,048,442	4,853,847
Fees and commission expenses	SC2	1,683,716	1,463,885	1,580,987	1,857,254	1,523,512	1,600,532
Income from other activities	SC3	4,281,354	5,441,286	4,386,382	4,286,224	5,453,180	4,393,650
Expense of other activities	SC4	2,605,719	3,240,196	2,605,043	2,536,522	3,166,140	2,595,581
│Net gain/loss from forex trading│ + │Net gain/loss from securities held-for-trading│ + │Net gain/loss from investment securities│	**FC**	**1,166,834**	**1,259,335**	**1,247,906**	**2,188,130**	**1,819,140**	**1,746,005**
Net gain/loss from forex trading	FC1	241,386	745	104,581	231,417	745	104,581
Net gain/loss from securities held-for-trading	FC2	152,305	321,398	397,932	152,305	321,398	397,664
Net gain/loss from investment securities	FC3	773,143	937,192	745,394	1,804,408	1,496,998	1,243,760
Business Indicator	**BI**	**40,776,144**	**33,398,183**	**27,184,546**	**45,806,238**	**36,761,624**	**29,447,460**
Operational risk capital requirement	**Kor**	**5,067,944**			**5,600,766**		
Total assets by operational risk	**12.5 * Kor**	**63,349,296**			**70,009,575**		

6. Market risk

6.1 Market risk management policy

The structure of Market Risk Management

- Board of Directors/ Board Risk Committee:
  + Board of Directors is the highest authority managing Market Risk of the system.
  + Board Risk Committee: advises the Board of Directors on the management of market risk and makes approval of risk acceptance decisions before proposing to the BOD for approval and issuance.
- Chief Executive Officer (CEO)/ Risk Committee:
  + CEO: is responsible for organizing and monitoring the implementation of the regulation of market risk management, approving the risk limits and is responsible to the Board of Directors/ Board Risk Committee for the approval of the limits, issuing standards for building and validating models for measurement of market risk, organizing the implementation of the direction of the Board of Directors in handling and remediating the shortcomings and limitations in risk management at the request and recommendations of the State Bank, independent auditing organizations and other authorities. The CEO inspects and evaluates risk management and proposes remedial measures to the Board of Directors.
  + Risk Committee: advises CEO on management of market risk and endorses risk limit decisions before proposing to the CEO for approval and issuance.
- Risk Management Division:
  + The Chief Risk Officer: is responsible for supervising market risk management activities and performing the functions and duties specified in the Risk Management Policy of Techcombank.
  + Market Risk Management unit: is independent from business units to exercise its duties and obligations including identifying, measuring, controlling, analyzing, forecasting and reporting on market risk, developing the regulations and proposing on market risk management tools.
- Business units: perform daily business operations and ensure such activities comply with regulations on risk management approved by competent authority.
- Internal Audit: is responsible for controlling, conducting independent and objective review of the compliance with strategy, policy, regulation, process on risk management and limits for market risk; proposing remedial solutions,measures and monitoring the implementation of recommendations by units in the post audit period.

6.2 Market risk management strategy

6.2.1 Market risk prevention for the market risk exposure of the Trading book

- Regarding the Trading book, business units shall only conduct transactions under the trading book and maintain market risk exposure within the approved market risk limit.
- The market risk limits are developed in compliance with the Bank's material market risk limit. The control of limit compliance must be carried out independently by Market Risk Management

Unit - Risk Management Division or another independent unit which is not under Global Transaction Banking Services Division.

Techcombank has developed limits as follows:

i. Interest rate limit for transaction product, trader, Stoploss, Stopgain, total interest rate risk exposure on the trading book, time holding, concentration.

ii. Forex risk limits include total foreign currency long and short positions, gold position, limit on each type of currency, trader limit, stop loss limit, stopgain limit.

iii. Equity trading risk limit (not incurring).

iv. Commodity risk limit (not incurring).

6.2.2 Principles of market risk management

i. In normal market conditions:

- The review of annual limits is conducted at least once a year or at any time during the year where necessary. In the event of changing limits, the new limits shall be adopted upon approval and informed by Market risk management unit.
- Traders shall conduct transactions within the approved market risk limits.

ii. In markets with high volatility in securities, commodities prices, exchange rates and interest rates: GTS Division and Risk Division shall collaborate in reviewing market risk positions and agree on what needs to be done to mitigate risks for the portfolio. When necessary, Risk Division shall conduct stress test based on combination of two approaches: (i) sensitivity analysis and (ii) scenario analysis.

6.2.3 Principles in market risk prevention

- Regarding prevention of market risk on the same financial instrument, Financial market under GTS Division shall proactively take necessary measures within the approved market risk limit.
- In case, the market risk hedging instrument for the portfolio is a different financial instrument, Financial market under GTS Division can only implement the hedging after having written agreement with Market Risk Management unit and TFC (Treasury Finance Control) on the measurement method and monitoring mechanism for the risk.

  Measures of the hedging market risk can only be adopted upon approval of the Head of GTS, Head of Market Risk and Head of TFC (Treasury Finance Control).

6.2.4 Market Risk Limit

Techcombank has developed market risk limits as follows:

- Market risk limits include three types of limits: annual limit, temporary limit and one-off limit.
- The limits are applicable & complied with by end of transaction day.
- The limit monitoring is conducted every day.
- Limits include two types: quantitative limits: VaR, PV01, NOP, Stoploss … and qualitative limits: limits for products, currency, or holding duration…

The Bank has established a system for managing market risk limits at the portfolio level. VaR limit has been developed for such trading portfolios as valuable papers, foreign currencies and gold, interest rate trading, credit sales and trading. Market risk limits at portfolio level include: VaR, PV01, Stoploss, Stopgain, NOP and book size. Specifically:

i. Interest rate risk limit includes interest rate risk limit for each product portfolio and total interest risk exposure on the trading book.

ii. Foreign exchange risk limit includes total foreign currency long and short positions for the foreign currency portfolio, including long and short positions for G4, gold position; and Stop loss limit, Stopgain.

iii. Equity trading risk limit for securities firm being the Bank's subsidiary: no limit applied since no trading.

iv. Commodity risk limit: no limit applied since no trading.

v. The Bank has also developed the Stoploss limit as parameter of the cumulative losses of the portfolio within a certain level.

vi. Concentration risk includes limit of the total portfolio of government bond, corporate bond and investment limit for one issuer of corporate bonds. In addition, the Unit has also developed concentration risk on the trading book for transaction counterparties, transaction products and currency types via the development and measuring concentration risk by (i) counterparty: Expected loss of the portfolio / Total owner's equity, EL of each customer / EL of total portfolio; (ii) transaction products: VaR or biggest loss (VaR equivalent) of the product portfolio / Total owner's equity; (iii) currency types: foreign currency net position / Owner's equity.

vii. Trader's limit is determined by the highest value of a transaction conducted by the individual traders.

Market risk limit excess

- Regulation of market risk management also specifies limit excess cases including: (i) due to a new trade; (ii) due to operational error; and (iii) due to market movement, which is beyond the Bank's control.
- When the limit excess occurs, the trading unit which use the limit and the Risk Management Division must find out the causes and remedial measures to avoid occurrence. In case, there is intention purpose of limit excess, trading unit and related trader with limit excess may be subject to disciplinary measures.

Method of development and approval of market risk limits

- The method of developing market risk limits must comply with material risk limit and regulatory requirements (if any). Limits should first be established for basic risk indicators and can be calculated by the system or alternative tools.
- Limit approval:
    + Approval principles: CEO approves limits for market risk, IRRBB and concentration risk for propriety trading. In case where limits are adjusted to a less restrictive level, CEO shall report these limits to the Board of Directors after the adjustment.
    + The limit approval process includes three steps:
        i. Limit proposal: drafted by the trading unit.
        ii. Independent consideration of the proposed limit and request for approval of the limit: Risk Division shall review the proposal independently and give inputs (in favor or against the proposal) and submit it to Risk Committee.
        iii. Limit approval: Based on the proposal of the trading unit and the recommendation of the Risk Management Division, the limit approval authority level makes a

decision to approve or not approve the limit. In case the limit is not approved, depending on the reason, trading unit and the Risk Management Division consider restarting the limit proposal process accordingly. After the limit being approved, related units shall be notified and Risk Division shall update the limit on the Bank's system for control purpose.

6.2.5 Measuring, monitoring and controlling market risk

- Techcombank adopts a segregated system of market risk management, where Market Risk unit is independent of the business unit. It is responsible for identifying, measuring, monitoring, controlling and reporting on market risk. It is also responsible for developing market risk management model.
- Market risk factors affecting the value of a financial portfolio need to be fully identified and quantified based on available market and price indicators. Assumptions and measurements need to be documented by the Market risk management unit and fully understood by the related units.
- Techcombank builds and uses a system of measurement tools for market risk widely recognized in the financial industry, suitable for the markets and in line with the measurement system of international standards such as IFRS (International Financial Reporting Standards), Basel Capital Accord... such as VaR, NOP, Stoploss, trader limits, PV01, Duration and stress tests.
- The selection of method and tools for measuring market risks should be based on the complexity of the products as well as Techcombank's IT system, database and infrastructure used for such measuring and monitoring.
- The measurement system for market risk, IRRBB and concentration risk on trading book transactions must ensure the following factors:
  + Assess key risk factors related to liabilities, assets, off-balance sheet commitments.
  + Risk measurement methods and models must be periodically checked and evaluated for accuracy and appropriateness, assumptions and parameters need to be adjusted according to internal regulations.
  + Risk measurement needs to be on timely manner and accurate for effective risk monitoring and control.
- Techcombank improves its capacity to measure market risk according to Basel standards (II, II.5, III) by applying the VaR model in periodically measuring risk appetite for trading book portfolios since 2019, the application of the aggregated VaR model in measuring risk appetite is more accurate.
- Besides, Techcombank has completed develop a Stress VaR model towards its application in the internal management of Trading book. After the Market Risk Model Validation project (including the pricing model) carried out by a reputable independent partner, TCB continues to improve the quality of risk measurement through the development of system functions and tool on the information technology system through the project of upgrading the Treasury system for model performance monitoring purpose. Market risk models, pricing models are assessed periodically at least once a year. Evaluation content includes reliability of market data, model accuracy, appropriateness of parameters and assumptions.
- Techcombank's regulations on market risk monitoring and control:

  Controlling limits and giving warnings on breach of limits:

+ The control of market risk limits is implemented every day on an independent basis by Market Risk Management. New limits or updated limits are controlled from the effective date.

+ Limit control reports must be sent to the Head of Business division, Head of Business Unit, CRO and Head of Market risk management Unit - Risk Management Division.

+ Risk reports are maintained for periodic reviews and assessment.

+ In order to support the management of risk limits, Market risk management Unit - Risk Management Division needs to give warnings to the Business unit when market risk position reaches the level of equal or greater than 80% of the approved limit.

+ There are periodic reports on market risk limits and breaches of limits.

Limit report and limit excess report.

+ Positions and limits are reported daily as part of the market risk report. VAS profit & loss and mark-to-market profit & loss of trading book is reported by Finance (TFC)

+ The daily report must emphasize the limit excess (if any).

+ In order to avoid a limit excess, the limit report should provide warnings when the risk position approaches the limit.

+ Limit excess due to non-compliance with TCB's regulations is not allowed under any circumstances. When reporting limit excess, the Market Risk Management Unit needs to notify the Business Unit and Business Unit Manager to have a plan to bring the exceeded positions within the limits.

+ Within 24 hours from the time of being notified of the limit excess, the Head of the Business Unit having limit excess approved by the Head of the Business Division must reply in writing or via email with solutions to bring the positions within the limit. In addition, the Business Unit needs to coordinate with relevant departments to find out the causes and make a report on the limit excess. This report must analyze the reason, the extent and measures to prevent similar cases from happening. The content of the report is agreed between the Risk Management Division and the Business Division or related department and reports to the CRO.

+ In case a portfolio's VaR limit is exceeded, the Business Unit needs to bring the position within the limit within two business days. After two days, if the position has not been within the limit, the Risk Management Division needs to notify the Head of the Business Division and the CRO.

+ Due to limited liquidity, the Stop loss threshold is established as a soft limit. Where the limit is breached, the business units using such limit shall propose a risk mitigation plan to the Head of Business Unit for approval and notify the CRO.

+ Monthly, the Market Risk Management Unit reports to the CEO, the Board of Directors / Board Risk Committee, the Board of Supervision and the CRO on limit breaches during the month, with summarized information on the extent of the violation, time to bring position back within limits, business unit actions when the limit is breached.

+ Employees who do not comply with regulations and make limit violation must be disciplined in accordance with TCB's regulations.

6.2.6 Internal reporting on market risks

Techcombank has strict requirements on internal market risk reporting on:

- Accuracy
- Adequacy
- Clarity and usefulness
- Frequency
- Distribution of units and individuals receiving reports

Recipients of reports: Techcombank has clear regulations on internal reporting on market risks with different frequencies: daily, monthly, quarterly, semiannual and ad-hoc upon request. Specifically:

- Daily risk report includes information on market risk position, use of limits, early warnings and breaches of limits (if any), profit and loss reports in accordance with VAS and marked-to-market valuation.
- Monthly portfolio report includes comprehensive information on compliance with market risk positions, market risk exposure of different portfolio in the month and on the report date, movements of risk exposures, changes in market conditions, observations and findings on portfolios in the month, limit excess, recommendations on risk management and results of implementing recommendations from internal audit and regulatory agencies.
- Quarterly and semiannual reports shall include, in addition to the above contents, a stress test, actual profit/loss and forecast of profit/loss as per marked-to-market valuation of the trading transactions.

6.3 Trading strategy

Techcombank has a conservative trading strategy for financial instruments exposed to market risks, where market risks of the products are assessed and subject to risk limits before being traded.

6.3.1 FX and gold trading

- FX and gold trading is based on the bid-ask spread of permitted currency pairs, trading of SJC gold plates on the interbank market in order to optimize profits for Techcombank within the approved limits in line with Techcombank's risk appetite from time to time.
- Products: USD, VND, convertible currencies, standard SJC gold plates.
- Types of transaction: spot, forward, swap.
- Transaction channel: direct trading on electronic system, chat room on Eikon Messenger (Reuters), recorded telephone messages, email…

6.3.2 Trading of valuable papers

- Trading of bonds and futures contracts of government bonds is based on the bid-ask spread of bonds of different maturities in order to optimize profit for Techcombank within the approved limits.
- Act as market maker by listing two-way prices for the bonds in the portfolio and list the buying price for bonds not in Techcombank's portfolio.
- Bond maturity: as per maturities in the market.
- Types of bonds: government bonds, government-guaranteed bonds, municipal bonds.
- Transaction channel: existing channels, market chat room (VBMA, listed price on the interbank market), skype, Reuters, email or another official transaction channel.

6.3.3 Rates trading

- Rates trading conducts trading transactions related to short-term interest rates on the interbank money market such as interbank deposits/lending, short-term money market swaps, investments of CDs/short-term valuable papers and other money market instruments as permitted by regulator from time to time in order to optimize revenues for the Bank within the approved limits.
- Rates trading is the unit representing the Bank to provide quotations on the interbank market and provide information on the interbank money market to other units across the Bank.
- Maturity: less than a year.
- Currencies: VND, USD and some other foreign currencies as permitted by the SBV.
- Transaction channels: existing electronic channels (Reuters Dealing, Reuters Messenger…), telephone, email or any other official transaction channels.

6.3.4 Interest rate derivatives trading

- Trading of interest rates derivatives, including interest rate swaps, cross currency swaps, accrual interest rate swaps …. Within the approved limits in order to optimize profit for the Bank and/or for hedging bank-wide balance sheet.
- Maturity: no restrictions
- Transaction currencies: VND, USD and some other currencies permitted by the SBV.
- Transaction channel: existing electronic transaction channels (Reuters Dealing, Reuters Messenger…), telephone, email or other official channels as permitted by regulators.

6.3.5 Debt trading

- Trading of bonds and other types of valuable papers issued by corporates/credit institutions in order to optimize profits for Techcombank within the approved limit.
- Maturity of bonds/valuable papers: as per the maturity of instruments in the market.
- Types of bonds/valuable papers: listed or unlisted bonds, CDs, bills and notes.
- Transaction channels: existing transaction channels, market chat rooms, skype, Reuters, email…

6.4 Trading and banking book portfolio classification

Table 11 – Trading & banking book portfolio classification

	Transaction/instrument	Purpose/instrument	Type of book
1.	Money market transaction	Repo, reverse repo	Banking Book
		Other transactions	Banking Book
2.	Debt securities – Government bonds	Trading purpose with holding duration of less than a year	Trading Book
		Other transactions	Banking Book
3.	Debt securities – Corporate bonds	Trading purpose with holding duration of less than a year	Trading Book
		Other transactions	Banking Book
4.	Equity securities	Trading purpose with holding duration of less than a year	Trading Book
		Other transactions	Banking Book
5.	Other valuable papers	Trading purpose with holding duration of less than a year	Trading Book
		Other transactions	Banking Book
6.	FX Transactions	Trading purpose with holding duration of less than a year	Trading Book
		To meet customers' and counterparties' needs and counter transactions of the above	Trading Book
		Other transactions	Banking Book
7.	Gold	Trading purpose with holding duration of less than a year	Trading Book
		Other transactions	Banking Book
8.	Commodities derivatives	To meet customers' and counterparties' needs and counter transactions of the above	Trading Book
9.	Other derivatives transactions	Trading purpose with holding duration of less than a year	Trading Book
		To meet customers' and counterparties' needs and counter transactions of the above	Trading Book
		To hedge transactions on the Banking Book	Trading Book
		To hedge balance sheet items (including off-balance sheet items) of the Banking Book, except transactions to hedge the self-trading transactions mentioned above	Banking Book
		Other transactions	Banking Book
10.	Other transactions	Other transactions on market 1 (deposits and lending)	Banking Book

6.5 Capital requirement for market risk

Table 12 - Capital requirement for market risk

Unit: million VND

Type of market risk	Capital requirement	Total risk-weighted assets
Interest rate risk	1,507,274	18,840,931
Equity risk	-	
FX risk	682,769	8,534,608
Commodities risk	-	
Option risk	-	
Total	**2,190,043**	**27,375,539**

Abbreviations

BOD	Board of Directors
BOM	Board of Management
CAR	Capital Adequacy Ratio
CCF	Credit Conversion Ratio
CMP	Crisis Management Plan
DATC	Vietnam Debt and Asset Trading Corporation
EAD	Exposure at Default
EL	Expected Loss
FIRB	Foundation Internal Rating-Based approach
FX	Foreign exchange
LGD	Loss given Default
NOP	Net Open Position
NPL	Non performing loan
PD	Probability of Default
PSEs	Non – central government Public Sector Entities
RW	Risk weight
RWA	Risk-weighted Assets
SBV	State Bank of Vietnam
Stop loss	Stop loss threshold
VAMC	Vietnam Asset Management Company
VaR	Value at Risk
VBMA	Vietnam Bond Market Association