Explanatory notes: Compilation of financial soundness indicators

I. General notes

To facilitate international comparison, most items listed in "Appendix: Financial Soundness Indicators" are compiled in accordance with the compilation guide on financial soundness indicators issued by the IMF. Based on its revision of the guide, some of the indicators were added or removed, and the explanatory notes were revised in 2020. All the data were traced back to 2016 for inter-period comparison application unless otherwise stated. However, a few new indicators are not incorporated for analysis in this report owing to incomplete time series data.

Unless otherwise stated, the data of all indicators are on a year-end (stock data) or year-to-date (flow data) basis.

Compilation of Financial Institutions' Indicators

1. Coverage of Financial Institutions (As of the end of 2020)
   1.1 Domestic Banks include Bank of Taiwan, Land Bank of Taiwan, Taiwan Cooperative Bank, First Commercial Bank, Hua Nan Commercial Bank, Chang Hwa Commercial Bank, The Shanghai Commercial & Savings Bank, Taipei Fubon Commercial Bank, Cathay United Bank, The Export-Import Bank of the Republic of China, Bank of Kaohsiung, Mega International Commercial Bank Co., Agricultural Bank of Taiwan, Citibank Taiwan, O-Bank, Taiwan Business Bank, Standard Chartered Bank (Taiwan), Taichung Commercial Bank, King's Town Bank, HSBC Bank (Taiwan), Taipei Star Bank, Hwatai Bank, Shin Kong Commercial Bank, Sunny Bank, Bank of Panhsin, Cota Commercial Bank, Union Bank of Taiwan, Far Eastern International Bank, Yuanta Commercial Bank, Bank SinoPac, E.Sun Commercial Bank, KGI Bank, DBS Bank (Taiwan) Ltd., Taishin International Bank, Jih Sun International Bank, EnTie Commercial Bank, and CTBC Bank Co., Ltd., amounting to37 banks.
   1.2 Life Insurance Companies include Bank Taiwan Life Insurance, Taiwan Life Insurance, PCA Life Assurance, Cathay Life Insurance, China Life Insurance, Nan Shan Life Insurance, Shin Kong Life Insurance, Cigna Taiwan Life Assurance, AIA, BNP Paribas Cardif TCB Life Insurance, Mercuries Life Insurance, Far Glory Life Insurance, Hontai Life Insurance, Allianz Taiwan Life Insurance, Cardif Assurance Vie, Prudential Life Insurance, TransGlobe Life Insurance, Yuanta Life Insurance, Life Insurance Division of Chunghwa Post, Chubb Tempest Life Reinsurance (Taiwan Branch), Fubon Life Insurance, and First Life Insurance, amounting to 22 companies.
   1.3 Bills Finance Companies include Mega Bills Finance, China Bills Finance, International Bills Finance, Dah Chung Bills Finance, Taiwan Finance, Grand Bills Finance, Ta Ching Bills Finance, and Taiwan Cooperative Bills Finance Co., Ltd., amounting to 8 companies.
2. The financial institutions' related indicators are calculated using unaudited data submitted regularly for each category by financial institutions. The submitted data are different from those posted on these institutions' websites, which are audited and certified by certified public accountants or adjusted after the

reporting period. The statistical basis for these two types of data is different.

3. Domestic banks' related indicators are calculated by aggregating the numerators and denominators of each ratio, and then dividing the total numerator by the total denominator to obtain the peer-group ratios. This methodology differs from the Winsorized mean method used in the quarterly "Condition and Performance of Domestic Banks" report compiled by the Department of Financial Inspection of the Central Bank of the Republic of China (Taiwan).

II. Explanatory notes on the indicators

1. Domestic banks' indicators

1.1 Asset Size

This indicator is to analyze the level of domestic banks' total assets to GDP.

- GDP: annual nominal gross domestic product.

1.2 Earnings and profitability

1.2.1 Return on assets (ROA)

This indicator is to analyze domestic banks' efficiency in using their assets.

- ROA = net income before tax/average assets
  - Net income: net income before income tax.
  - Average assets: the daily average of total assets as of the end of reference date in current year.

1.2.2 Return on equity (ROE)

This indicator is to analyze banks' pre-tax (after-tax) efficiency in using their capital.

- ROE = net income before (after) tax/average equity
  - Average equity: the daily average of equity as of the end of reference date in current year.

1.2.3 Net interest income to gross income

This indicator is a measure of the relative share of net interest earnings within gross income.

- Net interest income: interest income less interest expenses.
- Gross income: net interest income plus non-interest income.

1.2.4 Non-interest expenses to gross income

This indicator is a measure of the size of administrative expenses to gross income.

- Non-interest expenses include operating expenses other than interest expenses as follows:
  - Employee benefits expenses.
  - Other expenses related to operations.
    - Expenses for property and equipment, including: purchasing, ordinary and regular maintenance and repair, depreciation, and rental thereof.
    - Other expenditure related to operations, including: purchases of goods and services

(e.g., advertising costs, staff training expenses, and royalties paid for the use of other produced or non-produced assets).
    - Taxes other than income taxes less any subsidies received from general government.
- Gross income: (same as in 1.2.3).

1.2.5 Gains and losses on financial instruments to gross income

This indicator is to analyze business revenues from financial market activities as a share of gross income.

- Gains and losses on financial instruments include the following items:
    - Realized and unrealized gains and losses arising on all financial instruments which are held at fair value through profit or loss, excluding fair value through other comprehensive income and amortized cost.
    - Foreign exchange gains and losses.
    - Excluding bond interest and dividend income.
- Gross income: (same as in 1.2.3).

1.2.6 Employee benefits expenses to non-interest expenses

This indicator is to analyze employee benefits expenses as a share of non-interest expenses.

- Employee benefits expenses: including wages and salaries, profit sharing and bonuses, allowances, pensions, social insurance, and medical insurance.
- Non-interest expenses: (same as in 1.2.4).

1.2.7 Spread between lending and deposit rates

This indicator is to analyze the effect of the interest rate spread upon net interest revenues and profitability.

- Spread between lending and deposit rates: the weighted-average loan interest rate less the weighted-average deposit interest rate. The annual interest rate spread is the average of four quarters' spreads.

1.2.8 Spread between the highest and the lowest interest rates of interbank overnight lending

This indicator is to analyze the risk of interbank overnight lending.

- Spread between the highest and the lowest interest rates of interbank overnight lending: The highest interbank rate less the lowest interbank rate of financial sector.

1.3 Asset quality

1.3.1 Non-performing loans to total loans

This indicator is to analyze asset quality in the loan portfolio.

- Non-performing loans:

    According to the *Regulations Governing the Procedures for Banking Institutions to Evaluate Assets and Deal with Non-performing/Non-accrual Loans*, non-performing loans include the following items:
    - Loans for which repayment of principal or interest has been overdue for three months or more.
    - Loans for which the bank has sought payment from primary/subordinate debtors or has

disposed of collateral, although the repayment of principal or interest has not been overdue for more than three months.

- Total loans: Total loans include bills purchased, discounts, accrual and non-accrual loans, but excluding interbank loans.

1.3.2 Provision coverage ratio

This indicator is to analyze the provision policy for loan losses.

- Provision coverage ratio: Loan loss provisions/non-performing loans

1.4 Capital adequacy

1.4.1 Regulatory capital to risk-weighted assets

This indicator is to analyze the capital adequacy of domestic banks. The minimum statutory ratio of regulatory capital to risk-weighted assets of a bank shall not be less than a certain ratio, based on the *Regulations Governing the Capital Adequacy Ratio and Capital Category of Banks*.

- Regulatory capital: the aggregate amount of net Tier 1 Capital and net Tier 2 Capital.
- Risk-weighted assets: the aggregate amount of the risk-weighted assets for credit risk together with the capital requirements for market risk and operational risk multiplied by 12.5.

1.4.2 Tier 1 capital to risk-weighted assets

This indicator is to analyze the capital adequacy of domestic banks based on the core capital concept.

- Tier 1 capital: the aggregate amount of net common equity Tier 1 and net additional Tier 1 capital (as defined by the *Regulations Governing the Capital Adequacy Ratio and Capital Category of Banks*).

1.4.3 Common equity Tier 1 capital to risk-weighted assets

This indicator is to analyze the capital adequacy of domestic banks based on the high quality capital concept.

- Common equity Tier 1 capital: includes common stock and additional paid-in capital in excess of par value of common stock, capital collected in advance, capital reserves, statutory surplus reserves, special reserves, accumulated profit or loss, non-controlling interests, and other items of interest, less supervisory deductions (as defined by the Article 9 of the *Regulations Governing the Capital Adequacy Ratio and Capital Category of Banks*).

1.4.4 Non-performing loans net of provisions to equity

This indicator is to analyze the potential impact on equity of non-performing loans.

- Non-performing loans net of provisions to equity = (non-performing loans - specific loan loss provisions)/equity
  - The provisions for expected credit losses of financial assets were estimated by the historical loss experiences of banks prior to 2019; loan loss provisions are on the IFRSs 9 basis from 2020 onward, referring to the provisions for expected credit losses of financial assets whose credit is impaired.

1.4.5 Leverage ratio

This indicator is to analyze the capital adequacy of domestic banks based on the core capital relative to total non-risk weighted exposure.

- Leverage ratio = Tier 1 capital/total exposure
- Total exposure: the sum of on-balance sheet exposures, derivative exposures, securities financing transaction exposures and off-balance-sheet exposures.

1.5 Liquidity

1.5.1 Customer deposits to total loans

This indicator is a measure of liquidity to indicate the degree of dependence on more stable sources of funds (customer deposits) to illiquid assets (loans).

- Customer deposits: including checking deposits, demand deposits, time deposits, savings deposits, and money remittances.

1.5.2 Liquid assets to total assets

This indicator is to analyze the liquidity available to meet expected and unexpected demands for cash.

- Liquid assets: the core liquid assets comprising cash, checks for clearing, amounts due from the Central Bank, amounts due from banks, and assets with remaining maturity of no more than three months, which can be converted into cash quickly and with minimal impact to the price received.
- Total assets: the sum of financial and non-financial assets.

1.5.3 Liquid assets to short-term liabilities

This indicator is to analyze liquidity mismatch of assets and liabilities, and provide an indication of the extent to which banks could meet short-term demand for funds without facing liquidity problems.

- Short-term liabilities: liabilities with remaining maturity of no more than one year, including deposits, borrowings, debt securities issued, and the net market value of financial derivatives positions (liabilities less assets).

1.5.4 Liquidity coverage ratio

This indicator is to analyze the resilience of short-term liquidity.

- Liquidity coverage ratio = stock of high quality liquid assets/total net cash outflows over the next 30 calendar days
    - High quality liquid assets: assets with high liquidity under stress scenarios, such as cash, central bank reserves, government bonds, and qualified securities.
    - Net cash outflows over the next 30 calendar days: expected cash outflows minus expected cash inflows within the subsequent 30 calendar days under specific stress scenarios.

1.5.5 Net stable funding ratio

This indicator is to quantify long-term liquidity of banks.

- Net stable funding ratio = available stable funding/required stable funding
    - Available stable funding: the portion of capital and liabilities expected to be available to the bank to fund its operations over a one-year period.
    - Required stable funding: The amount of stable funding that is required, reflecting the

liquidity characteristics and residual maturities of each type of the bank's assets and off-balance-sheet exposures.

1.6 Credit risk concentration

1.6.1 Loan concentration by economic activity

This indicator is to analyze the concentration of credit in a specific industry or economic activity by domestic banks.

- Loan concentration by economic activity = corporate loans of domestic banks to the largest three industries/corporate loans
    - Corporate loans of domestic banks to the largest three industries: the aggregate of corporate loans of domestic banks to the largest three industries.

1.6.2 Large exposures to Tier 1 capital

This indicator is to analyze credit vulnerabilities of domestic banks arising from the concentration of credit risk on a single individual or corporate borrower.

- Large exposures: an amount of credit extended by a domestic bank to an enterprise after account integration exceeding 10% of the bank's Tier 1 capital at the end of the previous quarter.

1.6.3 Gross asset positions in financial derivatives to regulatory capital

This indicator is to analyze the effect of price changes on gross asset positions in financial derivatives relative to regulatory capital.

- Gross asset positions in financial derivatives: the aggregate amount of positive fair value in hedged and non-hedged financial derivatives such as swap, forward, and option contracts, excluding embedded derivatives inseparable from the underlying instruments.

1.6.4 Gross liability positions in financial derivatives to regulatory capital

This indicator is to analyze the effect of price changes on gross liability positions in financial derivatives relative to regulatory capital.

- Gross liability positions in financial derivatives: the aggregate amount of negative fair value in hedged and non-hedged financial derivatives such as swap, forward, and option contracts, excluding embedded derivatives inseparable from the underlying instruments.

1.6.5 Geographical distribution of loans to total loans

This indicator is to analyze the concentration of geographical distribution of loans underwritten by domestic banks.

- The regional grouping of countries is based on the classification provided in the IMF's *World Economic Outlook*, which divide countries into different groups as advanced economies, emerging Asia, emerging Europe, Latin America and the Caribbean, Middle East and Central Asia, and Sub-Saharan Africa.
    - Loans to the domestic economy: the local claims in Taiwan (on an immediate risk basis) in the Country Exposure Report of the CBC.
    - Loans to other regions: the total foreign claims (on an immediate risk basis) in the Country Exposure Report of the CBC.
    - Total loans: the sum of loans to the domestic economy, advanced economies, emerging Asia, emerging Europe, Latin America and the Caribbean, Middle East and Central Asia,

and Sub-Saharan Africa.

1.6.6 Credit of private sector to GDP

This indicator is to analyze whether credit of the private sector is overly expanded or faces a credit crunch.

- Credit of private sector: the loans to domestic private NFCs, HHs, and NPISHs; holdings of stocks issued by private NFCs, corporate bonds, commercial paper, acceptances, and beneficiary certificates; long-term investment in private NFCs' equities by main financial institutions.
- GDP: moving sum of the last four quarterly nominal gross domestic product figures.

1.7 Sensitivity to market risk

1.7.1 Net open position in foreign exchange to capital

This indicator measures the mismatch of foreign currency asset and liability positions at domestic banks to assess the potential vulnerability of capital to exchange rate movements.

- Net open position in foreign exchange: the open foreign currency positions in balance sheet and financial derivatives, which are converted into NT dollars using the exchange rates as of the reporting date.
- Capital: equity interest of owners in a bank (i.e., the difference between total assets and liabilities).

1.7.2 Foreign-currency-denominated loans to total loans

This indicator is to analyze the share of foreign currency loans within total gross loans.

- Foreign currency-denominated loans: the loans to other financial institutions, corporate entities, and individuals that are payable in foreign currency, or in domestic currency but with the amount to be paid linked to a foreign currency.
- Total loans: including loans to customers and other financial institutions, but excluding export bills purchased.

1.7.3 Net open position in equities to capital

This indicator is to analyze the effect of price changes of banks' net positions in equities compared with own equity.

- Net open position in equities: the sum of on-balance-sheet holdings of equities and notional positions in equity derivatives.

1.7.4 Foreign-currency-denominated liabilities to total liabilities

This indicator is to analyze the proportion of foreign currency funding within total liabilities.

- Foreign-currency-denominated liabilities: the liabilities that are payable in foreign currency, or booked in domestic currency but paid in an agreed foreign currency.
- Total liabilities: the total amounts of current, non-contingent liabilities, and the liabilities positions in financial derivatives.

2. Life Insurance Companies

2.1 Assets to GDP

This indicator is used to analyze the level of life insurance companies' total assets relative to GDP.

2.2 Return on assets (ROA)

This indicator is to analyze life insurance companies' efficiency in using their assets.

- ROA = net income before tax/average assets
  - Average total assets: the mean of total assets at the end of the previous and current year.

2.3 Return on equity (ROE)

This indicator is to analyze life insurance companies' pre-tax (after-tax) efficiency in using their capital.

- ROE = net income before (after) tax/average equity
  - Average equity: the mean of equity at the end of the previous and current years.

2.4 Risk based capital (RBC) ratio

This indicator is to analyze the capital adequacy of life insurance companies. The minimum statutory RBC ratio of a life insurance company shall not be less than 200%, pursuant to the *Regulations Governing Capital Adequacy of Insurance Companies*.

2.5 Equity to investment assets

This indicator is to analyze the capital adequacy and financial leverage of life insurance companies.

- Investment assets: including financial assets such as cash, deposits, loans, securities, and financial derivatives and non-financial assets held for investment purposes.

3. Bills Finance Companies

3.1 Assets to GDP

This indicator is used to analyze the level of bills finance companies' total assets relative to GDP.

3.2 Return on assets (ROA)

This indicator is to analyze bills finance companies' efficiency in using their assets.

- ROA = net income before tax/average assets
  - Average total assets: (same as in 2.2).

3.3 Return on equity (ROE)

This indicator is to analyze bills finance companies' pre-tax (after-tax) efficiency in using their capital.

- ROE = net income before (after) tax/average equity
  - Average equity: (same as in 2.3).

3.4 Regulatory capital to risk-weighted assets

This indicator is to analyze the capital adequacy of bills finance companies. The minimum statutory ratio of regulatory capital to risk-weighted assets of a bills finance company shall not be less than 8%, based on the *Act Governing Bills Finance Business*.

- Regulatory capital: the aggregate amount of net Tier 1 capital, eligible Tier 2 capital, and eligible used Tier 3 capital.
- Risk-weighted assets: (same as in 1.4.1).

3.5 0-30 day maturity gap to assets (NTD)

This indicator is to analyze the short-term liquidity of bills finance companies' NTD funds.

- 0-30 day maturity gap to assets: maturity gaps of expected NTD cash flow over the next 30 days to total NTD assets.
- Maturity gaps of expected NTD cash flow over the next 30 days: total expected NTD cash inflows net of total expected NTD cash outflows with remaining maturity of 30 days or less.

4. Non-financial corporate sector indicators

4.1 Total liabilities to equity

This indicator is a leverage ratio which is used to analyze the extent of activities that are financed through liabilities other than own funds.

- Total liabilities: including short-term and long-term liabilities.
- Equity: including funds contributed by owners, capital surpluses, retained earnings, and other items related to owners' equity.

4.2 Return on equity

This indicator is to analyze profitability of non-financial corporations in using their capital.

- Return on equity = net income before interest and tax/average equity (the "net income before interest and tax" is based on the FSIs of the IMF).
- Net income before interest and tax: net income before tax plus interest expenses from continuing operation units.
- Average equity: the mean of the equity at the beginning and the end of current year.

4.3 Net income before interest and tax/interest expenses

This indicator is to analyze how well non-financial corporate income covers interest expenses.

- Interest expenses: the interest payments on debt within the specified time period of the statement.

4.4 Foreign-currency-denominated liabilities to equity

This indicator is to analyze the effect of exchange rate movements on equity.

- Foreign-currency-denominated liabilities: (same as in 1.7.4).

5. Household sector indicators

5.1 Household debt to GDP

This indicator is to analyze the level of household debt to GDP.

- Household debt: outstanding household loans and credit card revolving balances borrowed from financial institutions. Financial institutions include depository institutions and other financial institutions (investment trust companies, life insurance companies, securities finance companies, and securities firms).

5.2 Borrowing service and principal payments to total disposable income

This indicator is to analyze the capacity of households to service their debts.

- Borrowing service and principal payments: interest and principal payments made on outstanding loans and credit card revolving balances within the specified time period of the statement.
- Total disposable income: net disposable income (i.e., the aggregate of the wages and salaries from employment, property and corporate income, and transfers receipts, less taxes on income and wealth and other transfers payments) plus expenses of interest and rent.

5.3 Household debt to total disposable income

This indicator is to analyze the degree of indebtedness in the household sector.

6. Real estate market indicators

6.1 National housing price index

This indicator is used to analyze the price movement of national housing prices.

- National housing price index: the index of national housing prices released quarterly by the Ministry of the Interior.

6.2 Residential real estate loans to total loans

This indicator analyzes the extent of concentration of domestic banks' loans in residential real estate-related lending.

- Residential real estate loans: individual loans that are collateralized by residential real estate. Residential real estate includes houses, apartments, and associated land (including owner–occupied and rental properties).
- Total loans: (same as in 1.3.1).

6.3 Commercial real estate loans to total loans

This indicator analyzes the extent of concentration of domestic banks' loans in commercial real estate-related lending.

- Commercial real estate loans: loans to corporate entities and individuals that are collateralized by commercial real estate, loans to construction companies, and loans to companies involved in the development of real estate. Commercial real estate includes buildings and associated land used by enterprises for retail, wholesale, manufacturing, or other purposes.
- Total loans: (same as in 1.3.1).