Central Bank of the Republic of China (Taiwan)

Financial Stability Report

May 2022 | Issue No. 16

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About the Financial Stability Report

Key points of the task to promote financial stability

Promoting financial stability not only is one of the operational objectives pursued by the Central Bank of the Republic of China (Taiwan), but also lays the cornerstone for the effective implementation of monetary policy. To achieve this objective, in addition to serving as lender of last resort when necessary, the Bank regularly monitors the financial system and the overall economic and financial environment. This allows it to be constantly aware of the potential vulnerabilities and risks that could threaten financial stability so that the relevant financial authorities and market participants can respond in a timely manner to avoid financial turbulence.

In its work to promote financial stability, the Bank focuses primarily on the risks that could affect the stability of the overall financial system. Nevertheless, the Bank still pays close attention to the status of individual institutions as their weaknesses can trigger systemic risks.

Purpose of this report

The Financial Stability Report is issued annually. The aims of this report are to offer insight into the state of Taiwan's financial system and its potential vulnerabilities and risks, and to spark broad-based discussion that will enhance awareness of risk among market participants and spur them to take responsive action in a timely manner. This does not mean, however, that the risks mentioned in this report are sure to occur. Furthermore, this report is intended to serve as a reference for financial authorities, market participants, and others interested in the subject. Readers are advised to interpret or quote the information contained herein with caution.

Definition of financial stability

There is as yet no universally accepted definition of "financial stability." Defined positively, "financial stability" can be thought of in terms of the financial system's ability to: (1) facilitate an efficient allocation of economic resources both spatially and intertemporally; (2) assess and manage financial risks; and (3) withstand adverse shocks. From a negative view, "financial instability" refers to the occurrence of currency, banking, or foreign debt crises, or inability of the financial system to absorb adverse endogenous or exogenous shocks and allocate resources efficiently, with the result that it cannot facilitate real economic performance in a sustained manner.

Note: Except as otherwise noted, all data and information cited in this report are current as of April 30, 2022.

Abstract

In 2021, amid the ongoing coronavirus (COVID-19) pandemic, the global economy saw a steady recovery albeit with mounting inflation. Domestic economic growth momentum was strong and inflation was relatively moderate compared to economies in Europe or the US. The corporate sector performed remarkably well and the financial condition of households also remained sound. In addition, the real estate market showed signs of heating up, but the government has implemented several measures to ensure the soundness of the market. Under this macro environment, financial markets in Taiwan kept operating smoothly and financial institutions' profitability elevated, with domestic financial infrastructures functioning well. On the whole, the financial system remained stable; however, the potential impacts stemming from uncertainties surrounding international economic and financial conditions on Taiwan's financial system warrant close attention.

The impacts of the pandemic and Russia-Ukraine conflict on international and domestic macro environments

Benefitting from expanded vaccinations around the world, loosened COVID-19 restrictions, and extraordinary fiscal policy support, the global economy significantly recovered in 2021. Nonetheless, supply disruptions amid the pandemic have led to a sustained increase in commodity prices. From the beginning of 2022, with a renewed flare-up of the pandemic worldwide and the ongoing Russia-Ukraine conflict, S&P Global Market Intelligence anticipates that global economic growth will moderate with notably increasing inflation. When it comes to international financial conditions, since the start of 2022, market expectations of a withdrawal of accommodative monetary policy and a protracted Russia-Ukraine conflict have led global financial markets to be more volatile. Reflecting this, financial conditions in most economies tightened. Additionally, with rapid buildup in government debt, some emerging markets could face the risk of capital outflows.

Regarding the domestic economy, in 2021, Taiwan saw strong economic growth momentum along with relatively moderate inflation compared to that in European economies and the US. External debt expanded slightly but foreign exchange (FX) reserves remained ample, indicating

robust external debt servicing capacity. Government debt and fiscal deficits increased yet still stayed within a manageable level. The revenue and profit of both Taiwan Stock Exchange (TWSE) listed and over-the-counter (OTC) listed companies reached record highs and their short-term debt servicing capacity markedly enhanced. Household financial conditions remained sound and demonstrated satisfactory credit quality. On the other hand, the buoyant housing market saw rising transactions and house prices, along with a moderately increasing mortgage burden. Relevant ministries and agencies actively launched regulations to ensure a healthy housing market so as to foster its sound development.

Financial markets, institutions, and infrastructures operated smoothly in Taiwan

From 2021 onwards, the outstanding amount of bill and bond issuance hit new highs, while their trading volume in the secondary market took divergent directions. Coupled with amplified volatility, stock prices fell back after repeatedly setting historical highs. The NT dollar turned to depreciate after appreciating against the US dollar, and FX markets remained dynamically stable. The profitability of domestic banks and their asset quality picked up with adequate capital levels. Life insurance companies reported record-high profits and higher risk-based capital (RBC) ratios, but faced higher market risks. Bills finance companies showed continuous expansion in profits, although liquidity risks remained high.

Domestic systemically important payment systems functioned in an orderly manner. The Bank has carried out successive experiments on a central bank digital currency (CBDC), and continually reviewed FX management measures. Meanwhile, the Financial Supervisory Commission (FSC) enhanced financial institutions' climate risk management and financial disclosure to promote the development of sustainable finance. In addition, the FSC has taken steps toward the New Generation Insurance Solvency Regime so that insurers can smoothly comply with international supervisory standards.

The Bank and the FSC kept taking measures to promote financial stability, and the government's economic relief measures showed to be effective

In 2021, the Bank continued the special accommodation facility to assist the Small and Medium-Sized Enterprises (SMEs) affected by the pandemic, and raised policy rates in March 2022 to contain domestic inflation expectations. The Bank also conducted open market operations for the purpose of adjusting funds in the banking system. Besides this, the Bank modified targeted macroprudential measures four times, in line with the government's Healthy Real Estate Market Plan, and adopted flexible FX policies to safeguard the dynamic stability of the NT dollar exchange rate. Meanwhile, the FSC took appropriately flexible measures to respond to the impact of the pandemic on financial markets, and constantly strengthened measures related to financial institutions' anti-money laundering and combating the financing of terrorism (AML/CFT). Furthermore, the FSC reinforced regulations governing information security (InfoSec) and corporate governance, and strengthened risk disclosures and suitability assessments of fund products. Since the beginning of 2021, the relief packages launched by the Taiwanese government, such as the special budget for prevention, relief, and revitalization measures for the pandemic, along with the Bank's special accommodation facility for SMEs, showed to be effective, and in turn, helped mitigate the adverse impact of the pandemic on the domestic macro economy and financial system.

The Bank will continually take measures to promote financial stability as needed

In 2021, with the pandemic still lingering but the related economic impact abating, Taiwan's financial system remained stable. Looking ahead, uncertainties arising from geopolitical tensions, soaring international raw material prices, and recurring pandemic outbreaks could lead high inflation globally to become much more persistent. These, together with an accelerated pace of monetary tightening in major economies, could increase volatility in financial markets and add further downside risks to the global economy. Considering all these factors, the Bank will continue to pay close attention to the potential impacts of relevant subsequent developments, and take appropriate response measures, such as monetary, credit, and FX policies, in a timely manner to promote domestic financial stability.

I. Overview

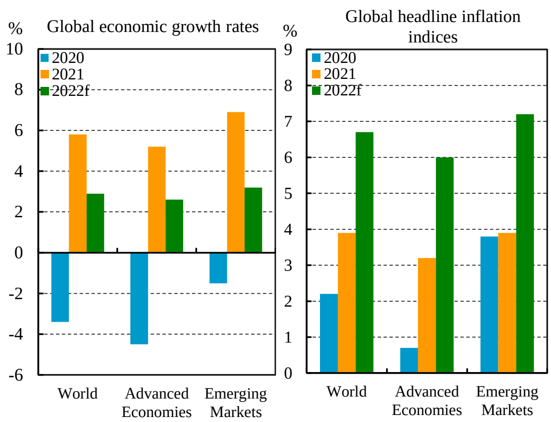
Potential macro environmental risk factors

International economic and financial conditions

Global growth is expected to moderate with tighter financial conditions

In 2021, thanks to expanded rollout of vaccinations, loosened COVID-19 restrictions, and extraordinary fiscal policy support, economies and trade across countries continued on the path of recovery. This, coupled with a lower base period, led global growth to surge notably to 5.8%. However, intensified supply disruptions amid the pandemic increased commodity prices, lifting the global consumer price index (CPI) inflation rate to 3.9% (Chart 1.1).

Chart 1.1 Global economic growth rates and headline inflation indices



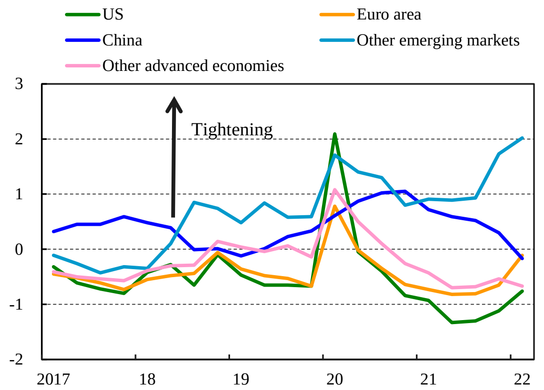
Note: Figures for 2022 are S&P Global Market Intelligence estimates.
Source: S&P Global Market Intelligence (2022/5/15).

Looking ahead to 2022, against the backdrop of rising downside risks to the global economic outlook owing to a renewed flare-up of the pandemic worldwide and the ongoing Russia-Ukraine conflict, S&P Global Market Intelligence anticipates that global growth will decline to 2.9%. Meanwhile, commodity prices further surged following the war in Ukraine, thus elevating global inflationary pressures. As a result, the global headline inflation rate is projected to pick up to 6.7% (Chart 1.1), and advanced economies in Europe and the US are expected to accelerate the pace of monetary policy normalization aimed at taming the rise in inflation worldwide.

With regard to financial conditions, in 2021, stock indices in Europe and the US kept their upward trajectories and financial conditions in advanced economies eased further. By contrast, financial conditions changed little in emerging markets as they saw relatively weaker stock market performance over the same period. From 2022 onwards, rising inflation risks and market expectations of a withdrawal of accommodative monetary policy, together with the continuing Russia- Ukraine war, have resulted in spiking volatility in financial markets worldwide. As a consequence, financial conditions in most economies, excluding China, tightened notably (Chart 1.2).

Given that major economies have hiked interest rates, the International Monetary Fund (IMF) warned that,[1] with global debt levels remaining relatively high, if real interest rates rise quickly, it could trigger an abrupt correction in financial markets and a sharp tightening of financial conditions. Moreover, with the rapidly mounting public debt-to-gross domestic product (GDP) ratio amid the pandemic, along with weaker post-pandemic recovery, emerging markets could face the risk of capital outflows in the case that financial conditions tighten further. Lastly, delayed and disorderly policies to combat climate change, together with market, liquidity, and cyber risks driven by extraordinary growth in decentralized finance (DeFi),[2] could pose a threat to financial stability.

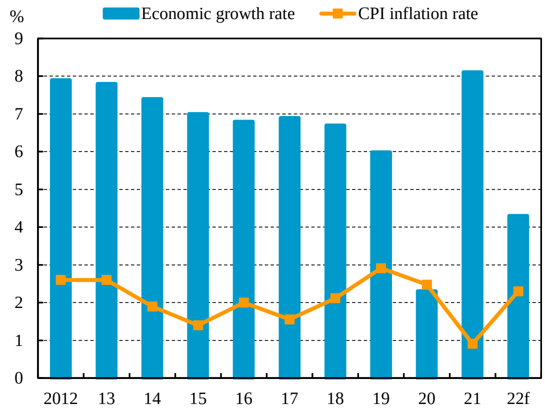
Chart 1.2 Global financial conditions indices



Notes: 1. Financial conditions indices are gauged by standard deviations from mean.
2. Other advanced economies comprise 11 economies, such as Australia, Canada, and the UK.
3. Other emerging economies include emerging markets in Europe (excluding Russia and Ukraine), Middle East, and Africa.

Source: IMF (2022), *Global Financial Stability Report*, April.

Chart 1.3 Economic growth rate and CPI inflation rate of China



Note: Figures for 2022 are S&P Global Market Intelligence projections.

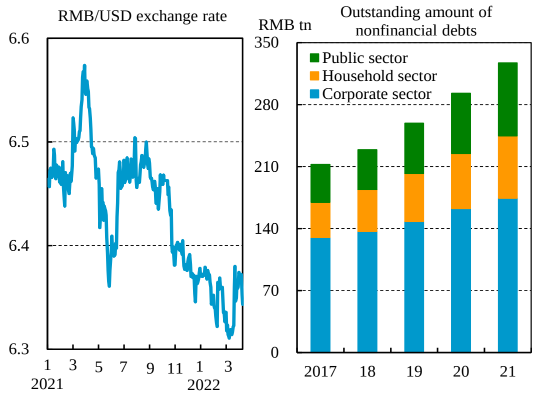
Sources: National Bureau of Statistics of China and S&P Global Market Intelligence (2022/5/15).

[1] IMF (2022), "Chapter 1: The Financial Stability Implications of the War in Ukraine," *Global Financial Stability Report*, April.

[2] DeFi refers to financial services processed by smart contracts stored on the blockchain. The key feature of DeFi is to record all contractual and transaction details, including lending, insurance, and investment, through automated and decentralized functions in the crypto ecosystem.

Economic growth in China could slow sharply, which would accelerate government debt risks

Chart 1.4 RMB/USD exchange rate and outstanding amount of nonfinancial debts in China



Sources: CBC and BIS.

Thanks to effective pandemic control, the annual economic growth rate of China rebounded markedly to 8.1% in 2021, with the annual CPI inflation rate declining to 0.9%. In 2022, with service industry and consumption momentum continually suppressed by the government's "zero-COVID" measures, together with the impacts of the Russia-Ukraine war and recent lockdowns in major cities, S&P Global Market Intelligence projects that the economic growth rate will decline noticeably to 4.3% (Chart 1.3). Meanwhile, the annual CPI inflation rate is forecast to pick up to 2.3%.

Affected by the government's stringent measures on property developers, some of them successively fell into liquidity crises and the housing market saw a sharp shrinkage in both transaction volume and prices in the second half of 2021. Despite the fact that China's government moderately relaxed the regulations afterwards, the housing market will likely remain sluggish in the short term.

In 2021, driven by the government's tightening regulations on internet platforms and a series of debt defaults by property developers, the SSE Composite Index fell sharply and then rebounded subsequently. Meanwhile, the RMB exchange rate against the US dollar turned to an uptrend after depreciating as a result of an accommodative monetary policy stance by the People's Bank of China (PBC) and an increase in export demand promoted by the pandemic. Since the beginning of 2022, shocked by bearish news, such as lockdowns in Chinese cities amid a rapid resurgence of the pandemic, the SSE Composite Index plummeted to a nearly two-year low and then recovered slightly. On the other hand, lifted by the rising demand for RMB in Russia's foreign transactions, the RMB exchange rate reached a nearly four-year high in March before gradually depreciating against the US dollar (Chart 1.4, left panel).

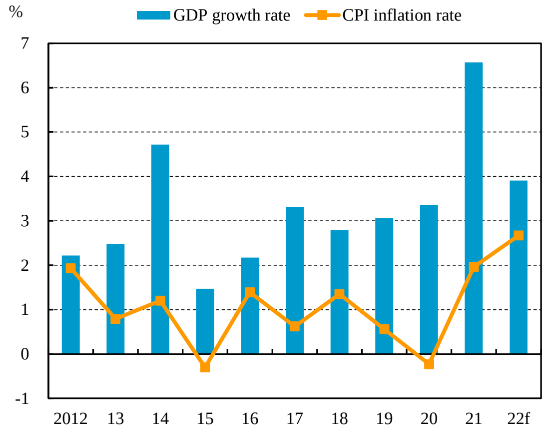
In 2021, the increment in aggregate financing to the real economy delined, and the NPL ratio of commercial banks continued to drop in China; nonetheless, vulunerability of small banks, such as rural commercial banks, remained elevated. The outstanding debt for nonfinanical sectors, including the corporate, household, and government sectors, saw moderate growth

(Chart 1.4, right panel), but that of local governments surged sharply. This, coupled with huge local government hidden debts accumulated by financing vehicles, reflects a rise in potential risks.

Domestic macro environment

Taiwan's economic growth momentum was strong, while domestic inflation was relatively moderate, and external debt servicing capacity remained sound

Chart 1.5 Economic growth rate and CPI inflation rate of Taiwan



Note: Figures for 2022 are DGBAS forecasts released on May 27, 2022.
Source: DGBAS.

Benefiting from record high exports and significant growth in private investment, together with the gradual recovery of private consumption, the annual economic growth rate in Taiwan reached 6.57% in 2021 (Chart 1.5), hitting a record high in the past eleven years. Annual CPI inflation registered 1.96% in 2021, higher than the -0.23% a year earlier; nonetheless, the inflation was relatively moderate compared to that of European economies or the US. Looking ahead to 2022, the growth momentum of exports and private investment is supposed to remain solid; however, recurring domestic COVID-19 pandemic outbreaks have posed an impact on consumption growth. Besides this, the exacerbating Russia-Ukraine war and supply chain bottlenecks have pushed up commodity prices. In sum, economic growth is forecast to decline and inflation is projected to pick up. The DGBAS predicts that the annual economic growth rate will register 3.91% in 2022, and the predicted CPI inflation rate was revised up to 2.67%.[3]

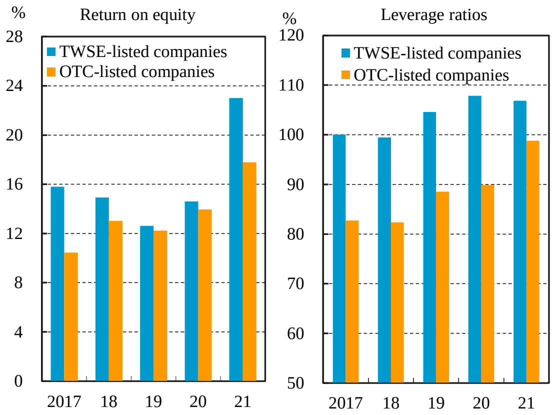
Taiwan's external debt[4] rose to US$213.6 billion at the end of 2021, but FX reserves remained at a sufficient level of US$548.4 billion, implying a robust capacity to service external debt. The government budget deficit was equivalent to 1.06% of annual GDP for 2021, which was lower than the internationally recognized alert threshold.[5] The ratio of total public debt to annual GDP continued dropping to 30.18%, implying that government debt still stayed within a manageable level.[6]

[3] Press release of the DGBAS on May 27, 2022.
[4] External debt refers to the combined amount owed to foreign parties by Taiwan's public and private sectors, including long-term debt with a maturity of greater than one year and short-term debt with a maturity of one year or less.
[5] As a comparison, fiscal deficits in EU member nations are not allowed to exceed 3% of GDP according to the *Maastricht Treaty* and the subsequent *Stability and Growth Pact*.
[6] As a comparison, outstanding government debt in EU member nations is not allowed to exceed 60% of GDP according to the *Maastricht Treaty* and the subsequent *Stability and Growth Pact*.

Revenue and profit of the corporate sector set new highs

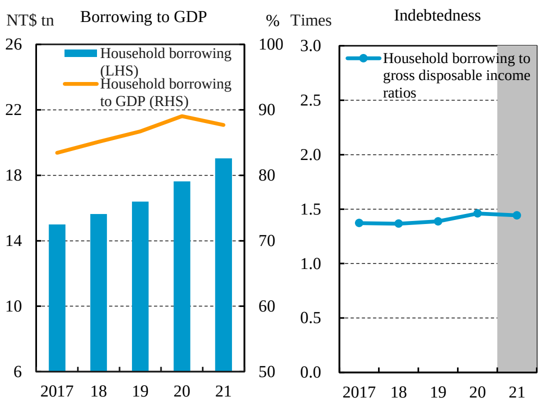
In 2021, the steady global economic recovery and the expansion of emerging technology applications fueled the demand for electronic and traditional products. As a result, the revenue and profit of both TWSE- and OTC-listed companies reached record highs despite the impact of persisting pandemic conditions internationally and domestically (Chart 1.6, left panel). On the other hand, the average leverage ratio for TWSE-listed companies decreased slightly, and that for OTC-listed companies increased at the end of 2021 (Chart 1.6, right panel). Nevertheless, both current ratios and interest coverage ratios trended upwards, indicating markedly enhanced short-term debt servicing capacity. Moreover, the non-performing loan (NPL) ratio for corporate loans from financial institutions dropped to a new low of 0.23%. The overall credit quality for the corporate sector was satisfactory.

Chart 1.6 Return on equity and leverage ratios in corporate sector



Notes: 1. Return on equity = net income before interest and tax/average equity.
2. Leverage ratio = total liabilities/total equity.
Source: TEJ.

Chart 1.7 Household indebtedness



Note: Total disposable income in shadow area is a CBC estimate.
Sources: CBC, JCIC, and DGBAS.

Household financial conditions remained sound

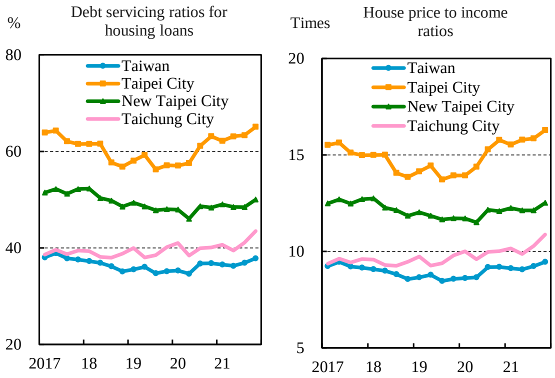
Total household borrowing expanded and reached NT$19.04 trillion at the end of 2021, equivalent to 87.69% of annual GDP (Chart 1.7, left panel), lower than the 89.04% in the previous year. The ratio of household borrowing to total disposable income also slightly dropped to 1.44 (Chart 1.7, right panel), reflecting a slightly eased household debt burden. Furthermore, household net worth in Taiwan has been remarkable[7] and has held at more than 8 times the GDP in recent years, indicating a healthy financial condition and a sustained debt

[7] Household net worth includes household net non-financial assets and net financial assets. Net non-financial assets include produced assets (buildings and constructions, transport equipment, machinery equipment, etc.) and non-produced assets (construction land, non-construction land, and other assets). Net financial assets are domestic and foreign financial assets minus liabilities (deposits, loans, shares of listed companies or other enterprises, life insurance reserves, etc.).

servicing capacity of households. Meanwhile, the NPL ratio of household borrowing from financial institutions decreased to a new low of 0.16%, showing satisfactory credit quality.

Transactions in the housing market thrived and house prices trended upwards with a slightly increasing mortgage burden

Chart 1.8 Debt servicing ratios for housing loans and house price to income ratios



Notes: 1. Debt servicing ratio for housing loans = median monthly housing loan payment/median monthly household disposable income.
2. House price to income ratio = median house price/median annual household disposable income.

Source: Housing Price Affordability Indicator Statistics, Construction and Planning Agency of the MOI.

A buoyant housing market saw a rise in house transactions and prices in 2021. The total number of building ownership transfers for transaction reached a record high since 2014, with an annual growth rate of 6.62%. Nevertheless, after the Bank and relevant ministries and agencies consecutively launched measures to curb speculation in the housing market, growth in housing market transactions moderated from the beginning of 2022. Meanwhile, the national housing price index released by the Ministry of the Interior (MOI), the Sinyi housing price index (for existing residential buildings), and the Cathay housing price index (for new residential buildings) reached historical high levels in 2021. The debt servicing ratio for housing loans also rose mildly quarter on quarter and reached 37.83% in 2021 Q4, while the house price to income ratio registered 9.46, both showing an increase from the previous year. In sum, the mortgage burden elevated marginally, and Taipei City exhibited the heaviest mortgage burden among the six metropolitan areas (Chart 1.8).

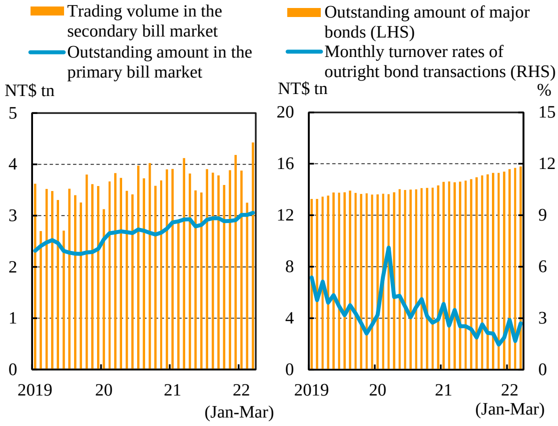
Since the government initiated the Healthy Real Estate Market Plan in December 2020, the Bank has revised targeted macroprudential measures regarding real estate loans four times. The FSC also continually adopted related measures to enhance financial institutions' risk management on mortgage loans. Furthermore, relevant ministries and agencies successively amended the regulations to refine management schemes and to prevent short-term speculation and tax evasion, which could foster sound development in the real estate market.

Financial system assessment

Financial markets

Bill and bond issuance hit new highs, while their trading volume in the secondary market took divergent paths

Chart 1.9 Primary and secondary bill and bond markets



Notes: 1. Major bonds include government bonds, international bonds, corporate bonds, and financial debentures.
2. Monthly turnover rate = trading value in the month/average outstanding amount of bonds issued. Average outstanding amount of bonds issued = (outstanding amount at the end of the month + outstanding amount at the end of last month)/2.

Sources: CBC and FSC.

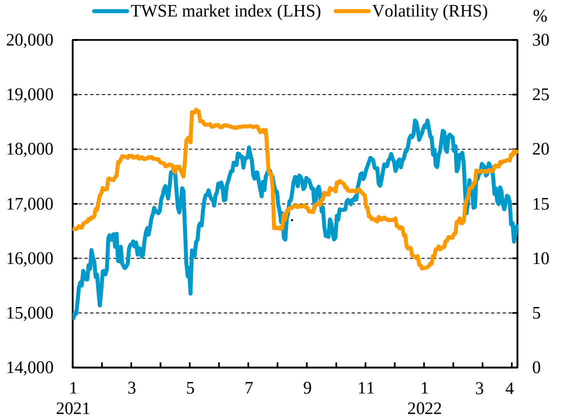
The outstanding amount of bill issuance in the primary market rose by 5.97% year on year at the end of 2021, owing to the fact that corporates significantly expanded commercial paper (CP) issuance for fund raising. The bill trading volume in the secondary market also saw a rise of 1.66% (Chart 1.9, left panel). As for the bond market, the outstanding amount of bond issuance increased by 7.58% at the end of the year because interest rates stayed at low levels, which attracted corporates and financial institutions to expand bond issuance. Nevertheless, trading volume in the secondary bond market[8] substantially decreased by 31.17% as bills finance companies and securities firms reduced their bond holdings. Analyzed by trading types, repurchase agreement (repo) transaction volume and outright transaction volume both shrank. As a consequence, the average monthly outright turnover rate of major bonds[9] continued its downward trend and declined further to a record low of 2.43% in 2022 Q1 (Chart 1.9, right panel).

In terms of short-term market rates, the interbank overnight call loan rate stabilized at a low level in 2021 and ascended marginally after the Bank raised the policy interest rates in March 2022. As for long-term market rates, 10-year government bond yields oscillated with an upward trend and reached a nearly 4-year high of 1.07% in late March 2022. Considering that recent tightening of monetary policies in major economies put upward pressure on bond yields globally, this could, in turn, propel Taiwan's 10-year government bond yields to increase further. Accordingly, the elevating interest rate risks related to bond investments warrant close attention.

8 Includes repo and outright transactions.
9 Includes government bonds, international bonds, corporate bonds, and financial debentures.

Stock indices reached historical highs before slumping, and trading volume rose dramatically

Chart 1.10 TWSE market index and volatility



Note: Volatility refers to the annualized standard deviation of 60-day daily index returns.
Sources: TWSE and CBC.

In May 2021, owing to recurring outbreaks of the pandemic, the Taiwan Stock Exchange Weighted Index (TAIEX) saw a sudden drop and its volatility surged sharply. Afterwards, with mixed news for the market, such as mounting concerns over inflation, faster-than-expected interest rate hikes by the US, heightened geopolitical risks, and uncertainty surrounding the pandemic, the TAIEX fluctuated with an upward trend and the volatility dropped. On December 29, the index reached a historical high of 18,248 (Chart 1.10), posting an increase of 23.66% year on year and surging higher than the major indices in international stock markets. Since the beginning of 2022, the TAIEX has slumped from its high level amid intensifying fluctuations in global stock markets, and the volatility has expanded again (Chart 1.10).

Underpinned by the booming trading volume of Taiwan's domestic stock markets in 2021, the monthly average trading value in the TWSE market significantly increased by 102.15% year on year. Consequently, the annual turnover rates in terms of trading value also rose noticeably to 176.60%, higher than those in most other major international stock markets, indicating sufficient liquidity in the stock market. Nonetheless, an escalation of the domestic pandemic recently, along with global geopolitical risks and uncertainties surrounding monetary policies in major economies, could impact domestic stock markets and warrant close attention.

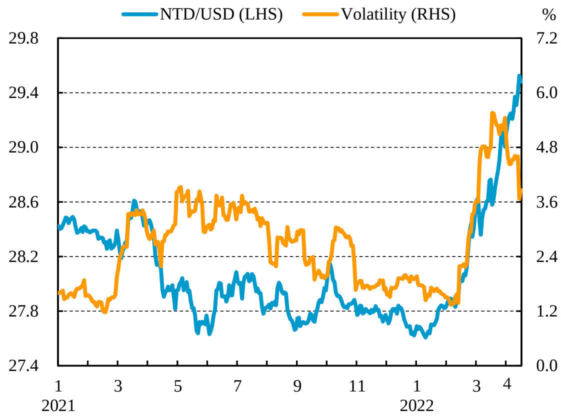
The NT dollar turned to depreciate after appreciating against the US dollar, while its volatility remained relatively stable

In 2021, Taiwan's exports performed remarkably well, creating strong demand for US dollars by exporters. This, coupled with inflows of foreign capital to invest in domestic stock markets, led the NT dollar exchange rate against the US dollar to fluctuate with an upward trend. The NT dollar stood at 27.690 at the end of 2021, rising by 2.95% over the end of the previous year. Nevertheless, with the US dollar trending upwards in the beginning of 2022, the NT dollar turned to depreciate by 6.07% against the US dollar compared to the end of 2021, falling to 29.480 at the end of April (Chart 1.11). With regard to trading volume, the scale of trading in

Taiwan's FX market declined by 0.30% in 2021, primarily because of a decrease in interbank transactions.

Furthermore, volatility in the NT dollar exchange rate against the US dollar shifted between 1.17% and 3.93% in 2021 and registered an annual average of 2.55%. During January to April 2022, volatility in the NT dollar exchange rate against the US dollar rose and registered between 1.34% and 5.56% (Chart 1.11). Compared to major currencies such as the Japanese yen, the euro, the Singapore dollar, and the Korean won, the NT dollar exchange rate has stayed relatively stable against the US dollar.

Chart 1.11 Movements of NT dollar exchange rate against US dollar

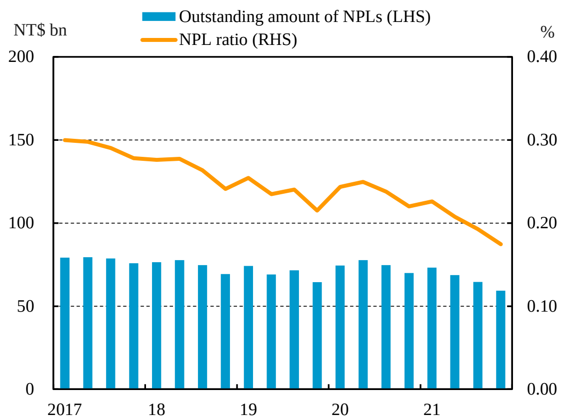


Note: Volatility refers to the annualized standard deviation of 20-day daily returns.
Source: CBC.

Financial institutions

Domestic banks' profitability and asset quality strengthened with satisfactory asset quality

Chart 1.12 NPLs of domestic banks

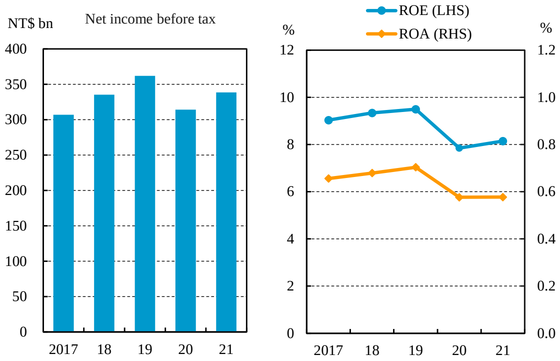


Note: Excludes interbank loans.
Source: CBC.

Growth in customer loans of domestic banks accelerated in 2021, while the credit concentration in corporate loans slightly decreased. However, the share of real estate-secured credit mounted continually. The average NPL ratio saw a decline to 0.17% at the end of the year (Chart 1.12), reflecting an improvement in credit quality, and the provisions for loan losses remained sufficient. Nevertheless, possible impacts stemming from relief loans on banks' credit risk management and their credit quality warrant close monitoring. Meanwhile, the aggregate amount of exposure to China continually contracted in 2021, and the ratio of the exposures to banks' net worth fell to a new low of 34% at the end of the year. Nevertheless, the potential risks in China are still elevated, which warrant constant close attention.

The net income before tax of domestic banks recorded NT$338.7 billion in 2021, increasing by 7.76% over the previous year (Chart 1.13, left panel). This mainly resulted from a pickup in net interest income owing to a geater decrease in interest expenses. The average return on equity (ROE) rose to 8.14%, while the return on assets (ROA) remained at 0.58% (Chart 1.13, right panel), indicating ascending profitability. On the other hand, the average capital adequacy ratio of domestic banks remained unchanged at 14.80% at the end of 2021, representing satisfactory capital quality.

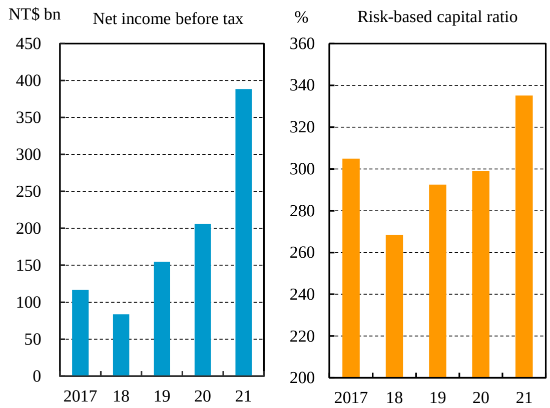
Chart 1.13 Profitability of domestic banks



Notes: 1. ROE = net income before tax/average equity.
2. ROA = net income before tax/average total assets.
Source: CBC.

Life insurance companies reported record-high profits and higher RBC ratios, though facing soaring market risks

Chart 1.14 Net income before tax and risk-based capital ratio of life insurance companies



Note: Figures for risk-based capital ratios exclude insurance companies taken into receivership by the FSC.
Source: FSC.

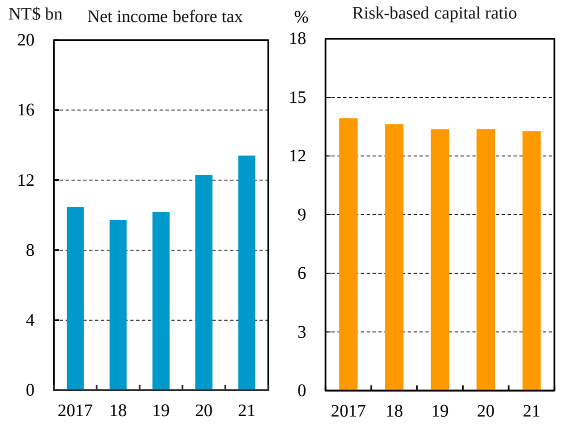
The net income before tax of life insurance companies hit NT$388.5 billion in 2021, a substantial year-on-year increase of 88.50% (Chart 1.14, left panel). This mainly resulted from elevated investment revenue as life insurance companies actively realized their capital gains of stock and bond investments. Additionally, at the end of the year, the average RBC ratio kept picking up to 335.17% (Chart 1.14, right panel), while the average equity to asset ratio[10] also rose to 8.87%.

Foreign portfolio positions of life insurance companies grew continually and reached NT$19.92 trillion at the end of 2021. Nonetheless, in view of recent turmoil in global financial markets and spiking US government bond yields, the impact of market risk on life insurance companies warrants close attention.

[10] Assets are exclusive of the assets of insurance products in separate accounts.

Profitability of bills finance companies kept increasing, but the liquidity risk remained high

Chart 1.15 Net income before tax and capital adequacy ratio of bills finance companies



Source: CBC.

CP guaranteed by bills finance companies continued to reach a record high in 2021, mainly because corporates increased CP issuance to raise funds on the back of a low level of interest rates in the bill market. The guaranteed advances ratio stayed at 0.01% at the end of the year, reflecting satisfactory credit quality; however, the impact of the evolution of the pandemic warrants close attention. Meanwhile, bills finance companies still faced a maturity mismatch between assets and liabilities, showing a still high liquidity risk.

In 2021, the net income before tax of bills finance companies expanded by 9.01% year on year to NT$13.4 billion (Chart 1.15, left panel), a new high in more than 10 years, mainly owing to a substantial decrease in interest expenses of bill and bond repo transactions and an expansion in income from underwriting fees. The average capital adequacy ratio declined slightly to 13.27% at the end of 2021 (Chart 1.15, right panel), but the capital adequacy ratio for each company remained well above the statutory minimum of 8%.

Financial infrastructure

Domestic payment systems functioned smoothly, and consumption via non-cash payment instruments expanded

The CBC Interbank Funds Transfer System (CIFS) functioned smoothly in 2021, settling funds worth a total of 24.6 times the GDP for the year. The overall consumption expenditure via a variety of non-cash payment tools[11] rose by 9.57%, mainly supported by continuous expansion of mobile payment coverage and mounting demand for contactless payment amid the pandemic. Furthermore, in order to facilitate the interconnection of information and cash flow between banks and e-payment institutions, the Bank urged the Financial Information Service Co., Ltd. (FISC) to set up a shared platform for cross-institution e-payment, which started to provide

[11] Non-cash payment tools include credit cards, debit cards, electronic tickets, electronic payment accounts, and ACH interbank collection.

intra-institution transfer services from October 2021 onwards. This platform is expected to offer "tax payment" and "bill payment" services in 2022, with the aim of promoting the efficiency of the overall payment market.

In response to the emerging trends of digital payment, the Bank has carried out orderly CBDC experiments

In order to explore the potential of digital technology, the Bank is pragmatically conducting CBDC research and testing projects. The Bank has already completed the first phase program on the feasibility of a wholesale CBDC. The results showed that the application of distributed ledger technology (DLT) had its own limits. In particular, it could not achieve efficacy in dealing with real-time, high-frequency, and large-volume payment transactions. Currently the Bank has proceeded to the second phase program on a general-purpose CBDC, which simulates the application of a CBDC in retail payment scenarios. The program is expected to be finalized in September 2022 and the Bank will extensively consult external opinions based on the simulation results, thereby assisting the Bank to evaluate the possibility of future CBDC issuance.

Other measures to strengthen the financial system

To urge financial institutions to prudently control the credit risk of real estate lending, the Bank has adjusted targeted macroprudential measures regarding real estate loans on a rolling basis. The FSC also adopted measures to strengthen risk management of real estate credit for banks and bills finance companies. Moreover, the FSC enhanced financial institutions' climate risk management and financial disclosure to promote the development of sustainable finance, as well as taking a gradual approach to implement the New Generation Insurance Solvency Regime for insurers in line with international supervisory standards. In addition, to fulfill FX management, along with simplifying administration and providing convenience for the public, the Bank continually reviewed FX regulations, such as the *Regulations Governing the Declaration of Foreign Exchange Receipts and Disbursements or Transactions*, so as to help banks develop public access to digital services and provide diversified financial services in a more flexible manner.

Measures to promote financial stability and address the COVID-19 pandemic

Measures undertaken by the Bank and the FSC to promote financial stability

Measures undertaken by the Bank to promote financial stability

The Bank continued the special accommodation facility in 2021 to support bank credit to the SMEs affected by the pandemic. Additionally, the Bank raised the discount rate, the rate on refinancing of secured loans, and the rate on temporary accommodations each by 25 basis points (bps) in March 2022, so as to contain domestic inflation expectations and maintain price stability. Moreover, for the purpose of adjusting funds in the banking system, the Bank conducted open market operations, as well as keeping the weighted average overnight call loan rate at an appropriate level.

In addition, with the aim of helping banks enhance risk management of real estate lending and implementing the government's Healthy Real Estate Market Plan, the Bank adjusted targeted macroprudential measures four times since December 2020. The Bank also continually adopted flexible FX rate policies and undertook appropriate FX management measures (such as reinforcing off-site monitoring efforts on forward transactions and urging authorized FX banks to enhance their exchange rate risk management) to safeguard the dynamic stability of the NT dollar exchange rate and maintain FX market order, thus ensuring sound financial development.

Measures undertaken by the FSC to maintain financial stability

From 2021 onwards, in response to the impact of the pandemic on the domestic financial system, the FSC appropriately took flexible measures, including allowing banks to use adaptable methods to provide financial services, extending the debt workout mechanism for personal loans, as well as deferring the implementation of *Basel III: Finalizing post-crisis reforms* and additional internal capital requirements for domestic systemically important banks (D-SIBs). Moreover, the FSC required domestic banks and insurers to conduct supervisory stress tests to evaluate their risk bearing capacities.

In addition, the FSC constantly strengthened AML/CFT measures of financial institutions, along with regulations governing InfoSec and corporate governance. In an effort to better protect investors' interest and increase their risk awareness, the FSC reinforced risk disclosures and fund suitability assessments for high-yield bond funds, together with ensuring more complete disclosures of funds featuring environmental, social, and corporate governance (ESG).

Effectiveness of Taiwan's measures to address the COVID-19 pandemic

In response to the impact of the COVID-19 pandemic on the domestic economy and society, the Legislative Yuan successively raised the ceiling on the special budget for the *Special Act for Prevention, Relief and Revitalization Measures for Severe Pneumonia with Novel Pathogens* with a total of NT$840 billion. As of the end of April 2022, about 85% of the special budget had been implemented. In addition, the special accommodation facility launched by the Bank to support financially-distressed SMEs had assisted vulnerable enterprises to access the funds to weather the pandemic. Thanks to the effectiveness of those economic relief measures, Taiwan sustained economic growth at 6.57% in 2021, not only reaching an 11-year high, but also performing much better than major economies in Europe, North America, and Asia. The unemployment rate gradually declined from its peak, and the number of employees who agreed on negotiated reductions of working hours with their employers also shrank notably. Meanwhile, with the profitability of TWSE- and OTC-listed companies reaching a 10-year high in 2021, domestic stock markets also hit record-high levels.

Lastly, despite the lingering challenge of the pandemic facing Taiwan, financial institutions continued to make profits in 2021. Among them, life insurance companies and bills finance companies kept reaching historical highs. Meanwhile, the average NPL ratios of domestic financial institutions remained at a low level, reflecting satisfactory credit quality, and their capital levels remained adequate and well above the statutory minimum. All of the aforementioned performance shows that financial institutions in Taiwan still operated soundly amid a negative shock from the pandemic.

The Bank will continue to adopt measures to promote financial stability when necessary

Overall, with the pandemic lingering but the related economic impact abating, Taiwan's financial system remained stable in 2021. To facilitate sound operations of financial institutions and promote financial stability, the Bank will keep adopting appropriate monetary, credit, and FX policies, and the FSC will revamp financial regulations and enhance financial supervisory measures.

Looking ahead, geopolitical tensions, soaring international raw material prices, and recurring pandemic outbreaks caused by new variants could lead high inflation globally to become much more persistent. These, coupled with the accelerated pace of monetary tightening in major economies, could increase volatility in financial markets and add further downside risks to the global economy. Against this backdrop, the Bank will continue to pay close attention to the impacts of relevant subsequent developments on domestic economic and financial conditions so as to take appropriate response measures in a timely manner, thus promoting financial stability.

II. Potential macro environmental risk factors

2.1 International economic and financial conditions

2.1.1 International economic and financial conditions

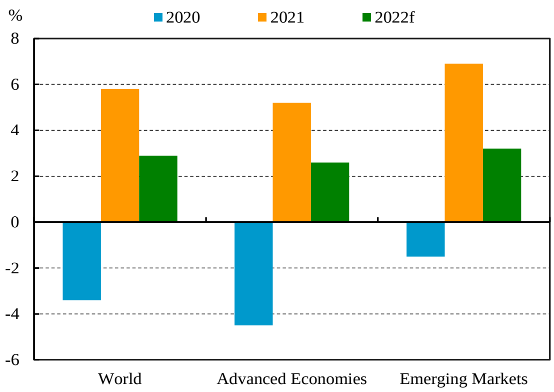
Global economic growth gained momentum in 2021, owing to expanded rollout of vaccines across countries, large-scale accommodative monetary policies employed by central banks, and a low base-year level in 2020. From 2022 onwards, the spread of the Omicron variant and the eruption of the Russia-Ukraine war have further intensified supply disruptions and pushed up commodity prices, thus increasing imported inflation pressure. Looking ahead, global growth is expected to moderate in 2022 against the backdrop of rising downside risks to the global economic outlook owing to a renewed flare-up of the pandemic worldwide and ongoing Russia-Ukraine conflict.

The war in Ukraine and policy rate hikes by major economies have resulted in a significant correction in global financial markets. Should central banks in advanced economies adopt a more hawkish stance to rein in rising inflation, emerging economies could see a disorderly tightening of financial conditions, thus putting financial stability at risk.

Increased inflationary pressures and the escalation of geopolitical tensions will lead to a slowdown in global growth in 2022

In 2021, thanks to expanded vaccination coverage, loosened COVID-19 restrictions, and extraordinary fiscal policy support, the global economy and trade continued to recover. Together with a lower base period, the global economic growth rate surged notably to 5.8% (Chart 2.1).[12]

Chart 2.1 Global economic growth rates

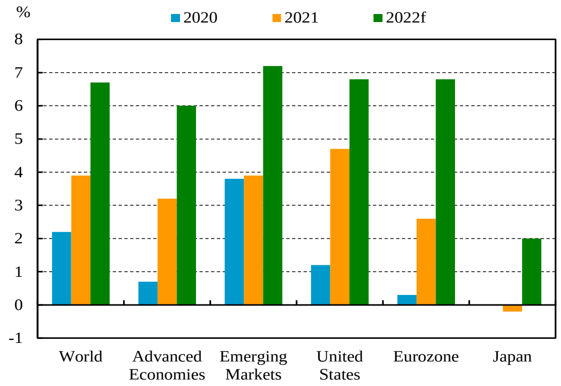


Note: Figures for 2022 are S&P Global Market Intelligence estimates.
Source: S&P Global Market Intelligence (2022/5/15).

[12] S&P Global Market Intelligence estimate on May 15, 2022.

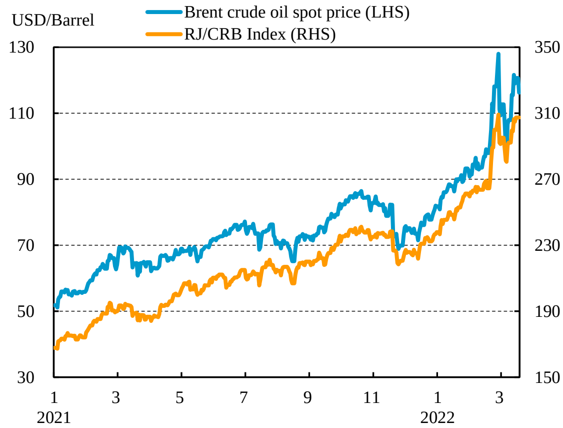
From the beginning of 2022 onwards, more severe sanctions imposed by several countries on Russia following its invasion of Ukraine, together with the spread of a new COVID-19 variant, have caused lasting disruptions of supply chains. As a result, global inflation rose drastically, posing considerable challenges for economic recovery. S&P Global Market Intelligence [13] anticipates that the global economy would expand at a slower pace of 2.9%, while the economic growth rates of advanced economies and emerging economies are expected to decelerate to 2.6% and 3.2%, respectively (Chart 2.1). In addition, the IMF noted that the recurrence of catastrophic climate events would impose significant costs on vulnerable low-income countries and further strain global supply chains, which could jeopardize economic recovery.

Chart 2.2 Global headline inflation indices



Note: Figures for 2022 are S&P Global Market Intelligence estimates.
Source: S&P Global Market Intelligence (2022/5/15).

Chart 2.3 Global commodity prices



Source: Bloomberg.

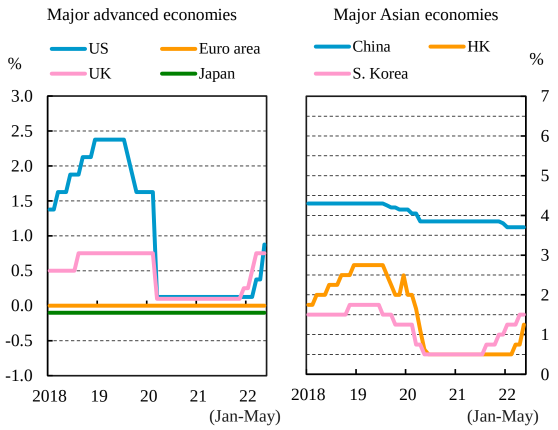
The Russia-Ukraine war posed upside risks to inflation

Since the beginning of 2021, two COVID-19 waves from the Delta and Omicron variants have caused labor shortages and port congestion in many economies, translating to supply chain breakdown and soaring commodity prices. Among the commodities, international oil prices gradually picked up amid the easing of lockdowns and solid oil demand stemming from a recovery of manufacturing sectors in Europe and the US. The average annual Brent crude oil spot price reached US$70.89 per barrel, an increase of 70% compared to US$41.69 in 2020. Furthermore, other energy prices and food prices, including prices of cereals, vegetable oil, dairy and meat, also trended upward. With commodity price spikes, the global CPI inflation rate accelerated to 3.9% in 2021. The headline inflation rates in advanced and emerging economies climbed to 3.2% and 3.9%, respectively (Chart 2.2).

[13] S&P Global Market Intelligence (2022), *Global Executive Summary*, May.

Entering 2022, with the Russia-Ukraine war dampening the supply of global energy and raw materials, the Brent oil price hit US$128 per barrel on March 8, a record high since 2008. The RJ/CRB Index, designed to capture broad trends in global commodity prices, also saw a significant upward shift (Chart 2.3). Against the backdrop of a sharp increase in commodity prices, S&P Global Market Intelligence expects that the global headline inflation rate will rise to 6.7%, whereas inflation in advanced economies and emerging economies will rise to 6.0% and 7.2%, respectively (Chart 2.2). High global inflation could be aggravated by a possible worsening of the Russia-Ukraine war.

Chart 2.4 Policy rates in major economies



Notes: 1. Advanced economies: figure for the US is based on the median of the federal funds rate target range; for the euro area, the interest rate on the main refinancing operations; for the UK, Bank Rate; for Japan, interest rate on banks' excess reserves.
2. Emerging Asia: figure for China is based on one-year loan prime rate; for Hong Kong, Base Rate; for South Korea, Base Rate.
3. Figures are as of May 4, 2022.

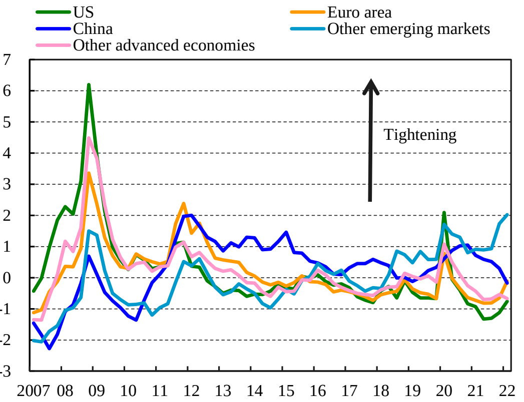
Sources: Central banks and monetary authority websites.

Advanced economies in Europe and the US accelerate the pace of policy normalization aimed at combating inflation

In 2021, since the real economy had not fully regained momentum amid the COVID-19 pandemic, major central banks maintained accommodative monetary policies by providing low interest rates. Then, from the beginning of 2022, central banks in Europe and the US, such as the Fed, gradually sped up the pace of policy normalization to rein in soaring inflation, which could have an adverse impact on bond markets and emerging economies.

In the recent year, major central banks took divergent paths in monetary policies. In the US, where there was elevated inflation, along with a substantially declining unemployment rate and strong job growth, the Fed decided to reduce its net asset purchases from January 2022. Moreover, the Fed raised its target band for the federal funds rate in March and May by a total of 75 basis points (bps) to 0.75% - 1.00% and planned to reduce the size of its balance sheet from June. In Europe, the European Central Bank scaled back its bond-buying stimulus plan in March 2022 amid raging inflation, but kept its key interest rates on hold. On the other hand, the Bank of Japan (BOJ) continued to pursue their bond-buying program given mild inflation, but planned to gradually return the amount of purchases of CP and corporate bonds to pre-pandemic levels. The Bank of England has increased its Bank Rate three times by a total of 65 bps to 0.75% since December 2021 and reduced the size of its asset purchase program in the face of an increase in domestic prices (Chart 2.4).

Chart 2.5 Global financial conditions indices



Notes: 1. Financial conditions indices are gauged by standard deviations from the mean.
2. Other advanced economies comprise 11 economies, such as Australia, Canada and the UK.
3. Other emerging economies include emerging markets in Europe (excluding Russia and Ukraine), Middle East, and Africa.

Source: IMF (2022), *Global Financial Stability Report*, April.

Among emerging Asian economies, China sustained its accommodative monetary policies. In the latter half of 2021 and early 2022, the People's Bank of China (PBC) separately cut the reserve requirement ratio for financial institutions and reduced the one-year loan prime rate twice to bring down funding costs. Meanwhile, with the aim of addressing inflation and mitigating financial risks, the Bank of Korea raised its policy rate by 25 bps four times to 1.50%. For Hong Kong, which adopts a linked exchange rate system, the Hong Kong Monetary Authority raised the Base Rate in March and May 2022 by a total of 75 bps following the Fed's rate hikes (Chart 2.4).

Global financial conditions have tightened, and emerging markets are facing greater debt vulnerabilities and higher risks of capital outflows

Financial conditions tightened

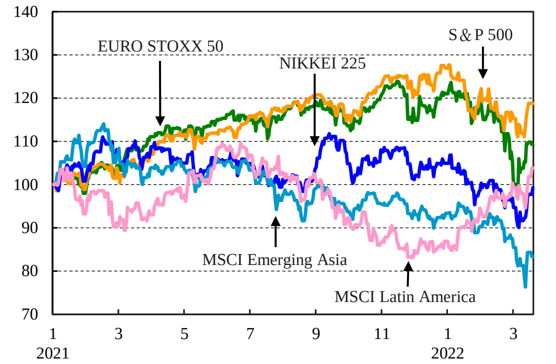
In 2021, buoyed by expectations of continued accommodative monetary policies launched by national authorities in the near term, stock indices sustained their uptrends and financial conditions in advanced economies eased further. By contrast, financial conditions changed little in some emerging markets as monetary policy tightening in response to inflationary pressures offset gains in financial asset prices (Chart 2.5).

Since the beginning of 2022, rising global inflation risks have prompted investors to broadly expect faster monetary policy normalization by advanced economies to tame inflationary pressures. This has resulted in spiking volatility in financial markets, a decline in stock prices and corporate valuations, along with a rise in government bond yields. As a consequence, financial conditions in most economies, excluding China, have tightened notably. Among them, the significant increase in external borrowing costs have weighed heavily on tighter financial conditions in emerging economies located in Eastern Europe and the Middle East with close ties to Russia. However, for other economies, financial conditions remained easy relative to historical levels (Chart 2.5).

The Russia-Ukraine war impacted the global financial system

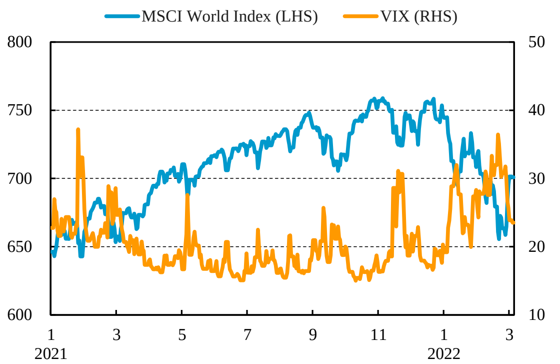
International stock markets dropped from historical levels, and government bond yields in major economies trended upward

Chart 2.6 Major international equity indices



Notes: 1. January 1, 2021 = 100.
2. The EURO STOXX 50 refers to a stock index consisting of the largest 50 stocks in the 12 major economies of the euro area.
Source: Bloomberg.

Chart 2.7 MSCI World Index and VIX Index



Notes: 1. The MSCI World Index, maintained by Morgan Stanley, is a weighted index of stocks from large companies throughout the world.
2. The VIX Index is a standardized measure of market volatility created by the Chicago Board Options Exchange. It is used to gauge investor confidence in the stock market. When the VIX Index trends upward, market participants expect volatility to increase.
Source: Bloomberg.

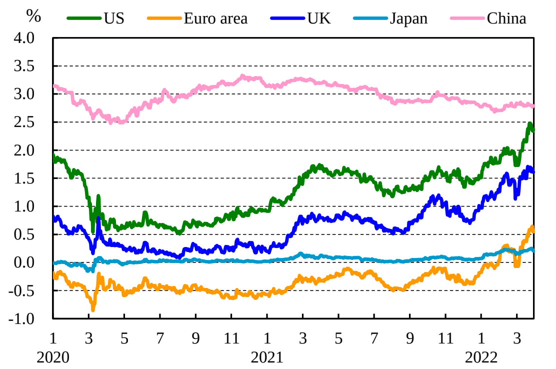
From 2021 onwards, benefitting from the easing of lockdowns and rapid vaccine rollout in advanced economies, European and US equities prices rose further, with the Dow Jones Industrial Average and S&P 500 reaching historical peaks in early January 2022. Subsequently, as the Fed hinted at the commencement of the normalization of monetary policy in light of elevated inflation in the US, the stock market turned downwards and fluctuated within a narrow range. In emerging markets, stock market performances were generally weaker than in advanced economies on account of rising commodity prices and slower vaccine rollout (Chart 2.6). In late February 2022, the MSCI World Index plummeted by 14%[14] compared to the high level of November 2021 because of the outbreak of the Russia-Ukraine war. The VIX Index also rose above 30 (Chart 2.7). Given the unclear path of the Russia-Ukraine war, there remain many uncertainties over global stock markets.

Regarding bond markets, as a consequence of the Fed's rate hike cycle amid a rapid surge in inflation, 10-year government bond yields in Europe and the US have increased significantly

[14] The MSCI World Index fell from 758.86 on November 16, 2021, to 655.47 on March 8, 2022.

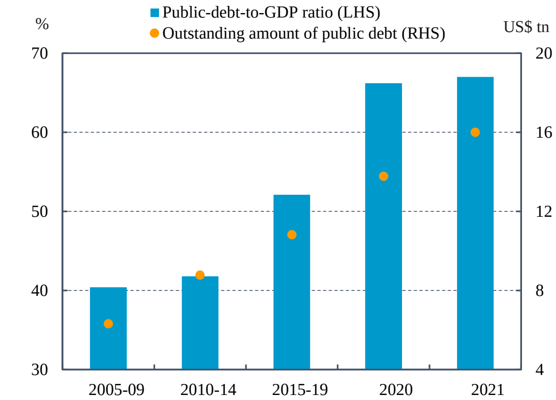
since early 2022, particularly those in the US, and bond yields in the euro area have moved from negative into positive territory (Chart 2.8). Since the war in Ukraine has already placed further pressure on global inflation, the probability of more aggressive rate hikes by central banks has soared. With global debt levels remaining relatively high, if real interest rates rise quickly, it could trigger an abrupt correction in financial markets and a sharp tightening of financial conditions, which could in turn hamper market confidence and endanger financial stability. Hence, rising global interest rates warrant close attention.

Chart 2.8 10-year government bond yields in major economies



Source: Bloomberg.

Chart 2.9 Government debt of emerging economies



Note: Indicators are country averages weighted by purchasing-power-parity GDP.
Source: IMF (2022), *Global Financial Stability Report*, April.

The war in Ukraine had a greater impact on European banks

After the war in Ukraine broke out, exposures of banks, nonbanks and corporates to Russia and Ukraine, along with rising liquidity and funding risks stemming from a tightening of financial conditions, may dampen financial institutions' profitability prospects and asset quality outlook. It is worth mentioning that Europe took a harder hit than other regions owing to its geographical proximity to the war, reliance on Russian energy exports, and banks with relatively larger exposures to Russia and Ukraine. In addition, although global nonbank financial intermediaries have sizable investments in Russian assets,[15] their exposure to Russia is small as a share of total assets and therefore the impact on them has been limited so far.

Governments in emerging economies could face debt distress and capital outflows

Following the COVID-19 outbreak, since governments in emerging markets greatly increased fiscal support to cushion the impact of the pandemic on firms and households, the average

[15] Global nonbank financial intermediaries hold 19% of Russia's total sovereign debt, half of its corporate debt, and 40% of Russian equities.

public-debt-to-GDP ratio rose to 67% from 52% before the pandemic (Chart 2.9). Furthermore, for the purpose of meeting increased financing needs for governments, the domestic sovereign debt exposure of banks has increased to 17.2% of total banking sector assets, notably higher than the 7.5% in advanced economies.

After the Fed's interest rate hike in March 2022, the prospect of a more hawkish stance has been the main theme for markets amid rising upside risks to inflation. Against this backdrop, if global financial conditions tighten suddenly, emerging economies could face the risk of capital outflows given their weaker post-pandemic recovery, shorter average maturity profile of public debt, and a higher share of public debt denominated in foreign currency. Moreover, a tightening of global financial conditions, a persisting pandemic, and heightened geopolitical tensions could worsen the fiscal conditions in emerging markets, leading to rising sovereign bond yields and lower market value. As a result, banks with more sovereign debt exposure could be subject to greater losses, causing them to adopt a more cautious lending stance and thus threatening the recovery for household and corporate sectors. Subsequently, with a slowdown in economic growth and lower tax revenues, governments would face more fiscal pressure. This may further impair sovereign bond markets and bank profitability, and then trigger an adverse feedback loop.

Climate change and decentralized finance could pose a threat to financial stability

- The introduction of foreign sanctions against Russia generated a sharp increase in energy prices. Even though spiraling energy prices could urge authorities to accelerate the transition to renewables and achieve net-zero targets, a delayed and disorderly climate transition may pose a threat to global financial stability.

- DeFi[16] has had extraordinary growth in recent years. Among them, supported by the wider use of stablecoins, the volume of DeFi lending has grown from less than US$1 billion in early 2019 to nearly US$25 billion at the end of 2021. To effectively address the market, liquidity, and cyber risks driven by DeFi, authorities should launch regulations that focus on elements of the crypto ecosystem and DeFi platforms. To balance between over-regulation and risk management, regulators may also need to encourage DeFi platforms to establish self-regulatory organizations.

[16] See Note 2.

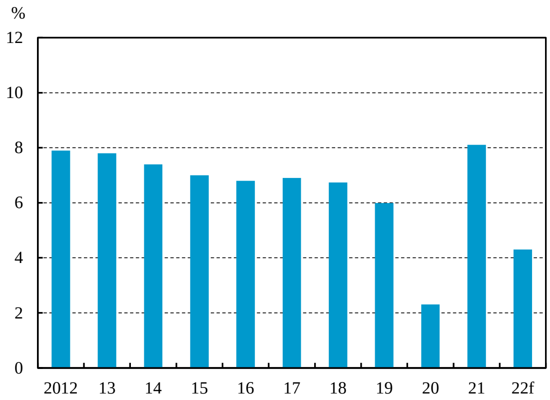
2.1.2 China's economic and financial conditions

Economic growth slowed sharply after a strong rebound

In 2021, the annual economic growth rate of China rebounded sharply to 8.1% (Chart 2.10) with an increase of 5.8 pps over the previous year, better than those of other major economies.

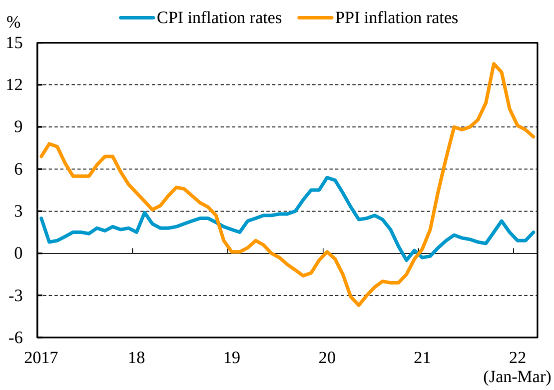
Looking ahead to 2022, owing to the recurring pandemic, the service industry and consumption momentum will continue to be suppressed by the government's "zero-COVID" measures. Moreover, the government continued to implement industrial regulation and the policy of deleveraging the housing sector. Considering these developments, along with the impact of the Russia-Ukraine war and lockdowns in China's major cities, major international institutions have downgraded their expectations of the economic growth of China. Among them, S&P Global Market Intelligence forecasts that the economic growth rate of China will decline markedly to 4.3% in 2022 (Chart 2.10).

Chart 2.10 Economic growth rate of China



Note: Figure for 2022 is an S&P Global Market Intelligence estimate.
Sources: National Bureau of Statistics of China and S&P Global Market Intelligence (2022/5/15).

Chart 2.11 CPI and PPI inflation rates of China



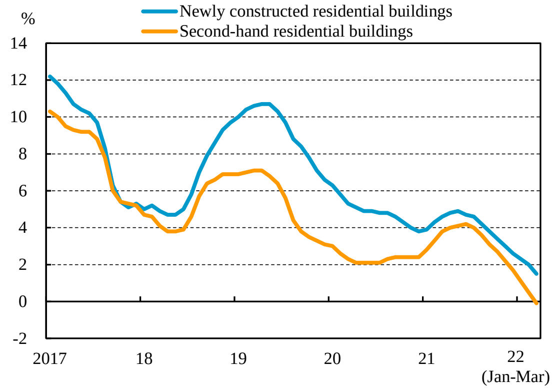
Source: National Bureau of Statistics of China.

Prices fell after rising and growth in housing prices moderated

In 2021, the producer price index (PPI) inflation rate in China rose faster than the CPI inflation rate and the gap between those two widened significantly, reflecting rising supply costs and operational pressure on enterprises. The CPI inflation rate of China was 0.9%, a decrease of 1.6 pps compared to a year earlier. However, affected mainly by imported inflation and supply-demand imbalances of energy, the annual PPI growth rate increased significantly from negative territory to register 8.1% in 2021, an increase of 9.9 pps compared to a year earlier. In March 2022, the annual CPI inflation rate and PPI inflation rate were 1.5% and 8.3%, respectively (Chart 2.11). S&P Global Market Intelligence projects the annual CPI inflation rate will pick up to 2.3% in 2022.

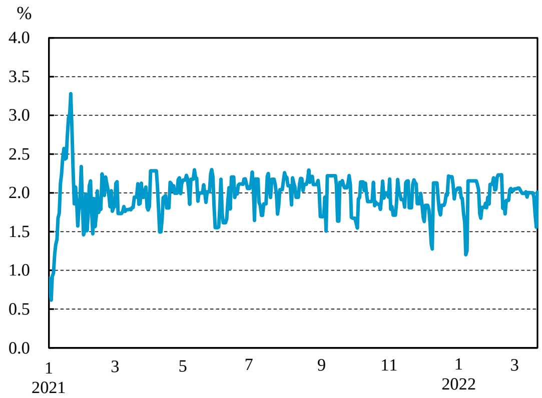
Regarding the housing market, affected by the government's imposition of the "three red lines" policy that puts strict limits on the property developers' leverage, several developers successively fell into liquidity crises and the housing market saw a sharp shrinkage in transaction volume in the second half of 2021. In December 2021, the average growth rate of newly constructed and second-hand housing prices in 70 medium-large cities dropped to 2.6% and 1.7% year on year, respectively (Chart 2.12). Although China's government moderately relaxed the regulations in order to avoid a spiraling debt crisis triggered by some property developers, the housing market will likely remain sluggish in the short term.

Chart 2.12 Average annual growth rates of residential building sales prices in 70 medium-large cities of China



Source: Refinitiv Datastream.

Chart 2.13 Overnight Shanghai Interbank Offered Rate



Note: The interbank overnight call loan rate rose sharply in early 2021, mainly owing to the tight monetary policy implemented by the PBC to contain rises in real estate and asset prices.
Source: Bloomberg.

The PBC implemented a more accommodative monetary policy

In 2021, the PBC cut each RRR for financial institutions by 0.5 pps in July and in December, respectively, releasing long-term funds totaling RMB2.2 trillion. Furthermore, in order to boost the economy, the PBC led the market interest rates downwards by means of several policy tools such as the medium-term lending facility (MLF), standing lending facility (SLF) and open market operation (OMO). The interbank overnight call loan rate roughly fluctuated in a range-bound band except for a dramatic movement in the beginning of 2021 owing to the PBC withdrawing excess liquidity from financial markets (Chart 2.13).

SSE Composite Index was range bound and RMB FX rate trended upwards after heading downwards

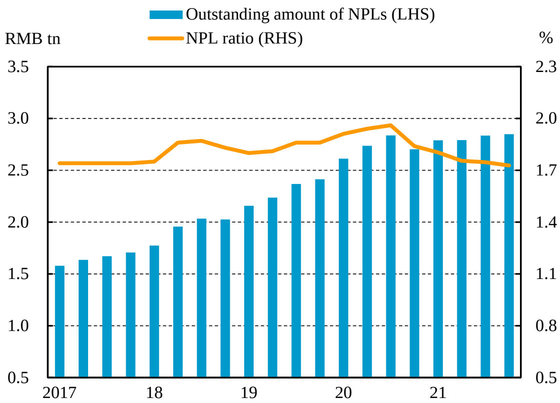
In 2021, the Shanghai Stock Exchange (SSE) Composite Index fluctuated between 3,300 and 3,700. During this period, driven by the government tightening regulations on internet platforms and a series of debt defaults by property developers (such as Evergrande Group) in the second half of the year, the SSE Composite Index fell sharply. Afterwards, the Index rebounded and closed at 3,639 at the end of December, representing an annual increase of 4.8%. In mid-March 2022, the SSE Composite Index plummeted to a nearly two-year low of 3,064, and then fluctuated with an uptrend (Chart 2.14).

Regarding the FX market, the RMB exchange rate against the US dollar turned to an uptrend after depreciating in 2021 and registered 6.3793 at the end of the year as a result of a more accommodative monetary policy stance by the PBC and an increase in export demand promoted by the pandemic. From the beginning of 2022, driven by the rising demand for RMB in Russia's foreign transactions, the RMB exchange rate continued to appreciate against the US dollar, and reached a nearly four-year high of 6.3107 in early March, but then gradually depreciated. Considering that the economic growth in China will slow down significantly and the US will accelerate the pace of rate hikes, closely monitoring the above-mentioned factors which may still affect the scope of further appreciation of the RMB is warranted.

Chart 2.14 Shanghai Stock Exchange Composite index

Source: Bloomberg.

Chart 2.15 NPLs of China's commercial banks



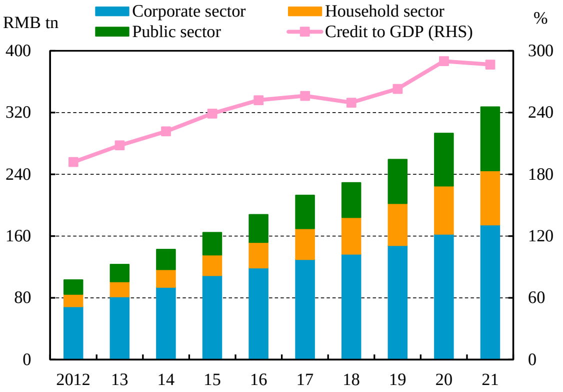
Source: China Banking and Insurance Regulatory Commission.

Growth in new credit slowed, while overall risk remained moderate for the banking industry

In 2021, the annual growth rate of broad money (M2) declined by 1.1 pps to 9.0% from 10.1% a year before. The aggregate financing to the real economy (flow data) also went down to

RMB31.4 trillion. At the end of 2021, the outstanding amount of financing to the real economy (stock data) stood at RMB314.1 trillion, an annual increase of 10.3% compared to a year earlier.

Chart 2.16 Outstanding amount of debt for nonfinancial sectors and credit-to-GDP ratio in China



Source: BIS.

At the end of 2021, the NPLs of commercial banks in China stood at RMB2.85 trillion, an increase of 5.39% year on year, while the NPL ratio continued to drop to 1.73% (Chart 2.15) because of a larger increase in credit. Furthermore, the outstanding amount of classified assets rose to RMB6.66 trillion, equivalent to 4.04% of total loans. Among all types of banks, the NPL ratios of domestic systemically important banks (D-SIBs), such as state-owned commercial banks, were generally lower than 2%, but those of small banks, such as rural commercial banks, exceeded 3%.

China saw a moderate growth in the debt of nonfinancial sectors

According to the statistics of the BIS, the outstanding debt for nonfinancial sectors in China reached a new record high of RMB327.3 trillion at the end of 2021, but its annual growth moderated. The nonfinancial sectors' debt-to-GDP ratio dropped to 286.6%, a decrease of 3.3 pps year on year, mainly driven by a decline in that of the corporate sector (Chart 2.16).

At the end of 2021, the corporate sector's debt-to-GDP ratio went down to 152.8%, decreasing by 8 pps compared with a year earlier. Household sector debt grew moderately and stood at 61.6% of GDP, slightly less than a year earlier. However, the government sector's debt-to-GDP ratio rose to 72.2%, 4.9 pps higher than that of 2020, mainly resulting from the government's massively scaled-up fiscal expenditure to address the COVID-19 pandemic. According to the statistics of China's Ministry of Finance, the outstanding amount of local government debt surged sharply to RBM30.47 trillion at the end of 2021. This, coupled with the huge local government hidden debts, may quickly heighten government debt risks given a continued economic slowdown and potential changes in housing market trends.

2.2 Domestic macro environment

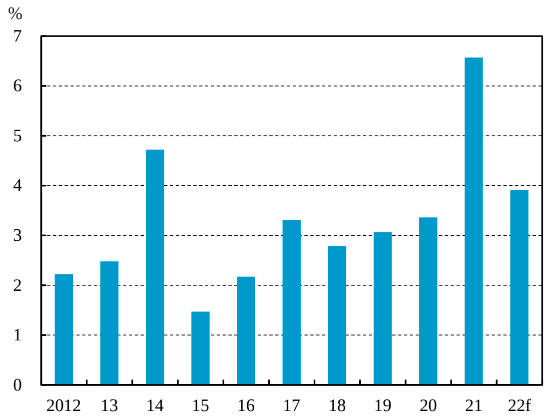
2.2.1 Domestic economic and fiscal conditions

Benefiting from significant growth in exports and private investment, together with the gradual recovery of private consumption, domestic economic growth momentum was strong in 2021 and inflation was relatively moderate. External debt servicing capacity stayed robust on the back of a persistent surplus in the balance of payments and ample FX reserves. The government expanded annual expenditures in response to the COVID-19 pandemic and maintained economic growth momentum. This resulted in an increase in fiscal deficits and outstanding public debt, albeit still within a manageable level. The impacts of global inflationary pressures and economic downside risks elevated by the Russia-Ukraine war on Taiwan's economic growth momentum warrant close attention.

Taiwan's economic growth momentum was strong

In 2021, exports and private investment thrived.[17] Moreover, private consumption progressively rebounded with loosened epidemic prevention measures in the second half of the year, bolstering economic growth. The annual economic growth rate reached 6.57%,[18] hitting a record high in the past eleven years (Chart 2.17).

Chart 2.17 Economic growth rate in Taiwan



Note: Figure for 2022 is a DGBAS forecast released on May 27, 2022.
Source: DGBAS.

Looking ahead to 2022, growth momentum for exports is supposed to remain solid. Furthermore, domestic and foreign technology companies are projected to increase investment and expand capacity in Taiwan, as well as proceed with major investment plans such as green energy, which are expected to buttress private investment. However, considering that recurring waves of the domestic COVID-19 pandemic might impact the uptrend in

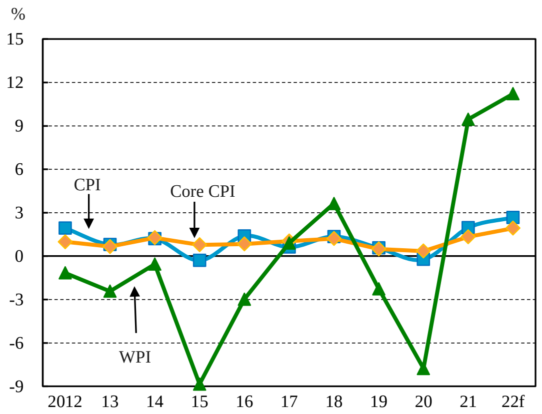
[17] As of the end of 2021, investments of the three major programs in Taiwan had increased over NT$1.6 trillion. With continuously active investments in Taiwan by global companies and the government's proactive efforts to expand and accelerate public infrastructure projects, private investment grew steadily, becoming one of the main drivers of economic growth.

[18] Press release of the DGBAS on May 27, 2022.

consumption, the DGBAS predicts that the annual economic growth rate will register 3.91% (Chart 2.17).

Furthermore, the exacerbating Russia-Ukraine war and economic sanctions imposed by major countries on Russia recently have affected global financial markets and supply chains. If the war drags on, it may further heighten global inflationary pressures and economic downside risks. The spillover effects on Taiwan's economic growth momentum warrant close attention.

Chart 2.18 Consumer and wholesale price indices (% change, yoy)



Note: Figures for Core CPI in 2022 are CBC forecasts released on March 17, 2022; other figures are DGBAS statistical data and a forecast released on May 27, 2022.
Sources: DGBAS and CBC.

Domestic inflation was relatively moderate compared to European economies or the US

On account of hikes in international energy as well as raw material and commodity prices, annual wholesale price index (WPI) inflation ascended to 9.46% in 2021, much higher than the -7.77% of the previous year. The DGBAS projected that annual WPI inflation would keep mounting to 11.22% in 2022. With regard to consumer prices, annual CPI inflation registered 1.96% in 2021, higher than the -0.23% recorded a year earlier. The main reasons were a lower base of periodic comparison, coupled with relatively high international agricultural and industrial raw material prices and elevated oil prices. The core CPI inflation, which excludes fruit, vegetables, and energy, increased to 1.33% in 2021, higher than the 0.35% of the previous year, but at a milder pace (Chart 2.18).

Owing to soaring international raw material and commodity prices caused by the conflict between Russia and Ukraine, the annual CPI inflation rate rose to 3.38% in April 2022. Most major domestic and foreign institutions projected that Taiwan's CPI inflation rate would be higher than 2% in 2022. The Bank forecasted that the annual CPI and core CPI inflation rates would be 2.37% and 1.93%, respectively, and that inflation shocks would mainly come from the supply side. In addition, considering that product prices would be reflected in manufacturer's cost pressures to some degree, the DGBAS revised the predicted CPI inflation rate of 2022 up to 2.67% in May. Looking ahead, supply chain bottlenecks and geopolitical risks are likely to continue to be uncertain factors influencing domestic and foreign inflation trends, which warrant attention (Box 1).

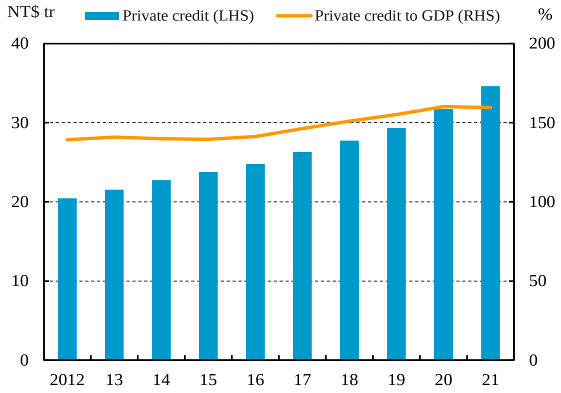
Credit to the private sector increased continually

Private credit[19] to private enterprises and households provided by domestic financial institutions continued to grow in 2021, reaching NT$34.63 trillion at the end of the year, an increase of 9.22% year on year, which was higher than the economic growth rate. The ratio of credit to GDP registered 159.52%, remaining roughly unchanged compared with the previous year (Chart 2.19). This showed that the credit provided by domestic financial institutions was sufficient to support economic activity.

Current account surplus reached a new high and FX reserves stayed ample

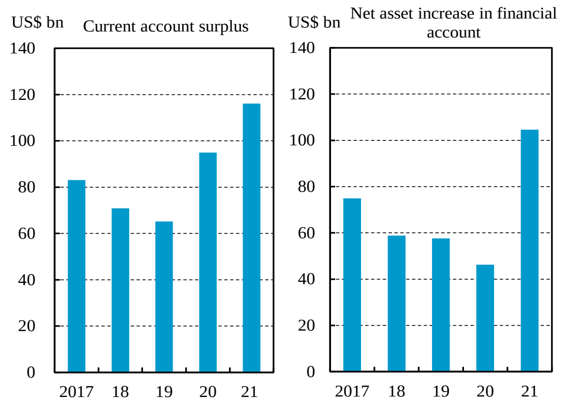
In 2021, the merchandise trade surplus kept expanding and the sharply increased freight proceeds pushed up the surplus of the services account. As a result, the annual current account surplus rose to a record high of US$116.1 billion (Chart 2.20, left panel), or 14.98% of the year's GDP, an increase of US$21.2 billion,

Chart 2.19 Private credit provided by financial institutions



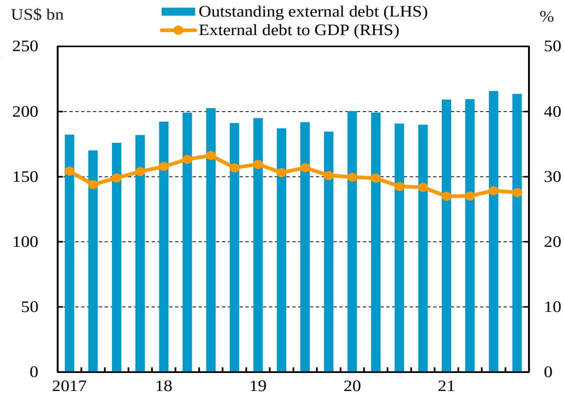
Sources: DGBAS and CBC.

Chart 2.20 Current account surplus and net asset increase in financial account



Source: CBC.

Chart 2.21 External debt servicing capacity



Notes: 1. Figures for outstanding external debts are on an end-of-period basis.
2. Figures for GDP are on an annualized basis.

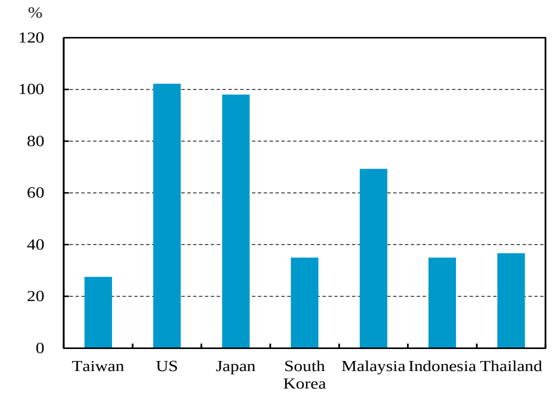
Sources: CBC and DGBAS.

19 Private credit refers to the loans granted by major financial institutions to various private enterprises, individuals, and non-profit organizations in Taiwan, as well as the purchases of securities such as stocks, corporate bonds, commercial paper, acceptance bills, beneficiary certificates issued by private enterprises, and the equities of long-term investments in private enterprises.

or 22.29% over the previous year.[20] In terms of the financial account, as banks and insurance companies increased foreign securities investments which boosted foreign assets, along with a decrease in foreign liabilities owing to reduced holdings of Taiwanese stocks by foreign institutional investors, the financial account posted an increase of US$104.6 billion throughout the year (Chart 2.20, right panel) and hit a record high. Meanwhile, the Bank's reserve assets increased by US$21 billion compared to the previous year.

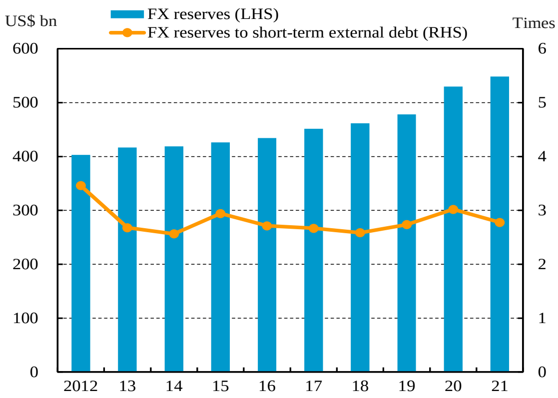
FX reserves amounted to US$548.4 billion at the end of 2021, rising by 3.49% from a year earlier, mainly supported by the earnings from portfolio investment operations of FX reserve assets, and the adjustment operations by the Bank to maintain an orderly foreign exchange market. At the end of March 2022, the FX reserves continuously increased to US$548.8 billion.

Chart 2.22 External debt to GDP in selected countries



Note: Figures are as of the end of 2021.
Source: CEIC.

Chart 2.23 Short-term external debt servicing capacity



Source: CBC.

The scale of external debt expanded, while debt servicing capacity remained strong

Primarily because of an increase in the short-term external debt of the private sector, Taiwan's external debt[21] rose to US$213.6 billion at the end of 2021, increasing by 12.49% compared to a year earlier (Chart 2.21). The largest share of external debt went for the private sector, registering US$212 billion, while the public sector share only reached US$1.6 billion. Taiwan's external debt to GDP stood at 27.56% at the end of 2021, slightly declining from 28.37% at the end of the previous year. It was lower than the internationally recognized alert threshold,[22] and

[20] For the ratio of current account deficit to GDP, it is generally deemed that its critical value as a risk measure is 3%. A country in which the reading is greater than 3% and has risen by at least 5 pps from the previous year is considered to be relatively high risk.
[21] See Note 4.
[22] The general international consensus is that a country with a ratio of external debt to GDP lower than 50% is deemed to be relatively low risk.

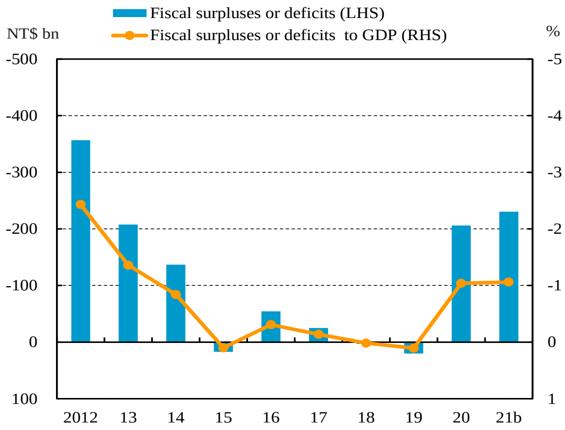
much lower those in the US and neighboring Asian countries (Chart 2.22).

Furthermore, at the end of 2021, the ratio of FX reserves to short-term external debt came down to 2.78 times owing to a greater increase in short-term external debt than FX reserves (Chart 2.23). However, it was still much higher than the internationally recognized alert threshold,[23] implying that Taiwan's FX reserves have a decent capacity to meet payment obligations.

Fiscal deficits and government debt stayed within a manageable level

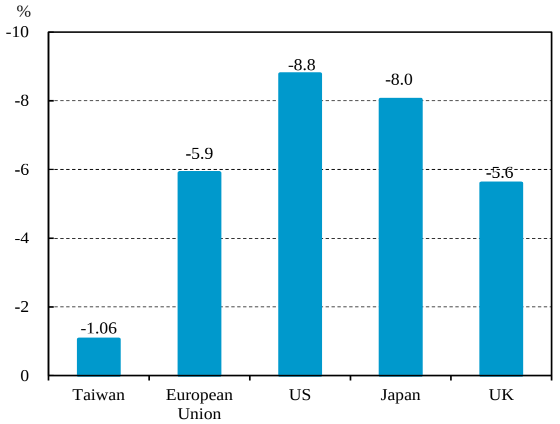
In 2021, in order to respond to the domestic COVID-19 resurgence and maintain economic growth momentum, the government increased the special budget for epidemic prevention and relief packages twice, and also actively promoted a number of measures, such as the *Forward-looking Infrastructure Development Program*, leading to an expansion of annual expenditures. As a result, the government fiscal deficit expanded from NT$205.9 billion recorded in the previous year to NT$230.4 billion, equivalent to 1.06% of GDP for the year (Chart 2.24), which was better than internationally recognized minimum levels[24] and lower than those of major economies including the US, the euro area, UK, and Japan (Chart 2.25).

Chart 2.24 Fiscal deficits



Notes: 1. Fiscal position data include those of central and local governments.
2. Figures for 2021 are final accounts for the central government and budgets for local governments.
Sources: MOF and DGBAS.

Chart 2.25 Fiscal deficits in selected countries

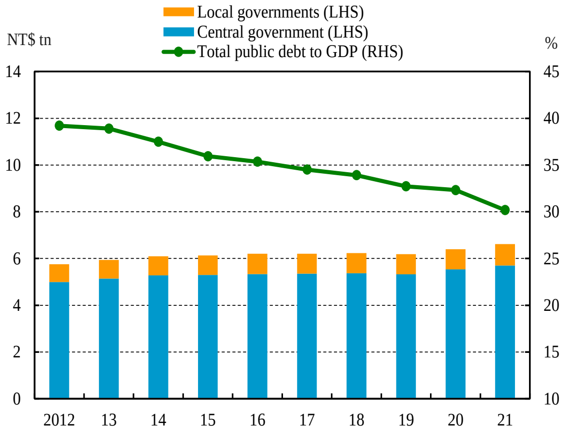


Note: Figures are as of the end of 2021.
Source: IMF.

[23] The general international consensus is that a country with a ratio of FX reserves to short-term external debt higher than 100% is deemed to be relatively low risk.
[24] See Note 5.

The outstanding public debt at all levels of government[25] rose to NT$6.55 trillion at the end of 2021, increasing by 2.34% year on year, while the ratio of total public debt to the year's GDP continued dropping to 30.18% (Chart 2.26). Government debt still stayed within a manageable level.[26]

Chart 2.26 Public debt



Notes: 1. Outstanding public debt refers to non-self-liquidating debt with a maturity of one year or longer, excluding external debt.
2. Figures for 2021 are preliminary final accounts for the central government and budgets for local governments.

Sources: MOF and DGBAS.

[25] The term "outstanding debt at all levels of government" as used in this report refers to outstanding non-self-liquidating debt with a maturity of one year or longer.

[26] See Note 6.

Box 1
Recent developments and possible effects of domestic and overseas inflation

Since 2021 onwards, global demand has rebounded, which is attributed to the restarting of economic activity in various countries. However, the supply-demand imbalances and supply chain bottlenecks have largely resulted in the inflationary spike in major economies. Moreover, the recent Russia-Ukraine war has prompted a number of countries to impose sanctions on Russia, thereby provoking a sharp rise in commodity prices. If the war persists, it could trigger imported inflation and further drive up global inflationary pressures which thus warrant close attention. This Box discusses the causes of recent inflation domestically and overseas, its development, and possible effects, as well as explaining Taiwan’s main measures to deal with rising inflation.

1. Factors affecting inflation at home and abroad

1.1 Inflationary pressures in major economies mostly mirrored the impact of the epidemic on both the supply and demand sides

The causes of elevated foreign inflationary pressures since 2021 have been mostly related to the progression of the pandemic in each country. For example, owing to the rising demand for energy in the wake of the easing of lockdowns, international oil prices picked up from a low level in 2020. As a result, the contribution of global energy prices to the annual growth rate of the consumer price index (CPI) turned positive in 2021 from negative in 2020. Furthermore, some economies did not effectively solve the problem of port congestion, which caused exorbitant freight rates, or severe labor shortages caused wages to rise. These were also the reasons for elevated inflation.

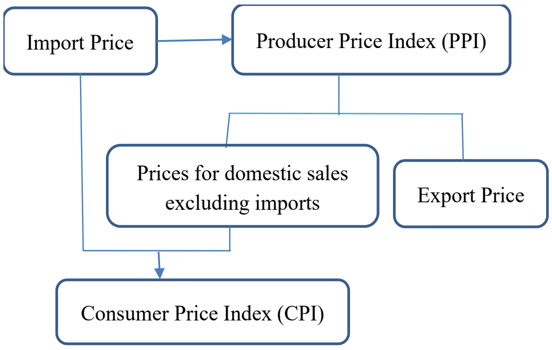
Compared to pre-pandemic levels, the ratio of commodity consumption to household expenditures in major economies increased in 2021. Meanwhile, commodity prices rose more than services prices, especially in the United States. In view of the pandemic, governments around the world offered citizens cash subsidies and relief funds to expand households’ disposable incomes; therefore, consumption momentum in the short term was boosted, which in turn affected domestic prices.

1.2 Rising prices in Taiwan derived mainly from a supply shock

1.2.1 The transmission channel of import prices to domestic inflation

Nearly 90% of Taiwan’s imported commodities are agricultural & industrial raw materials and capital goods, of which agricultural & industrial raw materials need to go through several processing stages before they are converted into finished products, which will be transported and eventually sold to consumers. As imported goods can be delivered and directly sold to consumers, they have an influence on the CPI. Apart from that, oil imports can directly affect the CPI via a floating price mechanism, and agricultural & industrial raw materials may also indirectly affect the CPI by causing an impact on the prices for domestic sales excluding imports (Chart B1.1).

Chart B1.1 The transmission channel of import prices to domestic prices



Source: CBC.

1.2.2 Price spikes in Taiwan stemmed mainly from supply-side factors in 2021

Taiwan's CPI grew by 1.96% in 2021, showing a relatively high increase, mostly owing to supply-side factors such as price surges in fuel and lubricants, flight tickets, fruit and vegetables, as well as a lower base period in 2020.

2. The development of foreign and domestic inflation

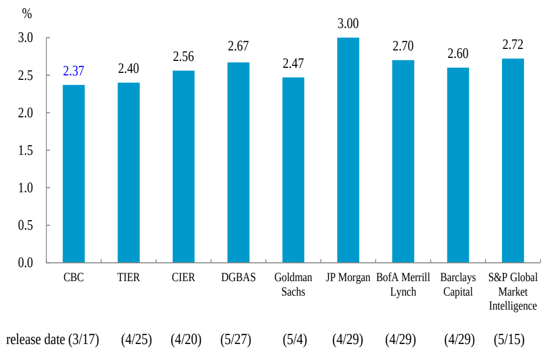
2.1 Global inflationary pressures escalated on account of the Russia-Ukraine conflict dragging on

Major central banks and international institutions' summaries of inflation outlooks at the end of 2021 pointed out that if the pandemic slows down, it will lead to a smaller oil price rise, and will also help deal with port congestion as well as container and chip shortages. Furthermore, labor force participation rates may rebound, easing the pressure of rising wages, and consumer demand for commodities would return to normal. If the benefits of the aforementioned factors are realized, the pressure of rising prices is likely to be mitigated.

However, the outbreak of the Russia-Ukraine war in February 2022 sent a shockwave through global energy and food supply chains, causing international energy and commodity prices to fluctuate at high levels. Consequently, S&P Global Market Intelligence significantly revised up inflation forecasts for major economies in 2022. On condition that the Russia-Ukraine war intensifies and the scope of sanctions against Russia expands, global inflationary pressures may rise further, which warrant attention.

2.2 Taiwan's inflationary spike is still moderate in comparison to Europe and the US

Chart B1.2 Taiwan's CPI inflation rate forecast in 2022



Sources: CBC and major domestic and international institutions.

Against the backdrop of ongoing global supply chain bottlenecks and the conflict between Russia and Ukraine, international commodity prices such as crude oil, cereals, and base metals have skyrocketed, pushing up the cost of imported raw materials in Taiwan and aggravating domestic inflationary pressures. Besides this, the NT dollar exchange rate against the US dollar has weakened recently. If the NT dollar depreciates more against the US dollar compared to the previous year, the pressures of domestic imported inflation could broaden.

Considering that the recent Russia-Ukraine conflict will further push up global inflation, S&P Global Market Intelligence and the DGBAS in May 2022 raised their forecasts for Taiwan's 2022 CPI inflation rate to 2.72% and 2.67%, respectively. Other major institutions also predicted that CPI inflation in Taiwan will be above 2% (Chart B1.2), still lower than those in Singapore (4.75%) and South Korea (4.36%). Nevertheless, unlike Europe and the US, which are seeing significant increases in inflation because of severe supply-demand imbalances, Taiwan's inflation mainly results from supply-side shocks. Therefore, the annual growth rate of Taiwan's CPI in 2022 may fall back in the middle of the year as the gain in crude oil prices slows down.

3. Possible impact of rising inflation on economic recovery and measures taken by Taiwanese authorities

3.1 High and persistent inflation in some economies might impact their consumer confidence and curb economic recovery

High and persistent inflation in some European economies and the US has weighed heavily on their consumer purchasing power. Moreover, labor shortages have fed into rising wages, which could be passed on to consumer prices. As a consequence, inflation expectations would be formed, causing a wage-price spiral. In addition, a long-lasting conflict between Russia and Ukraine could further have an influence on global consumer confidence and affect economic growth momentum in major economies (such as the US, the euro area, China, and Japan), thus setting back the global recovery. Facing high global inflation, governments around the world have launched different measures to address its adverse impacts. For example, with the aim of easing high inflationary pressures, major economies, such as the US and the UK, commenced to raise interest rates, and the US also released some of its strategic petroleum reserve.

3.2 The Taiwanese government has actively adopted measures to stabilize prices affected by imported inflation pressures

In the past twenty years, low and stable inflation rates in Taiwan, with the average annual CPI growth rate coming in at 0.96% and average volatility being 1.07%, maintained consumer purchasing power, and cut down uncertainties around fluctuations in relative prices and the level of future prices. This helped curtail distortions in resource allocation efficiency and improve economic efficiency, thereby promoting sustainable economic growth.

Since the second half of 2021, the domestic inflation rate has trended upward under the pressures of imported inflation. Meanwhile, the annual growth rate of the CPI has been above 2% for several months. Nonetheless, compared with countries in Europe and the US, Taiwan’s inflation is still moderate and the government has actively adopted the following price stabilization measures to alleviate the impact on consumers and the domestic economy.

3.2.1 Hiking the policy rates

In view of still-elevated domestic prices, the Bank decided to raise the policy rates by 0.25 percentage points on March 17, 2022 to contain domestic inflation expectations, and achieve the policy objectives of maintaining price stability and sound economic and financial development as a whole.

3.2.2 Cutting tariffs on staple goods, and lowering commodity and business taxes

Considering fluctuations in international energy and commodity prices, the government lowered tariffs on key raw materials as well as commodity and business taxes until the end of June 2022 in order to stabilize the prices of staple goods and reduce operational burdens for businesses.

3.2.3 Keeping prices of household natural gas, bottled gas, and electricity unchanged

With a focus on the cost of living and price stabilization, prices of household natural gas, bottled gas, and electricity in Taiwan will remain unchanged until the end of June 2022. The prices will be reviewed afterwards.

4. Conclusion

Domestic price hikes have been a social concern since the start of 2021. The Taiwanese government has hence adopted relevant measures to stabilize prices. The inflation rate in Taiwan has been relatively low and stable compared to major countries from a long-term perspective, which helps preserve the purchasing power of money and sustain the momentum of economic growth.

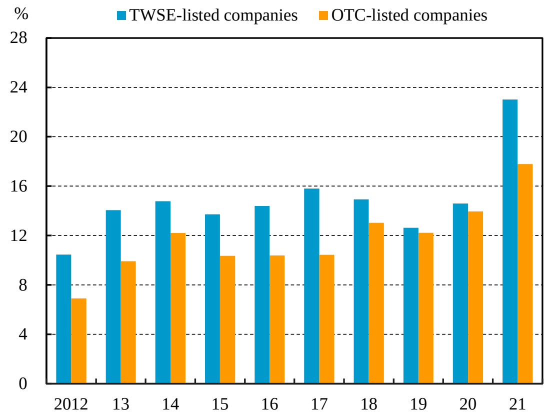
2.2.2 Corporate sector

Although the COVID-19 pandemic had not eased either globally or domestically in 2021, the overall profitability of TWSE- and OTC-listed companies bucked the trend with sharp growth. At the end of 2021, the financial leverage ratio of TWSE-listed companies slightly decreased, while that of OTC-listed companies elevated compared to the end of the previous year. However, the overall short-term debt servicing capacity improved significantly. The NPL ratio for corporate loans granted by financial institutions declined, and the credit quality for the corporate sector was satisfactory.

Revenue and profit of both TWSE- and OTC-listed companies reached record highs despite the impact of the COVID-19 pandemic

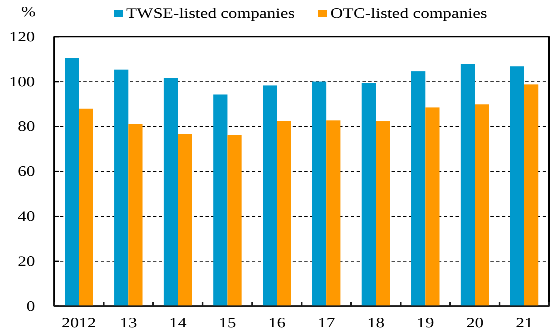
In 2021, even though the pandemic continued to hit the operation of some industries in Taiwan, the performance of the corporate sector set a new high on the back of the steady global economic recovery and the expansion of emerging technology applications. The net operating revenue of TWSE- and OTC-listed companies reached NT$35.05 trillion and NT$2.62 trillion, driving the average ROE to jump to 23.01% and 17.78% from 14.60% and 13.95%, respectively, in the previous year (Chart 2.27). Both revenue and profit of listed companies reached historical highs, and the overall profitability ascended remarkably.

Chart 2.27 Return on equity in corporate sector



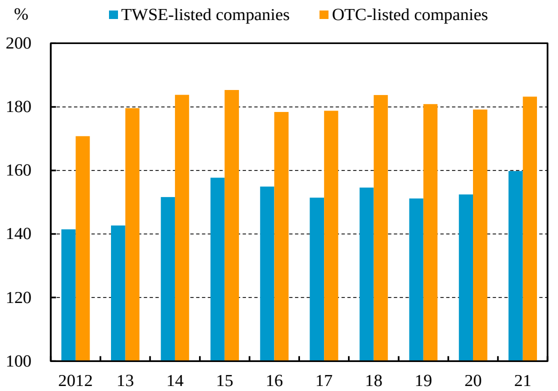
Note: Return on equity = net income before interest and tax/average equity.
Source: TEJ.

Chart 2.28 Leverage ratios in corporate sector



Note: Leverage ratio = total liabilities/total equity.
Source: TEJ.

Chart 2.29 Current ratios in corporate sector



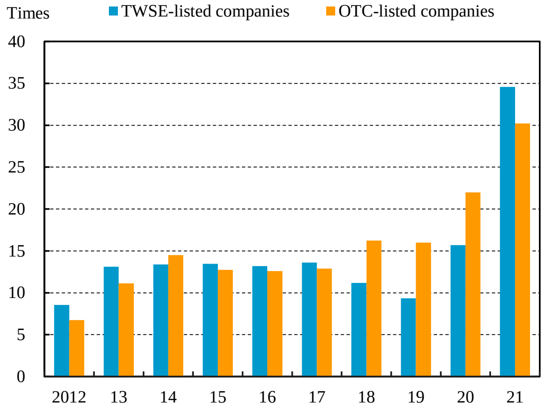
Note: Current ratio = current assets/current liabilities.
Source: TEJ.

Leverage ratio for TWSE-listed companies decreased slightly, and that for OTC-listed companies increased. However, the overall short-term debt servicing capacity improved significantly

At the end of 2021, the average leverage ratio for TWSE-listed companies slightly dropped to 106.85% from 107.85% a year earlier primarily because of a substantial surge in earnings. Nevertheless, the ratio for OTC-listed companies climbed from 89.88% at the end of the previous year to 98.81% (Chart 2.28), mainly attributable to business operational needs which induced an increase in the issuance of CP and corporate bonds.

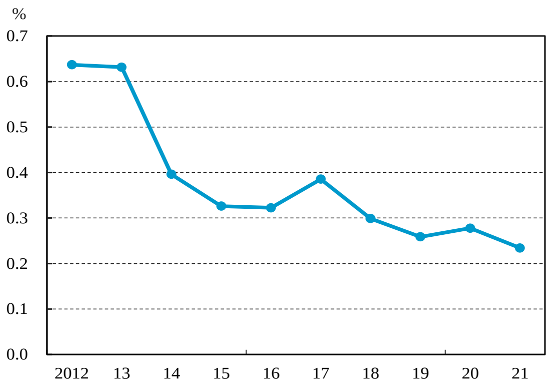
At the end of 2021, the current ratios for TWSE- and OTC-listed companies rose slightly to 159.79% and 183.21% from 152.43% and 179.14%, respectively, a year earlier (Chart 2.29), and their interest coverage ratios sharply climbed to 34.58 times and 30.23 times from 15.70 times and 21.99 times, respectively, (Chart 2.30) owing to a substantial increase in profits. Overall, the short-term debt servicing capacity for listed companies was significantly improved.

Chart 2.30 Interest coverage ratios in corporate sector



Note: Interest coverage ratio = income before interest and tax/interest expenses.
Source: TEJ.

Chart 2.31 NPL ratio of corporate loans



Source: JCIC.

The NPL ratio of the corporate sector fell, and the credit quality of corporate loans was satisfactory

The NPL ratio for corporate loans[27] from financial institutions dropped to a new low of 0.23% at the end of 2021 from 0.28% a year earlier (Chart 2.31). The overall credit quality for the corporate sector was satisfactory.

[27] The data for the corporate sector herein are on the basis of listed and unlisted corporations provided by the Joint Credit Information Center (JCIC), excluding the data of overseas branches of domestic banks.

2.2.3 Household sector

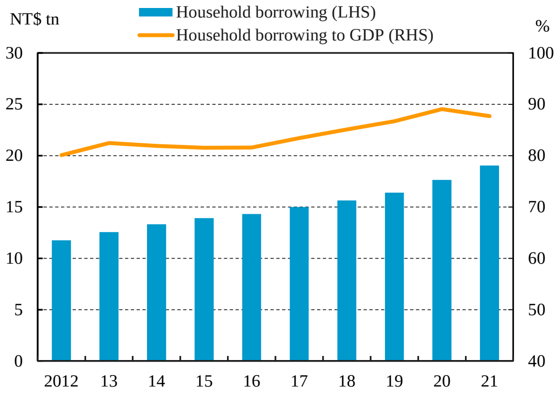
The balance of total household borrowing expanded continually, while household indebtedness slightly decreased in 2021. Household net worth was enormous, reflecting that the debt servicing capacity of households remained sound. Moreover, the credit quality of household borrowing from financial institutions appeared to be satisfactory.

Household borrowing grew continually, while its proportion to GDP fell

Total household borrowing increased and reached NT$19.04 trillion at the end of 2021, equivalent to 87.69% of annual GDP for the year (Chart 2.32), lower than the 89.04% of the previous year. The main purpose of household borrowing was to purchase real estate, accounting for 62.67%, followed by current operation loans, accounting for 35.06% (Chart 2.33).

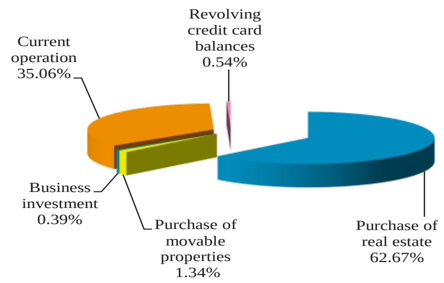
The annual growth rate of household borrowing rose to 7.99% in 2021 from 7.54% in the previous year, mainly attributable to the purposes of real estate purchase and working capital needs. Compared to other countries, the growth rate of total household borrowing in Taiwan was lower than that in South Korea, but higher than those in the US, Australia, and Japan. As for household borrowing to GDP, Taiwan's ratio was lower than those in Australia and South Korea, but higher than those in the US and Japan (Chart 2.34).

Chart 2.32 Household borrowing to GDP



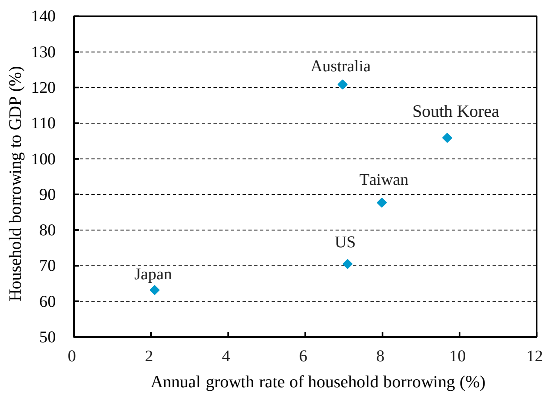
Sources: CBC, JCIC, and DGBAS.

Chart 2.33 Household borrowing by purpose



Note: Figures are as of the end of 2021.
Sources: CBC and JCIC.

Chart 2.34 Household indebtedness in selected countries



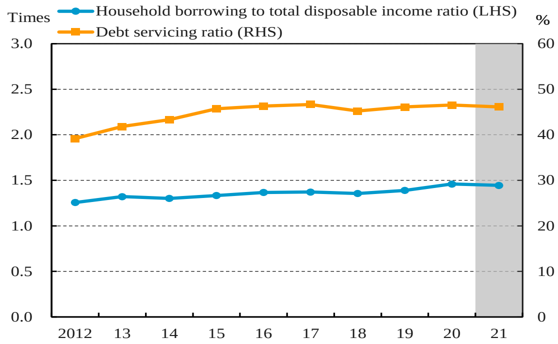
Note: Figures are as of the end of 2021.
Sources: Fed, BOJ, BOK, ABS, IMF, DGBAS, JCIC, and CBC.

Household indebtedness decreased slightly and net worth was high

The ratio of household borrowing to total disposable income[28] slightly dropped to 1.44 in 2021, reflecting a slightly eased household debt burden. Moreover, the debt servicing ratio also dropped marginally to 46.14% (Chart 2.35), indicating that short-term household debt servicing pressure relaxed. In the meantime, an increase in the minimum wage and a pay raise for military personnel, civil servants, and teachers are expected to encourage corporations to follow suit, which will help to further improve household disposable income and debt servicing capacity.

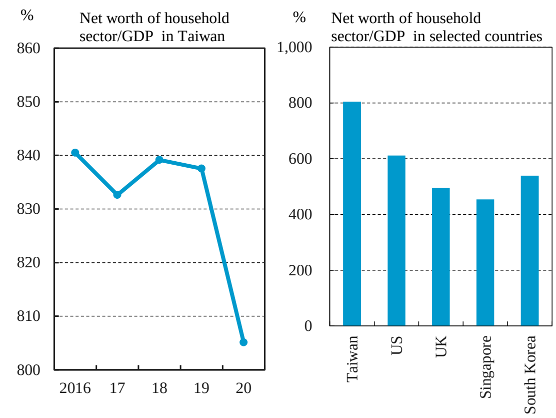
Furthermore, household net worth[29] in Taiwan has been remarkable over the past decades and has held at more than 8 times the GDP in recent years. Compared to other countries, the household net worth to GDP ratio in Taiwan was far higher than those in the UK, the US, South Korea, and Singapore (Chart 2.36), showing that the financial condition of households in Taiwan was sound with fair debt servicing capacity.

Chart 2.35 Household indebtedness and debt servicing ratio



Notes: 1. Total disposable income in shaded area is a CBC estimate.
2. Debt servicing ratio = borrowing service and principal payments/total disposable income.
Sources: CBC, JCIC, and DGBAS.

Chart 2.36 Household net worth to GDP



Notes: 1. The household sector herein includes households and non-profit organizations.
2. In the right panel, figures are as of the end of 2020.
Sources: DGBAS and official websites of selected countries.

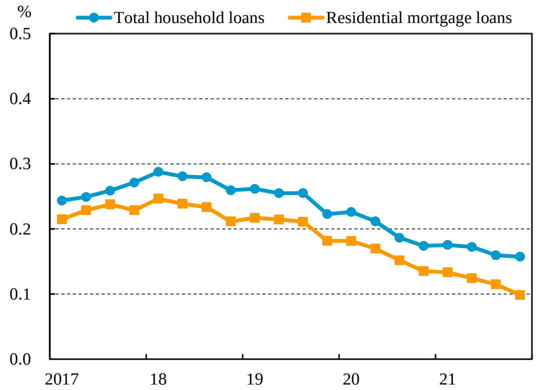
Credit quality of households stayed strong

Economic activity has gradually recovered with the domestic COVID-19 pandemic easing from the second half of 2021 onwards. The unemployment rate fell back to 3.64% in December, and the actual number of employees who needed to reduce working hours as previously

[28] Total disposable income = disposable income + rental expenses + interest expenses.
[29] See Note 7.

determined through negotiations with employers also significantly dropped to 18,272, indicating that the impact of COVID-19 on the household sector shrank noticeably. These factors, coupled with persistently low interest rates, were conducive to reducing household indebtedness. As a result, the NPL ratios of household borrowing and loans for purchase of real estate decreased to a new low of 0.16% and a historical low of 0.10%, respectively (Chart 2.37), reflecting satisfactory credit quality.

Chart 2.37 NPL ratios of household borrowing



Source: JCIC.

2.2.4 Real estate market

Transactions in the housing market thrived and house prices trended upwards in 2021. The mortgage burden slightly increased and the pressure from an overhang of unsold new residential houses remained a concern. Nonetheless, transactions in the housing market grew at a slower pace in early 2022. In terms of housing credit, as the Bank adjusted its targeted macroprudential measures four times from December 2020 onwards and relevant ministries and government agencies also actively adopted measures to curb speculation in the housing market, the growth of construction loans and new housing loans extended by banks has slowed since February and July 2021, respectively; meanwhile, banks' risk management of real estate loans remained satisfactory.

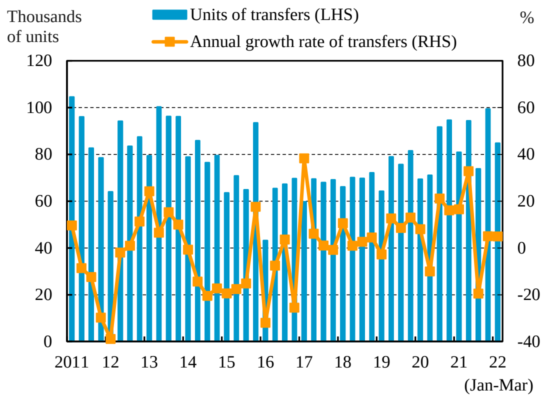
Transactions in the real estate market thrived but trading volumes grew at a slower pace

In the first half of 2021, owing to rising demand for houses around industrial parks and buoyant market expectation for house prices to rise amid booming exports and strong private investments as well as a lower base period, the total number of building ownership transfers substantially increased by 24.77% compared to the same period of the previous year. However, in 2021 Q3, affected by the upgrade of the COVID-19 alert to level 3, the total number of building ownership transfers decreased sharply by 19.53% over the same period of the previous year. With the domestic COVID-19 pandemic easing, loosened restrictions, and steady economic growth, the housing market recovered rapidly and the annual growth rate rebounded to 5.01% in 2021 Q4. In 2021, the total number of building ownership transfers reached 348 thousand units, a record high since 2014, with an annual growth rate of 6.62% (Chart 2.38).

Since December 2020, the Bank has adjusted its targeted macroprudential measures regarding real estate loans four times, tightening loan standards of those loans under regulation. Coupled with the measures successively launched by the relevant ministries and agencies to curb speculation in the housing market, housing transactions grew at a slower pace in early 2022, while the annual growth rate of the total number of building ownership transfers dropped to 4.88% for the period of January to March (Chart 2.38).

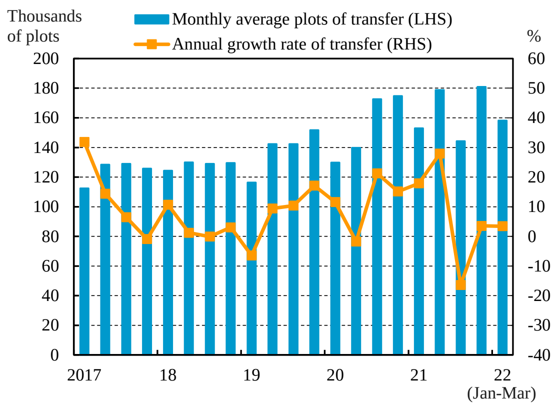
Regarding land transactions, amid a buoyant housing market, and boosted by growing land demand from manufactures seeking to expand their factories, coupled with the active purchase of vacant land by the real estate industry and increased domestic real estate investments by life insurance companies, the total number of land ownership transfers rose by 6.50% compared to the previous year. From early 2022 onwards, as the real estate industry gradually turned from optimism to prudence about the outlook of the housing market, the average number of land ownership transfers from January to March was slightly lower than that of the same period in 2021, with the annual growth rate dropping to 3.42% (Chart 2.39).

Chart 2.38 Number and growth of building transfers



Source: *Monthly Bulletin of Interior Statistics*, MOI.

Chart 2.39 Land transfers for transaction and annual growth rate



Note: Figures are the monthly average of each year. Data of 2022 are the monthly average for the period of January to March.
Source: *Monthly Bulletin of Interior Statistics*, MOI.

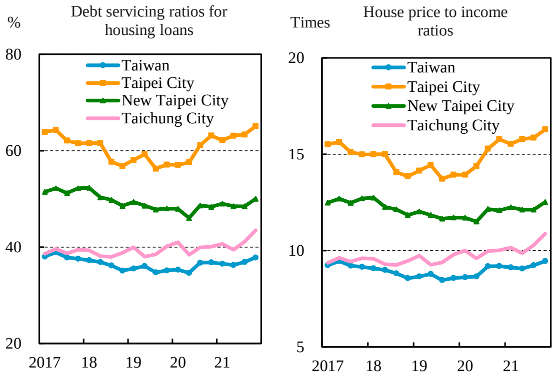
Real estate prices reached a new record high

The national housing price index released by the Ministry of the Interior (MOI) continued to rise gradually from early 2021 onwards and reached a record high of 117.50 in Q4. The Sinyi (existing) and Cathay (newly built) housing price indexes also trended upwards to hit historical highs in 2022 Q1.

Mortgage burden increased mildly

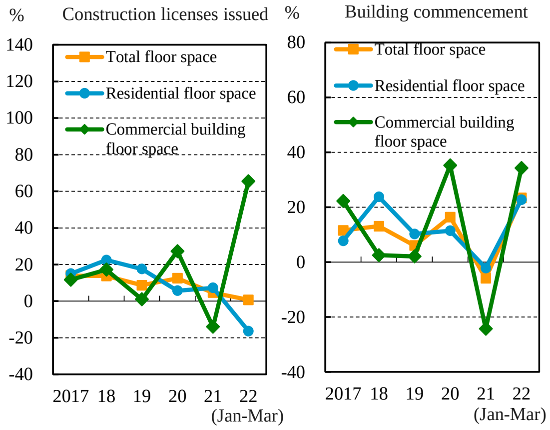
The debt servicing ratio for housing loans rose mildly quarter by quarter in 2021 and reached 37.83% in Q4 with an increase of 1.02 pps from the previous year. Among them, Taipei City showed the heaviest mortgage burden with its ratio registering 65.09% (Chart 2.40, left panel). Taiwan's house price to income ratio also rose to 9.46 times in 2021 Q4 (Chart 2.40, right panel), increasing 0.26 times year on year.

Chart 2.40 Debt servicing ratios for housing loans and house price to income ratios



Notes: 1. Debt servicing ratio for housing loans = median monthly housing loan payment/median monthly household disposable income.
2. House price to income ratio = median house price/median annual household disposable income.
Source: Statistic on Housing Affordability, MOI.

Chart 2.41 Annual growth rates of floor space of construction licenses issued and construction commencement



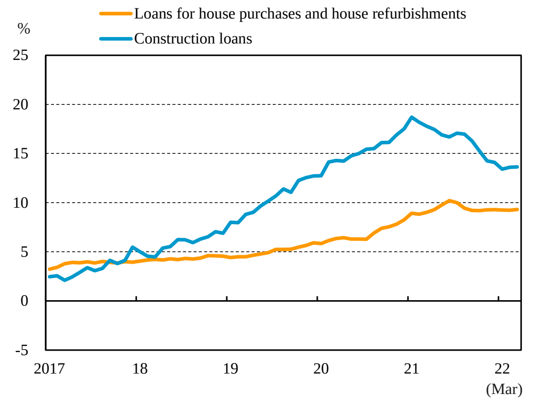
Note: Commercial building includes buildings for commerce, industry, storage, business and service.
Source: *Monthly Bulletin of Interior Statistics*, MOI.

The total floor space of construction licenses issued and building commencement stayed at high levels, while pressure from the overhang of unsold newly built residential houses remained

With an abundance of new residential housing projects open for pre-sale, the total floor space of construction licenses issued increased by 4.59% year on year in 2021, and marginally increased by 0.69% in 2022 Q1 (Chart 2.41, left panel). Nonetheless, the total floor space of construction commencement decreased by 5.87% in 2021 mainly because of a higher base period as mass residential and commercial buildings broke ground in 2020, but then increased by 23.39% year on year in 2022 Q1 (Chart 2.41, right panel). Additionally, the total floor space of usage licenses issued slightly decreased by 0.79% year on year in 2021, but turned to increase by 1.95% in 2022 Q1.

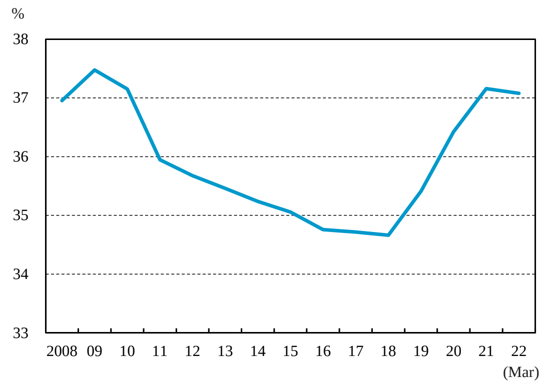
According to statistics from the Ministry of the Interior (MOI), the number of unsold newly built residential houses remained at a high level of 70.1 thousand units in 2021 Q2. Meanwhile, the annual number of construction projects commenced for new residential buildings has been more than 100 thousand units from 2018 onwards. Although the number of unsold newly built residential houses mildly reduced in 2020, the pressure to sell such houses remained given their enormous supply and high prices.

Chart 2.42 Annual growth rates of real estate loans



Source: CBC.

Chart 2.43 Real estate loans to total loans



Notes: 1. Real estate loans refer to the aggregate amount of loans for house purchases, house refurbishments, and construction loans.
2. Figures are end-of-year data, except for figure of 2022, which is end-March data.

Source: CBC.

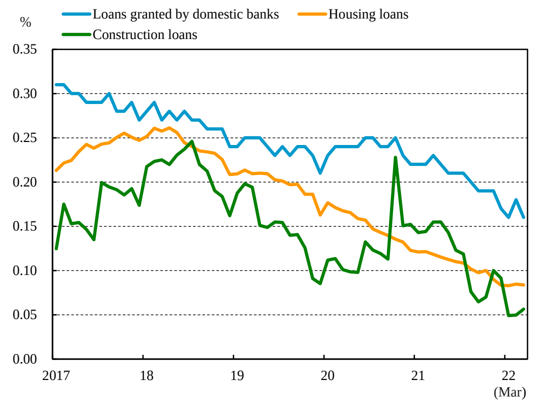
Real estate loans grew at a slower pace and mortgage interest rates rose slightly

With the Bank's four amendments to its targeted macroprudential measures regarding real estate loans that lowered the LTV ratio cap of the regulated loan types, the outstanding construction loans granted by banks[30] grew slowly from February 2021 onwards and the annual growth rate declined to 13.64% at the end of March 2022. From July 2021 onwards, the annual growth rate of outstanding loans for house purchases and refurbishments also trended downward gradually and registered 9.30% at the end of March 2022 (Chart 2.42). The aggregate amount of the aforementioned real estate loans amounted to NT$11.90 trillion and their share of total loans mildly declined to 37.08% at the end of March 2022 (Chart 2.43). Regarding the interest rate of real estate loans, owing to the increase of first-time home buyers usually eligible for lower interest rates, the average interest rate for new housing loans granted by the dominant five banks trended downward from early

[30] Refers to domestic banks and the local branches of foreign and China's banks.

2021 onwards and dropped to a low level of 1.346% in September but rose gradually to 1.378% in March 2022 as a result of the Bank urging banks to fulfill the risk pricing principle and in line with the Bank's policy rate hiked in March.

Chart 2.44 NPL ratios of housing loans and construction loans



Note: NPLs herein exclude non-accrual loans.
Source: CBC.

Banks' risk management on real estate loans remained satisfactory

Since the Bank's targeted macroprudential measures regarding real estate loans did not affect the loan demand of first-time and second-time (out of a need to change homes) buyers, the average LTV ratio for new housing loans rose quarter by quarter and the annual average registered 72.51% in 2021, slightly higher than the 71.79% in 2020. However, following the Bank's successive reductions of the LTV cap to 40%, the average LTV ratio for the regulated loans newly granted by banks dropped significantly. Unsold housing unit loans registered the lowest level among the loan types, with a ratio of 38.14% in March 2022.

Moreover, NPL ratios of housing loans and construction loans granted by domestic banks dropped to 0.08% and 0.06%, respectively, at the end of March 2022. Both of the ratios were much lower than the 0.16% NPL ratio of total loans (Chart 2.44). In addition, all of the 36 domestic banks passed the stress tests requested by the FSC in 2021, which revealed that the risk management of domestic banks on real estate loans remained satisfactory.

The government actively endeavored to implement the Healthy Real Estate Market Plan to foster a sound real estate market

Since the government initiated the Healthy Real Estate Market Plan in December 2020, the Bank has adjusted targeted macroprudential measures regarding real estate loans four times to prevent excessive inflows of credit to the housing market. The FSC also conducted a targeted examination toward mortgage loans and continued to strengthen the management of real estate lending or guarantee business of banks and bills finance companies, as well as raising risk weights on mortgage loans in February 2022 to enhance their risk management.

In addition, the MOI, the Fair Trade Commission, the Consumer Protection Committee and local governments have consecutively initiated joint audits targeting pre-sold houses and amended the regulations to refine the property transaction price registration scheme and curb pre-sold housing speculation. The Ministry of Finance also actively amended regulations to prevent short-term speculation and tax evasion, amending the consolidated land and housing income tax and other measures from July 2021 onwards. All of the abovementioned efforts contributed to fostering a sound real estate market. Notwithstanding, with part of the authority and responsibility of real estate market management resting with local governments, the overall policy effectiveness relies on cooperation between central and local governments to carry out and improve relevant measures to achieve the goals of sound development of the real estate market and fulfill housing justice.

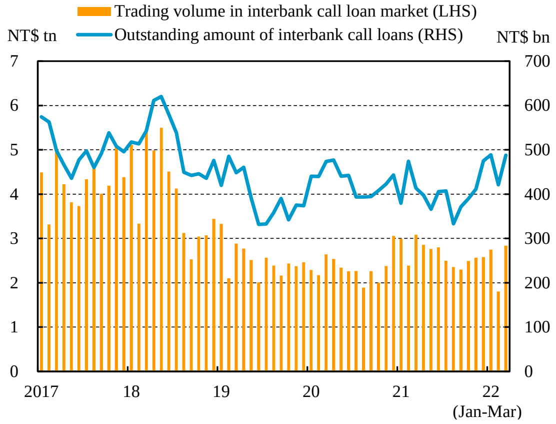
III. Financial system assessment

3.1 Financial markets

In 2021, the outstanding amount of interbank call loans declined, while their trading volume expanded. On the other hand, the outstanding amount of bill issuance reached another historical high mainly because of a greater increase in CP, and the trading volume amplified. Meanwhile, the outstanding amount of bond issuance continued to expand, with the greatest increase in international bonds, but the trading volume in the secondary market decreased substantially and the turnover rate of outright bond transactions declined. Short-term market rates stabilized at a low level, while long-term interest rates fluctuated upwards after the Bank raised the policy rates in March 2022, resulting in higher interest rate risks in bond investments. As for stock markets, in 2021, stock indices hit historical highs and then fell back with increasing volatility. Meanwhile, the NT dollar oscillated and appreciated against the US dollar. Nevertheless, in the beginning of 2022, propelled by a stronger US dollar, the NT dollar depreciated, while the volatility remained relatively stable.

3.1.1 Money and bond markets

Chart 3.1 Interbank call loan market

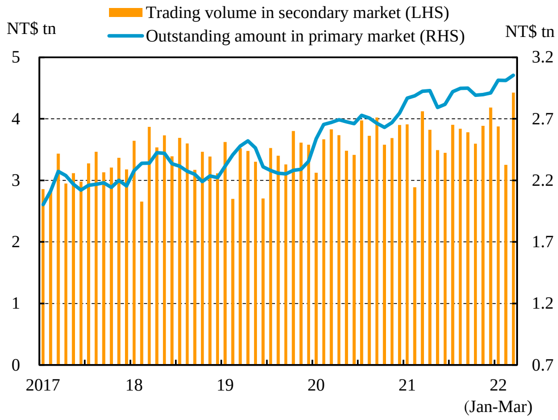


Note: Outstanding amount is the monthly average of daily data.
Source: CBC.

Outstanding amount of interbank call loans declined, while their trading volume expanded

In 2021, owing to the resurgence of domestic pandemic cases, financial institutions became more conservative in extending interbank lending. As a result, the average daily outstanding amount of interbank call loans decreased by 6.68% and registered NT$402.1 billion. However, the trading volume of interbank call loans increased by 12.78% year on year in 2021, given that the proportion of interbank overnight call loans in the market expanded and financial institutions increased the frequency with which they rolled over their interbank borrowing. In 2022 Q1, the average daily outstanding amount of interbank call loans expanded year on year, but their trading volume decreased over the same period (Chart 3.1).

Chart 3.2 Primary and secondary bill markets



Source: CBC.

Outstanding amount of bill issuance hit a new high, propelling the bill trading volume in the secondary market to increase accordingly

The outstanding amount of bill issuance in the primary market reached a record high of NT$2.91 trillion at the end of 2021, increasing by 5.97% year on year. The main reason was that interest rates in the primary market stayed at low levels and attracted corporates to increase CP issuance for fund raising. In 2022 Q1, the outstanding amount of bill issuance continued to grow because of the increase in the issuance of treasury bills and CP (Chart 3.2).

Impelled by the expansion in the primary market, the bill trading volume in the secondary market also increased in 2021. The trading volume increased by 1.66% year on year and amounted to NT$44.87 trillion with CP constituting the largest share of 95.81%. In 2022 Q1, the bill trading volume continued its upward trend over the same period of the previous year (Chart 3.2).

Bond issuance continued to expand, while the trading volume decreased substantially, and the turnover rate of outright bond transactions dropped to a record low

The outstanding amount of bond issuance increased by 7.58% and reached a new high of NT$15.45 trillion at the end of 2021 because interest rates stayed at low levels and attracted corporates and financial institutions to increase bond issuance so as to lock in long term funding costs. Major bonds all saw increasing issuance. Among them, the outstanding amount of international bond issuance increased the most by value and registered an annual growth rate of 9.26%, followed by corporate bonds and government bonds, which increased by 15.35%

and 3.82%, respectively, year on year (Chart 3.3).

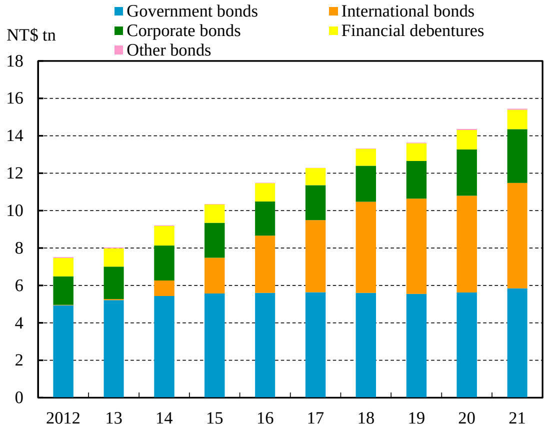
However, the trading volume in the secondary bond market dropped to NT$36.14 trillion in 2021, substantially decreasing by 31.17% year on year (Chart 3.4). This was mainly owing to the fact that major bond market traders such as bills finance companies and securities firms reduced their bond holdings considering that bond yields might rise. Analyzed by trading types, repo transaction volume shrank by 30.01% year on year, and outright transaction volume decreased by 35.52%. As a result, the average monthly outright turnover rate of major bonds decreased continually in 2021 and dropped to a recent low of 2.45%. In 2022 Q1, it declined further to a record low of 2.43%.

Long-term market rates rose markedly, leading to higher interest rate risks on bond investments

In terms of short-term market rates, the interbank overnight call loan rate stabilized at a low level in 2021 and ascended gradually after the Bank raised the policy interest rates and the interest rate on the Bank's certificates of deposit (CDs) in March 2022 (Chart 3.5). However, liquidity in financial markets remained ample.

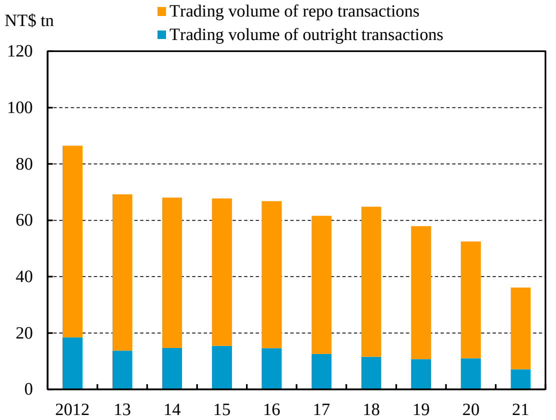
As for long-term market rates, 10-year government bond yields trended upwards in 2021 alongside the movement of US government bond yields. In 2022, the yields rose further and reached a 4-year high of 1.07% on March 28 (Chart 3.5) given that the

Chart 3.3 Total amount of bonds outstanding in the primary market



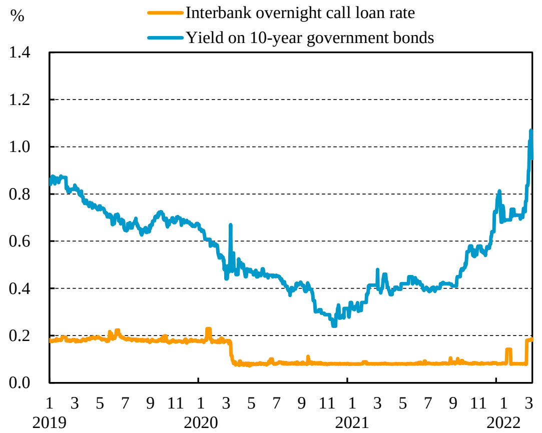
Note: Other bonds include beneficiary securities and foreign bonds.
Source: FSC.

Chart 3.4 Outright and repo transactions in the bond market



Source: CBC.

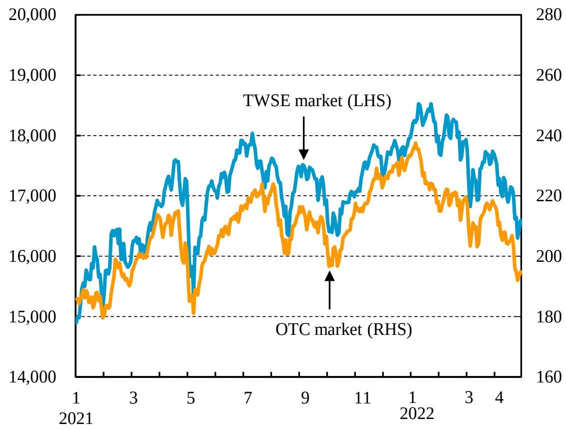
Chart 3.5 10-year government bond yield and interbank overnight rate



Source: Bloomberg.

Bank raised policy interest rates in mid-March and US government bond yields saw a sharp rise. Considering that recent tightening of monetary policies in major economies to curb inflation might put upward pressure on bond yields globally and, in turn, propel 10-year government bond yields to increase further, interest rate risks related to bond investments might elevate and warrant close attention.

Chart 3.6 Taiwan's stock market indices

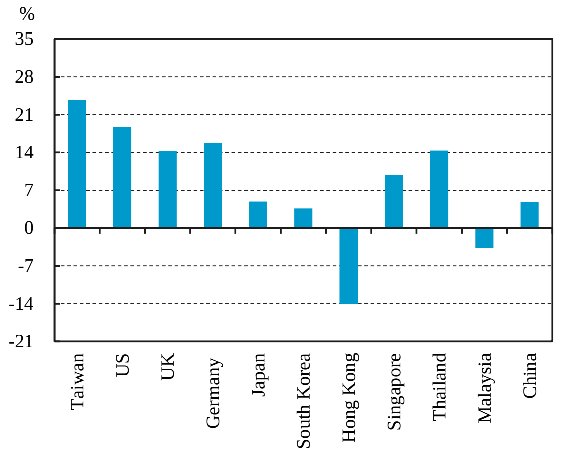


Sources: TWSE and TPEx.

3.1.2 Equity markets

Stock indices reached historical highs before slumping

Chart 3.7 Major stock market performance



Notes: 1. Changes are figures at the end of 2021 compared to those at the end of 2020.
2. Market performance is based on TWSE Weighted Index for Taiwan, DJIA Index for the US, FTSE-100 Index for the UK, DAX Index for Germany, NK-225 Index for Japan, KOSPI Index for South Korea, Hang Seng Index for Hong Kong, Straits Times Index for Singapore, SET Index for Thailand, Kuala Lumpur Composite Index for Malaysia, and SSE Composite Index for China.

Source: TWSE.

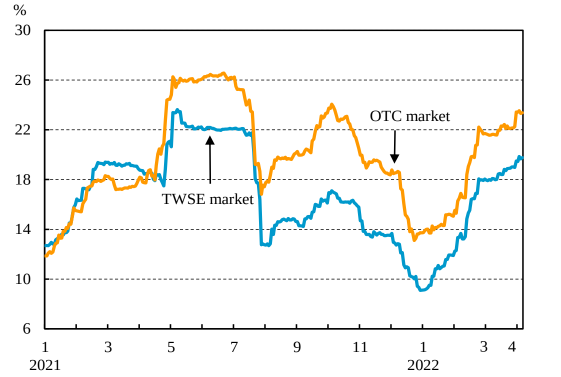
In the beginning of 2021, benefiting from strong exports and better-than-expected economic performance in Taiwan, as well as US stock indices repeatedly reaching new highs, the TAIEX of the TWSE market went up steadily. Owing to recurring outbreaks of the pandemic, the TAIEX saw a sudden drop in May. However, affected by sequences of positive/negative messages, the TAIEX fluctuated with an upward trend (Chart 3.6), posting an increase of 23.66% year on year and surging higher than the major indices in international stock markets (Chart 3.7). The Taipei Exchange Capitalization Weighted Stock Index (TPEX) of the OTC market closely tracked the movements of the TAIEX, posting an increase of 29.03% year on year in 2021. In 2022 Q1, affected by US policy interest rate hikes, the Russia-Ukraine war, and the resurgence of the pandemic in China, the volatility in international stock markets increased dramatically. Therefore, the TAIEX dropped from its high level, and the TPEX also followed the same trend (Chart 3.6).

Volatility in the stock markets increased sharply and annual turnover rates rose dramatically

Since May 2021, the spread of intensified panic sentiment in financial markets caused by the domestic COVID-19 resurgence drove the volatility of Taiwan's stock prices to surge sharply. However, the volatility of the TWSE and the OTC markets dropped and stabilized in the second half of the year, registering 10.27% and 13.81%, respectively, at the end of the year. From the beginning of 2022, affected by the intensifying fluctuations in global stock markets, the volatility of Taiwan's stock prices expanded again (Chart 3.8).

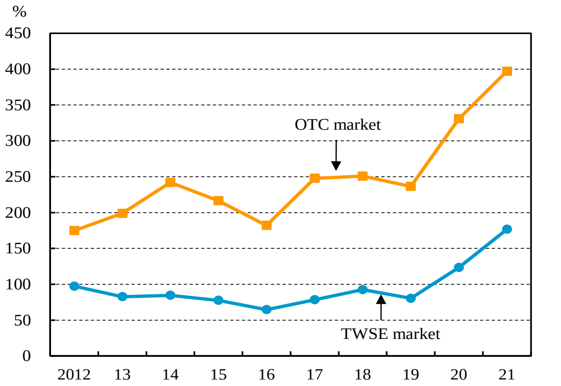
Owing to the booming trading volume of Taiwan's stock markets, the monthly average trading value in both the TWSE and the OTC markets increased to NT$7.69 trillion and NT$1.69 trillion in 2021, respectively, posting increases of 102.15% and 67.75% year on year. Among them, the monthly average trading value of domestic individuals accounted for 69.77% of the total and showed an increase for two consecutive years. Affected by the above factors, the annual turnover rates in terms of trading value also rose to 176.60% and 397.00% in the TWSE and the OTC markets (Chart 3.9), respectively, higher than those in most major international stock markets (Chart 3.10), indicating that Taiwan's stock markets were prosperous and liquidity remained sufficient.

Chart 3.8 Stock price volatility in Taiwan's markets



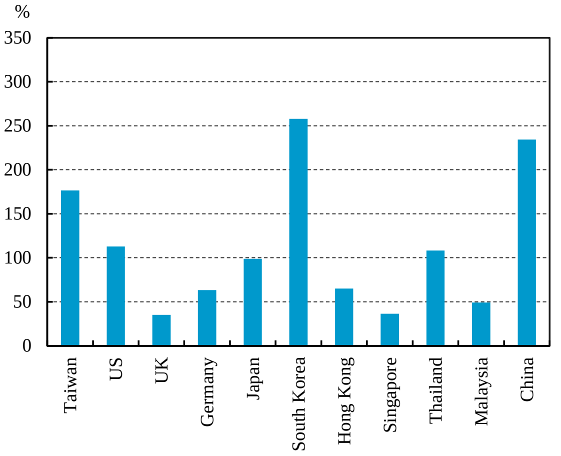
Note: Volatility refers to the annualized standard deviation of 60-day daily index returns.
Sources: TWSE, TPEx, and CBC.

Chart 3.9 Annual turnover rates in Taiwan's stock markets



Sources: TWSE and TPEx.

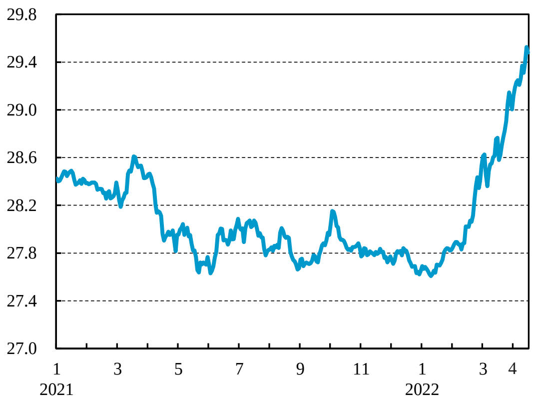
Chart 3.10 Turnover rates in major stock markets



Note: Figures refer to accumulated turnover rates in 2021.
Source: TWSE.

Domestic stock markets were supported by sound economic fundamentals. However, an escalation of the COVID-19 pandemic, along with global geopolitical risks and uncertainties surrounding monetary policies in major economies, may affect the global economy and international stock markets, which could in turn impact domestic stock markets. The developments of the above issues warrant close attention.

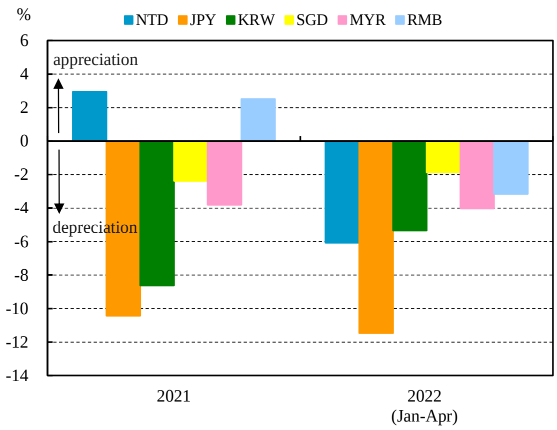
Chart 3.11 NTD/USD exchange rate



Source: CBC.

3.1.3 FX market

Chart 3.12 Exchange rate changes of major Asian currencies against the US dollar



Source: CBC.

The NT dollar turned to depreciate after appreciating against the US dollar, while the trading volume of the FX market decreased moderately

In 2021, Taiwan's economy performed remarkably well and its exports repeatedly hit new highs. Strong demand for US dollars by exporters, coupled with inflows of foreign capital to invest in domestic stock markets, led the NT dollar to appreciate against the US dollar. Following this upward trend, the NT dollar stood at 27.690 at the end of 2021, rising by 2.95% over the end of the previous year. Nevertheless, in the beginning of 2022, the US dollar began an uptrend caused by US policy interest rate hikes and uncertainties stemming from rising geopolitical tensions. As a consequence, the NT dollar turned to depreciate against the US dollar (Chart 3.11), depreciating by 6.07% at the end of April compared to the end of 2021.

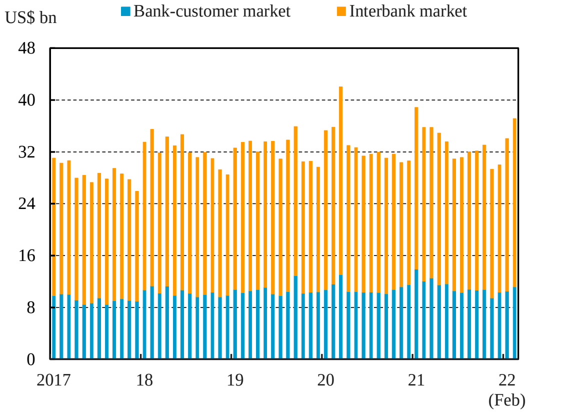
In 2021, owing to appropriate domestic pandemic control and sound economic fundamentals, the extent of NT dollar appreciation against the US dollar was slightly more than the RMB; meanwhile, most other major Asian currencies depreciated against the US dollar. However, from January to April 2022, the rising trend of the US dollar caused the depreciation of most major Asian currencies including the NT dollar (Chart 3.12).

The scale of trading in Taiwan's FX market slightly decreased in 2021, with average daily trading volume amounting to US$33 billion from US$33.1 billion a year earlier, or declining by 0.30%, primarily because of a decrease in interbank transactions (Chart 3.13).

NT dollar exchange rate volatility remained relatively stable

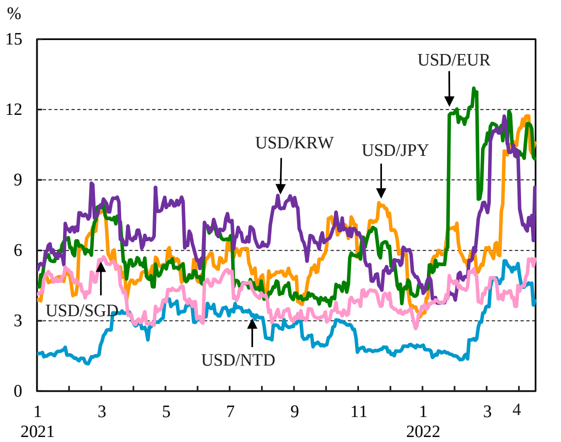
The volatility of the NT dollar exchange rate against the US dollar fluctuated between 1.17% and 3.93% in 2021 and registered an annual average of 2.55%, which was relatively lower than those in other major currencies. From January to April 2022, the volatility of the NT dollar exchange rate rose and registered between 1.34% and 5.56%. Compared to major currencies such as the Japanese yen, the euro, the Singapore dollar, and the Korean won, the NT dollar exchange rate remained relatively steady against the US dollar (Chart 3.14).

Chart 3.13 FX market trading volume



Notes: 1. Trading volume is the monthly average of daily data.
2. The latest data for trading volume are as of February 2022.
Source: CBC.

Chart 3.14 Exchange rate volatility of various currencies versus the US dollar



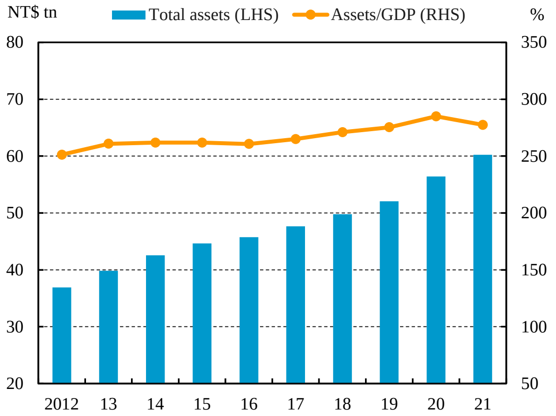
Note: Volatility refers to the annualized standard deviation of 20-day daily returns.
Source: CBC.

3.2 Financial institutions

3.2.1 Domestic banks

The total assets of domestic banks[31] continually expanded in 2021 but at a slower pace. Asset quality improved and exposures to China continuously decreased. The sectoral concentration in corporate loans declined moderately, while loans related to real estate increased slightly. The estimated value at risk (VaR) of market risk exposures decreased and the impacts on capital adequacy ratios were limited. Liquidity in the banking system was ample, and overall liquidity risk remained relatively low. The profitability of domestic banks turned to increase in 2021, and the average capital adequacy ratio rose, indicating satisfactory capacity to bear losses.

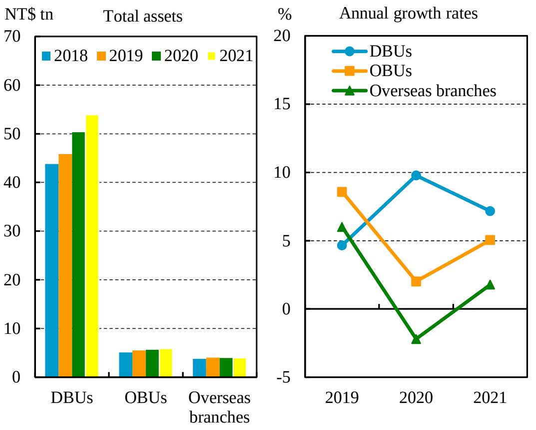
Chart 3.15 Total assets of domestic banks



Note: Figures from 2012 forward are on the TIFRSs basis.
Sources: CBC and DGBAS.

Total assets kept growing, but at a slower pace

Chart 3.16 Total assets of domestic banks by sector



Note: Figures for total assets include interbranch transactions.
Source: CBC.

The total assets of domestic banks kept growing and reached NT$60.23 trillion at the end of 2021, equivalent to 277.41% of annual GDP (Chart 3.15). Nevertheless, the annual growth rate of the total assets rose at a slower pace of 6.78%. Broken down by sector, the annual asset growth rates of offshore banking units (OBUs) and overseas branches trended upwards, whereas those of domestic banking units (DBUs) trended down (Chart 3.16).

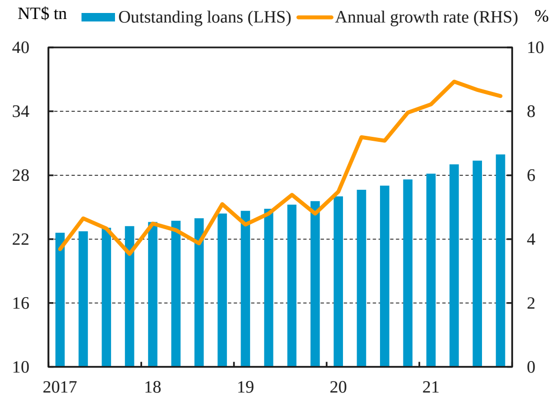
[31] Includes Agricultural Bank of Taiwan.

Credit risk

Customer loans growth accelerated

Customer loans granted by the DBUs of domestic banks stood at NT$29.95 trillion at the end of 2021, accounting for 49.73% of total assets with an annual growth rate of 8.48% (Chart 3.17). Among them, the annual growth rate of household borrowing slightly declined to 8.68%, while the annual growth rate of corporate loans rose to 8.92% owing to the undertaking of relief loans and rising funding demand after the pandemic eased.

Chart 3.17 Outstanding loans in domestic banks

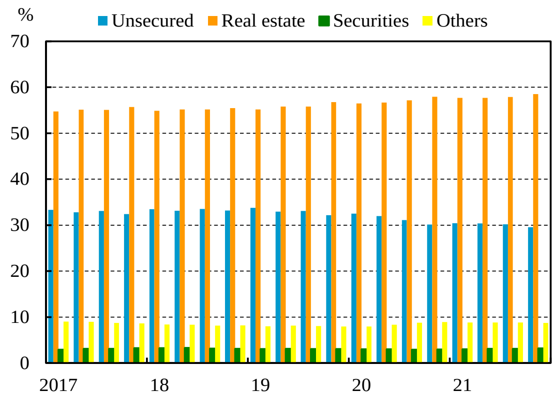


Note: Loans of OBUs and overseas branches are excluded.
Source: CBC.

The share of real estate-secured credit continuously increased

At the end of 2021, real estate-secured credit granted by domestic banks reached NT$20.85 trillion, accounting for 58.49% of total credit[32] (Chart 3.18). Transactions in the housing market thrived and house prices trended upwards in 2021. However, considering that the pressure from the increased stock of unsold new housing units remained and the government had actively introduced relevant measures to curb market speculation, the credit risk related to the real estate sector is still high, warranting continuous monitoring.

Chart 3.18 Credit by type of collateral in domestic banks



Source: CBC.

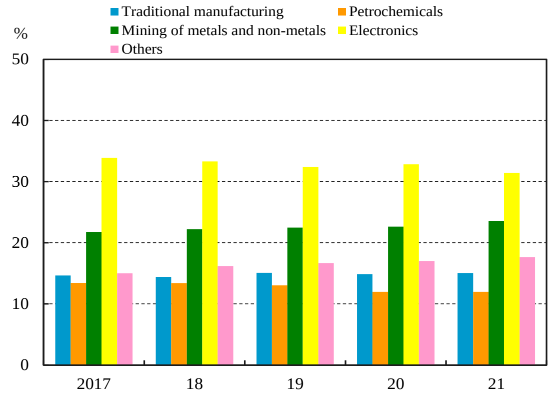
Credit concentration in corporate loans slightly decreased

For the DBUs of domestic banks, corporate loans stood at NT$12.85 trillion at the end of 2021, of which loans to the manufacturing sector accounted for the largest share at 36.63%. Among the manufacturing sector,[33] the largest proportion of loans was in the electronics industry with

[32] The term "credit" herein includes loans, guarantee payments receivable, and acceptances receivable.
[33] Loans to the manufacturing sector are divided into five categories by industry, including: (1) electronics, (2) mining of metals and non-metals, (3) petrochemicals, (4) traditional manufacturing, and (5) others.

a share of 31.42%, showing a slight decrease over the previous year. This reflected the fact that credit concentration in corporate loans reduced mildly (Chart 3.19).

Chart 3.19 Exposure to the manufacturing sector by domestic banks



Notes: 1. Exposure to each sector = loans to each sector/loans to the whole manufacturing sector.
2. Exposures of OBUs and overseas branches were excluded.

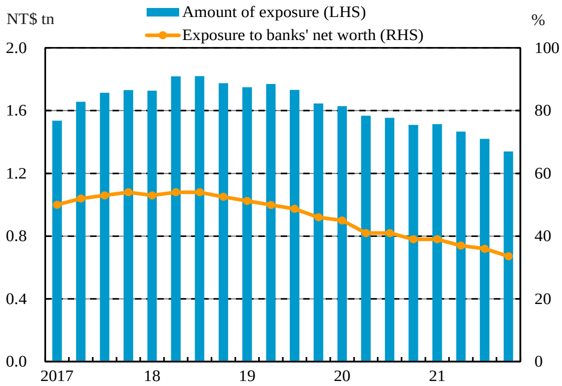
Source: CBC.

Exposures to China continued to decrease, but potential risks remained high

At the end of 2021, the statutory exposures of domestic banks to China stood at NT$1.34 trillion, decreasing by 11.22% from a year earlier mainly owing to a decline in credit granted. The above exposures as a percentage of their previous year-end final net worth also fell to a new low of 34% (Chart 3.20).

Although domestic banks' exposure to China remained at a low level, considering the slowdown in China's short-term economic growth, coupled with the impact of the Russia-Ukraine war disrupting the global supply chain on which it depends, the potential economic and financial risks in China are still high; therefore, they warrant continual close attention.

Chart 3.20 Exposures of domestic banks to China



Source: FSC.

Asset quality improved

The outstanding classified assets[34] of domestic banks decreased by 6.37% from a year earlier and stood at NT$449.2 billion at the end of 2021. Therefore, the average classified asset ratio stood at 0.75%, slightly decreasing by 0.01 pps from the end of the previous year (Chart 3.21), showing that the asset quality of domestic banks improved. Meanwhile, the expected losses of classified assets[35] decreased by NT$6.7 billion from a year earlier to NT$45.2 billion, accounting for 8.91% of allowances for doubtful accounts and loss provisions, indicating that

[34] Assets of domestic banks are broken down into five categories: normal, special mention, substandard, doubtful, and loss. The term "classified assets" herein includes all assets classified as the latter four categories.

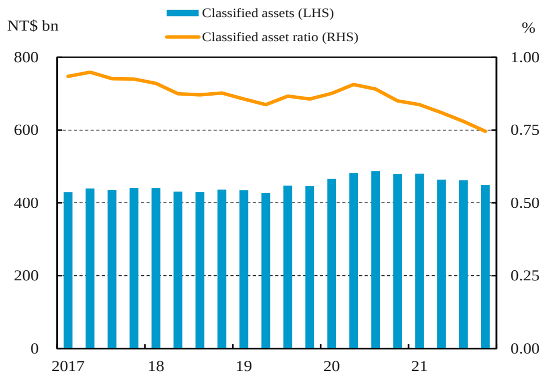
[35] Loss herein refers to the losses from loans, acceptances, guarantees, credit cards, and factoring without recourse.

domestic banks had sufficient provisions to cover expected losses without eroding equity.

The outstanding NPLs of domestic banks registered NT$59.4 billion at the end of 2021, decreasing by 15.09% from the end of the previous year. The average NPL ratio saw a decline to 0.17% (Chart 3.22), continuing to hit a record low. In addition, at the end of 2021, because of a greater increase in loans than in the allowance for doubtful accounts, the loan coverage ratio declined slightly to 1.36%. However, the NPL coverage ratio rose sharply to 781.47% (Chart 3.23) on account of a greater decrease in NPLs. The overall capability of domestic banks to cope with potential loan losses remained satisfactory.

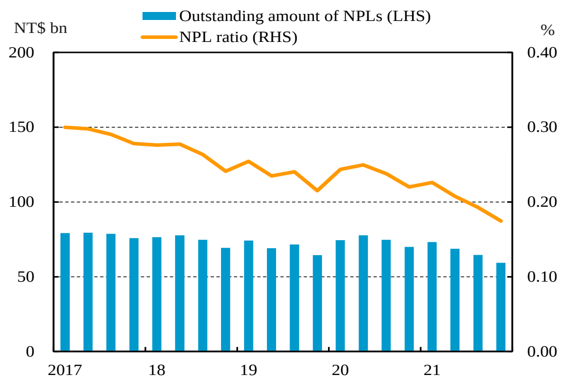
Since the outbreak of the pandemic in early 2020, in order to assist the harder-hit enterprises and individuals and to tide them over, domestic banks have successively provided various relief loans, with a scale of more than 570,000 applicants and the amount exceeding NT$4.88 trillion by late December 2021. Considering that uncertainties surrounding the global and domestic pandemic outlooks remain high and that the relief loans extended by domestic banks in line with government policies will be withdrawn eventually, it is important to closely monitor banks' credit risk management of relief loans and the related impacts on credit quality (Box 2).

Chart 3.21 Classified assets of domestic banks



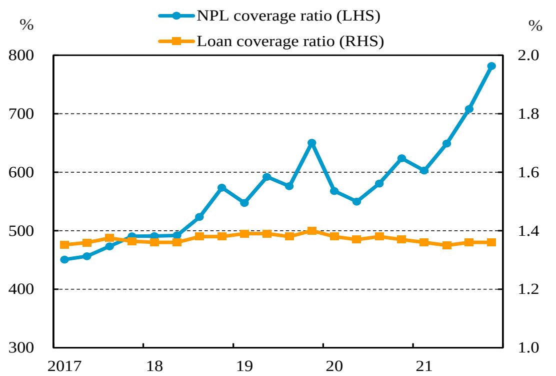
Note: Classified asset ratio = classified assets/total assets.
Source: CBC.

Chart 3.22 NPLs of domestic banks



Note: Excludes interbank loans.
Source: CBC.

Chart 3.23 NPL coverage ratio and loan coverage ratio of domestic banks



Notes: 1. NPL coverage ratio = total provisions/non-performing loans.
2. Loan coverage ratio = total provisions/total loans.
3. Excludes interbank loans.
Source: CBC.

Market risk

Estimated value-at-risk for market risk exposures decreased

Based on the Bank's VaR model,[36] the estimated total VaR for market risk exposures of domestic banks stood at NT$153.1 billion at the end of 2021, decreasing by NT$6.7 billion or 4.19% compared to a year earlier (Table 3.1). Among the market risk exposures, the interest rate VaR declined by 8.17% year on year in 2021. This mainly resulted from a shrinkage in short-term bond yield volatility because of a relative easing of pandemic-induced fear in financial markets. Meanwhile, the equities VaR rose by 49.53%, reflecting a substantial increase of 43.97% in the net position of equity securities. The FX VaR diminished by 2.94%, owing to reductions in the net position of FX and decreasing volatility in the NT dollar exchange rate against the US dollar (Table 3.1).

Since February 2022, the deterioration in the conflict between Russia and Ukraine and monetary policy tightening adopted by central banks in major economies owing to rising inflationary pressures have exacerbated volatilities in both US bond yields and international stock markets. These factors could in turn increase the VaR for relevant exposures of domestic banks and therefore warrant close attention.

Table 3.1 Market risks in domestic banks

Unit: NT$ bn

Type of risk	Item	End-Dec. 2020	End-Dec. 2021	Changes	
				Amount	pps
Foreign exchange	Net position	201.8	200.2	-1.6	-0.79
	VaR	3.4	3.3	-0.1	-2.94
	VaR/net position (%)	1.68	1.65		-0.03
Interest rate	Net position	1,986.5	2,001.3	14.8	0.74
	VaR	145.7	133.8	-11.9	-8.17
	VaR/net position (%)	7.33	6.69		-0.64
Equities	Net position	78.0	112.3	34.3	43.97
	VaR	10.7	16.0	5.3	49.53
	VaR/net position (%)	13.72	14.25		0.53
Total VaR		159.8	153.1	-6.7	-4.19

Source: CBC.

[36] For more details about the Bank's VaR model, please see CBC (2016), Box 2, *Financial Stability Report*.

The impacts of market risk on capital adequacy ratios were limited

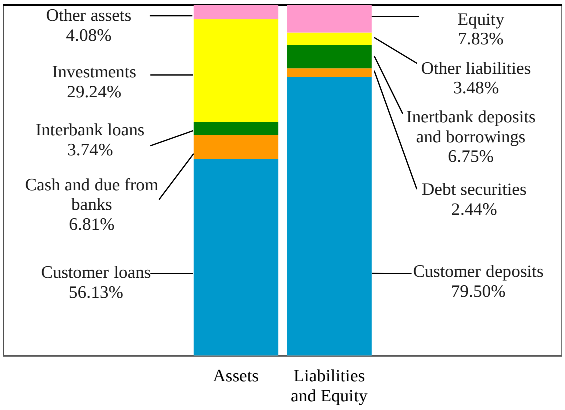
According to the estimation mentioned above, the total VaR would lead to a decrease of 0.33 pps[37] in the average capital adequacy ratio of domestic banks, causing the ratio to drop from the current 14.80% to 14.47%. Nevertheless, it would still be higher than the statutory minimum of 10.5%.

Liquidity risk

Liquidity in the banking system remained ample

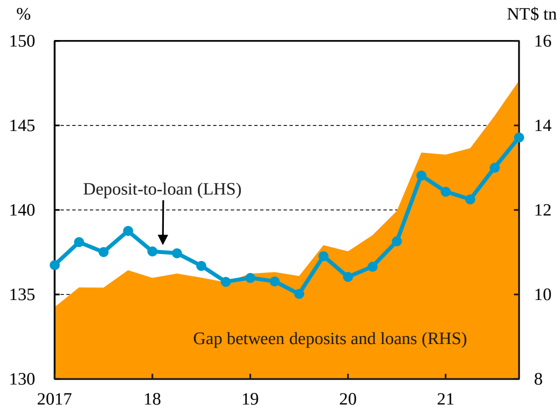
The asset and liability structure of domestic banks remained roughly unchanged in 2021. For the sources of funds, customer deposits, which tend to be relatively stable, still made up the largest share with 79.50% of the total. As for the uses of funds, customer loans accounted for the biggest share with 56.13% (Chart 3.24). At the end of 2021, the average deposit-to-loan ratio of domestic banks rose to 144.30%, and the funding surplus (i.e., deposits exceeding loans) increased to NT$15.06 trillion. The overall liquidity of domestic banks remained abundant (Chart 3.25).

Chart 3.24 Asset/liability structure of domestic banks



Notes: 1. Figures are as of end-December 2021.
2. Equity includes loss provisions. Interbank deposits include deposits with the CBC.
Source: CBC.

Chart 3.25 Deposit-to-loan ratio of domestic banks



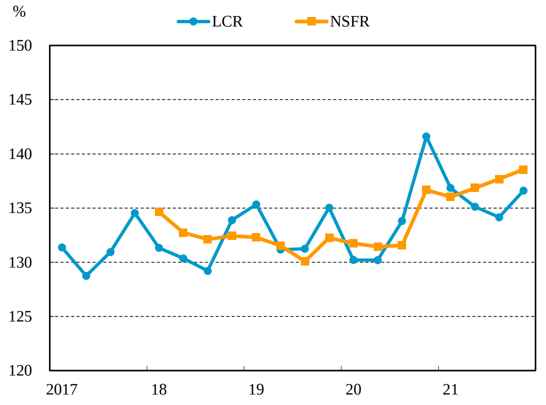
Note: Deposit-to-loan ratio = total deposits/total loans.
Source: CBC.

[37] Domestic banks had already set aside capital for market risk in accordance with relevant regulations. To avoid double counting, the impacts of market risk on the capital adequacy ratio herein were estimated using capital shortfalls after considering the aforementioned market risk capital.

Overall liquidity risk remained relatively low

The average NT dollar liquid reserve ratio of domestic banks was well above the statutory minimum of 10% in every month of 2021 and stood at 31.52% in December. At the end of 2021, the average liquidity coverage ratio (LCR) of domestic banks decreased to 137% (Chart 3.26), while the net stable funding ratio (NSFR) of domestic banks rose to 139% (Chart 3.26). Meanhwhile, all banks met the minimum LCR and NSFR requirements in 2021, indicating that the overall liquidity risk of domestic banks was relatively low.

Chart 3.26 LCR and NSFR of domestic banks



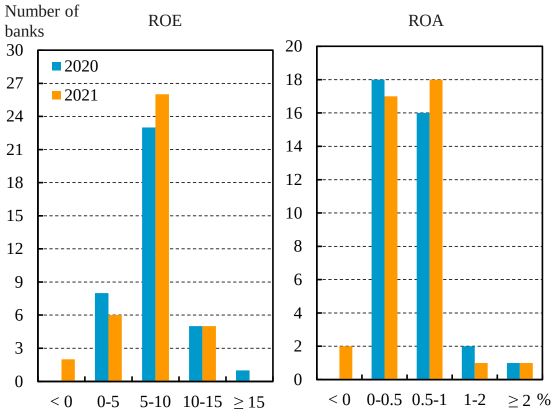
Note: LCR and NSFR were implemented from 2015 and 2018 onwards, respectively.
Source: CBC.

Profitability

Profit of domestic banks rebounded in 2021

The net income before tax of domestic banks in 2021 recorded NT$338.7 billion, increasing by NT$24.4 billion or 7.76% over the previous year. This mainly resulted from a pickup in net interest income owing to a greater decrease in interest expenses. The average ROE of domestic banks rose to 8.14%, while the average ROA remained at 0.58%, indicating ascending profitability.

Chart 3.27 Domestic banks classified by ROE and ROA



Source: CBC.

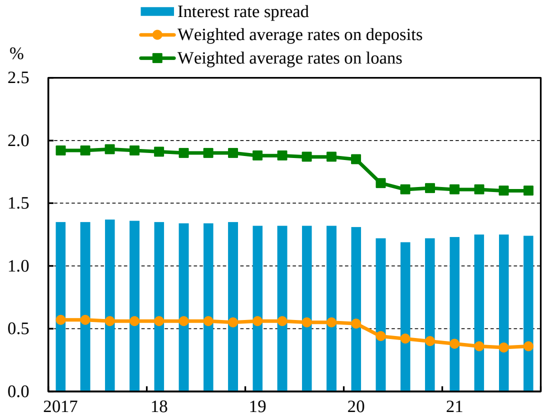
In 2021, except for the operating losses of LINE Bank and Rakuten Bank, which officially began operations at the beginning of the year, all the other banks made profits. Among them, the numbers of banks with higher ROEs and ROAs than the previous year were 27 and 23, respectively. Five banks achieved a profitable ROE of 10% or more, decreasing from six banks in 2020. Meanwhile, the number of banks with ROAs above the international standard of 1% also saw a decrease from three to two (Chart 3.27).

Factors that might affect future profitability

Owing to an increase in the proportion of demand deposits, which pay lower interest, the average interest rate spread between deposits and loans of domestic banks at the end of 2021 slightly elevated to 1.24% from 1.22% at the end of the previous year (Chart 3.28), which is beneficial to domestic banks for expanding net interest income.

Although profits of domestic banks recovered in 2021, there are still uncertainties regarding future profitability which warrant close attention, including: (1) banks with greater exposure to Russia may need to increase provisions for impaired assets, which could affect their profitability, as Russia's sovereign credit rating has been downgraded to junk level recently; (2) issues such as a surge in international commodity prices and supply chain disruptions may affect the operation and debt-servicing capacity of specific industries, thus escalating credit losses; (3) intensified fluctuations in international financial markets may affect future investment returns.

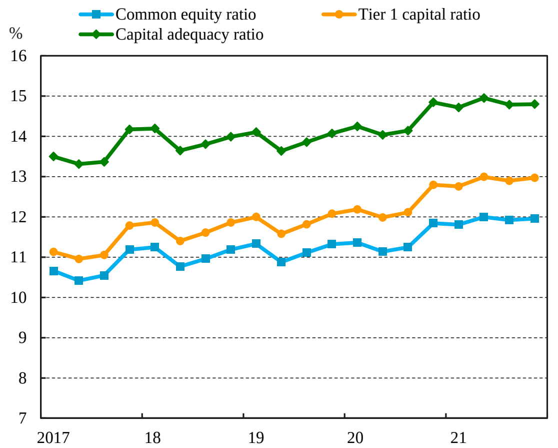
Chart 3.28 Interest rate spread of domestic banks



Notes: 1. Interest rate spread = weighted average interest rates on loans - weighted average interest rates on deposits.
2. The weighted average interest rates on deposits and loans exclude preferential deposits of retired government employees and central government loans.

Source: CBC.

Chart 3.29 Capital ratios of domestic banks



Notes: 1. Common equity ratio = common equity Tier 1 capital/risk-weighted assets.
2. Tier 1 capital ratio = Tier 1 capital/risk-weighted assets.
3. Capital adequacy ratio = eligible capital/risk-weighted assets.

Source: CBC.

Capital adequacy

Capital ratios trended upward

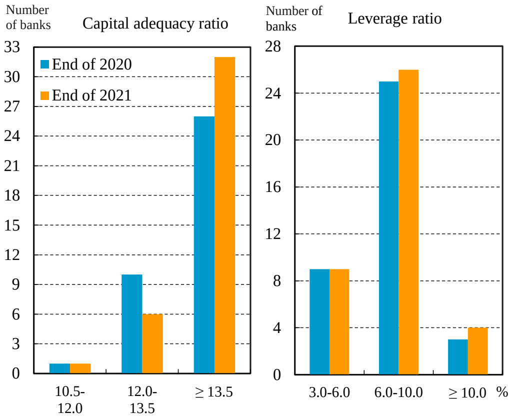
Benefiting from the lower risk weights to domestic banks' real-estate exposures by adopting the LTV approach, which led to a substantial reduction in their risk-weighted assets, and the capital injection from accumulated earnings, the average common equity ratio and Tier 1 capital ratio reached 11.96% and 12.97%, respectively, at the end of 2021. As for the capital adequacy ratio, it stood at 14.80%, almost the same as the ratio a year before (Chart 3.29). Among the components of regulatory capital, common equity Tier 1 (CET 1) capital, featuring the best loss-bearing capacity, accounted for 80.80% of eligible capital. This showed that the capital quality of domestic banks was satisfactory.

Moreover, the average leverage ratio of domestic banks stood at 6.46% at the end of 2021, lower than 6.64% a year earlier but still above the 3% statutory standard, indicating that financial leverage remained sound.

All domestic banks had capital ratios and leverage ratios higher than the statutory minimum

At the end of 2021, the capital ratios of six domestic systemically important banks (D-SIBs) as well as non-D-SIBs were all above the relevant FSC statutory minimum standards or additional capital buffer requirements.[38] Leverage ratios of all domestic banks also exceeded the statutory minimum of 3% (Chart 3.30).

Chart 3.30 Distribution of domestic banks' capital adequacy ratios and leverage ratios



Note: Leverage ratio = Tier 1 capital/total exposures.
Source: CBC.

Table 3.2 Systemic risk indicators for the banking system

Banking System	Standard & Poor's		Fitch	
	BICRA		BSI/MPI	
	2021/2	2022/2	2020/8	2021/8
Singapore	2	2	aa/1	aa/2
Hong Kong	2	2	a/2	a/2
Japan	3	3	a/2	a/2
South Korea	3	3	a/1	a/2
Taiwan	**4**	**4**	**bbb/2**	**bbb/2**
Malaysia	4	4	bbb/1	bbb/1
Philippines	5	5	bb/1	bb/1
China	6	6	bb/1	bb/1
Thailand	6	6	bbb/1	bbb/1
Indonesia	6	6	bb/1	bb/1

Sources: Standard & Poor's and Fitch Ratings.

Credit ratings

Average credit rating level remained steady

Of the overall risk assessments of Taiwan's banking system made by credit rating agencies, Standard & Poor's kept Taiwan's Banking Industry Country Risk Assessment (BICRA)[39] unchanged at Group 4 with moderate risk. Compared to other Asian economies, the risk level of Taiwan's banking system was the same as that of Malaysia, but much lower than those of the Philippines, China, Thailand and Indonesia. Moreover, the assessment of Taiwan's banking system by Fitch Ratings in its Banking System Indicator/Macro-Prudential Risk Indicator

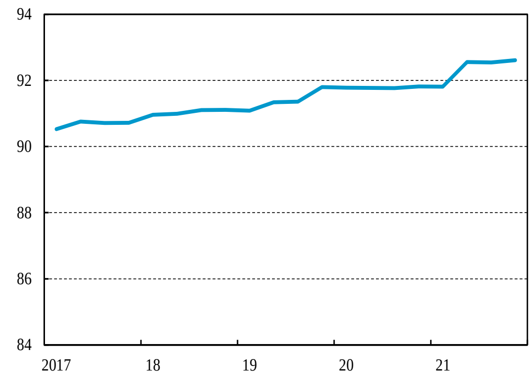
[38] The statutory standards for the common equity ratio, Tier 1 capital ratio and capital adequacy ratio of non-D-SIBs are 7%, 8.5% and 10.5%, respectively. D-SIBs are required to set aside an additional 2% of buffer capital and 2% of internal management capital according to the requirement of the FSC. The additional capital must be achieved before the end of each of the four years equally starting from the next year after the designated date.

[39] BICRA is scored on a scale from 1 to 10, ranging from the lowest-risk (group 1) to the highest-risk (group 10), which indicates the assessment results by Standard & Poor's of economic and industry risks of a country's banking system.

(BSI/MPI)[40] also remained unchanged at level bbb/2 (Table 3.2).

The weighted average credit rating index[41] went up slightly compared to the previous year owing to the upgrading of five banks, indicating that domestic banks generally had the capability to deal with the impact of the pandemic (Chart 3.31).

Chart 3.31 Credit rating index of domestic banks

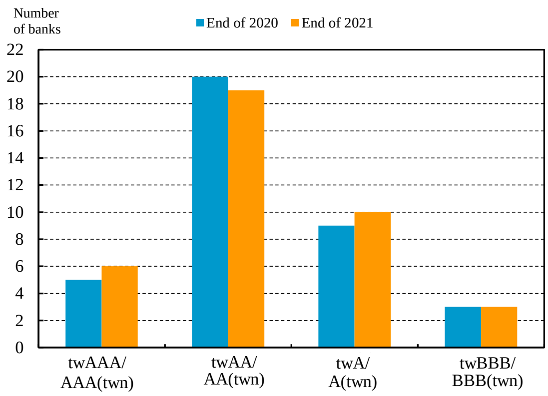


Sources: Taiwan Ratings, Fitch Ratings and CBC.

Rating outlooks for most domestic banks remained stable

Most domestic banks maintained credit ratings of twAA/twA (Taiwan Ratings) or AA(twn)/A(twn) (Fitch Ratings) and none had credit ratings lower than twBB/BB(twn) at the end of 2021 (Chart 3.32). Only four banks received Negative or Evolving Rating Outlooks,[42] while rating outlooks for the other banks remained Stable or Positive.

Chart 3.32 Number of domestic banks classified by credit ratings



Sources: Taiwan Ratings and Fitch Ratings.

Taiwan Ratings announced that Taiwan's banking industry outlook remained stable in 2022, and indicated that domestic banks' adequate capital levels could absorb credit costs which may arise from the phasing out of government relief loan schemes.[43]

40 Fitch Ratings assesses banking system vulnerability with two complementary measures, the BSI and the MPI. These two indicators are brought together in a Systemic Risk Matrix. The BSI represents banking system strength on a scale from aaa, aa, a, bbb, bb, b, ccc, cc, c and f. The MPI indicates the vulnerability of the macro environment on a scale from 1, 2, 2* and 3.

41 The credit rating index is an asset-weighted average rating score of rated domestic banks, measuring the overall creditworthiness of those banks on a scale from 1 (weakest) to 100 (strongest). The rating score for banks is determined according to their long-term issuer ratings from Taiwan Ratings or national long-term ratings from Fitch Ratings. The higher the index is, the better the bank's overall solvency.

42 Standard Chartered Bank (Taiwan) and Shin Kong Commercial Bank received Negative Rating Outlooks at the end of 2021. Citibank Taiwan Ltd. and EnTie Commercial Bank received Evolving Rating Outlooks, while Fitch Ratings revised Citibank's outlook to Stable in February 2022.

43 Press releases by Taiwan Ratings on January 6 and April 20, 2022.

Box 2
Credit risk management of domestic banks in undertaking pandemic relief loans

When the COVID-19 pandemic broke out in early 2020, governments around the world successively launched large-scale relief measures to help corporations and individuals out of their financial predicaments. As the global economy gradually recovered, international organizations, such as the Bank for International Settlements (BIS), the Financial Stability Board (FSB) and the International Monetary Fund (IMF),* have sequentially issued press releases or research reports on the possibility that prolonged relief measures could increase the risk of financial instability and on the impact arising from the withdrawal of relief measures on banks' credit risk. Meanwhile, domestic banks in Taiwan have provided various types of relief loans for corporations and individuals affected by the COVID-19 pandemic since 2020. The Bank visited some of those domestic banks with larger scales of self-run relief loan schemes to have a good grasp of their credit risk management in extending such loans.

1. Relief loans extended by domestic banks

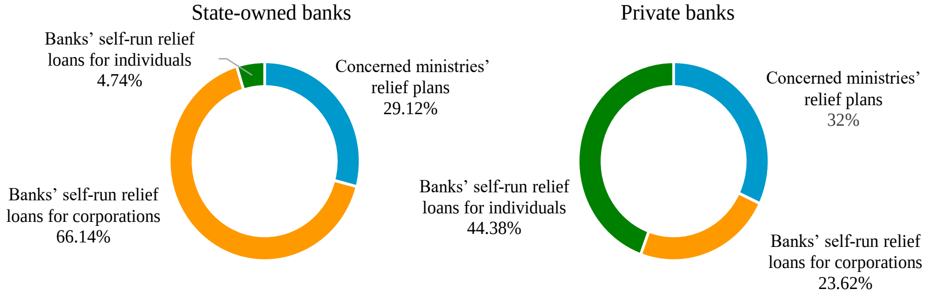
1.1 State-owned banks had played a more active role in relief loan programs

Since relief loan programs were introduced in 2020, domestic banks had approved 572,700 applications with the amount totaling NT$4,884.5 billion as of December 27, 2021. Among them, state-owned banks had approved 388,100 applications totaling NT$4,126 billion, indicating that they had been more active in extending relief loans in coordination with government policies.

1.2 Corporations were the major borrowers of relief loans; lending exposure differed between state-owned and private banks

Corporate loans accounted for the primary shares of the relief loans. The proportions of corporate loans (including those provided under concerned ministries' relief plans and banks' self-run relief loans for corporations) extended by state-owned and private banks were 95.26% and 55.62%, respectively. As for self-run relief loans for individuals, 44.38% of them were extended by private banks, a much larger share than the 4.74% extended by state-owned banks (Chart B2.1).

Chart B2.1 Relief loans by counterparty

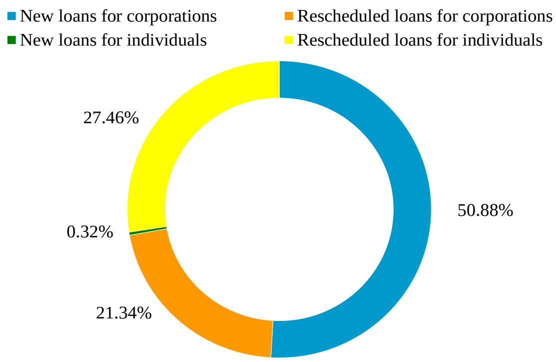


Note: Figures are as of December 27, 2021.
Source: FSC.

1.3 Banks' self-run relief loans were held in almost equal proportion between rescheduled loans and new loans

Among visited banks' self-run relief loans, the proportion of rescheduled loans granted with a grace period (both those for corporations and individuals) was 48.8% (Chart B2.2), mainly because these banks, with the aim of customer retention, offered loan forbearance solutions to help viable customers get through pandemic hardship. In addition, most of these new loans were provided for corporations, which accounted for 50.88% of visited banks' self-run relief loans.

Chart B2.2 Banks' self-run relief loans by type

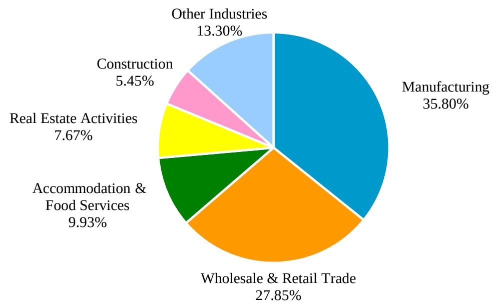


Note: Figures are as of the end of 2021.
Source: Visited banks.

1.4 Relief loans for corporations were chiefly for those in manufacturing and wholesale & retail trade

The top three industry borrowers in terms of relief loans for corporations were manufacturing (35.80%), wholesale & retail trade (27.85%) and accommodation & food services (9.93%). These three industries combined to account for more than 70% of visited banks' self-run relief loans for corporations (Chart B2.3), reflecting the fact that these industries were more significantly impaired by the pandemic.

Chart B2.3 Banks' self-run relief loans for corporations by industry



Note: Figures are as of the end of 2021.
Source: Visited banks.

1.5 More than 80% of the relief loans were guaranteed by Taiwan SMEG or secured by real estate

More than 80% of visited banks' relief loans for corporations were guaranteed by the Small and Medium Enterprise Credit Guarantee Fund of Taiwan (Taiwan SMEG) or secured by real estate, while more than 90% of their relief loans for individuals were secured by real estate.

2. Credit approval and loan review of the relief loans

2.1 Loan forbearance was applicable to borrowers who had paid interest regularly; several banks had temporary measures for credit review

To accelerate the review process and improve operational efficiency in extending the relief loans, several of the visited banks laid down loan forbearance measures including payment moratorium, applicable to individuals paying interest regularly or corporations that were willing to continue operations and paid interest normally. They would agree to defer repayment of principal or lower the interest rates depending on borrowers' situations. New loans or incremental loans, except for the loans applicable for small-scale business entities under Program C of the Bank's Special Accommodation Facility that would be undertaken using a simplified credit score sheet, were handled according to the banks' existing internal credit score mechanisms. In addition, some of the visited banks formulated temporary measures for credit review, lowering credit authorization levels depending on the loan amount and collateral quality.

2.2 Most banks conducted post-lending reviews of the relief loans in accordance with existing internal rules while several banks also performed stress testing

Visited banks conducted post-lending reviews of the relief loans in accordance with their existing internal rules and early warning reporting procedures, while paying special attention to the impact of the pandemic on borrowers' revenues. Moreover, they regularly monitored the lending condition of the relief loans, status of non-performing loans and non-accrual loans, and their exposures to borrowers affected by the pandemic. Several banks also voluntarily conducted stress testing for the relief loans, and the results showed that they maintained sound risk bearing capacities.

3. Credit quality of the relief loans

To ensure that banks prudently evaluate credit risk of the relief loans, the FSC required banks to earnestly classify credit assets and assess expected credit losses in accordance with the IFRS 9 and the five-category classification method stipulated in the relevant regulations. Among visited banks' relief loans, the NPL ratios of rescheduled loans ranged between 0.13% and 0.81%, while the NPL ratios of new loans were below 0.5% as of the end of 2021. These two NPL ratios were below 1%, indicating that the credit quality of the relief loans remained sound.

4. While credit risk remained under control, the impact of the exit of relief measures on banks' asset quality warrants close attention

Given that over 80% of domestic banks' relief loans were guaranteed by Taiwan SMEG or secured by real estate, coupled with ample liquidity in the banking system and the recent housing market boom, the overall credit risk in the banking system remained controllable. In addition, most of the visited banks had planned relevant response measures in advance, tracked changes in the exposures to the relief loans continuously, adjusted credit policies as needed, and reverted to the regular debt collection or negotiation mechanisms, so as to protect their debt claims. As many of the relief loans are still in the principal moratorium period, any overdue cases could show at a later time. Therefore, domestic banks should strengthen post-lending tracking, conduct risk assessments or stress testing of their relief loan exposures, and develop response measures where necessary. The Bank will also pay close attention to the impact of the withdrawal of COVID-19 relief measures on domestic banks' asset quality in the future.

Note: *BIS (2022), "Newsletter on Covid-19 related credit risk issues," March; FSB (2021), "COVID-19 support measures: Extending, amending and ending"; IMF (2021), "Unwinding COVID-19 Policy Interventions for Banking Systems," *Special Series on COVID-19*, March.

3.2.2 Life insurance companies

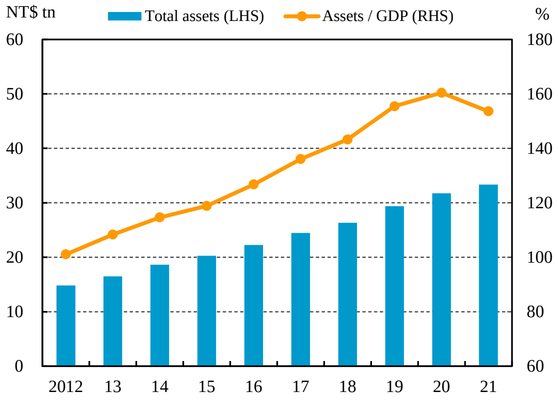
In 2021, the total assets of life insurance companies continued to increase but at a slower pace. Their pretax income reached a record high, while the average RBC ratio further improved and overall credit ratings remained stable. However, owing to the expansion of foreign investment positions, life insurance companies still faced higher FX risk, interest rate risk and equity risk.

Assets grew at a slower pace

The total assets of life insurance companies reached NT$33.34 trillion at the end of 2021, equivalent to 153.58% of annual GDP (Chart 3.33). The annual growth rate of total assets slowed to 5.00% from 8.03% a year earlier. The top three companies in terms of assets made up a combined market share of 55.25%. The market structure of the life insurance industry remained roughly unchanged in 2021.

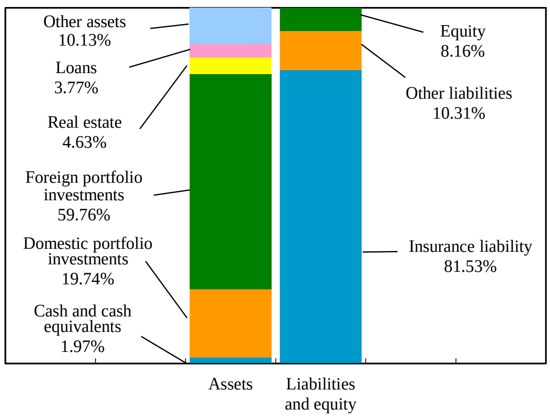
Foreign investments remained the primary usage of funds

Chart 3.33 Total assets of life insurance companies



Sources: FSC and DGBAS.

Chart 3.34 Asset/liability structure of life insurance companies



Note: Figures are as of the end of 2021.
Source: FSC.

In terms of the usage of funds of life insurance companies as of the end of 2021, foreign investments and domestic portfolio investments continued to take up the primary shares of total assets. Among them, the share of foreign investments rose to 59.76%, whereas that of domestic portfolio investments decreased to 19.74%. As for the sources of funds, insurance liabilities accounted for 81.53%, ranking the largest share, while the share of equity increased to 8.16%, mainly supported by a substantial expansion of profit (Chart 3.34).

Pretax income continued to reach a record high

Life insurance companies reported a record-high net income before tax of NT$388.5 billion in 2021 from NT$206.1 billion a year earlier, a substantial year-on-year increase of 88.50% (Chart 3.35). This mainly resulted from an increase in investment revenue as life insurance companies actively realized their capital gains of stock and bond investments. Accordingly, their average ROE and ROA increased markedly to 14.83% and 1.19% from 9.27% and 0.67% a year earlier (Chart 3.36).

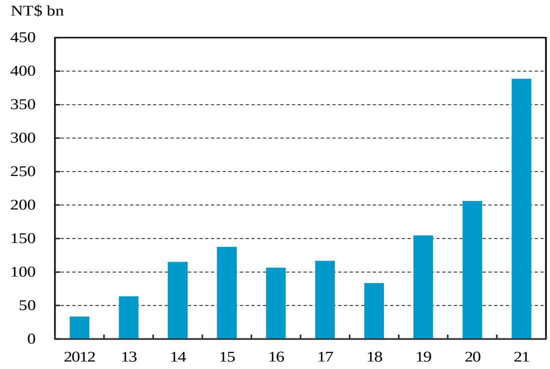
Average RBC ratio and equity to asset ratio continued to rise

In 2021, total capital in life insurance companies rose because of increases in profits and higher valuations of their stock holdings. As a result, the average RBC ratio increased to 335.17%[44] at the end of the year from 299.13% a year earlier (Chart 3.37). Furthermore, the average equity to asset ratio continued to rise to 8.87% from 8.57% at the end of the previous year (Chart 3.38).

Overall credit ratings remained stable

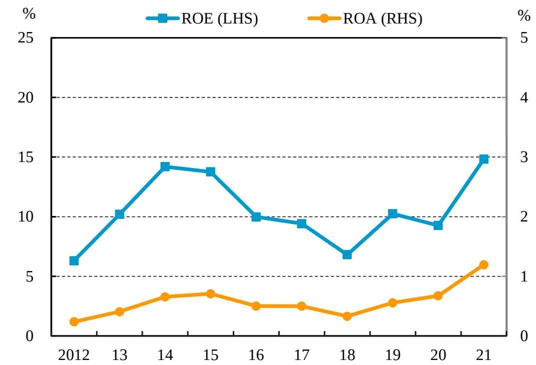
Among the 12 life insurance companies rated by credit rating agencies, none received rating adjustments in 2021. As of the end of the year, all rated life insurance companies

Chart 3.35 Net income before tax of life insurance companies



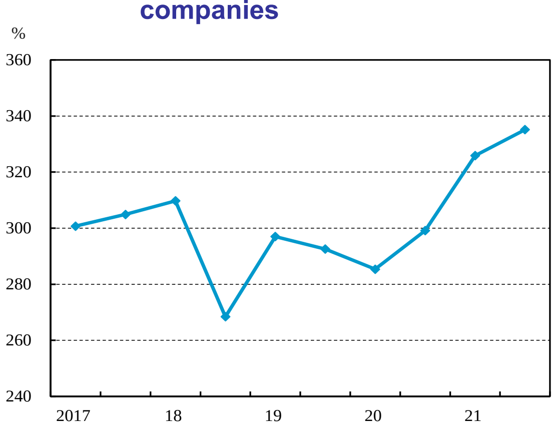
Source: FSC.

Chart 3.36 ROE & ROA of life insurance companies



Notes: 1. ROE = net income before tax/average equity.
2. ROA = net income before tax/average assets.
Source: FSC.

Chart 3.37 RBC ratio of life insurance companies



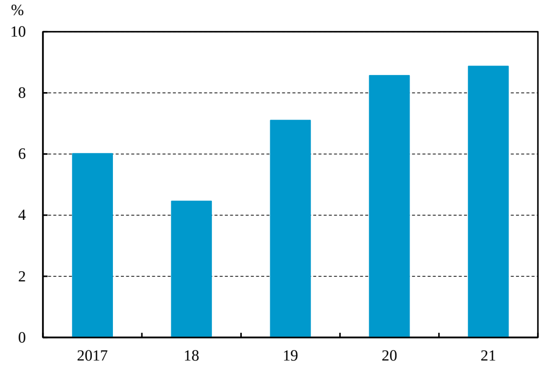
Notes: 1. RBC ratio = regulatory capital/risk-based capital.
2. Figures are exclusive of life insurance companies in receivership.
Source: FSC.

[44] RBC data is reported on a semiannual basis.

maintained credit ratings above twA or its equivalent, with the ratings of the top three companies in terms of assets holding at twAA. Moreover, the prospects of most companies were rated with a positive or stable outlook, except for three companies being rated with a negative outlook.

Taiwan Ratings indicated[45] that Taiwan's life insurers improved capitalization, driven by satisfactory profitability and adequate risk control and monitoring, which could help to support the ratings outlook to remain stable in 2022.

Chart 3.38 Equity to asset ratios of life insurance companies



Notes: 1. Equity is unaudited figures.
2. Assets are exclusive of the assets of investment-linked insurance products in separate accounts.
Source: FSC.

Foreign investment positions faced higher interest rate risk and equity risk

Foreign investment positions of life insurance companies grew continually and reached NT$19.92 trillion at the end of 2021. Securities investments constituted the largest share, of which about 90% were invested in bills and bonds and 10% in equities. With respect to bond investments, since the beginning of 2022, US government bond yields had trended upwards significantly amid the Fed's interest rate hike cycle that potentially could exert an impact on the revaluation of bond investments. Furthermore, the Russia-Ukraine conflict resulted in a sharp rise in volatility in global financial markets. As a result, life insurance companies will likely face higher interest rate risk and equity risk.

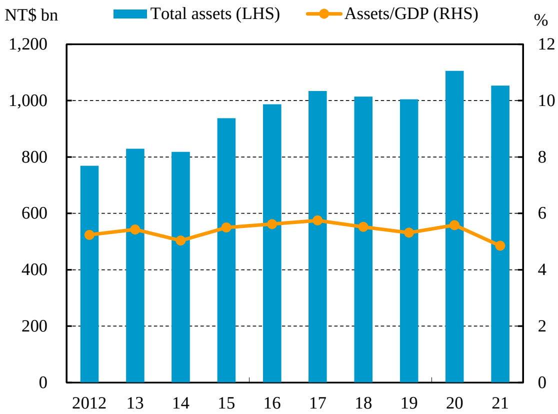
In addition, more than 90% of foreign investment positions of life insurance companies were denominated in US dollars. In order to alleviate the impacts of exchange rate fluctuations, life insurance companies actively used derivative financial instruments for FX hedging while they also built up FX valuation reserves in compliance with the relevant regulations. However, the FX risk inherent in large-value open FX positions of life insurance companies still warrants close attention.

According to the statistics of the FSC, eight life insurance companies held a combined Russian exposure of NT$104.6 billion as of the end of March 2022, most of which was Russian government bonds denominated in US dollars. As the three major international credit

45 Taiwan Ratings (2022), "Robust Economy Underpins Stable Credit Outlook for Taiwan in 2022," *Media Release*, January.

rating agencies successively downgraded Russia's sovereign credit rating to non-investment grades, these eight life insurance companies recognized provisions of about NT$14.2 billion for their Russian exposures. Furthermore, the FSC required these life insurance companies to report the risk management enhancement measures to their board of directors and to adjust their investment positions within six months. Taiwan Ratings also pointed out [46] that Taiwan's life insurance companies have sufficient buffers to absorb the adverse impacts from price fluctuations of the above investment exposures even in the least-favorable scenario; therefore, the risk from their Russian exposures is still manageable.

Chart 3.39 Total assets of bills finance companies



Sources: CBC and DGBAS.

3.2.3 Bills finance companies

In 2021, the total assets of bills finance companies decreased, but their guarantee business expanded and credit asset quality remained sound. Moreover, their pretax income reached the highest recorded in recent years, with rising profitability. However, the average capital adequacy ratio edged down, while liquidity risk and interest rate risk remained high.

Total assets decreased

The total assets of bills finance companies decreased by NT$52.2 billion or 4.72% in 2021 and stood at NT$1,053.2 billion at the end of the year, mainly owing to reductions in positions of bond investments and negotiable certificates of deposit. The ratio of their total assets to annual GDP also dropped to 4.85% over the same period (Chart 3.39).

With respect to the asset and liability structure of bills finance companies, bill and bond investments constituted the largest share of 96.39% of total assets as of the end of 2021. On the liability side, bills and bonds sold under repo transactions as well as borrowings accounted for 84.75% of total assets, while the proportion of equity accounted for 13.08% (Chart 3.40). The

[46] Taiwan Ratings (2022), *Taiwan Life Insurers' Russia Exposures Look Manageable*, February.

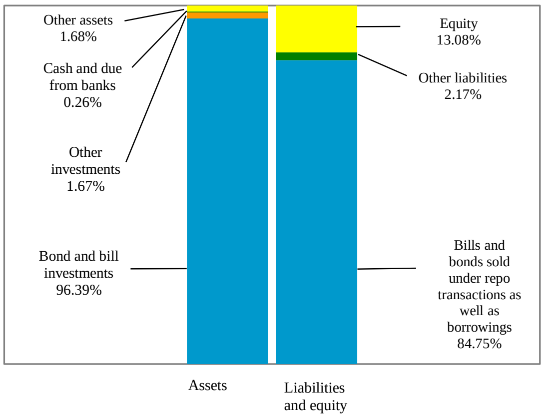
asset and liability structure remained roughly unchanged compared to the previous year.

Credit risk

Guarantee liabilities expanded and the share of credit secured by real estate remained high

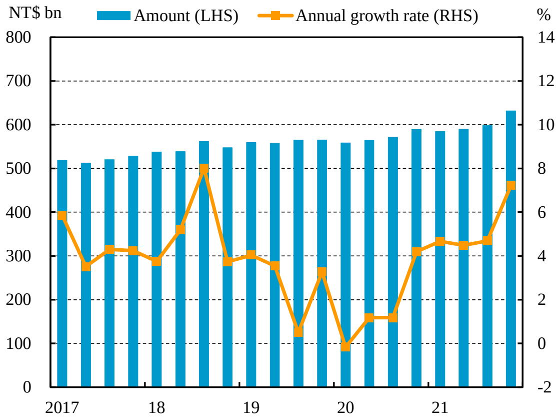
CP guaranteed by bills finance companies registered NT$631.6 billion at the end of 2021, increasing by 7.22% year on year (Chart 3.41) to a new record high. The increase was mainly because corporates increased CP issuance to raise funds on the back of a low level of interest rates in the bill market. Although the amount of CP guaranteed rose, the average ratio of guarantee liabilities to equity decreased slightly to 4.88 times owing to a greater increase in equity, and the ratio for each company remained below the regulatory ceiling of 5 or 5.5 times.

Chart 3.40 Asset/liability structure of bills finance companies



Note: Figures are as of the end of 2021.
Sources: CBC and FSC.

Chart 3.41 Outstanding CP guaranteed by bills finance companies



Source: CBC.

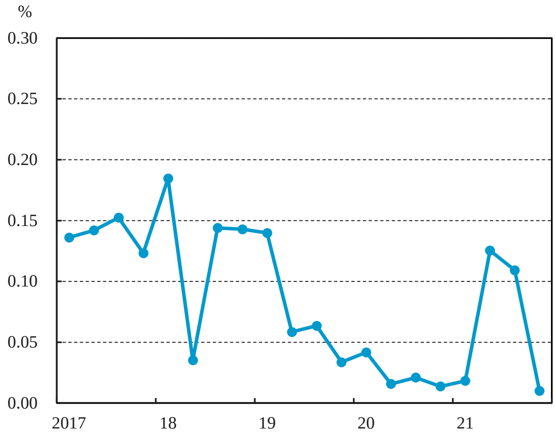
At the end of 2021, guarantees granted to the real estate and construction industries and credit secured by real estate stood at 31.42% and 40.61%, respectively, of the total credit of bills finance companies. Both ratios remained at recent high levels. Moreover, as a large overhang of unsold new residential housing units could restrain prices and the government continued with rigorous policy efforts to curb housing speculation, the prospects of the domestic real estate market may be affected. Bills finance companies should closely monitor those impacts on the asset quality of mortgage-related credit.

To prevent excessive credit resource allocation to the real estate market, in December 2021, the FSC announced the implementation of enhanced supervision measures governing bills finance companies' guarantee business for the real estate industry, including a ceiling of 30% for the share of guarantees granted to the real estate industry. As of the end of 2021, the average share of guarantees granted by bills finance companies to the real estate industry was 28.18%, staying below the aforementioned regulatory ceiling.

Guaranteed advances ratio remained relatively low, showing sound credit quality

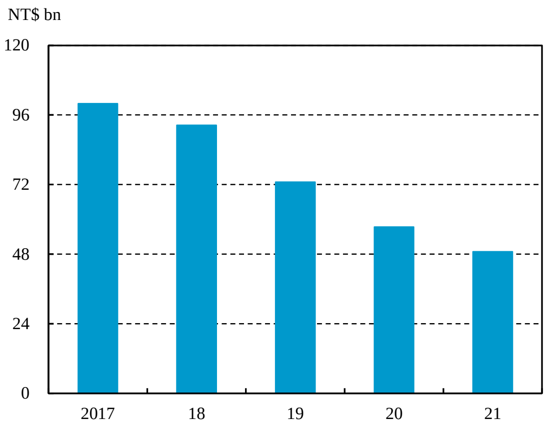
At the end of 2021, the guaranteed advances ratio of bills finance companies stayed at 0.01%, the same as a year before (Chart 3.42), reflecting satisfactory credit quality. Moreover, the credit loss reserves to guaranteed advances ratio [47] expanded to 219.95 times, indicating sufficient reserves to cover potential credit losses. However, the recent resurgence of domestic COVID-19 pandemic cases might impact the credit quality of bills finance companies going forward, and thus warrants close attention.

Chart 3.42 Guaranteed advances ratio of bills finance companies



Note: Guaranteed advances ratio = overdue guarantee advances/(overdue guarantee advances + guarantees)
Source: CBC.

Chart 3.43 Outstanding amount of non-guaranteed CP investments of bills finance companies



Source: CBC.

Investment in non-guaranteed CP issued by the leasing industry expanded substantially and its potential credit risk warrants attention

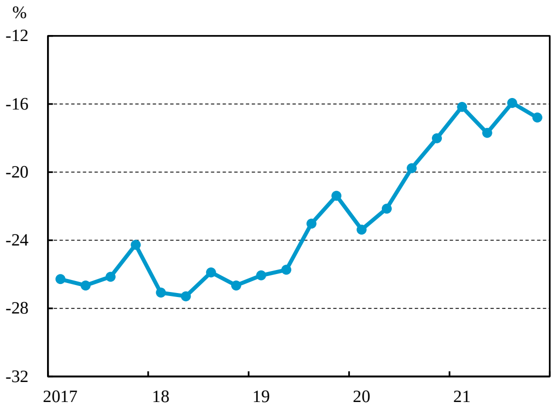
The outstanding amount of non-guaranteed CP investment held by bills finance companies stood at NT$48.8 billion at the end of 2021, decreasing by 14.92% year on year (Chart 3.43). Each company's ratio of non-guaranteed CP investment to equity remained below the self-disciplinary ceiling of 2 times. However, the outstanding amount of non-guaranteed CP investment issued by the leasing industry expanded substantially by 91.32% to NT$17 billion over the same period. The leasing industry has higher potential credit risk owing to the fact that it tends to rely on short-term sources for funding long-term investments, hence warranting continuous attention.

In April 2022, the Bills Finance Association amended the *Self-disciplinary Rules Governing*

[47] Credit loss reserves to guaranteed advances ratio = (provisions + loss reserves to guarantees)/guaranteed advances

Non-guaranteed Commercial Paper Business Conducted by the Members of Bills Finance Association. It stipulated that when underwriting non-guaranteed CP, bills finance companies should observe industry caps and ensure the outstanding amount of non-guaranteed CP issuance of each issuer stay within 3 times of its net worth, so as to promote the sound development of the bill market.

Chart 3.44 0-30 day maturity gap ratio of bills finance companies

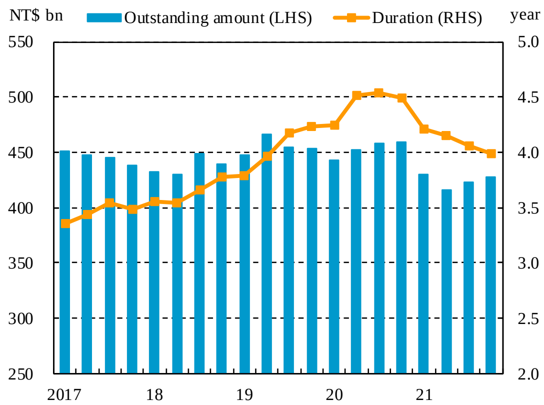


Note: 0-30 day maturity gap ratio = net NTD cash flow within 0-30 days/total assets denominated in NTD.
Source: CBC.

Liquidity risk remained high

In 2021, bills finance companies still faced a significant maturity mismatch between assets and liabilities. More than 90% of their assets were invested in bills and bonds as of the end of the year, 43.65% of which were long-term bonds. Meanwhile, more than 80% of their liabilities were from short-term interbank call loans and repo transactions. Nevertheless, bills finance companies' 0-30 day maturity gap to total assets denominated in NTD shrank further and registered -16.80% at the end of the year (Chart 3.44), reflecting a declining but still high liquidity risk.

Chart 3.45 Outstanding amount of fixed-rate bond investments and bond duration of bills finance companies



Source: CBC.

The outstanding amount of major liabilities[48] decreased by 5.41% to NT$897.3 billion at the end of 2021, owing to the fact that bills finance companies reduced bill and bond investments and, in turn, required less interbank borrowing or bill and bond repo transactions to meet funding needs. The average ratio of major liabilities to equity also decreased to 6.93 times from 7.88 times registered at the end of the previous year, reflecting a lower degree of financial leverage. Moreover, the leverage ratios of all bills finance companies stayed below the regulatory ceilings of 10 or 12 times.

[48] Major liabilities include call loans, repo transactions, as well as issuance of corporate bonds and CP.

Interest rate risk of bond investments remained high

In 2021, the outstanding amount of fixed-rate bond investments of bills finance companies decreased by 6.91% to NT$428.2 billion with average duration shortening to 3.99 years (Chart 3.45). Considering that 10-year Taiwan government bond yields continued rising recently and global bond yields might face upward pressure because of the tightening of monetary policies in major countries, domestic government bond yields could rise further. The interest rate risk of bills finance companies' bond investments remains high, which warrants close attention.

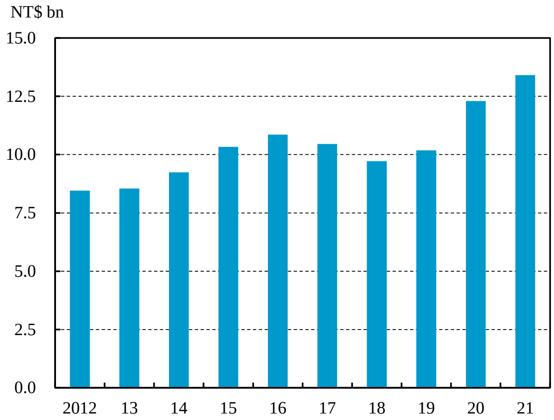
Pretax income hit a recent high and profitability improved further

In 2021, the net income before tax of bills finance companies increased by 9.01% year on year to NT$13.4 billion (Chart 3.46), a new high since 2006, mainly owing to a substantial decrease in interest expenses of bill and bond repo transactions and an expansion in underwriting fee income. The average ROE and ROA thus rose to 9.78% and 1.27% (Chart 3.47), respectively, reflecting improving profitability.

Average capital adequacy ratio declined marginally

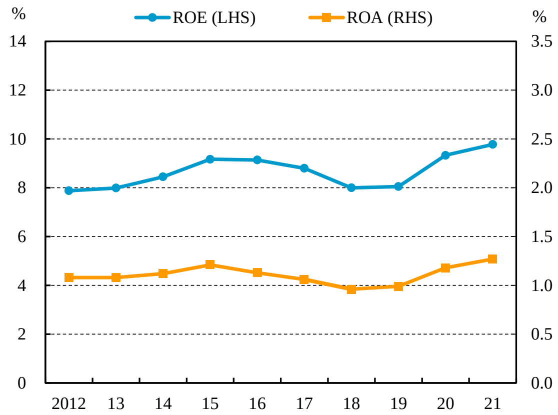
At the end of 2021, the average Tier 1 capital ratio of bills finance companies rose marginally to 12.88%, while their average

Chart 3.46 Net income before tax of bills finance companies



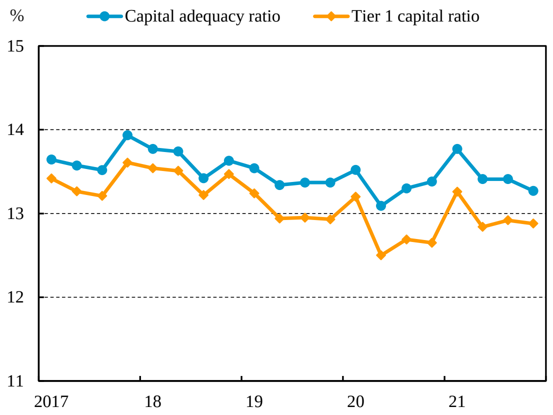
Source: CBC.

Chart 3.47 ROE & ROA of bills finance companies



Notes: 1. ROE = net income before tax/average equity.
2. ROA = net income before tax/average assets.
Source: CBC.

Chart 3.48 Average capital adequacy ratios of bills finance companies



Source: CBC.

capital adequacy ratio declined slightly to 13.27% (Chart 3.48). Moreover, the capital adequacy ratio for each company remained well above the statutory minimum of 8%.

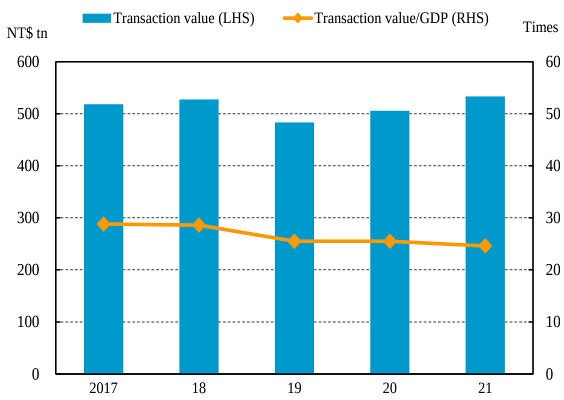
3.3 Financial infrastructure

3.3.1 Payment and settlement systems

Overview of the CIFS's operation

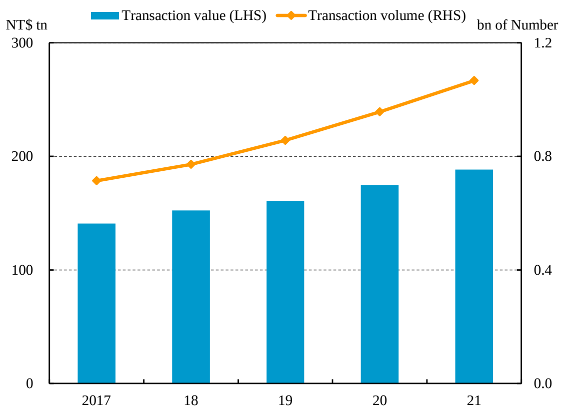
The CBC Interbank Funds Transfer System (CIFS), a large-value electronic payment (e-payment) network system operated by the Bank, is responsible for interbank funds transfers (including interbank lending and the Bank's open market operations) and the final settlement for financial market transactions (e.g., securities and bonds) and retail payment transactions (e.g., remittances, credit cards and check clearing). In 2021, funds transferred via the CIFS amounted to about NT$533 trillion, an increase of 5.5% year on year, equivalent to 24.6 times the GDP for the year (Chart 3.49).

Chart 3.49 Funds transferred via the CIFS



Sources: CBC and DGBAS.

Chart 3.50 Transaction value and volume processed by the FIS



Source: CBC.

In addition, retail payments are mainly processed by the FISC's Inter-bank Financial Information System (hereinafter abbreviated as FIS), which uses the funds deposited by financial institutions in the Interbank Funds Transfer Guarantee Special Account (hereinafter the "Guarantee Account") under the CIFS to clear and settle interbank payment transactions one by one.[49] In 2021, about 1.07 billion transactions were processed by the FIS with the value totaling NT$188 trillion (Chart 3.50), representing year-on-year increases of 11.46% by volume and 7.43% by value.

In view of the increasing demand for interbank transactions via e-payment system, the Bank raised the ceiling ratio for financial institutions' daily balance in the Guarantee Account to be counted as part of their actual reserves in 2019 and later again in 2021 (Chart 3.51). Financial

49 Interbank payment transactions include remittances, automated teller machines (ATM) withdrawals, transfers (including online and mobile transfers), tax payments and corporate fund transfers.

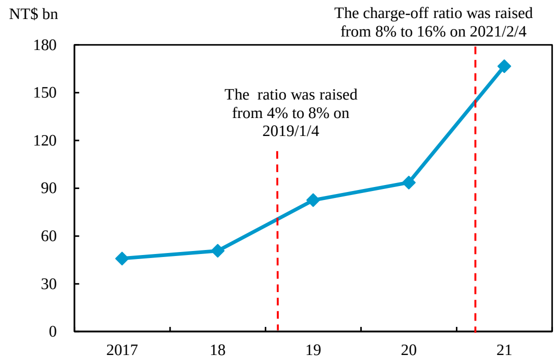
institutions are encouraged to maintain sufficient funds so as to ensure the smooth functioning of the interbank retail payment system on a 24/7 basis.

Development of shared infrastructure for retail payments

The Bank has urged the FISC to establish a common QR Code payment standard and has been promoting it jointly with banks so as to improve the convenience of mobile payment for the public. Since its launch in September 2017, the accumulated volume of transactions processed through this common standard has exceeded 89 million with a total value of approximately NT$334.4 billion at the end of 2021. The volume and value of transactions in 2021 increased respectively by 94.07% and 108.18% year on year.

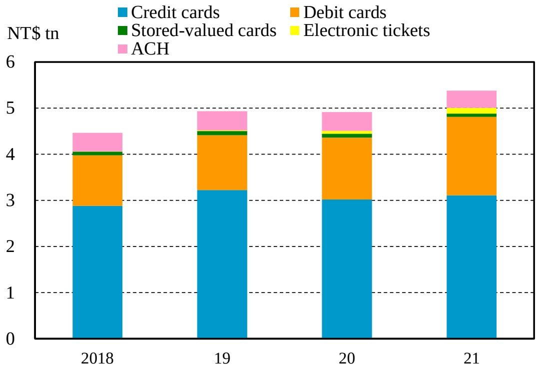
Furthermore, in order to facilitate the interconnection between banks and e-payment institutions' information and cash flows, the Bank urged the FISC to set up a shared platform for cross-institution e-payment, which started to provide intra-institution transfer services from October 2021 onwards. Currently, all domestic e-payment institutions have participated in the platform, which would begin to cover e-payments for taxes and utility bills later in 2022.

Chart 3.51 Average daily balance of the Guarantee Account



Source: CBC.

Chart 3.52 Consumption via non-cash payment tools



Notes: 1. The consumption statistics of debit cards include consumer purchases with domestic chip bank cards, VISA and other international debit cards, UnionPay cards, and ATM transfers for shopping payments.
2. ACH inter-bank collection means that the payment institutions handle deduction and account entry through the ACH system of the TCH after obtaining the entrustment of the public.

Sources: CBC, FSC and FISC.

Domestic consumption via non-cash payment instruments

In 2021, the overall consumption expenditure via non-cash payment tools was NT$5.38 trillion (Chart 3.52), an increase of 9.57% year on year. Among a variety of these payment instruments, the consumption amount via credit cards, debit cards and electronic ticketing increased by approximately NT$88.1 billion, NT$361.9 billion, and NT$59.4 billion, respectively. The growth was mainly due to continuous expansion of mobile payment coverage and mounting demand for contactless payment amid the pandemic.

CBDC development around the world and its policy implications

At present, 86% of central banks worldwide have engaged in CBDC research, and Taiwan, as well as many other economies, has carried out CBDC experiments in stages. However, CBDCs are not always the optimal choice for every country. Each economy should hence adopt the most adequate digital payment strategy in line with its policy objectives and needs of their jurisdictions. Policy implications for the economies that currently develop or conduct CBDC research can roughly fall into three broad categories: (1) exploring the potential of digital technologies in response to the emerging trends of digital payment; (2) safeguarding the role of the state in the payment market to promote sound operation of the financial system; (3) providing a public payment instrument to promote financial inclusion (Box 3).

Box 3
International developments and policy implications of CBDCs

Currently the development of central bank digital currencies (CBDCs) is moving from theoretical research to technical experimentation. However, a CBDC is not always the best option for each economy, and preemptive issuance of a CBDC would not necessarily bring about positive and immediate benefits. Central banks should hence adopt the most suited strategies based on the policy objectives and needs of their jurisdictions.

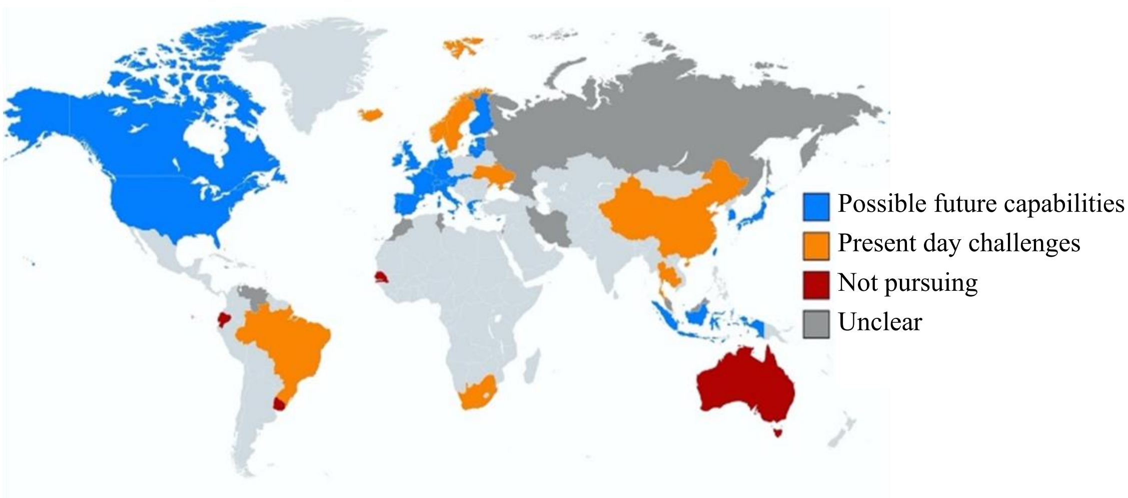
1. International developments of CBDCs

According to a BIS survey,[1] 86% of central banks worldwide have been actively exploring CBDC arrangements. Most of them gradually moved from purely theoretical research to technical experimentation or proofs-of-concept (POC), while only a small number of central banks have advanced to pilot testing or launched CBDCs officially.

1.1 Taiwan and many economies in Europe and North America, with diversified and convenient electronic payment systems in place, have carried out CBDC research and experiments with a gradual approach

In response to the emerging trends of digital payment, major economies in Europe and North America, as well as Japan, South Korea, and Taiwan, have planned for or rolled out CBDC research projects (Chart B3.1).[2] However, none of them has officially issued a CBDC or announced a timetable to launch.

Chart B3.1 Primary motivations for CBDC research and experimentation

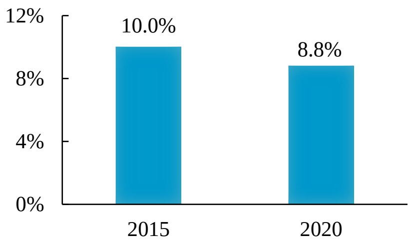
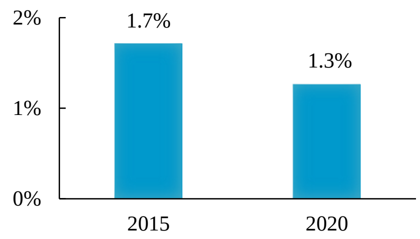
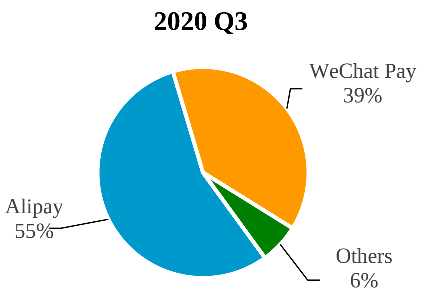
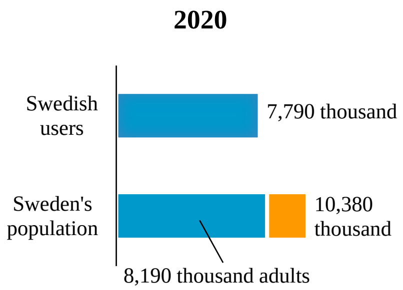


Source: Cheng et al. (2021).

1.2 China and Sweden intend to address special problems in local payment markets with CBDCs

China and Sweden face common problems of the marginalization of the use of cash as a means of payment and payment markets being monopolized by private payment companies (Chart B3.2). Launching a CBDC not only can fill the gap arising from diminishing cash usage but also avoid private monopoly, so as to safeguard the state's role in the payment market. Therefore, China is aggressively conducting e-CNY trials,[3] and the Riksbank continues its experiments on e-krona.[4]

Chart B3.2 Chinese and Swedish payment markets face common problems

	China	Sweden
Demand for cash weakens	The ratio of currency in circulation to nominal GDP continues to decline  	Same as China 
Private payment companies monopolize payment markets	Alipay and WeChat Pay together account for 94% of the mobile payment market transaction volume  	The private mobile payment system is used by 95% of Swedish adults 

Sources: BIS, Enfodesk, Swish, and SCB.

1.3 Some emerging economies, including the Bahamas, expect to use CBDCs as a complement to their weak payment infrastructure

In some emerging economies, payment infrastructure is extremely insufficient, and the locals rely on cash transactions. Since a CBDC is expected to supplement weak payment infrastructure, act as the most basic electronic payment tool for the public, reduce the reliance on cash, and help the government to promote financial inclusion, there has been an upsurge of interest in CBDC issuance in emerging economies recently. For example, the Central Bank of the Bahamas' "Sand Dollar",[5] the Eastern Caribbean Central Bank's "DCash" trials,[6] and the Central Bank of Nigeria's "eNaira".[7]

2. Policy implications of CBDCs

The policy implications for the economies that are developing or conducting research on CBDCs can roughly fall into three broad categories:

2.1 Exploring the potential of digital technologies in response to the emerging trends of digital payment

For economies that have efficient payment systems in place, such as Taiwan and those in Europe and North America, a CBDC merely serves as an additional alternative to various existing payment instruments. The primary motivations for those economies to conduct research on CBDCs are expectations that new digital payment instruments can meet the needs of future digital environments and for innovation of business models.

2.2 Safeguarding the role of the state in payment markets so as to promote sound operation of the financial system

Sweden and China are facing challenges such as the private mobile payment companies monopolizing payment markets and continuing to crowd out the use of cash. It is expected that CBDCs can fill the gap with cash losing ground and safeguard the role of the state in payment markets. In addition, a good design can help ensure the sound operation of the financial system by emphasizing consumer privacy protection and complying with regulations such as those for anti-money laundering (AML) and prevention of illegal activities.

2.3 Providing a public payment instrument to facilitate financial inclusion

The Bahamas and other emerging economies lack sufficient financial infrastructure, along with high costs of cash issuance and poor outcomes of private promotion of electronic payments. A feasible alternative is for the government to facilitate financial inclusion by providing the public with a CBDC as a basic electronic payment instrument. Different from commercial interest-oriented private payment instruments, CBDCs are public interest-oriented and can be used by the public in a more inclusive manner.

3. Policy considerations and research progress of the Bank on CBDC

3.1 Policy considerations of the Bank's research on CBDC

Similar to major economies in Europe and North America, Taiwan has diversified and convenient electronic payment instruments and adequate cash usage, and shares similar policy considerations for CBDC work (Table B3.1), which mainly focus on how to keep up with the evolving trend of digital payment and to proactively understand the technological challenges and cost-effectiveness of a CBDC, while continuing to explore possible technical solutions and best operating models. Therefore, if a CBDC is indeed launched in the future, it can create value and function differently from other payment instruments.

Table B3.1 International development of payment markets and focus of CBDC policy considerations

	Electronic payment	Cash usage	Focus of CBDC policy considerations
Taiwan and major countries in Europe and North America	Diversified and convenient	Adequate	Exploring the potential of digital technology and responding to the emerging trends of digital payment
China and Sweden	Monopolized by the private sector	Declining	Safeguarding the role of the state in the payment market and promoting sound operation of the financial system
Emerging countries such as the Bahamas	Inefficient	Strongly reliant	Providing a public payment instrument to facilitate financial inclusion

Source: CBC.

3.2 The Bank is conducting CBDC research and testing projects

For these economies, developing CBDCs is an earnest endeavor. They should at a minimum make sure that CBDC issuance meets the needs of businesses, consumers, and governments and is developed according to local circumstances. While a few economies have become the front-runners in CBDC issuance and performed pilot testing of CBDC technologies, they also have to confront the potential risks of those technologies. Most of the other economies could learn from their experience and strive to build a more comprehensive CBDC ecosystem.

In Taiwan, the Bank already completed the first phase program on the feasibility of a wholesale CBDC in June 2020. The results showed that the application of distributed ledger technology (DLT) had its own limits. In particular, it could not achieve efficacy in dealing with real-time, high-frequency, and large-volume payment transactions. Currently the Bank has proceeded to the second phase program on a general-purpose CBDC and is carrying out technical experimentation. By building a prototype CBDC platform, the program will simulate the application of a CBDC in retail payment scenarios and is expected to be finalized in September 2022. The Bank will consider the simulation results in the second phase as the basis for public discussion and extensively consult external opinions, thereby garnering more diverse perspectives to help evaluate the possibility of future CBDC issuance.

Notes: 1. Boar, Codruta and Andreas Wehrli (2021), "Ready, Steady, Go? – Results of the Third BIS Survey on Central Bank Digital Currency," *BIS Papers*, No. 114, January.

2. Cheng, Jess, Angela Lawson and Paul Wong (2021), "Preconditions for a General-purpose Central Bank Digital Currency," *FEDS Notes*, February.
3. PBoC (2021), "Progress of Research & Development of E-CNY in China," July 16.
4. Sveriges Riksbank (2021), "E-krona Pilot Phase 1," April.
5. Central Bank of the Bahamas (2020), "The Sand Dollar is on Schedule for Gradual National Release to The Bahamas in mid-October 2020," September.
6. ECCB (2021), "Bitt Partners with ECCB to Develop World's First Central Bank Digital Currency in a Currency Union," March.
7. Central Bank of Nigeria (2021), "President Buhari to Unveil eNaira on Monday, 25 October 2021," October.

3.3.2 Measures for enhancing risk management of real estate credit of financial institutions

To urge financial institutions to prudently control the credit risk of real estate lending, the Bank has adjusted targeted macroprudential measures regarding real estate loans four times since December 2020. Besides this, the FSC also successively adopted measures to strengthen risk management of real estate credit of financial institutions as follows:

Adopting enhanced supervisory measures for the real estate credit or guarantee of financial institutions

(1) In December 2021, the FSC required banks to abide by the Bank's targeted macroprudential measures when conducting guarantee business of commercial paper or corporate bonds. In addition, the FSC required those banks whose portfolio concentration ratios rose more significantly after adding real estate guarantees – in addition to construction loans – into the calculation to propose improvement plans and formulate management measures.

(2) In December 2021, the FSC revised the regulations to require that the ratio of the guarantee balance of bills finance companies for commercial paper issued by real estate firms to the total guarantee balance shall not exceed 30%. In addition, the FSC asked bills finance companies to incorporate the Bank's targeted macroprudential measures into their internal rules for commercial paper guarantees business.

(3) Towards the end of 2021, the FSC implemented a new series of targeted examinations toward real estate loans at the end of 2021. In addition, compliance with the relevant regulations and requirements issued by the Bank and the FSC was listed as one of the primary focuses of financial examinations in 2022.

Raising risk weights for real estate mortgage loans of banks

With the implementation of the Bank's targeted macroprudential measures, several types of real estate mortgage loans would then be assigned lower risk weights as per current capital requirements. Therefore, the FSC raised the risk weights of the newly extended mortgage loans under the Bank's targeted macroprudential measures in February 2022 (Table 3.3).

Table 3.3 Risk weights of real estate mortgage loans

<table>
<tr><th>Loan type</th><th colspan="2">Before amendment in February 2022</th><th>After amendment</th></tr>
<tr><td rowspan="2">Housing loans for corporate entities</td><td>Residential real estate - general</td><td>20%</td><td>50%</td></tr>
<tr><td>Residential real estate - income producing</td><td>30%</td><td>100%</td></tr>
<tr><td>The third (or more) housing loans for natural persons</td><td>Residential real estate - income producing</td><td>30%</td><td>100%</td></tr>
<tr><td rowspan="2">Land loans</td><td>ADC exposures - residential districts</td><td>100%</td><td>150%</td></tr>
<tr><td>ADC exposures - commercial districts</td><td>150%</td><td>200%</td></tr>
<tr><td rowspan="2">Unsold housing unit loans</td><td>Residential real estate- income producing</td><td>30%</td><td>100%</td></tr>
<tr><td>ADC exposures - residential districts</td><td>100%</td><td>150%</td></tr>
<tr><td rowspan="3">Mortgage loans for idle land in industrial districts</td><td>Non-qualifying commercial real estate exposures - general</td><td>75%, 85%, 100%</td><td rowspan="3">200%</td></tr>
<tr><td>Non-qualifying commercial real estate exposures - income producing</td><td>150%</td></tr>
<tr><td>ADC exposures - non-residential districts</td><td>150%</td></tr>
</table>

Notes: 1. The applicable scope includes the regulated types of real estate mortgage loans newly granted by domestic banks.
2. ADC refers to land acquisition, development and construction.
3. Real estate mortgage loan cases undertaken in support of relevant government policies shall not apply.

Source: FSC.

3.3.3 Strengthening financial institutions' climate risk management and financial disclosure

To achieve the objectives for the development of sustainable finance in the Green Finance Action Plan 2.0 and strengthen financial institutions' climate risk management and financial disclosure, the FSC proposed the following measures recently.

Establishing the guidelines on climate-related financial disclosures for domestic banks and insurance companies

The FSC issued the guidelines on climate risk financial disclosures for domestic banks and insurance companies in November 2021. Accordingly, they are required to establish appropriate evaluation and disclosure mechanisms for climate risks and opportunities (given company size and type of business) and disclose information on climate risk management in terms of governance, strategies, risk management, and metrics and targets. Additionally, starting from 2023, they should reveal climate-related financial information for the previous year before the end of June each year.

Enhancing financial institutions' climate risk management

In order to strengthen insurance companies' ability to respond to climate risks, the FSC adopted the following measures: (1) urging insurance companies to enhance identification of sources and types of climate risks; (2) incorporating major catastrophes caused by climate change into non-life insurance companies' stress test scenarios;[50] (3) requiring non-life insurance companies and reinsurance companies to integrate natural disaster risks into their risk-based capital (RBC); and (4) requiring insurance companies to identify and evaluate climate change risks and formulate an appropriate risk management mechanism.

In addition, the FSC proposed to apply a method for calculating a catastrophe risk charge, built by the Insurance Capital Standard (ICS), to the current RBC system, and required domestic banks to conduct scenario analyses and stress tests for climate change. In the future, the FSC will seek to integrate climate risk into the existing regime for financial institutions' stress tests and capital requirements.

3.3.4 The FSC takes a gradual approach to implement the New Generation Insurance Solvency Regime

In the ICS issued by the International Association of Insurance Supervisors (IAIS), assets and liabilities are both measured at fair value. Moreover, the insurers in Taiwan are expected to adopt "IFRS 17: Insurance Contracts", which will require evaluation of insurance liabilities at fair value. Accordingly, the FSC is developing the New Generation Insurance Solvency Regime, which would take reference from the ICS and is scheduled to be officially launched in 2026 in step with the domestic adoption of IFRS 17.

The calculation of the ICS capital requirement for assets and liabilities is based on a market value approach, which is quite different from the existing RBC system adopted by the insurers in Taiwan. Therefore, the FSC is planning to adopt the above-mentioned new solvency regime in three phases from 2020 to 2026 with a gradual approach, including an on-site field-testing phase (phase I), a parallel run phase (phase II) and a preparatory phase (phase III), so that

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[50] According to the stress test results released by the FSC in June 2021, the non-life insurance industry under an extremely adverse scenario would have an average capital adequacy ratio of 422.3% and an average net worth ratio of 30.06%, both of which were higher than the statutory minimums. This showed that the non-life insurance industry has sufficient solvency.

Taiwan's insurers can smoothly adopt the approach in compliance with international standards, which would help more reasonably reflect their business risks.

3.3.5 FX regulation amendments

To keep up with rapid changes in economic and financial conditions, fulfill good FX management, streamline relevant administrative processes, and help banks develop digital service channels and provide more flexible access to diversified financial services, the Bank amended FX regulations in the recent year, as follows:

- The Bank revised the *Regulations Governing the Declaration of Foreign Exchange Receipts and Disbursements or Transactions* and related directions in June 2021. The main amendments included: (1) broadening the regulated scope to include FX business conducted by electronic payment institutions; (2) taking a flexible approach, where the Bank may adjust the ceiling of the annual aggregate settlement amount of FX purchased or sold by declarants and of a specific nature; and (3) deleting the provision that the amount of FX purchased as per the guidelines of "direct declaration" and sold later would not be counted toward the declarant's aggregate settlement amount of the same year.

- The Bank revised the *Directions Governing Authorized Banks for Operating Foreign Exchange Businesses through Electronic or Communications Equipment* in December 2021. The amendments included: (1) relaxing the restrictions on authorized banks' counterparties when conducting business not involving FX settlement against the NT dollar and (2) stipulating that authorized banks shall immediately request and verify the relevant supporting documents when the accumulated settlement amount of transactions involving FX settlement against the NT dollar reaches a specific amount.[51]

- The Bank revised the *Directions Governing Banking Enterprises for Operating Foreign Exchange Business* in January 2022. The major amendments included: (1) deleting the procedures and required documents for confirming customer identity when authorized banks engage in remittance business and enabling banks to act in accordance with relevant regulations and their internal operating procedures; and (2) relaxing the restrictions on authorized banks' counterparties when conducting digital foreign currency deposit business and expanding the scope of the required documents for foreign currency loan business.

[51] The threshold is an amount equal to or greater than an equivalent of USD 1 million for the accumulated settlement amount of FX purchased or sold by a company or a firm, and that of USD 500,000 for an association or an individual.

IV. Measures to promote financial stability and address the COVID-19 pandemic's impact

4.1 Measures taken by the Bank and the FSC to promote financial stability

4.1.1 Measures taken by the Bank to promote financial stability

In 2021, the Bank kept the special accommodation facility in place to support bank credit to the SMEs affected by the pandemic. Meanwhile, in response to imported inflation pressures and policy rate hikes by the United States and other economies, the Bank raised the policy rates by 25 basis points (bps) in March 2022. Furthermore, the Bank adjusted targeted macroprudential measures regarding real estate loans four times from December 2020 to avoid excessive flows of bank credit into the real estate sector. The Bank also continued to adopt flexible FX rate policies to maintain dynamic stability of the NT dollar exchange rate, so as to safeguard financial stability and foster sustainable economic development.

The Bank raised the policy rates

As the Russia-Ukraine conflict pushed up commodity prices (such as energy prices) and heightened imported inflation pressures, domestic inflation is expected to remain elevated. Meanwhile, there have been and are likely to be further policy rate hikes by central banks in major economies like the US. Taking the above-mentioned factors into account, the Bank raised the discount rate, the rate on refinancing of secured loans and the rate on temporary accommodations each by 25 bps to 1.375%, 1.75% and 3.625%, respectively, on March 18, 2022. The rate hikes are expected to help contain domestic inflation expectations, maintain price stability, and assist sound financial and economic development.

Continued support for a special accommodation facility for SME loans

Against the backdrop of recurrent pandemic outbreaks, the Bank initiated the Special Accommodation Facility to Support Bank Credit to SMEs ("the Facility") in April 2020, and conducted a rolling review to fine-tune the rules in the Facility, the deadline of applicable preferential interest rates, total amount of the Facility's accommodations, and the application deadline, in order to continue to help SMEs reduce their funding costs and support industries to recover from the pandemic (Table 4.1). The total amount of the Facility was NT$400 billion. The deadline for SMEs to apply for credit support was extended to the end of 2021, while the preferential rates will remain applicable until June 30, 2022. As of April 29, 2022, banks had received 312,687 applications with the amount totaling NT$515.3 billion. Considering the facts that the Bank is adopting a tightening monetary policy stance, the pandemic-hit SMEs are gradually resuming normal operations, and the unemployment rate is falling, the Facility will be closed and the Facility's accommodations to the banking sector will not be rolled over after June 30, 2022.

Table 4.1 Key points of amendments to the Bank's Special Accommodation Facility

Content	Effective date
Extending the deadline from March 27, 2021 to December 31, 2021 for accommodations and applicable preferential interest rates for cases that banks submitted during the period from April 1, 2020 to August 9, 2020 for the approval of the Bank	Mar. 19, 2021
1. Raising the total amount of the Facility to NT$400 billion from NT$300 billion 2. Extending the deadline for SMEs to apply for credit support from June 30, 2021 to December 31, 2021 3. Extending the deadline to June 30, 2022 for accommodations to banks and for preferential interest rates applicable to SME loans 4. Adjusting lending conditions to allow loan applicants to apply again within the maximum credit lines	Jun. 4, 2021
Raising the maximum credit lines of Program C for each applicant from NT$0.5 million to NT$1 million	Jun. 24, 2021
Allowing banks to continue to apply to the Bank for accommodations, regardless of the NT$400 billion amount cap, for the SME loan cases received before the deadline of December 31, 2021	Oct. 29, 2021
Extending the deadline to June 30, 2022 for accommodations and applicable preferential interest rates for cases that banks submitted during the period from April 1, 2020 to July 4, 2021 for the approval of the Bank	Dec. 16, 2021

Source: CBC

Conducting open market operations to manage market liquidity

To manage liquidity in the financial market, the Bank conducts open market operations and manages reserve money at an appropriate level by issuing NCDs. At the end of 2021, the total outstanding amount of NCDs issued by the Bank was NT$9,483 billion, while the average annual growth rate of reserve money registered 12.18% for the year 2021. Furthermore, the

Bank guided the weighted average overnight call loan rate towards an appropriate level, holding at about 0.080% throughout 2021 and up to the rate hike on March 18, 2022. The rate was about 0.180% after the Bank raised the policy rates.

Adjusting targeted macroprudential measures four times to guide efficient allocation of bank credit

In order to promote financial stability and to help banks enhance risk management of real estate lending, to implement the government's Healthy Real Estate Market Plan and to preclude excessive flow of bank credit into the real estate market, the Bank has adjusted targeted macroprudential measures four times since December 2020 (Table 4.2), which have helped banks to lower credit risk.

Table 4.2 The CBC has amended the *Regulations Governing the Extension of Mortgage Loans by Financial Institutions* four times since December 2020

<table>
<tr><th colspan="2" rowspan="2">Loan items</th><th colspan="4">Loan conditions</th></tr>
<tr><th>2020.12.7 amendment[1]</th><th>2021.3.18 amendment[1]</th><th>2021.9.23 amendment[1]</th><th>2021.12.16 amendment[1]</th></tr>
<tr><td rowspan="2">Corporates</td><td>The first housing loan</td><td>LTV cap of 60%, no grace period</td><td rowspan="2">LTV cap of 40%, no grace period</td><td rowspan="2">(unchanged)</td><td rowspan="2">(unchanged)</td></tr>
<tr><td>The second (or more) housing loan</td><td>LTV cap of 50%, no grace period</td></tr>
<tr><td rowspan="4">Natural persons</td><td>High-value housing loan for a borrower with two or less outstanding housing loans</td><td rowspan="2">LTV cap of 60%, no grace period</td><td>LTV cap of 55%, no grace period</td><td>(unchanged)</td><td>LTV cap of 40%, no grace period</td></tr>
<tr><td>High-value housing loan for a borrower with three or more outstanding housing loans</td><td>LTV cap of 40%, no grace period</td><td>(unchanged)</td><td>(unchanged)</td></tr>
<tr><td>Second home loan for housing in "specific areas"[2]</td><td>(nil)</td><td>(nil)</td><td>No grace period</td><td>(unchanged)</td></tr>
<tr><td>Third home loan</td><td>LTV cap of 60%, no grace period</td><td>LTV cap of 55%, no grace period</td><td>(unchanged)</td><td>LTV cap of 40%, no grace period</td></tr>
</table>

Loan items		Loan conditions			
		2020.12.7 amendment[1]	**2021.3.18 amendment[1]**	**2021.9.23 amendment[1]**	**2021.12.16 amendment[1]**
	Fourth (and more) home loan		LTV cap of 50%, no grace period	(unchanged)	
Land loans		● LTV cap of 65% (10% withheld until construction begins) ● Borrower required to submit a substantive development plan for the land purchase	(unchanged)	● LTV cap of 60% (10% withheld until construction begins) ● Borrower required to submit a substantive development plan for the land purchase	● LTV cap of 50% (10% withheld until construction begins) ● Requiring the borrower to submit a substantive development plan for the land purchased, and to undertake in writing a specific time frame to commence construction[3]
Unsold housing unit loans		LTV cap of 50%	(unchanged)	(unchanged)	LTV cap of 40%
Mortgage loans for idle land in industrial districts		Banks internal rules	LTV cap of 55%[4]	LTV cap of 50%[4]	LTV cap of 40%[4]

Notes: 1. The 2020.12.7 amendment took effect on December 8, 2020; the 2021.3.18 amendment took effect on March 19, 2021; the 2021.9.23 amendment took effect on September 24, 2021; and the 2021.12.16 amendment took effect on December 17, 2021.
2. Specific Areas include Taipei City, New Taipei City, Taoyuan City, Taichung City, Tainan City, Kaohsiung City, Hsinchu County, and Hsinchu City.
3. The promised time frame as formally undertaken by the loans' borrowers is up to 18 months.
4. It shall not apply if mortgaged land is already under construction, or if the borrower already submits a substantive plan for construction and pledges that construction will begin within a certain period of time, which was amended to one year on September 23, 2021.

Source: CBC.

Additionally, the Bank has consecutively conducted targeted examinations of real estate lending business, invited banks for communication to further understand their real estate credit management, and urged banks to issue internal regulations to require that borrowers begin construction within a limited period of time. The FSC, referring to the suggestions from the Bank, also took measures to urge banks and bills finance companies to control the risks stemming from their guarantee business for the real estate industry. The Bank will closely monitor and evaluate the effectiveness of targeted macroprudential measures, allocations of bank credit resources in the real estate market and the developments in housing markets, and fine-tune the regulatory measures via a rolling review, so as to maintain financial stability.

Adopting a flexible FX rate policy to safeguard the dynamic stability of the NT dollar exchange rate

As Taiwan is a small open economy that is highly interconnected through trade with other economies, the Bank suitably adopts a managed float exchange rate regime to contain sharp fluctuations in exchange rates. The exchange rate of the NT dollar is in principle decided by market forces. Nevertheless, when seasonal factors (such as massive inflows or outflows of short-term capital) lead to excess volatility and disorderly movements in the NT dollar exchange rate with adverse implications for domestic economic and financial stability, the Bank will, in line with its mandate, aptly maintain FX market order.

In recent years, huge and frequent movements of international short-term capital flows have superseded international trade and economic fundamentals and become the key factor influencing the volatility of exchange rates. With a view to avoiding disturbances from the abovementioned factors on the domestic FX market, the Bank conducts “leaning against the wind” operations to maintain order in the FX market when necessary so as to mitigate volatile movements of the NT dollar exchange rate and foster FX market efficiency. The dynamic stability of the NT dollar exchange rate is conducive to the long-term sound development of the domestic economy.

Additionally, the Bank continued to undertake appropriate management measures to safeguard FX market order and promote its sound development. These measures mainly included: (1) taking hold of the updated transaction information in the FX market through the Real-Time Reporting System for Large-Amount FX Transactions; (2) reinforcing off-site monitoring efforts to ensure that forward transactions are based on genuine needs so as to curb FX speculation; (3) urging authorized FX banks to enhance their exchange rate risk management, thereby reducing FX exposures of individual banks and systemic risks in the FX market; and (4) strengthening targeted examinations on FX business in order to maintain the discipline of the FX market.

4.1.2 Measures undertaken by the FSC to maintain financial stability

From 2021 onwards, in view of the impact of the COVID-19 pandemic on the domestic financial system, the FSC took appropriate measures in a timely, flexible manner and evaluated financial institutions’ risk bearing capacities. Furthermore, the FSC strengthened AML/CFT and information security (InfoSec) measures of financial institutions, as well as enhancing risk disclosures of several mutual fund products to preserve financial stability.

Taking measures in response to the impact of the pandemic

(1) In light of an upsurge in domestic COVID-19 cases, the FSC successively adopted temporary measures from May 2021 onwards, including: allowing banks to use flexible methods to provide financial products and services, to adjust their business hours, and to waive or reduce individuals' interbank transfer service fees via banks' online banking/mobile banking and physical ATMs.[52]

(2) Since February 2020, the FSC has coordinated with banks to extend the debt workout mechanism[53] for credit card debts and other personal loans, including housing loans, auto loans and unsecured consumer loans, through end-June 2023. Personal credit records will not be affected during the deferral period.

(3) The FSC deferred the implementation of *Basel III: Finalizing Post-crisis Reforms* to 2024 and allowed D-SIBs to defer for one year the enforcement of the 2% additional internal capital requirement, which must be achieved before each year-end of the four years equally from 2022 onwards.

Urging banks and insurers to conduct stress tests to evaluate their risk bearing capacities

To understand how the low interest rate environment and the pandemic affected the resilience of financial institutions, the FSC required domestic banks and insurers to conduct stress tests in 2021. The stress scenarios for domestic banks included credit, market and operational risks, while those for insurers encompassed insurance, market and climate change risks. According to the test results released by the FSC, financial institutions' average capital adequacy ratios under extremely adverse scenarios were still higher than the statutory minimums,[54] indicating that domestic banks and insurers had strong risk bearing capacities.

Recently, a rise in COVID-19 cases in Taiwan triggered a drastic surge in claims for several domestic insurers. Against this backdrop, the FSC required life and non-life insurers that sold COVID-related policies to conduct stress tests for the purpose of estimating the claims on

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52 Fee waiver or reduction ceased to apply following the lowering of domestic pandemic alert level in July 2021.

53 The debt workout mechanism included: (1) credit card debts: cardholders can apply for a deferral of payment for 3 to 6 months. During the deferral period, liquidated damages and revolving interest will be waived, and (2) other personal loans: individuals can apply for a deferral of principal or interest payments for 3 to 6 months. During the deferral period, liquidated damages and deferred interest will be waived.

54 The results of the stress test showed that the average common equity ratio, Tier 1 capital ratio, capital adequacy ratio, and leverage ratio of domestic banks under the severe adverse scenario were 9.68%, 10.64%, 12.33% and 5.60%, respectively. All ratios were above the statutory minimums. In addition, the stress test results for life and non-life insurers in terms of insurance and market risks, and non-life insurers in terms of climate change risks indicated that the average capital adequacy ratios and the equity to asset ratios of those insurers were all higher than the statutory minimums.

pandemic insurance policies and the underlying impact on their own financial health.

Strengthening AML/CFT measures of financial institutions

(1) In June 2021, to robustly enforce the *Money Laundering Control Act* as well as the international norms issued by the Financial Action Task Force, the FSC included, for the first time, those enterprises who handle virtual currency platforms or transactions into the scope of AML control, while taking a preemptive approach by offering guidance and assistance to these enterprises for proper conduct and compliance of AML operations.

(2) The FSC amended the *Regulations Governing Anti-money Laundering of Financial Institutions* and regulations related to internal control and audit systems in December 2021. The aforementioned regulations incorporated migrant worker foreign remittance companies into the scope of AML control, and added provisions that set out relevant requirements for electronic payment institutions and migrant worker foreign remittance companies to comply with when conducting cross-border correspondent banking and remittance business.

Continually reinforcing InfoSec and corporate governance

(1) To enhance the decision-making of financial institutions on cyber security matters, the FSC revised related regulations in September 2021, requiring all banks, together with bills finance companies, securities related financial institutions and insurance companies that met specific requirements, to appoint a vice president (or a person of equivalent rank) or higher-level personnel to serve as chief cyber security officer, who shall be in charge of promoting cyber security policy and the allocation of resources for relevant matters.

(2) To strengthen the ability of insurance companies to monitor and prevent conflicts of interest or improper transactions, the FSC issued a policy interpretation and collected banks' submission of self-regulatory rules in December 2021. Those measures stipulated that insurance companies should adopt management mechanisms for domestic equity investment staff, with the aim of urging firms to improve their internal control.

Enhancing risk disclosure and suitability assessment of fund products

(1) In an effort to better protect investors and increase investors' risk awareness, the FSC adopted strengthened supervisory measures for high-yield bond funds as follows: (A) changing the term "high-yield bond fund" to "non-investment grade bond fund"; (B)

requiring fund operators to explain how its risk-return ratings are calculated, why each fund has received its particular risk-return rating, and any restrictions that may result from the rating; (C) revealing exchange rate risk in the risk disclosures signed by the investors; and (D) strengthening fund investment suitability assessments for customers.

(2) To ensure more complete disclosures of ESG funds' investment policies, the FSC announced related rules. The key points included: (A) stipulating the details[55] to be published in issuance prospectuses or investor information summaries, and requiring that the aforementioned information shall be disclosed on a regular basis; (B) for the approved ESG-themed funds, the content disclosed in the investor information summary shall be rectified and submitted to the FSC for approval within six months; (C) an offshore fund, which is not compliant with the above rules, is not allowed to be claimed as a sustainability- or ESG-themed fund in marketing communications.

4.2 Effectiveness of Taiwan's measures to address the COVID-19 pandemic

In response to the impact of the COVID-19 pandemic on the domestic economy and society, the Legislative Yuan successively raised the ceiling on the special budget under the *Special Act for Prevention, Relief and Revitalization Measures for Severe Pneumonia with Novel Pathogens* to a total of NT$840 billion,[56] and extended the applicable period[57] depending on the extent of the pandemic's impact. Those measures were aimed at boosting consumption and improving domestic demand, reducing the impact of the pandemic on the public and businesses, and maintaining the momentum of domestic economic growth.

As of the end of April 2022, NT$712.1 billion had been executed under the special budget, accounting for about 85% of the total special budget of NT$840 billion. The remaining budget will be used based on the pandemic developments in the future. In addition, as of April 27, 2022, domestic banks had accepted a total of 607,429 applications for relief loans, with the amount totaling NT$5.22 trillion, either under various government (including the Bank) programs or banks' self-run relief lending initiatives. Among these measures, the Special Accommodation Facility launched by the Bank to support financially distressed SMEs had

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[55] The disclosures included ESG investment objectives and measurement standards, investment strategies and methods, allocations of investment ratios, performance indicators, exclusion criteria, risk warnings, and participation in due diligence and governance.

[56] In February 2020, the Executive Yuan promulgated the *Special Act for Prevention, Relief and Revitalization Measures for Severe Pneumonia with Novel Pathogens*, initially set at NT$60 billion, followed by an additional budget of NT$150 billion in April, NT$210 billion in July and NT$260 billion in October. This special budget was again expanded by NT$160 billion in June 2021 with the amount totaling NT$840 billion.

[57] In May 2021, the Legislative Yuan agreed to extend the special COVID-19 relief act and its associated budget to June 30, 2022. Amid a continued and severe outbreak of infections, the Executive Yuan presented to the Legislative Yuan in April 2022 the extension of the special COVID-19 relief act and its associated budget to June 30, 2023.

approved 306,888 applications with the amount totaling NT$503.5 billion as of April 29, 2022 (Table 4.3), representing an effective effort to help vulnerable SMEs access the needed working capital to weather the pandemic.

Table 4.3 The effectiveness of the Bank's Special Accommodation Facility (as of April 29, 2022)

		Program A	Program B	Program C	Total
Applications	No. of cases	76,053	59,823	176,811	312,687
	Amount (NT$bn)	151.8	272.9	90.6	515.3
Cases approved	No. of cases	74,796	59,187	172,905	306,888
	Amount (NT$bn)	148.1	267.7	87.8	503.5

Notes: 1. Program A aims at assisting SMEs to obtain financing up to NT$4 million per borrower. The program is offered at an interest rate of up to 1% per annum with 90% of credit guaranteed by Taiwan SMEG. This scheme is available from April 1, 2020 to December 31, 2021.

2. Program B aims at assisting SMEs to obtain financing up to NT$16 million per borrower. The program is offered at an interest rate of up to 1.5% per annum with collateral required by banks (or 80% of credit guaranteed by Taiwan SMEG). This program is available from April 1, 2020 to December 31, 2021.

3. Program C aims at assisting small-scale business entities to obtain financing up to NT$1 million per borrower. The program is offered at an interest rate of up to 1% per annum with 100% of credit guaranteed by Taiwan SMEG. This program is available from April 20, 2020 to December 31, 2021.

Source: CBC

Thanks to the effectiveness of those economic relief measures, Taiwan sustained economic growth at 6.57% in 2021, reaching an 11-year high and faring much better than major economies in Europe, North America, and Asia. The unemployment rate gradually declined from a peak of 4.8% in June 2021 to 3.64% at the end of the year, and the number of employees who agreed to negotiated reductions of working hours with their employers also decreased significantly from a peak of 58,731 at the end of August 2021 to 12,198 in April 2022. Meanwhile, benefiting from increasing demand for electronics as well as for traditional products underpinned by a sustainable economic recovery worldwide, the profitability of TWSE-listed and OTC-listed companies in 2021 reached the highest level in nearly a decade, driving the domestic stock market to record highs.

Moreover, despite the lingering challenge of the pandemic, Taiwan's financial institutions continued to make profits in 2021. Among them, life insurance companies and bills finance companies kept making record-high profits. Meanwhile, the average NPL ratio of domestic financial institutions remained at a low level, reflecting satisfactory credit quality, and their capital levels continued to be adequate and well above the statutory minimum. All of the aforementioned performance shows that financial institutions still operated soundly in spite of a negative shock from the epidemic.

4.3 The Bank will continue to adopt measures to promote financial stability when necessary

Despite the fact that the pandemic continued to develop, though its impact on global economic activity began to gradually fade, Taiwan's financial markets and financial infrastructure functioned well and developed steadily in 2021. Profitability of financial institutions also remained satisfactory with sound asset quality and adequate capital levels. Overall, Taiwan's financial system remained stable. The Bank continued to adopt appropriate monetary, credit and foreign exchange policies in response to changes in the global and domestic economic and financial conditions to promote financial stability. Meanwhile, the FSC revamped financial regulations and enhanced financial supervisory measures to facilitate sound operations of financial institutions and maintain financial stability.

Entering the year 2022, global economic recovery continued. However, the resurgence of the Omicron variant, persistent supply chain bottlenecks and the recent Russian invasion of Ukraine which propelled major economies to impose economic and financial sanctions on Russia have constrained raw commodity supplies, resulting in price hikes and adding to global inflationary pressures. Moreover, with the United States and other major countries gradually withdrawing from their accommodative monetary policies, global economic growth is expected to be more moderate. Looking ahead, geopolitical tensions, soaring international raw material prices and recurring pandemic outbreaks caused by new coronavirus variants could lead elevated global inflation to become entrenched. Moreover, the accelerated pace of monetary tightening in major economies could increase volatility in financial markets and create more downside risks to the global economy.

Considering that the international economic outlook is still surrounded by many uncertainties, the Bank will continue to pay close attention to the impacts of relevant subsequent developments on domestic economic and financial conditions so as to take appropriate response measures in a timely manner to promote financial stability.

Appendix: Financial soundness indicators[58]

Table 1: Domestic Banks

Unit: %

Items \ Year (end of year)	2016	2017	2018	2019	2020	2021
Asset size						
Assets to GDP*	260.61	264.95	r 270.89	r 275.32	r 284.89	277.41
Earnings and profitability						
Return on assets (ROA)	0.66	0.66	0.68	0.70	0.58	0.58
Return on equity (ROE) (Pretax)	9.23	9.03	9.34	9.49	7.84	8.14
Return on equity (ROE) (After tax)*	7.94	7.80	8.09	8.11	6.82	7.11
Net interest income to gross income	60.04	60.03	59.33	56.59	59.95	62.11
Non-interest expenses to gross income	52.01	52.74	51.55	51.30	53.93	53.88
Gains and losses on financial instruments to gross income	11.37	14.85	11.23	18.78	17.06	12.93
Employee benefits expenses to non-interest expenses	56.29	56.75	57.15	56.76	57.05	58.36
Spread between lending and deposit rates (basis points)	1.37	1.36	1.35	1.32	1.22	1.24
Spread between the highest and the lowest interest rates of interbank O/N lending*	0.18	0.13	0.13	0.11	0.12	0.22
Asset quality						
Non-performing loans to total loans	0.27	0.28	0.24	0.22	0.22	0.17
Provision coverage ratio	503.45	490.59	573.67	650.30	623.74	781.47
Capital adequacy						
Regulatory capital to risk-weighted assets	13.33	14.17	13.99	14.07	14.84	14.80
Tier 1 capital to risk-weighted assets	10.97	11.78	11.86	12.08	12.79	12.97
Common equity Tier 1 capital to risk-weighted assets	10.50	11.19	11.19	11.32	11.84	11.96
Non-performing loans net of provisions to equity	-2.49	-2.18	-1.86	-1.78	-0.51	0.09
Leverage ratio	6.29	6.42	6.56	6.71	6.82	6.46

[58] In consideration of the IMF *2019 Financial Soundness Indicators Compilation Guide (FSI Guide)*, two categories of indicators comprising life insurance companies and bills finance companies have been added to the financial soundness indicators while the category market liquidity has been removed since 2020. Thus, the number of indicators increased from 42 to 58. The time series data of removed and pre-adjusted indicators are available on the CBC's website (https://www.cbc.gov.tw/en/cp-486-862-AE8D1-2.html). For more details about explanatory notes for the compilation of financial soundness indicators, please refer to the CBC *Financial Stability Report* May 2021 (https://www.cbc.gov.tw/en/cp-970-140474-7ae08-2.html).

Table 1: Domestic Banks (cont.)

Unit: %

Items / Year (end of year)	2016	2017	2018	2019	2020	2021
Liquidity						
Customer deposits to total loans	137.25	138.76	135.75	137.27	142.04	144.30
Liquid assets to total assets	10.55	9.75	9.46	9.05	9.44	9.74
Liquid assets to short-term liabilities	14.98	13.37	13.36	12.53	13.19	13.37
Liquidity coverage ratio	125.81	134.54	133.89	134.82	141.60	136.60
Net stable funding ratio	-	-	132.44	132.71	136.51	138.56
Credit risk concentration						
Loan concentration by economic activity*	69.48	71.29	70.94	71.43	71.95	72.04
Large exposures to tier 1 capital**	-	-	-	-	8.60	8.06
Gross asset positions in financial derivatives to regulatory capital*	11.27	5.69	6.38	6.53	8.75	4.32
Gross liability positions in financial derivatives to regulatory capital*	11.58	7.02	8.64	7.66	9.36	4.51
Geographical distribution of loans to total loans*						
Domestic economy*	80.21	80.62	80.33	79.49	80.96	81.23
Advanced economies*	13.79	13.30	13.49	14.01	12.66	12.45
Emerging economies						
Emerging Asia*	4.75	4.91	5.12	5.42	5.31	5.30
Emerging Europe*	0.08	0.06	0.04	0.04	0.02	0.02
Latin America and the Caribbean*	0.54	0.48	0.44	0.40	0.37	0.31
Middle East and Central Asia*	0.24	0.31	0.27	0.35	0.42	0.47
Sub-Saharan Africa*	0.39	0.33	0.32	0.29	0.26	0.22
Credit of private sector to GDP*	140.73	146.27	150.92	r 155.13	r 160.16	159.52

Table 1: Domestic Banks (cont.)

Unit: %

Items \ Year (end of year)	2016	2017	2018	2019	2020	2021
Sensitivity to market risk						
Net open position in foreign exchange to capital	4.21	3.95	3.78	3.20	3.45	3.58
Foreign-currency-denominated loans to total loans	20.80	20.35	20.14	20.67	18.80	18.06
Net open position in equities to capital	21.73	21.42	22.51	24.56	26.93	31.71
Foreign-currency-denominated liabilities to total liabilities	29.49	26.31	29.21	26.57	26.53	25.80

Notes: 1. Items with "*" and "**" are new indicators starting from 2020 with data traced back to 2016 and 2020 respectively.

2. Figures for "Spread between lending and deposit rates" exclude the data of preferred deposits rates of retired government empolyees and central government lending rates.

3. Non-performing loans net of provisions to equity:

(1) For data before 2019, specific provisions for credit losses refers to minimum provisions that a bank should allocate for classified loans and liabilities on guarantees in accordance with *Regulations Governing the Procedures for Banking Institutions to Evaluate Assets and Deal with Non-performing/Non-accrual Loans.*

(2) Beginning 2020, specific provisions for credit losses, based on the IFRSs 9, refers to the provisions for expected credit losses of financial assets whose credit is impaired.

4. Figures for "Net stable funding ratio" are published from 2018.

5. Credit concentration:

(1) For the data before 2019, large exposures prior refer to the total amount of credit exposures to the first 20 private enterprises at domestic banks (after integration).

(2) Beginning 2020, large exposures are revised to the total amount of credit exposures to an enterprise at domestic banks (after integration) exceeding 10% of its Tier 1 capital.

6. Figures with "r" are revised data, which is based on GDP updated by DGBAS.

Table 2: Life Insurance Companies

Units: %

Items \ Year (end of year)	2016	2017	2018	2019	2020	2021
Assets to GDP	126.51	136.03	143.22	r 155.44	r 160.39	153.58
Return on assets (ROA)	0.50	0.50	0.33	0.55	0.67	1.19
Return on equity (ROE) (pretax)	9.98	9.42	6.82	10.24	9.27	14.83
Return on equity (ROE) (after tax)	9.86	9.92	7.81	9.65	9.38	13.78
Risk based capital (RBC) ratio	301.25	304.90	268.43	292.54	299.13	335.17
Equity to investment assets	5.57	6.20	4.60	7.29	8.80	9.10

Notes: 1. FSIs of life insurance companies are newly added from 2020 with data traced back to 2016.

2. Investment assets include financial assets such as cash, bank deposits, loans, securities, derivatives, and non-financial assets for investment.

3. Figures with "r" are revised data, which is based on GDP updated by DGBAS.

Table 3: Bills Finance Companies

Units: %

Items \ Year (end of year)	2016	2017	2018	2019	2020	2021
Assets to GDP	5.62	5.75	5.52	r 5.31	r 5.58	4.85
Return on assets (ROA)	1.13	1.06	0.96	0.99	1.18	1.27
Return on equity (ROE) (pretax)	9.14	8.80	8.00	8.05	9.33	9.78
Return on equity (ROE) (after tax)	7.66	7.46	6.72	6.67	7.56	8.01
Capital adequacy ratio	13.90	13.93	13.63	13.37	13.38	13.27
0-30 day maturity gap to assets (NTD)	-23.76	-24.27	-26.66	-21.39	-18.01	-16.80

Notes: 1. FSIs of bills finance companies are newly added from 2020 with data traced back to 2016.
2. Figures with "r" are revised data, which is based on GDP updated by DGBAS.

Table 4: Non-financial Corporate Sector

Units: %, times

Items \ Year (end of year)	2016	2017	2018	2019	2020	2021
Total liabilities to equity						
TWSE-listed companies	98.33	100.07	99.48	104.61	107.85	106.85
OTC-listed companies	82.52	82.73	82.36	88.55	89.88	98.81
Return on equity						
TWSE-listed companies	14.38	15.81	14.92	12.62	14.60	23.01
OTC-listed companies	10.39	10.44	13.02	12.23	13.95	17.78
Net income before interest and tax / interest expenses (times)						
TWSE-listed companies	13.18	13.60	11.18	9.35	15.70	34.58
OTC-listed companies	12.59	12.88	16.23	15.99	21.99	30.23
Foreign liabilities to equity**						
TWSE-listed companies	-	-	-	-	32.48	32.62
TPEx-listed companies	-	-	-	-	20.11	21.64

Notes: 1. Data of TWSE-listed and OTC-listed companies are from TEJ.
2. Item with "**" is a new indicator to be disseminated from 2020 onward and the reference date of figures in 2021 is the end of September 2021.

Table 5: Household Sector

Unit: %

Items / Year (end of year)	2016	2017	2018	2019	2020	2021
Household debt to GDP	81.57	83.43	r 85.11	r 86.70	r 89.04	87.69
Debt service and principal payments to total disposable income	46.32	46.67	45.23	r 46.13	r 46.54	46.14
Household debt to total disposable income*	1.37	1.37	r 1.36	r 1.39	r 1.46	1.44

Notes: 1. Figures for "total disposable income" are the sum of household disposable income, rent expense and interest expense.
2. Figure for "total disposable income" for 2021 is a CBC estimate.
3. Item with "*" is a new indicator starting from 2020 with data traced back to 2016.
4. Figures with "r" are revised data, which is based on GDP and total disposable income updated by DGBAS.

Table 6: Real Estate Market

Unit: index, %

Items / Year (end of year)	2016	2017	2018	2019	2020	2021
National housing price index*	99.09	100.60	100.80	104.14	108.17	117.50
Residential real estate loans to total loans	29.35	29.82	29.73	29.44	32.04	32.52
Commercial real estate loans to total loans	16.60	17.54	17.78	17.73	19.37	19.69

Note: Item with "*" is a new indicator starting from 2020 with data traced back to 2016.

Abbreviations

ABS	Australian Bureau of Statistics
ACH	Automated clearing house
ADC	Land acquisition, development and construction
AML	Anti-money laundering
ATM	Automated teller machine
BICRA	Banking Industry Country Risk Assessment
BIS	Bank for International Settlements
BOJ	Bank of Japan
BOK	Bank of Korea
BPS	Basis points
BSI	Banking system indicator
CBC	Central Bank of the Republic of China (Taiwan)
CBDC	Central bank digital currency
CD	Certificate of deposit
CET 1	Common Equity Tier 1
CFT	Combating the financing of terrorism
CIFS	CBC Interbank Funds Transfer System
COVID-19	Coronavirus disease 2019
CP	Commercial paper
CPI	Consumer price index
DBU	Domestic banking unit
DeFi	Decentralized finance
DGBAS	Directorate-General of Budget, Accounting and Statistics of the Executive Yuan
DJIA	Dow Jones Industrial Average
DLT	Distributed ledger technology
D-SIB	Domestic systemically important bank

ESG	Environmental, social, and corporate governance
EU	European Union
Fed	Federal Reserve System
FIS	Financial information system
FISC	Financial Information Service Co., Ltd.
FSB	Financial Stability Board
FSC	Financial Supervisory Commission
FSIs	Financial soundness indicators
FTSE	Financial Times Stock Exchange
FX	Foreign exchange
GDP	Gross domestic product
IAIS	International Association of Insurance Supervisors
ICS	Insurance capital standard
IFRS	International Financial Reporting Standard
IMF	International Monetary Fund
JCIC	Joint Credit Information Center
KOSPI	Korea Composite Stock Price Index
LCR	Liquidity coverage ratio
LTV	Loan-to-value
MLF	Medium-term lending facility
MOF	Ministry of Finance
MOI	Ministry of the Interior
MPI	Macro-Prudential Indicator
MSCI	Morgan Stanley Capital International
NCD	Negotiable certificate of deposit
NPL	Non-performing loan
NSFR	Net stable funding ratio
NTD	New Taiwan dollar
OBU	Offshore banking unit
OMO	Open market operation
OTC	Over-the-counter
PBC	People’s Bank of China
POC	Proof-of-concept

PPI	Producer price index
PPS	Percentage points
RBC	Risk-based capital
Repo	Repurchase agreement
RMB	Renminbi
ROA	Return on assets
ROC	Republic of China
ROE	Return on equity
SET	Stock Exchange of Thailand
SLF	Standing lending facility
SME	Small and medium-sized enterprises
SMEG	Small & Medium Enterprise Credit Guarantee Fund
SSE	Shanghai Stock Exchange
TAIEX	Taiwan Stock Exchange Weighted Index
TCH	Taiwan Clearing House
TEJ	Taiwan Economic Journal Co., Ltd.
TIFRS	Taiwan-IFRS
TPEx	Taipei Exchange
TPEX	Taipei Exchange Capitalization Weighted Stock Index
TWSE	Taiwan Stock Exchange
USD	US dollar
VaR	Value at risk
WPI	Wholesale price index

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