O'ZBEKISTON RESPUBLIKASI MARKAZIY BANKI

Financial Stability Report

2022|1

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The Central Bank of Uzbekistan publishes the Financial Stability Report twice a year. The report discusses the assessment of macro-financial vulnerabilities and risks, an analysis of the domestic financial system stability, and policies and measures to support financial stability.

This report is based on data as of July 1, 2022.

This is a translation of the original version in Uzbek, which is the sole authoritative text.

The report was prepared by Financial Stability Department of the Central Bank of Uzbekistan.

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Financial Stability and Challenges in Uzbekistan

Contents

Key risks to financial stability	Risk level and its change		Risk mitigation measures
	In the short term	In the medium term	
Low risk	Medium risk		High risk
External risks			
Aggravation of the external geopolitical situation. The deterioration of the geopolitical situation may lead to lower economic growth, higher inflation, lower remittances, and weaker investor confidence. That, in turn, would negatively affect the aggregate demand and economic activity. NPLs may increase due to the deterioration of bank loan portfolio quality and the decrease in borrowers' capacity to service loans.			- continuation of a coordinated policy aimed at macroeconomic stability through a flexible exchange rate, inflation-focused monetary policy, and active macroprudential policy; - strengthening the monitoring of bank assets quality, especially in the sectors most affected by the pandemic and experiencing rising NPLs; - introduction of macroprudential capital buffers, including a countercyclical buffer and a buffer for systemically important banks.
Higher compliance risks. Due to the external geopolitical situation, compliance risks may arise when conducting international transactions. In addition, the US Department of the Treasury may restrict access to the US financial system, including correspondent accounts, for financial institutions connected to the SPFS. Such restrictions may increase bank transaction costs, reduce			- maintaining an effective AML/CFT framework and compliance with Know Your Customer (KYC) rules; - developing effective international sanctions compliance programs that take into account the restrictions of the US Office of Foreign Assets Control (OFAC) and the European Union; - constant monitoring of changes in sanctions, as

the range of banking services, affect bank ratings, and elevate the country risk premium.			well as periodic assessment of the likelihood of risk materialization; - maintaining dialogue with leading consultancies and expert communities who have sanctions compliance experience.
Monetary policy tightening by major central banks. Amid rising funding costs in international markets, domestic banks and enterprises may face difficulties in attracting external funding. It may trigger the expansion of direct lending, increasing NPLs and lowering the country's financial buffers.			- completing some key structural reforms (transformation and privatization of state-owned enterprises and banks, further improvements in market competition and foreign trade liberalization); - reducing gradually state support to the economy through fiscal and monetary policies promoting domestic and foreign private investment; - strengthening the regulatory framework for banks by increasing the level and quality of capital and liquidity buffers.

Lower availability of external funding for Uzbek banks due to the increased country risk premium. An increase in the risk premium may drive up interest rates on foreign loans and make foreign lenders reluctant to roll over their loans. In turn, domestic banks may be less able to support new lending and may come under pressure to use foreign currency liquidity to pay off external obligations. Ultimately, lending and economic activity may decline.			- conducting a savings-promoting deposit policy to reduce banks' dependence on external funding; - speeding up the transformation of state-owned banks; - deployment of macroprudential measures to limit banks' dependence on external funding.
External cyber attacks. Such attacks can seriously damage the banking system's critical financial infrastructure and undermine public confidence.			- strengthening the banking sector's cyber security capacity with technical assistance from IFIs and central banks with relevant experience; - developing a cyber risk management framework in banks.
Internal risks			
Foreign currency solvency and liquidity issues due to high dollarization in case of significant exchange rate depreciation. The depreciation may increase the liabilities of households and firms, unleashing a sharp increase in NPLs and defaults of individuals and businesses.			- allowing market-driven exchange rate fluctuations, bringing inflation to the target, and decreasing dollarization through prudential measures; - maintaining positive real interest rates to encourage savings in the national currency.

Excessive debt burden. Persistently elevated levels of the credit-to-GDP, PTI, LTV, and DSR ratios.			- tightening requirements for the PTI and LTV ratios; - setting a regulatory limit for the DSR ratio.
Credit losses from the materialization of climate-related physical risks (such as risks from frequent or extreme weather events) **and transition risks** (i.e., risks associated with the transition to a less polluting, low-carbon economy).			- developing a framework for analyzing the impact of climate change on the financial sector based on recommendations from international organizations; - determining measures and tools for mitigating the effects of climate change on the financial system.

Note: The direction of the arrow represents the change in the risk level.

Executive Summary

Uzbekistan's banking system has been weathering shocks emanating from the Covid-19 pandemic and changes in external economic conditions. Financial soundness indicators were robust in H1 2022, above the Basel III minimum requirements. The capital adequacy and Tier 1 capital ratios exceeded regulatory minimums 1.3 times. The liquidity coverage ratio (LCR) stayed above the regulatory minimum of 100 percent by a large margin despite tightened regulation for bank assets.

Uzbekistan's total credit-to-GDP ratio has increased substantially since 2017 and reached the levels of the Commonwealth of Independent States (CIS) and lower-middle-income countries. In 2017–2020, Uzbekistan experienced a credit boom, with credit growth outpacing GDP growth. In 2021, Uzbekistan's total credit-to-GDP ratio (44 percent) overtook the median for the CIS countries (30 percent), a group of former Soviet republics, and has been above it ever since. Uzbekistan also quickly reached the total credit-to-GDP median for lower-middle-income countries.

Since the pandemic, banks' non-performing loans (NPLs) have risen sharply to 5-6 percent of total loans. Besides the pandemic, the state-directed lending programs and improved NPL reporting by banks contributed to a significant increase in NPLs. As of July 1, 2022, the NPL ratio in Uzbekistan (4.9 percent) was lower than the average for the CIS countries (5.9 percent) and Central Asia and the Caucasus countries (5.2 percent). By sectors, NPLs in industry and agriculture increased significantly.

The share of mortgage loans with a payment-to-income (PTI) ratio higher than 51 percent and a loan-to-value (LTV) ratio from 76 to 90 percent remains high. Although from 2018 to 2021, the share of mortgage loans with a PTI ratio higher than 51 percent decreased, they still account for 60-70 percent of all mortgage loans. To limit overindebtedness risks for borrowers, in 2020, the CBU introduced a limit on issuing loans to individuals with a PTI ratio of more than 50 percent. Around 90 percent of all mortgage loans have an LTV ratio from 76 to 90 percent.

An additional capital buffer is needed for domestic systemically important banks (D-SIBs). Estimates based on the Basel Committee's long-term economic impact (LEI) approach suggest that the requirement for Common Equity Tier 1 (CET1) in Uzbekistan (8 percent) is lower than its optimal level. The Herfindahl-Hirschman Index (HHI) indicates moderate concentration in Uzbekistan's banking sector. The LEI analysis and HHI suggest introducing an additional buffer of 2 percent for the Uzbek D-SIBs, which should be met by CET1. However, the buffers and the minimum capital requirements should be harmonized before introducing an additional capital buffer for D-SIBs.

The banking system appears resilient in the preliminary macro stress testing exercise. In the baseline and moderately adverse scenarios, by end-2024, the banking system will withstand shocks well, with its capital adequacy ratio (CAR) comfortably above the regulatory minimum of 13 percent. Only in the severely adverse scenario, which, inter alia, implies a drastic economic deterioration and sizable exchange rate depreciation, the CAR will breach the 13 percent threshold due to significant loan losses and the growth of risk-weighted assets (RWA). Nevertheless, the breach will not be dramatic, and the banking system will still have enough cushion to absorb reasonable losses.

I. Macro-Financial Conditions

International financial institutions (IFIs) and central banks develop financial conditions indices (FCIs) to assess macro-financial developments and provide a snapshot of financial market stress (Appendix 1). According to the International Monetary Fund's (IMF) FCI, the tightening of financial conditions observed in advanced economies this year can be explained by the decline in corporate valuations, higher government bond yields, and continued expectations of monetary policy normalization[1].

Figure 1: Financial Conditions: Advanced Economies (Standard deviations from the mean[2])

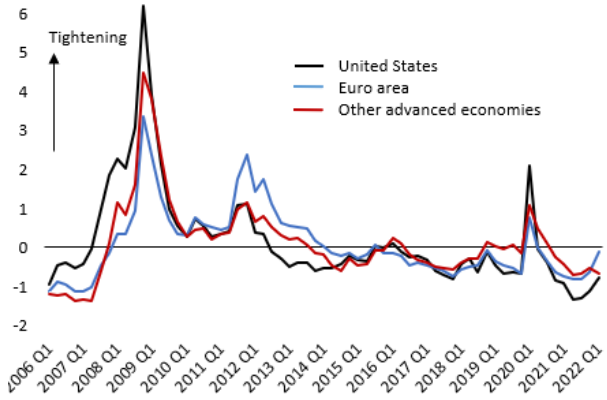
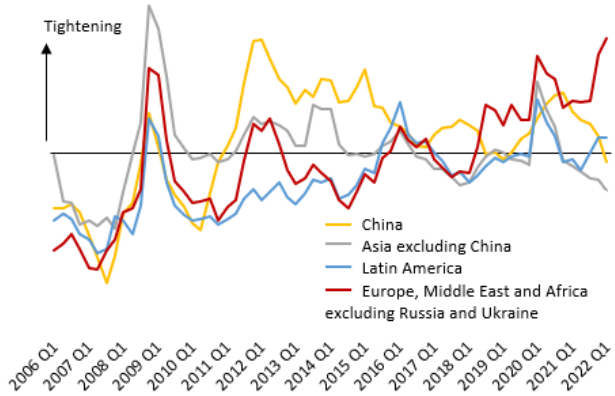


Figure 2: Financial Conditions: Emerging Markets (Standard deviations from the mean)



Source: IMF.

Emerging market economies face a high risk of tighter financial conditions and capital outflows. The sharp rise in external borrowing costs and the rise in local currency rates have seriously affected financial conditions in Eastern European countries with close ties to Russia. Higher interest rates to curb inflation, lower equity valuations, and higher external borrowing costs have tightened financial conditions in many other emerging market economies[3].

After the global economic downturn caused by the Covid-19 pandemic, low-income developing economies grew by 4.1 percent in 2021, thanks

[1] International Monetary Fund, Global Financial Stability Report, April 2022, pp. 3-4. https://www.imf.org/en/Publications/GFSR/Issues/2022/04/19/global-financial-stability-report-april-2022

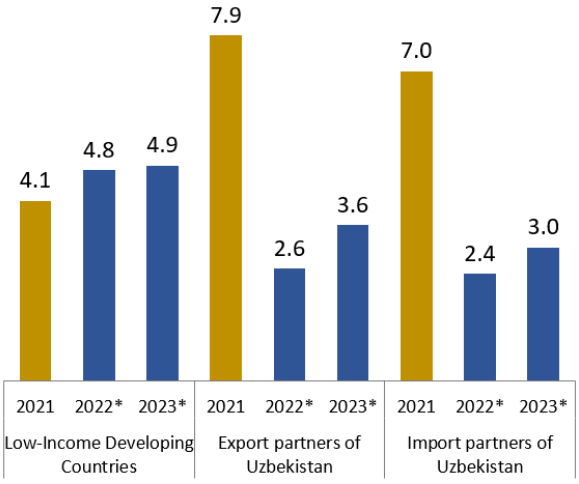
[2] The index indicates how many times the standard deviation differs from the average value.

[3] International Monetary Fund, Global Financial Stability Report, April 2022, p. 4. https://www.imf.org/en/Publications/GFSR/Issues/2022/04/19/global-financial-stability-report-april-2022

to the recovery in aggregate demand boosted by the lifting of restrictive health measures and the vaccination roll-out.

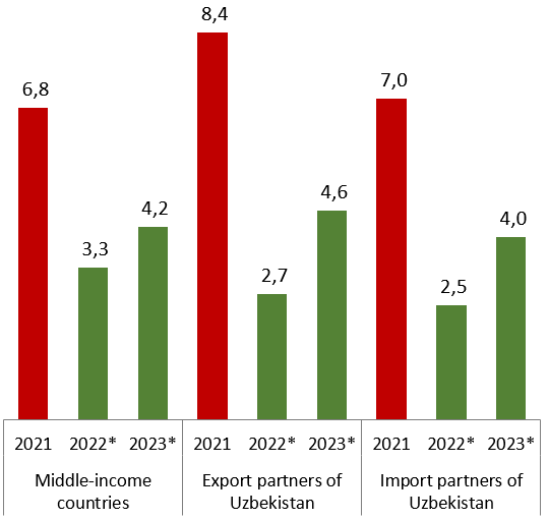
Despite high uncertainty due to the geopolitical situation and high global inflation, the IMF forecasts economic growth in low-income developing countries at 4.8 and 4.9 percent in 2022 and 2023, respectively[4].

Figure 3. Growth Projections, %



Source: IMF.

Figure 4. Growth Projections, %



Source: World Bank.

Note: * Forecast.

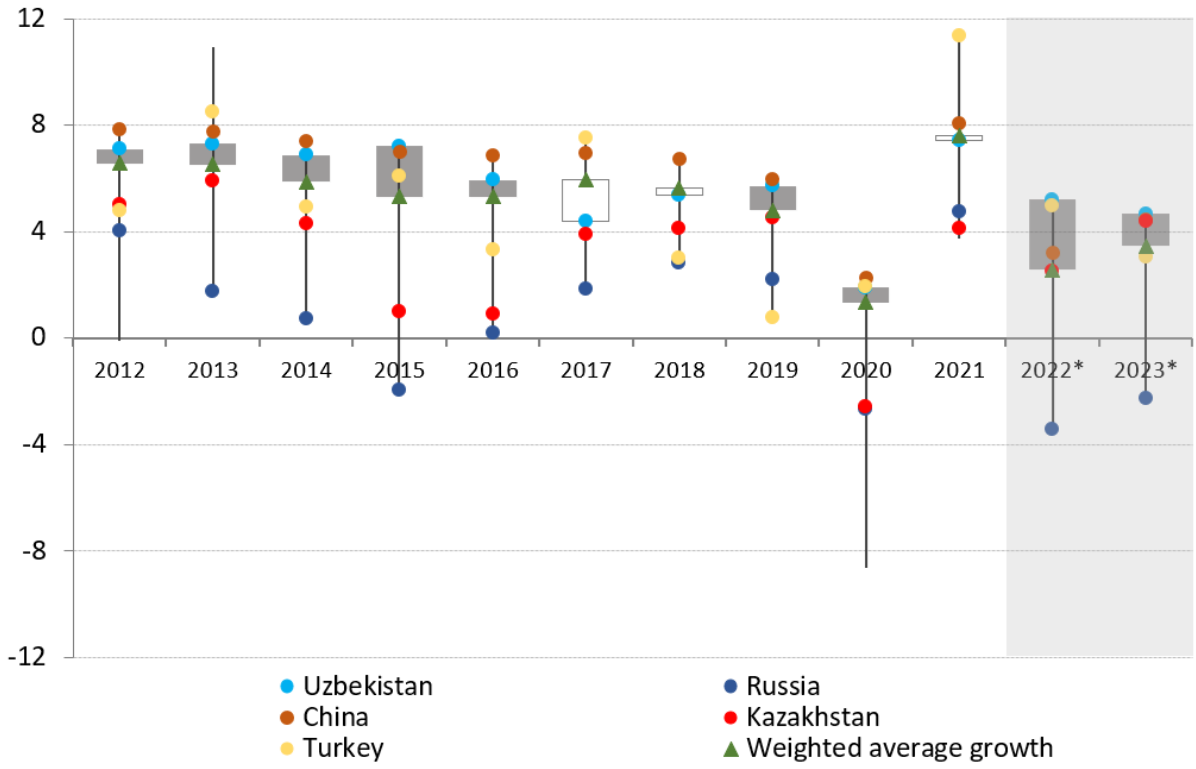
China, Russia, Turkey, Kazakhstan, and Kyrgyzstan are Uzbekistan's largest importing trading partners. Russia, China, Kazakhstan, South Korea, Turkey, and Germany are the six largest countries in Uzbekistan's imports.

In 2021, growth in middle-income countries rebounded to 6.8 percent following the relaxation of the quarantine measures. According to the World Bank, in 2022, growth in middle-income countries is expected to slow down to 3.3 percent due to the deteriorated global economic environment that pushed up food and energy prices[5].

[4] International Monetary Fund, World Economic Outlook October 2022. https://www.imf.org/en/Publications/WEO/Issues/2022/10/11/world-economic-outlook-october-2022

[5] World Bank, Global Economic Prospects June 2022. https://www.worldbank.org/en/publication/global-economic-prospects

Figure 5. Growth Distribution of the Main Trading Partners of Uzbekistan, %



Sources: IMF, CBU staff calculations.

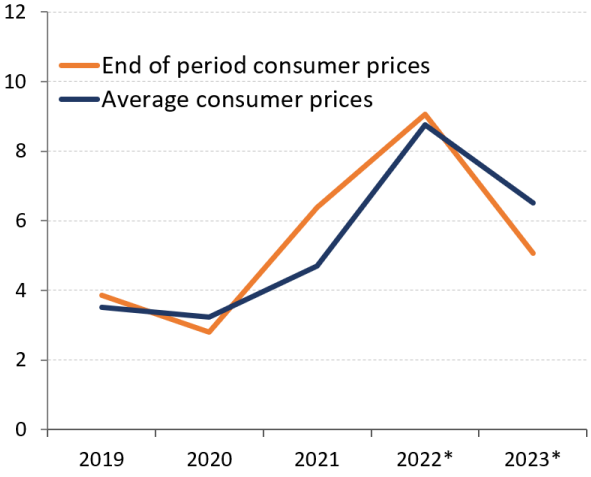
Note: * Forecast.

The rectangle in the chart shows the difference between Uzbekistan's GDP growth rate and the weighted average of GDP growth rates for selected countries (China, Kazakhstan, Kyrgyzstan, Russia, South Korea, Turkey, and Uzbekistan). The greater the difference between the growth rates, the longer the rectangle. If Uzbekistan's GDP growth rate is greater than the weighted average, the rectangle is shadowed, and if vice versa, it is blank. The highest point of a vertical black line indicates the maximum growth rate among the 7 countries for a given year, and its lowest point indicates the minimum growth rate.

Uzbekistan's economic growth rate during 2012–2019 (except 2017 and 2018) was higher than the weighted average growth rate of its main trading partners. In 2017 and 2018, real GDP grew by 4.4 and 5.4 percent, respectively. Uzbekistan's economy grew by 1.9 percent in 2020 and 7.4 percent in 2021 due to the policy support measures during the pandemic. Taking into account the lower-than-expected impact of the negative external economic developments, higher economic activity, and growing external trade turnover, for 2022 the Central Bank of Uzbekistan (CBU) forecasts a real GDP growth rate of about 5.0–5.5 percent.

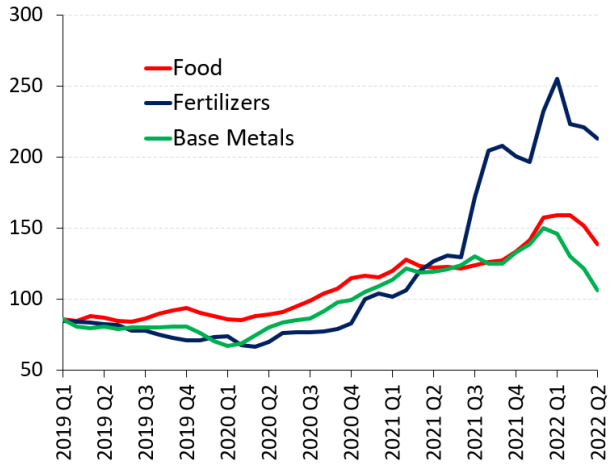
Central banks worldwide face a difficult choice between curbing high inflation and ensuring a post-pandemic economic recovery at a time of increased uncertainty about the global economic outlook.

Figure 6. Global Inflation (Consumer Price Index), %



Source: IMF.

Figure 7. Global Price Index for Selected Products (USD Indices, 2010=100)



Source: World Bank.

Global inflation is a weighted average of individual countries' numbers using GDP valued at purchasing power parity as weights.

Since 2021 pent-up consumer demand, supply chain disruptions, the geopolitical tensions, and rising food and energy prices have caused a significant increase in global inflation. According to the latest IMF World Economic Outlook (WEO), in 2022, consumer prices are expected to rise by 7.2 percent in advanced economies and 9.9 percent in emerging market and developing economies[6]. Since food and energy make up a larger share of consumption baskets in developing countries, their high price increases are expected to have a stronger impact on inflation than in developed countries[7].

The global economic slowdown and increased supply led to lower non-fuel prices in Q2 2022. In May–August 2022, world food commodity prices declined for the 4th consecutive month. The World Bank Food Price Index for August was 136.4 points (2010=100), 14 percent lower than its peak in April 2022. A sharp drop in wheat prices led to lower food prices as production levels in Canada, the US, and Russia improved, and exports from the Black Sea ports in Ukraine resumed in July[8].

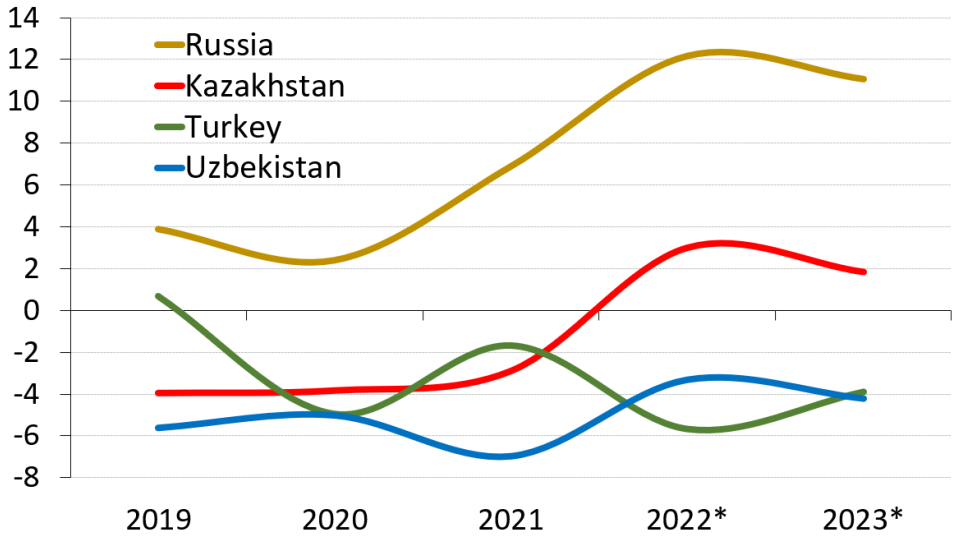
[6] International Monetary Fund, World Economic Outlook Update October 2022, Table A5. https://www.imf.org/en/Publications/WEO/Issues/2022/10/11/world-economic-outlook-october-2022

[7] Bank for International Settlements, Annual Economic Report 2022 of the BIS, p. 14. https://www.bis.org/publ/arpdf/ar2022e.pdf

[8] Institute of International Finance, Nonfuel commodity prices fall as global economy slows, 2022, p.1. https://www.iif.com/portals/0/Files/content/32370132_september_2022_nonfuel_commodity_prices.pdf

Central banks worldwide have tightened monetary policy in response to high inflation. In most countries with floating interest rates, higher interest rates can increase the debt service burden for businesses and households[9]. As a result of an increase in defaults, financial institutions may incur losses in their loan portfolios. In addition, even if inflation reduces the real value of outstanding debt[10], borrowers may experience debt service problems if their income does not exceed investment and consumption expenditures[11].

Figure 8. Current Account Balances of Uzbekistan and Selected Main Trading Partners, % of GDP



Source: IMF.
Note: * Forecast.

In 2021, Uzbekistan's current account balance was -4.8 billion US dollars, or 7 percent of GDP[12]. According to the IMF's forecasts for 2022 and 2023, the current account balance of Uzbekistan is expected to be -3.3 and -4.2 percent of GDP, respectively[13].

In H1 2022, Uzbekistan's current account balance was -830.5 million US dollars, the trade balance was -6.5 billion US dollars, and the balance of primary and secondary income was 5.7 billion US dollars. In addition,

[9] Bank for International Settlements, Annual Economic Report 2022 of the BIS, p. 17. https://www.bis.org/publ/arpdf/ar2022e.pdf

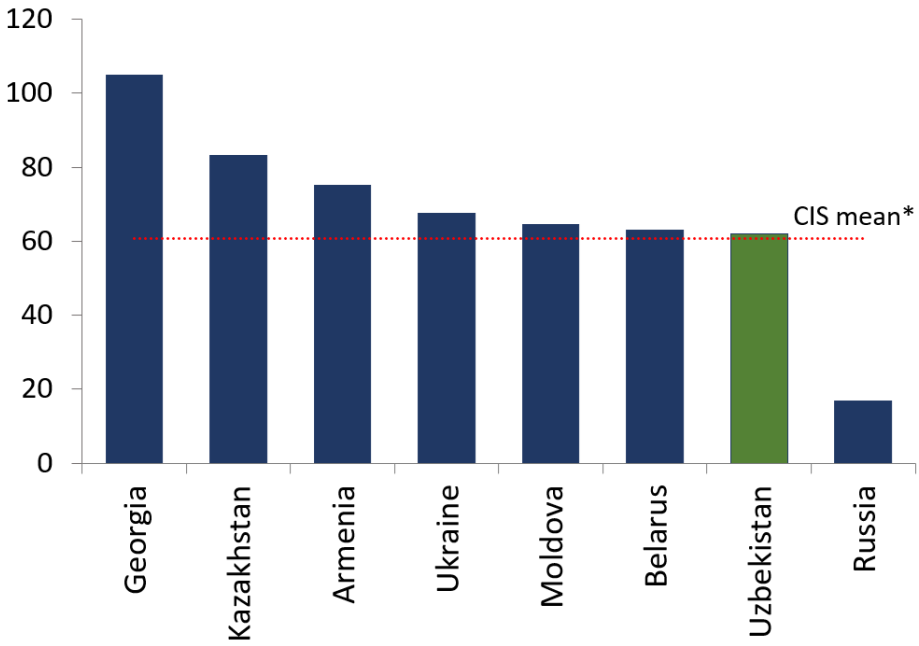
[10] The real value of any nominal amount of outstanding debt decreases as prices increase.
[11] European Central Bank, Financial stability implications of higher than expected inflation, 2022. https://www.ecb.europa.eu/pub/financial-stability/fsr/focus/2022/html/ecb.fsrbox202205_03~df74747300.en.html

[12] International Monetary Fund, World Economic Outlook database, April 2022. https://www.imf.org/en/Publications/WEO/weo-database/2022/April/download-entire-database

[13] International Monetary Fund, World Economic Outlook Update October 2022, Annex Table 1.1.4. https://www.imf.org/en/Publications/WEO/Issues/2022/10/11/world-economic-outlook-october-2022

cross-border remittances reached their highest value since the pandemic (1.5 billion US dollars), ensuring a positive primary income balance[14].

Figure 9. Total External Debt-to-GDP Ratio in Selected Countries, % (As of July 1, 2022)



Sources: National authorities, CBU.

Note: * Armenia, Belarus, Moldova, Kazakhstan, Russia, Ukraine, and Uzbekistan are taken into account.

In 2017, due to market-based reforms, Uzbekistan's government, in cooperation with IFIs, tapped long-term external funding for infrastructural projects, regional development programs, and budget financing. In 2021, the external debt-to-GDP ratio stabilized at around 60 percent, thanks to the strong economic growth of 7.4 percent and the introduction of annual limits on public external debt. In 2021, Uzbekistan's external debt was below the CIS mean (71 percent). In H1 2022, long-term debt (39.8 billion US dollars) made up about 87 percent of Uzbekistan's gross external debt (45.8 billion US dollars)[15].

[14] Central Bank of the Republic of Uzbekistan, Balance of payments of the Republic of Uzbekistan (standard presentation), 2022. https://cbu.uz/en/statistics/bop/690357/

[15] Central Bank of the Republic of Uzbekistan, Balance of Payments and International Investment Position of the Republic of Uzbekistan, 2022. https://cbu.uz/upload/medialibrary/734/te1sbjd7fo4axxbyiziijfatuwv8ac9s/en_BOP_-IIP_2Q2022..pdf

Figure 10. Uzbek Bank Liabilities to Non-Residents, % of GDP

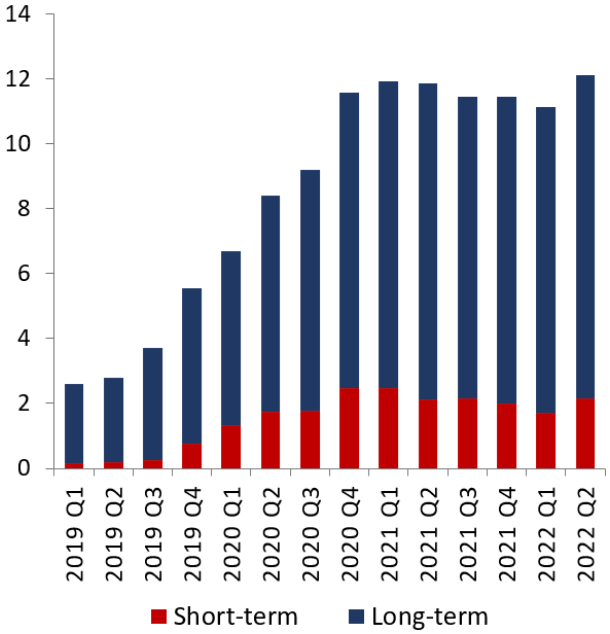
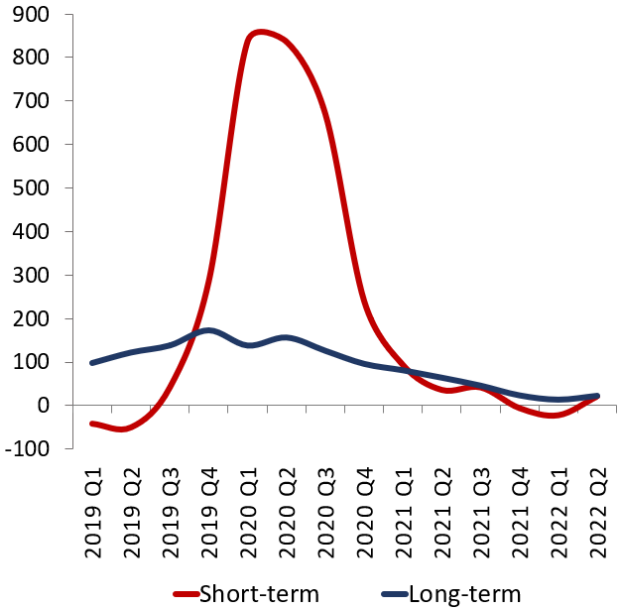


Figure 11. Uzbek Bank Liabilities to Non-Residents, annual percent change (YoY)



Source: CBU.

As of July 1, 2022, the gross liabilities of commercial banks to non-residents increased by 22 percent or 1.6 billion US dollars compared to the corresponding period of 2021 and amounted to nearly 9 billion US dollars. After a significant increase in the banks' gross external liabilities-to-GDP ratio during the pandemic, it has stood at around 11-12 percent since 2021. 67 percent of these liabilities corresponded to loans and debts by foreign banks and IFIs. The amount of these loans and debts remained unchanged in the year to the end of June.

By end-H1 2022, long-term liabilities comprised 82 percent of banks' gross external liabilities or 7.4 billion US dollars. From 2020 to Q2 2021, the annual growth rate of banks' short-term liabilities decreased significantly and was lower than that of long-term liabilities. The high share of long-term liabilities favors their use for financing long-term projects while reducing liquidity risks for banks.

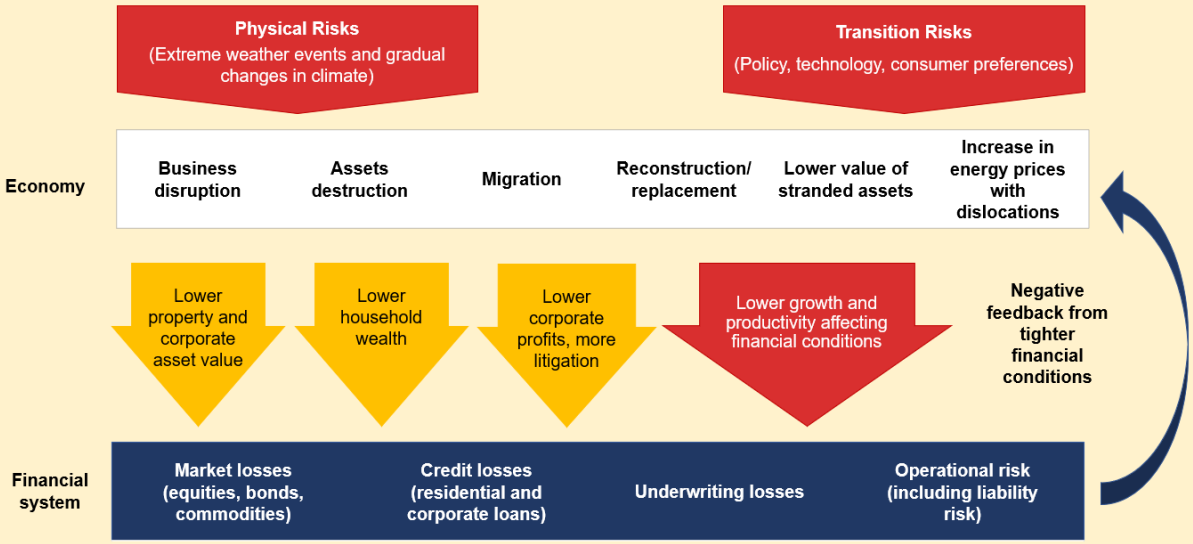
Also, the maturity structure of commercial banks' gross liabilities to non-residents can significantly negatively affect the domestic credit and foreign exchange markets. In particular, short-term debt obligations pose a rollover risk to banks that rely on external financing. Conversely, long-term liabilities could help reduce this risk and mitigate the effects of adverse external shocks.

Box 1. Climate Change Risks

Climate change risks to financial stability are typically divided into physical and transition risks[16]. Physical risks are the economic costs due to the intensification of climate-related extreme weather events, which can reduce the value of financial assets or increase liabilities. Transition risks are related to the process of adaptation to a low-carbon economy. During such an adjustment, changes in climate change mitigation and adaptation policies can affect the value of financial assets and liabilities.

Increased physical risks could result in both market and credit risks to the financial system. Market risks – the risk of reductions in the value of financial assets – could result in losses for banks, asset owners, and other financial institutions. Physical risks can cause credit losses due to the reduced income of borrowers. Credit risks can arise as a result of a decrease in the value of collateral assets. Together, these effects could have a broad range of impacts on the financial system, reducing the value of investments, and increasing risks to lenders and other financial market participants.

Physical and Transition Risks of Climate Change



Source: IMF.

Transition risks imply important structural changes in the economy, including a reallocation of investments. This could have a significant impact on firms involved in the production of fossil fuels, such as coal, oil and gas, as well as other sectors whose business models rely on using such fossil fuels or that are energy intensive (such as utilities, heavy industry, and the transportation sector). A disorderly transition by market participants to a low-carbon economy could have negative

[16] Financial Stability Board, The Implications of Climate Change for Financial Stability, 2020. https://www.fsb.org/wp-content/uploads/P231120.pdf

effects on financial stability. Such a transition might occur due to sudden changes in technology and public policy.

Central banks and financial regulators are increasingly paying more attention to the impact of climate change on financial stability. The CBU became a member of the expanding Network of Central Banks and Supervisors for Greening the Financial System (NGFS), which includes 116 members, to share experience in managing climate-related risks in the financial sector and learn international best practices.

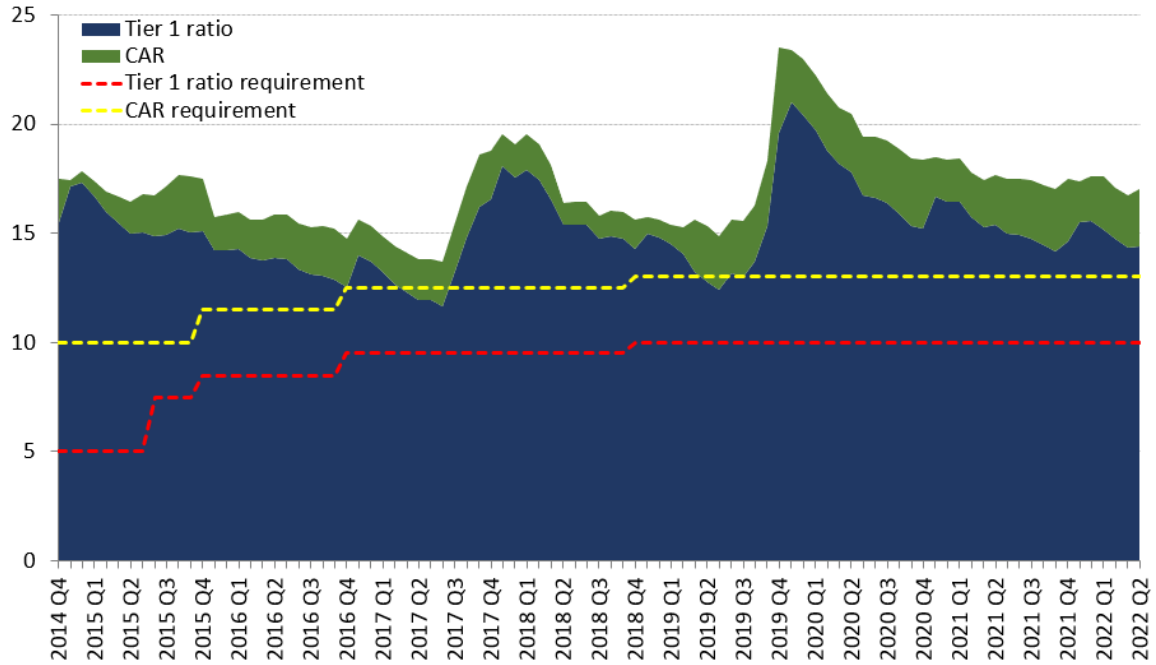
II. Analysis of Banking System Stability

2.1. Analysis of Financial Stability Indicators

The CAR[17] is one of the main indicators of bank solvency. According to Basel III requirements, a bank's total capital ratio must be no lower than 8 percent of RWA. In addition, Basel III requirements envisage the implementation of additional capital buffers, such as a capital conservation buffer (2.5 percent of RWA), a countercyclical capital buffer (0–2.5 percent of RWA), and a buffer for global and domestic systemically important banks (no specific limit is set).

Considering the assessment of the Uzbek banking system stability and Basel III's additional capital buffer requirements, the CAR for banks is set at 13 percent. As of July 1, 2022, financial stability indicators were at robust levels. Banks complied well with the CBU's requirements, having sufficient capital to absorb potential losses.

Figure 12. Capital Adequacy Ratio in the Banking Sector, %



Source: CBU.

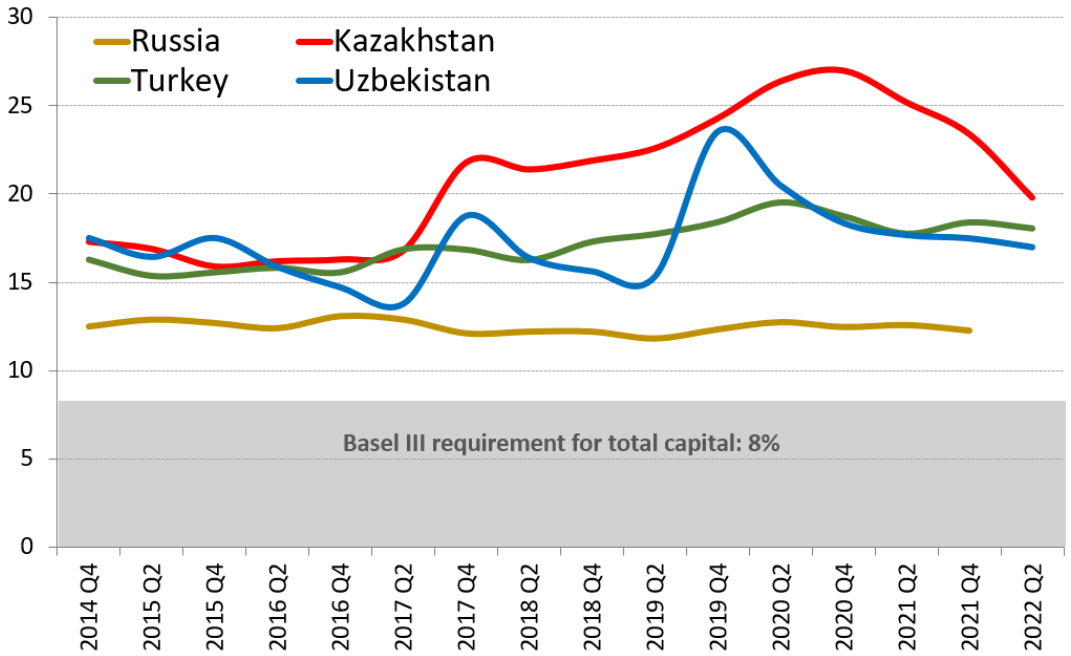
[17] According to the CBU requirements, the ratio of regulatory capital to the total amount of RWA should be at least 13 percent. The CAR is calculated as follows:

$$\text{CAR} = \frac{\text{Regulatory capital}}{\text{Total risk–weighted assets}}$$

The CBU has gradually modified the minimum capital requirements methodology to match the latest Basel accords. In 2015, the Tier 1 Capital Ratio requirement increased twice from 5 to 8.5 percent, while the CAR grew from 10 to 11.5 percent. Under these regulation changes, the Tier 1 Capital Ratio was split into CET1 and Additional Tier 1 Capital. The following increase in capital requirements (both CAR and Tier 1 Capital Ratio increased by 1 percentage point) took effect on January 1, 2017.

Before the regulation amendments, which took effect on October 1, 2017, the minimum share capital for private and other commercial banks was 5 million and 10 million euros, respectively. However, according to the new rules, the minimum share capital for all commercial banks was set at 100 billion soums[18]. Subsequently, all banks, particularly private ones, began raising their capital to meet the regulatory minimum.

Figure 13. Total Capital-to-RWA Ratio in the Banking Sectors of Uzbekistan and Selected Main Trading Partners, %



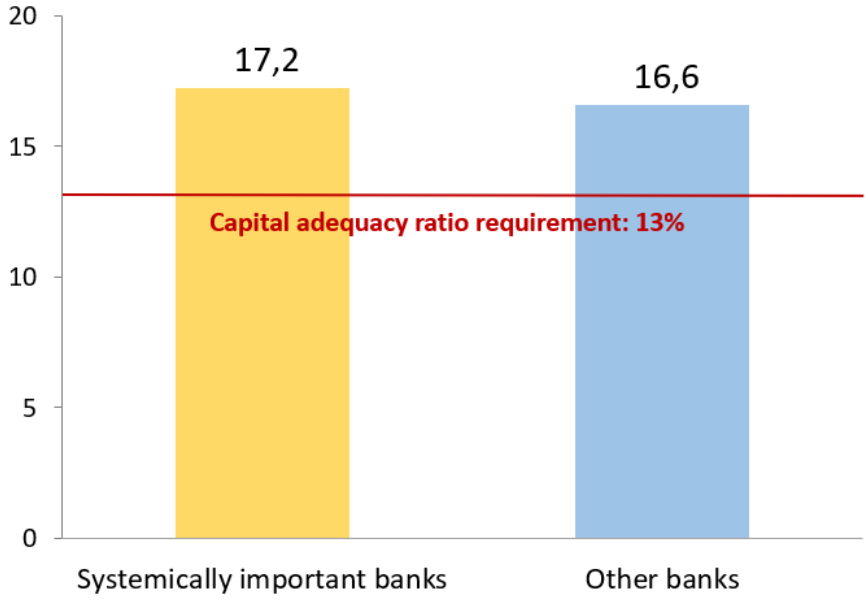
Sources: National authorities, CBU.

[18] O‘zbekiston Respublikasi Markaziy banki Boshqaruvining “Tijorat banklari kapitalining monandligiga qo‘yiladigan talablar to‘g‘risidagi nizomga o‘zgartirishlar kiritish haqida” gi 26/7-sonli qarori, 2017. https://lex.uz/docs/-3389824

The CAR rose sharply in Q1 2020. Assets of state-owned banks (SOBs) increased rapidly because of government-supported lending programs. SOBs' capitalization strengthened due to the capital injections by the Fund for Reconstruction and Development of Uzbekistan (UFRD)[19].

From 2020 to 2021, notwithstanding an increase in regulatory capital, the CAR decreased by about 6 percentage points due to the substantial expansion of the loan portfolio. The rise in RWA surpassed banks' regulated capital growth. Consequently, the CAR for SOBs declined by around 4 percentage points but remained stable for private commercial banks.

Figure 14. CAR of Systemically Important Banks and Other Banks (as of July 1, 2022), %



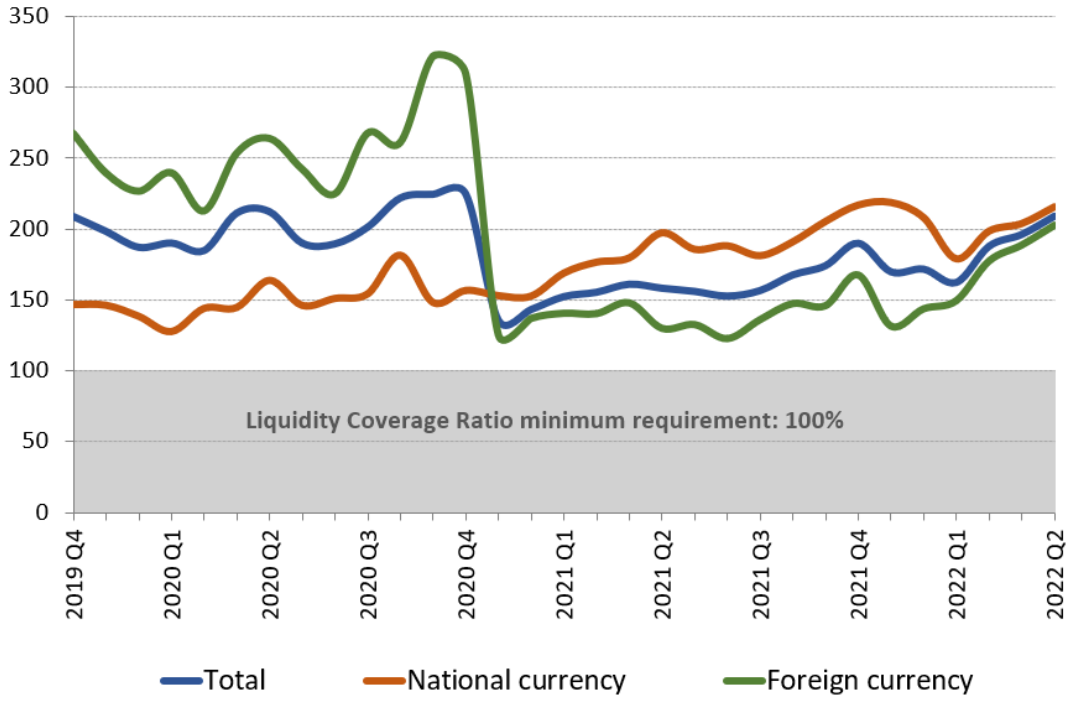
Source: CBU staff calculations.

In 2022, the CBU conducted initial studies to identify systemically important banks (SIBs)[20]. The identified SIBs are all large SOBs that the government uses mainly to fund various state programs. It is a key reason SIBs have more capital than other commercial banks.

[19] O'zbekiston Respublikasi Prezidentining "O'zbekiston Respublikasi aksiyadorlik tijorat Xalq banki va «Mikrokreditbank» aksiyadorlik tijorat bankining moliyaviy holatini yaxshilash hamda faoliyatini yanada takomillashtirish chora-tadbirlari to'g'risida" gi PQ-3694-sonli Qarori, 2018. https://lex.uz/docs/-3721642

[20] For identifying SIBs, four broad indicators were used: size, interconnectedness, substitutability, and complexity.

Figure 15. Liquidity Coverage Ratio of the Banking Sector, %



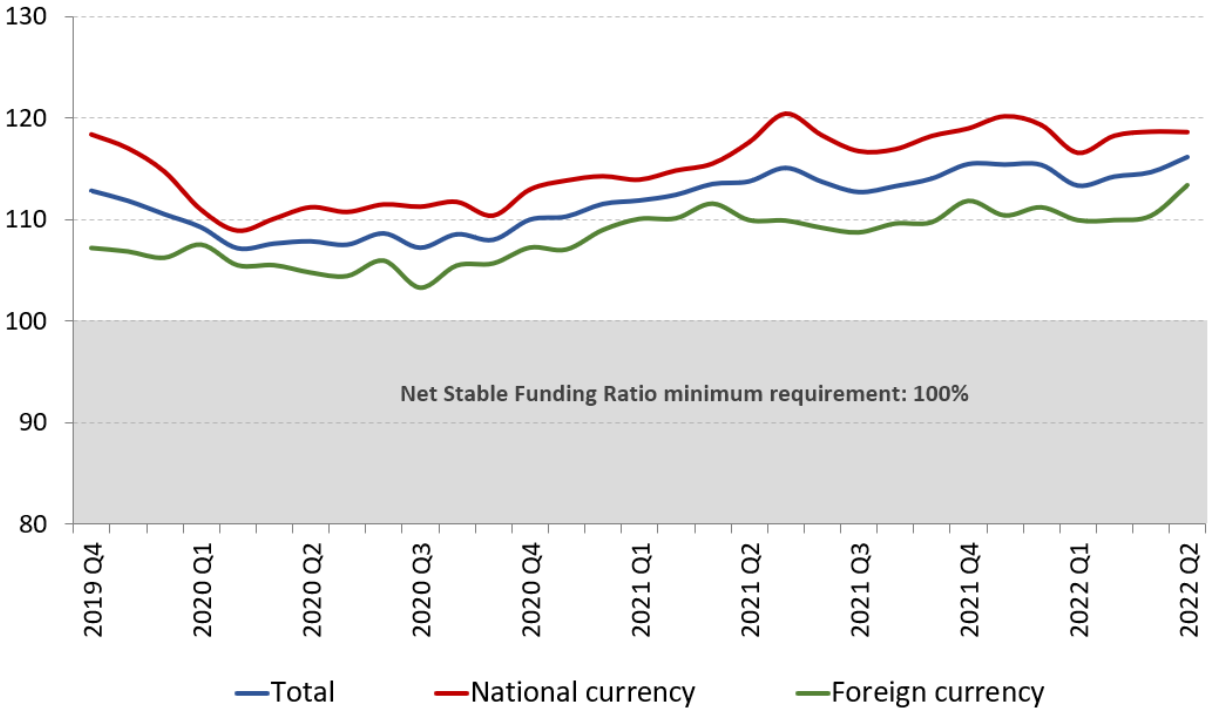
Source : CBU.

Since the Uzbek banking system's liquidity coverage ratio (LCR) is well above the CBU's regulatory requirements, the banks are resilient to short-term liquidity shocks. Although economic activity decelerated after the strict quarantine measures in Q1 2020, banks' LCR did not significantly decrease, thanks to the CBU's continuous liquidity support operations. In early 2021, the CBU modified the LCR calculation methodology to estimate net cash outflows in foreign currencies more accurately. In these amendments, the CBU tightened the requirements for highly liquid assets and assets in foreign currency. Subsequently, the LCR in foreign currency dropped sharply.

The net stable funding ratio (NSFR), introduced by Basel III requirements to ensure the banking system's liquidity, is defined as the amount of available stable funding relative to the amount of required stable funding[21]. Between 2020 and Q2 2022, the total NSFR of Uzbekistan's banking system was higher than the minimum requirement (100 percent). Starting from Q2 2020, the total NSFR has been trending upward.

[21] Basel Committee on Banking Supervision, Basel III: the net stable funding ratio, October 2014. https://www.bis.org/bcbs/publ/d295.pdf

Figure 16. Net Stable Funding Ratio of the Banking Sector, %



Source: CBU.

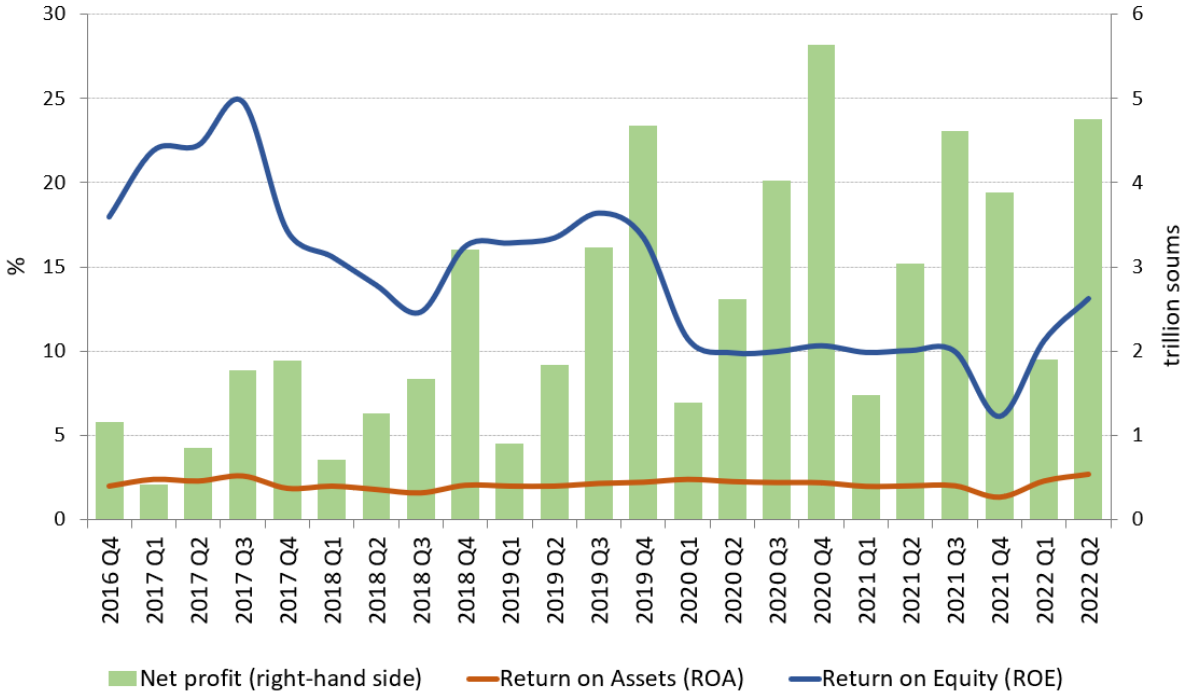
The NSFR decreased in Q1 2020. The decline can be explained by the slowdown in deposit growth due to the imposition of pandemic-related restrictions and a significant increase in the volume of loans with a maturity of more than one year issued to legal entities. In addition, loan deferments were given to the affected legal entities and individuals to mitigate the negative impact of borrowers' financial stress during the pandemic on the banking system and prevent a surge in NPLs[22].

The NSFR in national currency rose by 10,1 percentage points in July 2021 compared to November 2020 thanks to significant growth in the deposit volume, driven by a rise in weighted average interest rates on long-term deposits in national currency by 2.4 percentage points[23] and the stable exchange rate. The total NSFR has been around 110–120 during 2022.

[22] O'zbekiston Respublikasi Prezidentining "Koronavirus pandemiyasi davrida aholi, iqtisodiyot tarmoqlari va tadbirkorlik sub'ektlarini qo'llab-quvvatlashga doir qo'shimcha chora-tadbirlar to'g'risida" gi PF-5978-sonli Farmoni, 2020 yil 3 aprel. https://lex.uz/uz/docs/-4780475

[23] Central Bank of the Republic of Uzbekistan, Monetary Statistics: Interest rates on bank deposits in national currency. https://cbu.uz/en/statistics/dks/691622/

Figure 17. Profitability in the Banking Sector

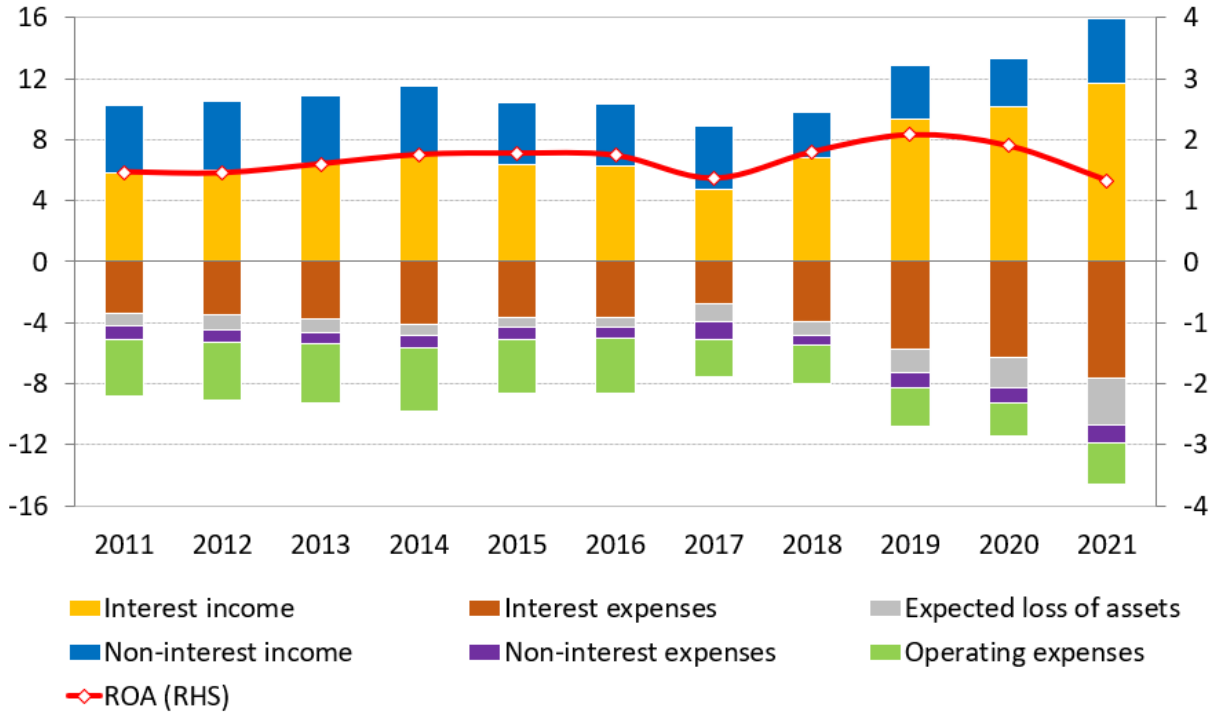


Source: CBU.

Despite the Covid-19-related slowdown in economic activity in 2020, banks' net profit in monetary value increased continuously until end-2020. However, the pandemic ultimately took a toll on bank profitability in 2021. As of end-2021, the net profit decreased by about 1.8 trillion soums compared to end-2020. Because of the easing of the pandemic-related restrictions, banks achieved a high net profit in H1 2022, which was 1.7 trillion soums more compared to H1 2021.

The profitability ratios indicate that banks' net profit does not increase at the same pace as their assets or equity. The return on equity (ROE) ratio reached 25 percent in 2017, a 5-year peak. At the beginning of 2020, the decline in bank profitability was noticeable in SOBs. During 2020 and 2021, the ROE stayed around 10 percent. In Q4 2021, the ROE of the banking system plunged owing to an increase in regulatory capital and a decrease in net profit.

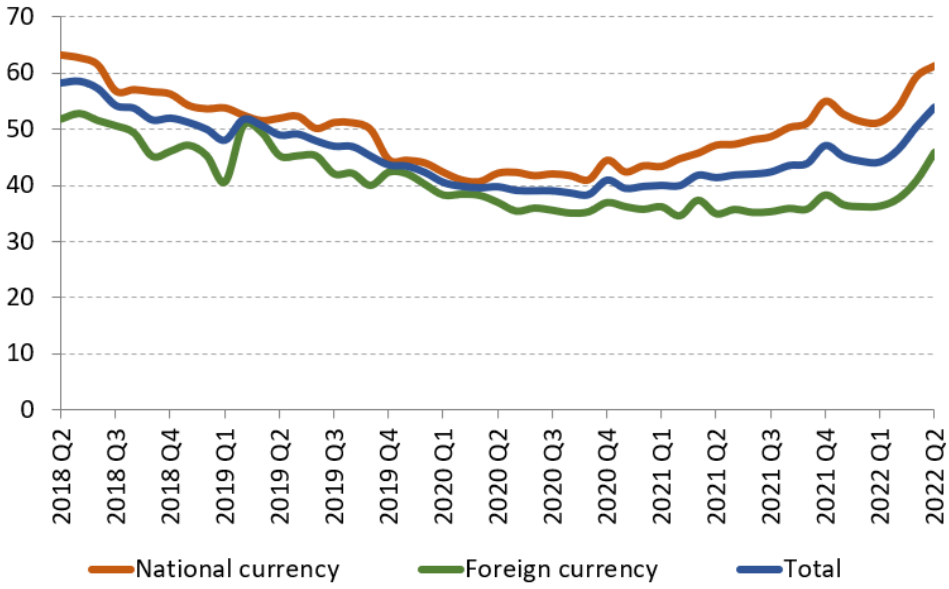
Figure 18. ROA Decomposition for the Banking Sector, %



Source: CBU staff calculations.

Commercial banks in Uzbekistan are mainly involved in traditional banking. Although banks try to diversify their services, they do not offer investment-banking services because of the underdeveloped financial market. Thus, interest income traditionally makes up a large part of the banks' income. Over the last four years, the share of interest income and expenses increased.

Figure 19. Deposit-to-Loan Ratio, %



Source: CBU.

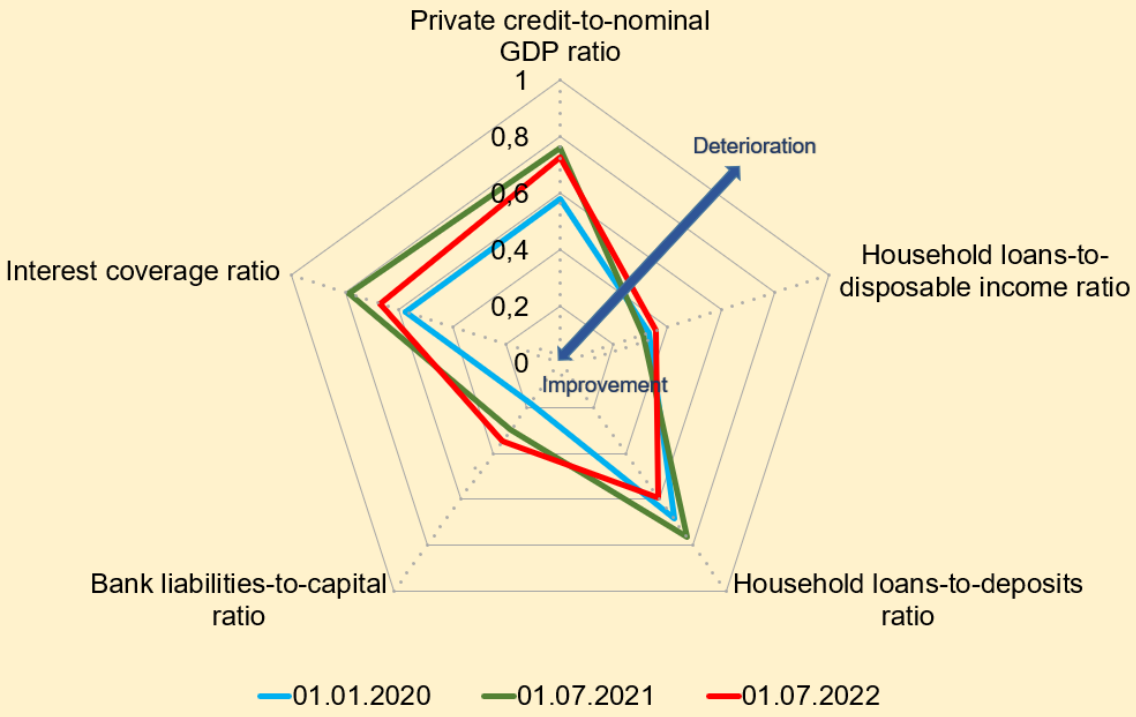
In Uzbekistan, the lower volume of deposits compared to the volume of loans indicates that loans of large SOBs are mainly funded through other sources[24]. The funding primarily comes from the state, international capital markets, and IFIs, while private banks mostly attract deposits to expand their loan portfolios. Until 2020, loans grew slightly faster than deposits. In Q2 2022, the deposit-to-loan ratio returned to its 2018 peak.

[24] If the ratio is far below 100 percent, banks must finance lending from sources other than deposits. In contrast, a ratio above 100 percent may indicate that banks do not transform enough deposits into loans and do not earn as much as they could.

Box 2. Risk Map

A spider chart[25] compares three or more indicators on a standardized scale. The spider chart's center represents the lowest risk level of the observed indicator, while the furthest point from the center represents its highest risk level. In other words, the closer the indicator is to the center, the lower its risk level. Contrarily, as the indicator gets further from the center, its risk level increases.

Figure 1. Credit Market Conditions



Sources: Statistics Committee and CBU staff calculations.

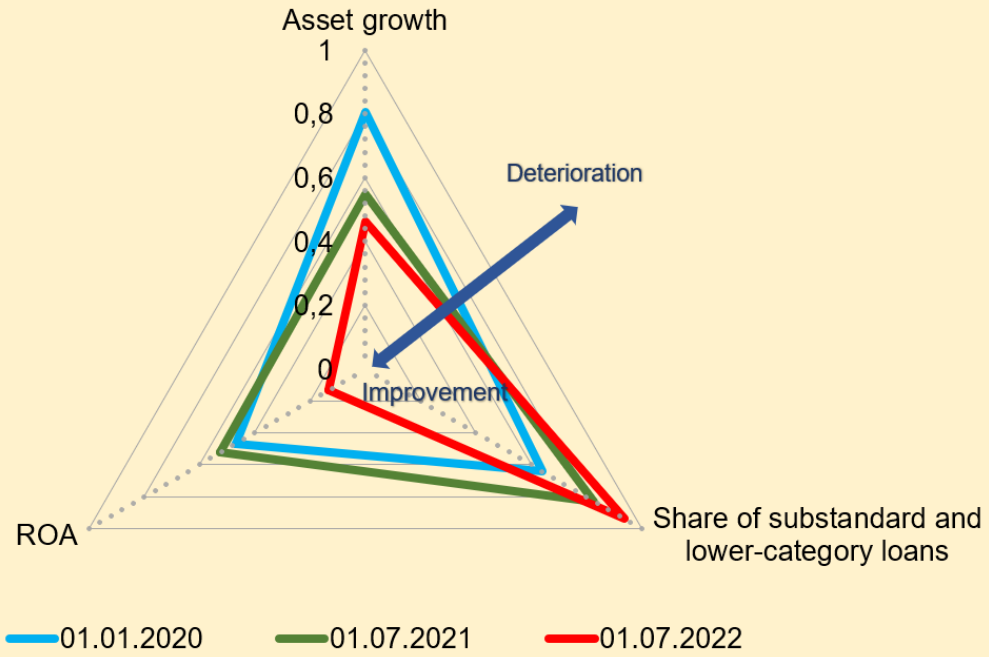
According to the map of changes in credit market conditions, the household loans-to-disposable income and household loans-to-deposits ratios returned to their pre-pandemic levels. The private credit-to-nominal GDP ratio, interest coverage ratio, and bank liabilities-to-capital ratios have not yet recovered to their pre-pandemic levels.

The private credit-to-nominal GDP ratio increased in H1 2021 and 2022 compared to H1 2020 due to increased bank lending amid the recovering economic activity from 2021. In 2021, the household loans-to-disposable income ratio improved thanks to better household solvency, given increased income levels. A higher household loans-to-deposits ratio indicates that loans are not sufficiently funded through deposits. During H1 2022, the increase in real interest rates[26] on national currency deposits of individuals compared to H1 2021 caused a significant increase in the volume of deposits that lowered the associated risk level compared to H1 2020 and 2021.

[25] The Bank of Korea, Financial Stability Report, April 2008, pp. 113-115.

The bank liabilities-to-capital ratio indicates the funding sources of bank operations. Since 2020, funds raised by some large banks through the issuance of corporate bonds in international capital markets have increased bank debt obligations. As a result, in 2021–2022, the indicator's risk level deteriorated.

Figure 2. Financial Soundness Conditions



Source: CBU staff calculations.

In the risk map for the banking sector, only the share of substandard and lower-quality loans has not returned to its pre-pandemic level.

In H1 2020–2022, the banking sector's total assets growth did not change significantly. In 2021–2022, an increase in lending to support post-pandemic economic activity fueled an upsurge in the share of substandard and lower-category loans in the bank loan portfolio. The increasing share of these loans reflects growing issues of timely debt repayments and higher default risk.

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https://www.bok.or.kr/viewer/skin/doc.html?fn=FILE_20180330085119448 1.pdf&rs=/webview/result/E0000737/200806

The spider chart was developed based on the methodology used for the financial stability map presented in the Bank of Korea's 2008 Financial Stability Report. Firstly, a specific period is selected for each indicator. Secondly, the following formula is used to calculate the standardized indicators (Z-scores) from the given data:

$$z_{i,t} = \frac{x_{i,t} - \bar{x}}{\sigma_{i,t}};$$

where, $x_{i,t}$ is an indicator, $\bar{x}$ is the arithmetic mean of the indicator, and $\sigma_{i,t}$ is the standard deviation of the indicator.

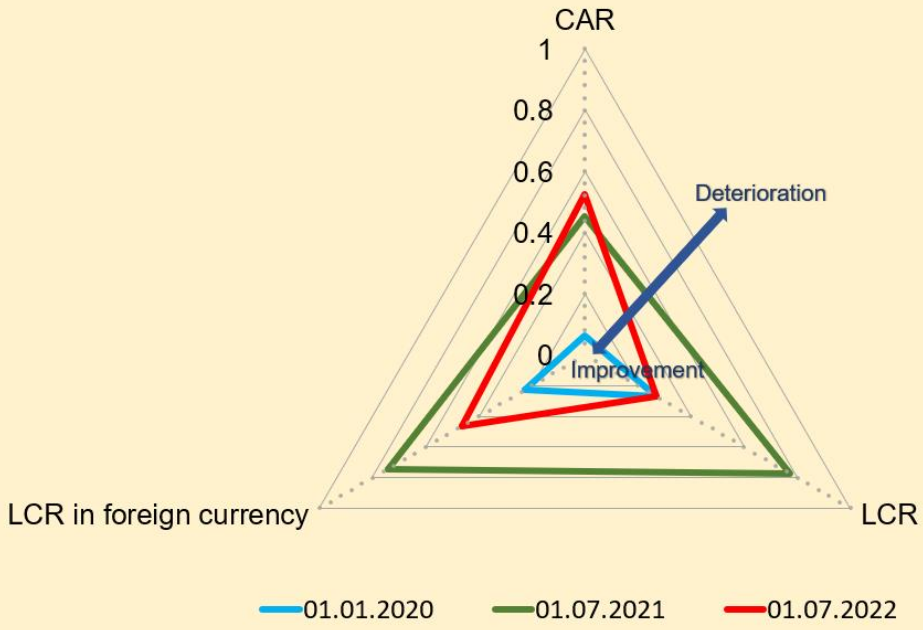
The computed indicators are mapped using the following logarithmic function: $r_{i,t} = \frac{1}{(1+exp\ (yoz_{i,t}))}$

In this case, the minimum and maximum limits of each indicator are between 0 and 1. If the result is close to 1, it means a high risk level, and if it is close to 0, it means a low risk level.

[26] Central Bank of the Republic of Uzbekistan, Statistical bulletin of the Central Bank – first half of 2022, 2022. https://cbu.uz/en/statistics/buleten/672780/

In H1 2021, compared to H1 2020, the banks' ROA decreased considerably. Since Q3 2020, the banks' total assets increased more than their profit before tax, causing a decline in the ROA. As of July 1, 2022, the ROA for the banking sector soared compared to the corresponding period of 2020–2021 on the back of the post-pandemic economic rebound and approached the low-risk area.

Figure 3. Banking System Resilience



Source: CBU staff calculations.

In the banking system resilience map, only the LCR has returned to its pre-pandemic level.

As of July 1, 2022, the CAR deteriorated due to the NPL ratio and RWA increase compared to the corresponding period of 2020 and 2021. From end-H1 2020 to end-H1 2021, the LCR, including LCR in foreign currency, deteriorated as a result of the CBU's amendments to the LCR calculation methodology at the beginning of 2021 (requirements for liquid assets in foreign currency were tightened).

2.2. Non-Performing Loans

The CBU's supervisory measures aimed at increasing NPL reporting transparency since Q4 2019 and the economic slowdown due to Covid-19 restrictions were the main drivers of a significant increase in NPLs in the recent past.

Figure 20. The NPL Ratio in Selected Countries, %

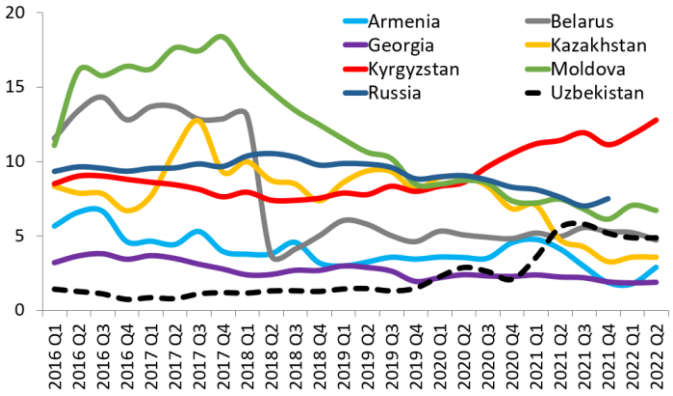
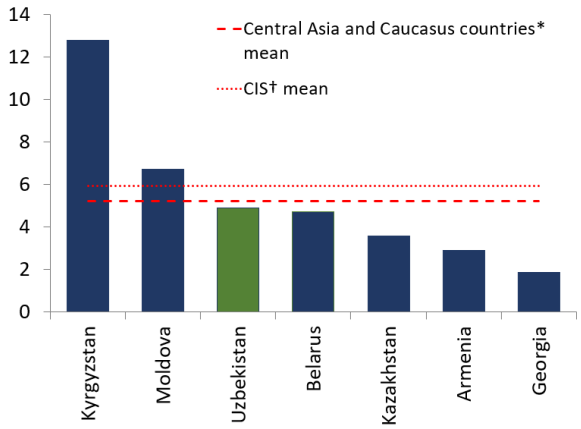


Figure 21. The NPL Ratio in Selected Countries, % (as of July 1, 2022)



Sources: National authorities, IMF and CBU staff calculations.

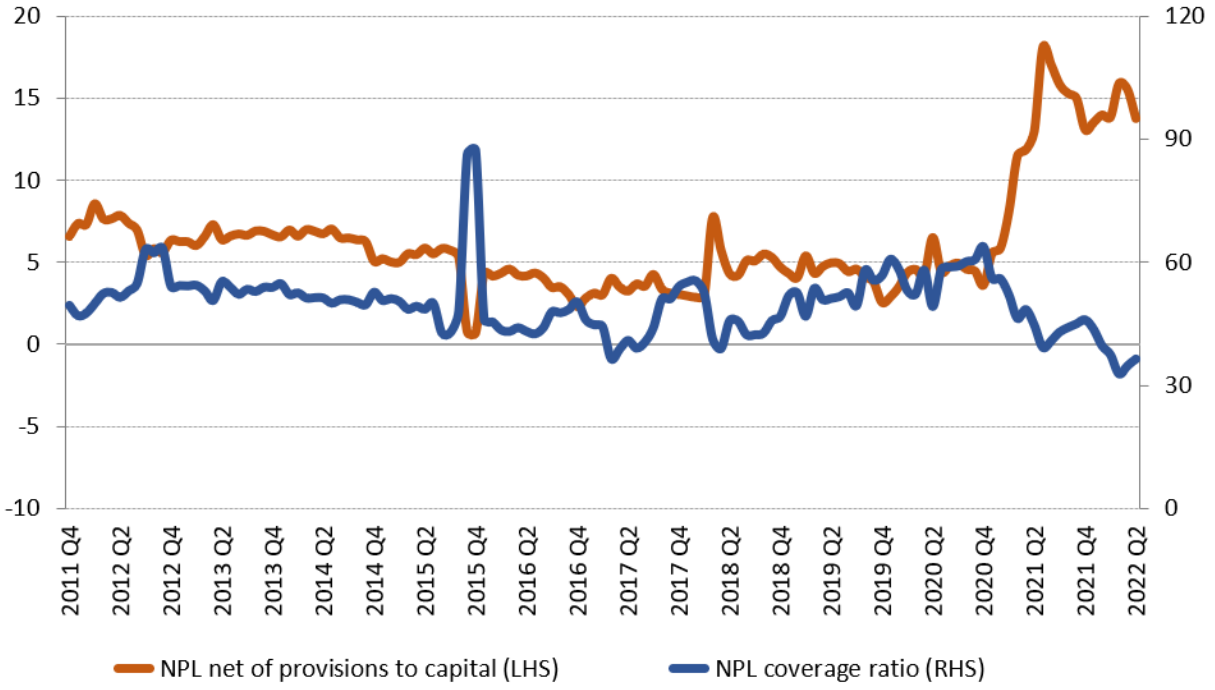
Note: * Armenia, Georgia, Kazakhstan, Kyrgyzstan, and Uzbekistan are taken into account. Tajikistan, Turkmenistan and Azerbaijan are not included due to the lack of data.
† Armenia, Belarus, Moldova, Kazakhstan, Kyrgyzstan, and Uzbekistan are taken into account. Russia, Tajikistan and Azerbaijan are not included due to the lack of data.

From 2016 to 2019, the NPL ratio in Uzbekistan was around 0.7–1.5 percent, the lowest among the CIS countries. NPLs grew rapidly from Q1 2020 and reached 4.9 percent as of July 1, 2022, due to deteriorated solvency of business entities and reduced household income during the pandemic.

Although commercial banks built sufficient reserves against loan losses, from H2 2018 to 2021, the NPL growth outpaced the growth of bank provisions for loan losses. From 2021 to end-H1 2022, the share of unsatisfactory and doubtful loans in the NPL composition increased by 3.5 and 4.2 times, respectively. This prompted a larger increase in NPLs than provisions for them[27]. As a result, the NPL-to-capital ratio increased by 10 percentage points, while the NPL coverage ratio decreased by 27 percentage points.

[27] Provisions for NPLs are set at 25 percent for unsatisfactory loans, 50 percent for doubtful loans, and 100 percent for presumed loan losses.

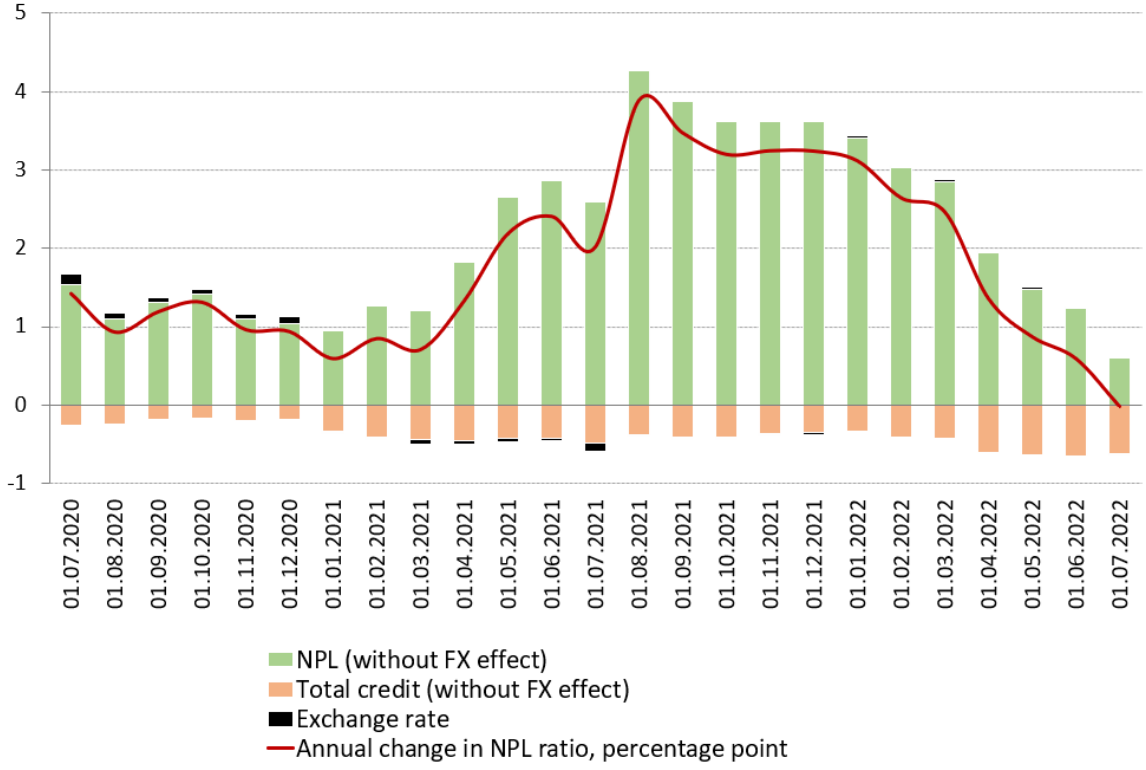
Figure 22. NPL and Provisions in the Banking Sector, %



Source: CBU staff calculations.

The total credit growth had a downward effect on the NPL ratio. In recent years, absent significant volatility, the exchange rate's impact on the annual change in the NPL ratio was negligible.

Figure 23. Decomposition of the Annual Change in the NPL Ratio, %



Source: CBU staff calculations.

Private banks in Uzbekistan usually have a lower NPL ratio than SOBs owing to their client-oriented business model, more advanced corporate governance and risk management policies, stricter loan issuance requirements, and focus on consumer loans rather than large corporate loans. Private banks seem to be more sensitive to factors that drive the NPL ratio, as their loan portfolio quality began to deteriorate earlier than at SOBs. However, unlike SOBs, private banks have relatively small loan portfolios that are easier to manage. SOBs' NPL ratio increased sharply in early 2021, exceeded private banks' NPL ratio by mid-2021, and remained high ever since.

Figure 24. Share of NPLs in Total Loans of SOBs and Private Banks, %

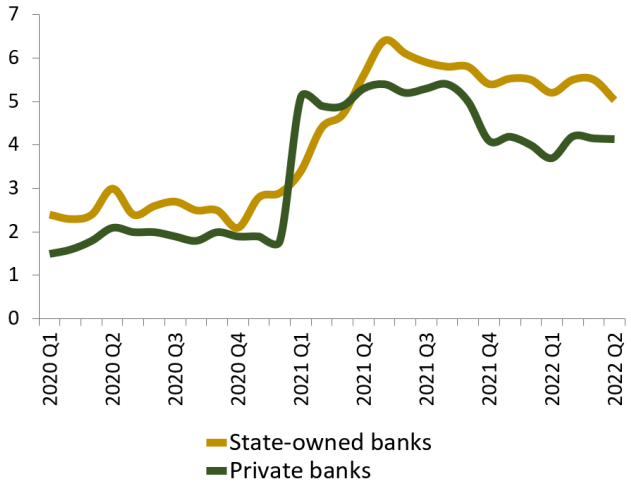
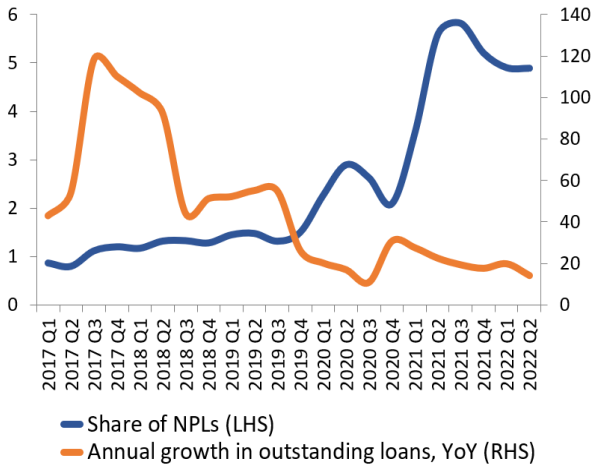


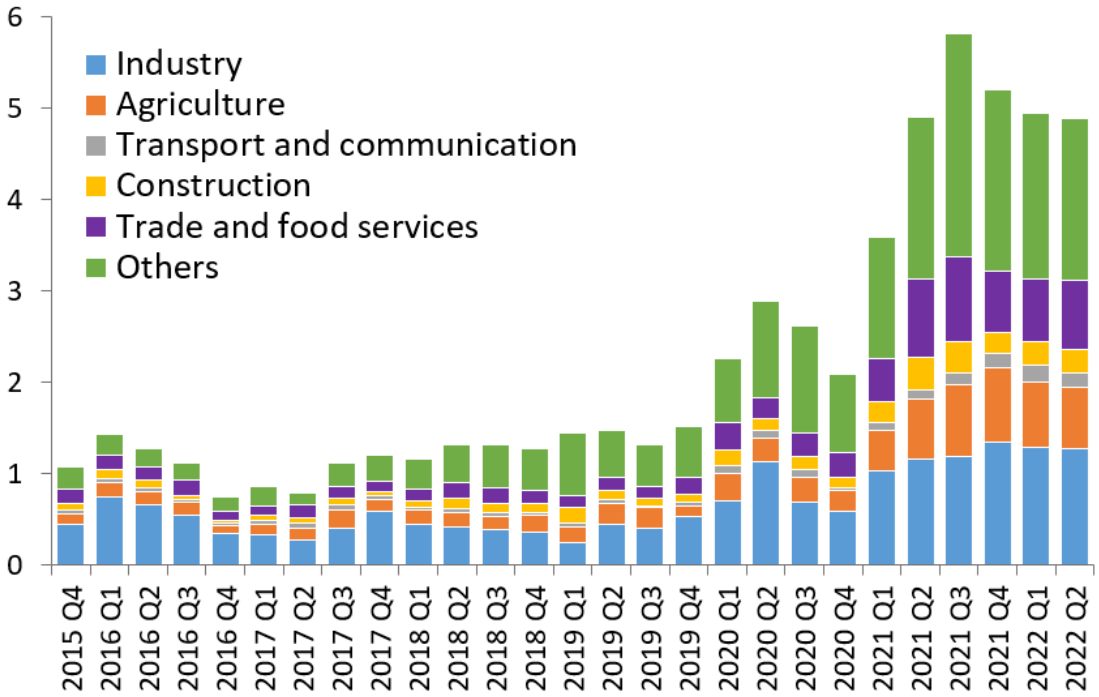
Figure 25. Share of NPLs in Total Loans; Credit Growth, %



Source: CBU.

The correlation between credit growth and the NPL ratio is weak. The foreign exchange liberalization in Q3 2017 led to the doubling of bank foreign exchange assets and an increase of about 50 percent in total gross loans. In end-2019, credit growth declined due to the transfer of large state-funded bank loans, equivalent to almost 40 billion soums, to the UFRD's balance sheet.

Figure 26. NPL Decomposition by Sectors, %



Source: CBU staff calculations.

The NPL ratio decomposed by economic sectors reveals the industrial sector as the single largest contributor to NPLs over the past six years. Agriculture was the next most significant source of NPLs. However, from Q1 2020, when the pandemic began, other sectors' contributions, including loans to individuals, started to pick up.

2.3. Debt Burden Analysis

In 2020, Uzbekistan's loans to private sector-to-GDP ratio was 37 percent. It is very close to the average of lower-middle-income countries[28] but much lower than that of upper-middle-income countries[29] (144 percent). Uzbekistan's loans to private sector-to-GDP ratio is broadly in line with other lower-middle-income countries.

[28] As of July 1, 2021, according to the World Bank country classifications by income level, lower-middle-income countries include 55 countries with gross national income per capita from 1046 to 4095 US dollars, including Uzbekistan.

[29] As of July 1, 2021, according to the World Bank country classifications by income level, upper-middle-income countries include 55 countries with gross national income per capita from 4096 to 12695 US dollars.

Figure 27. Loans to Private Sector-to-GDP and GDP per Capita in All Countries, 2020

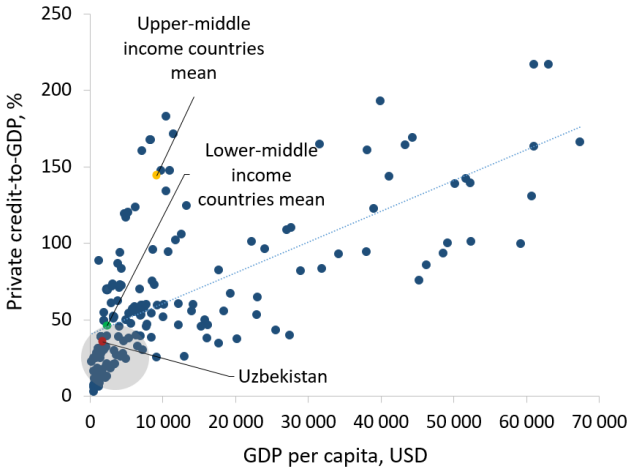
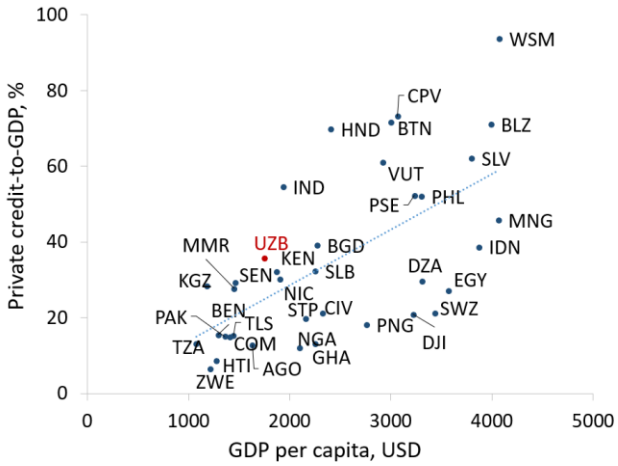


Figure 28. Loans to Private Sector-to-GDP and GDP per Capita in Lower-Middle-Income Countries, 2020



Sources: World Bank and CBU staff calculations.

The percentile bands[30] were used to see how Uzbekistan's total loans-to-GDP ratio compares to countries with a broadly similar level of economic development. Until 2016, Uzbekistan's total loans-to-GDP ratio was lower than the median for the CIS and lower-middle-income countries. Since 2017, however, Uzbekistan has experienced a credit boom, with credit growth outpacing GDP growth.

Figure 29. Total Loans-to-GDP in CIS Countries*, %

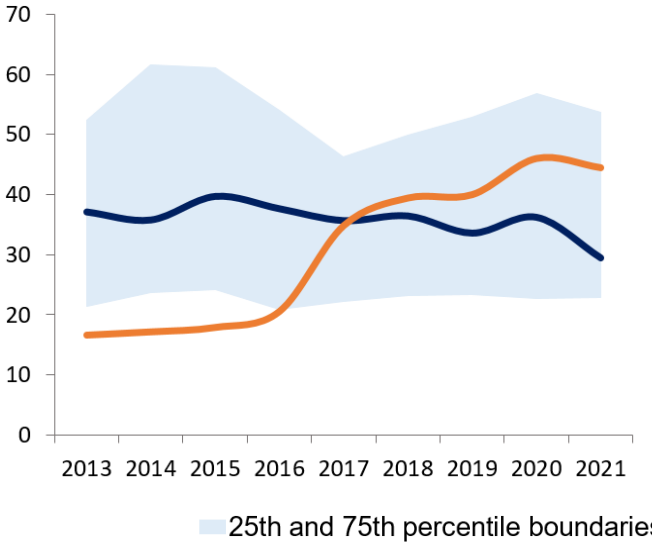
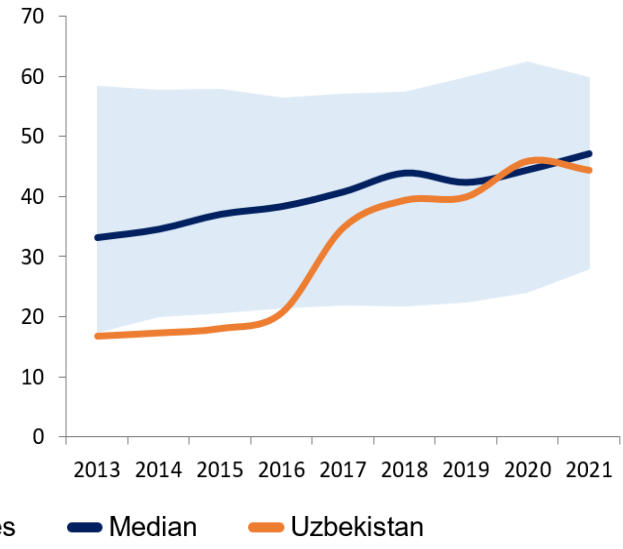
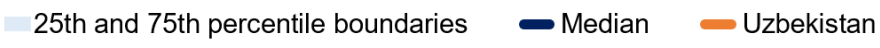


Figure 30. Total Loans-to-GDP in Lower-Middle-Income Countries, %





Sources: World Bank, national authorities and CBU staff calculations.
Note: * Armenia, Azerbaijan, Belarus, Moldova, Russia, Tajikistan, Kazakhstan, Kyrgyzstan, Uzbekistan.

[30] A type of visual analysis that shows an indicator's location in the second and third quartiles, or the middle half of a data set, and how far the indicator is from the median.

As of 2021, Uzbekistan's total credit-to-GDP ratio exceeded the CIS median by a large margin. As for lower-middle-income countries, in 2019, Uzbekistan's total loans-to-GDP ratio reached the median for the group.

Figure 31. Decomposition of Total Loans-to-GDP, %

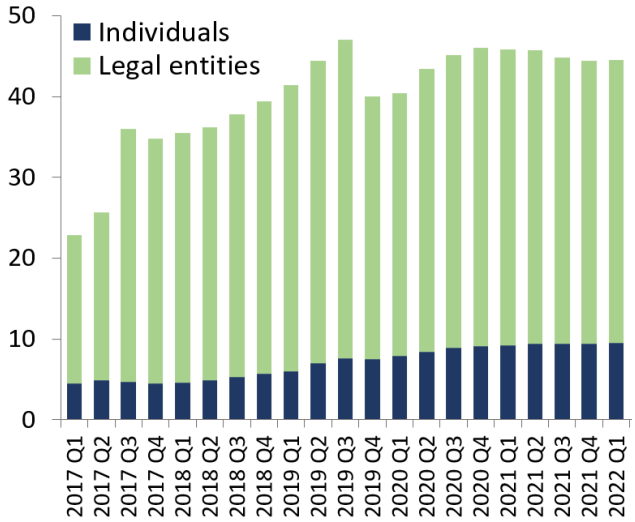
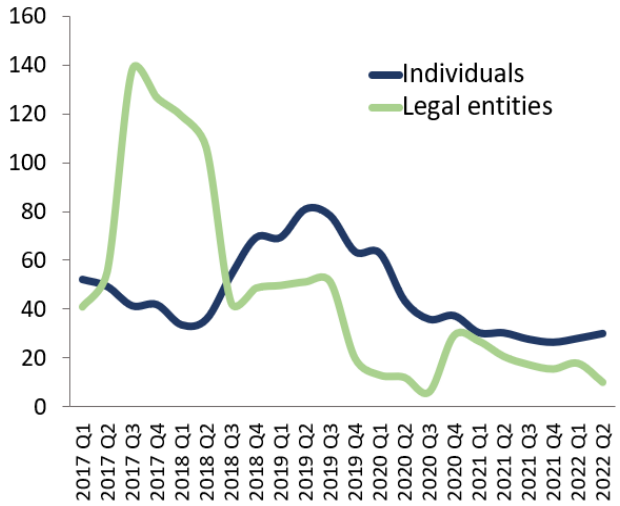


Figure 32. Annual Credit Growth (YoY), %



Source: CBU.

The total credit-to-GDP ratio decomposition by types of borrowers shows that legal entities account for around ¾ of the banking system's loan portfolio. Although the share of individuals' loans in total loans is low, it is growing. As of July 1, 2022, it increased by 2 percentage points compared to the corresponding period of 2021 and accounted for 23 percent.

The exchange rate fluctuations did not affect loans to individuals, as banks were forbidden to issue foreign currency loans to individuals. In end-2019, as the government decided to transfer loans given to legal entities worth about 40 billion soums from banks' balance sheets to the UFRD, the growth of loans to legal entities decreased by almost 31 percent. In 2021–2022, individuals' credit outstanding increased at an annual rate of around 30 percent. From 2021 to end-Q2 2022, legal entities' credit outstanding decreased at an annual rate of 19 percent.

Figure 33. Loans to Individuals, % of GDP

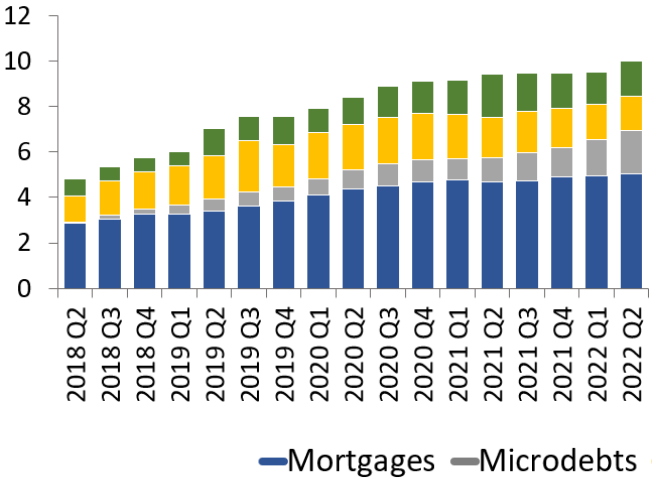
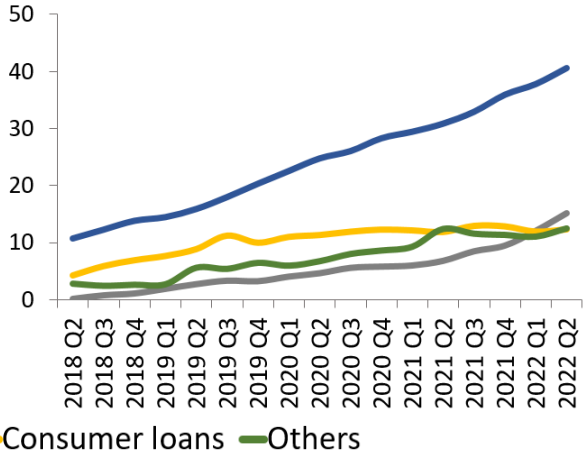


Figure 34. Stocks of Loans to Individuals, in trillion soums



Source: CBU staff calculations.

Mortgage loans corresponded to around half of all loans to individuals and reached about 5 percent of GDP as of July 1, 2022. A microdebt, a relatively new loan product, is quickly growing in popularity and has almost the same share as consumer loans. Compared to other loans, including consumer loans, microdebts can be obtained remotely with less paperwork.

A debt service ratio (DSR) indicates what share of income of the population or borrowers is spent on debt repayment (principal and interest)[31].

Figure 35. Debt Service Ratio for Total Loans to Individuals, %

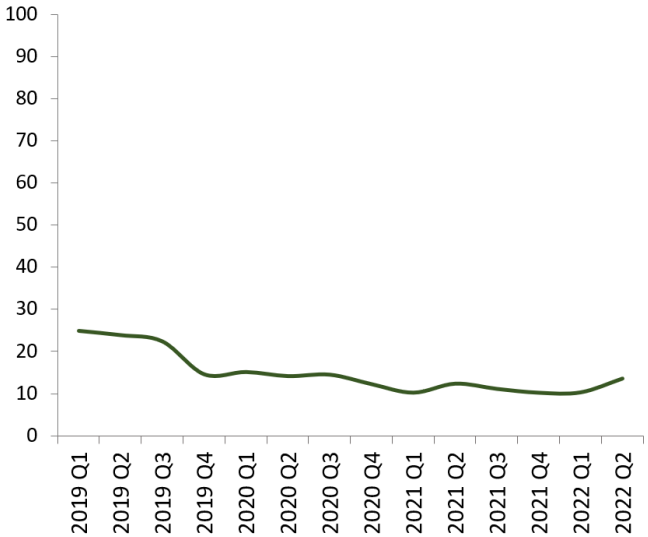
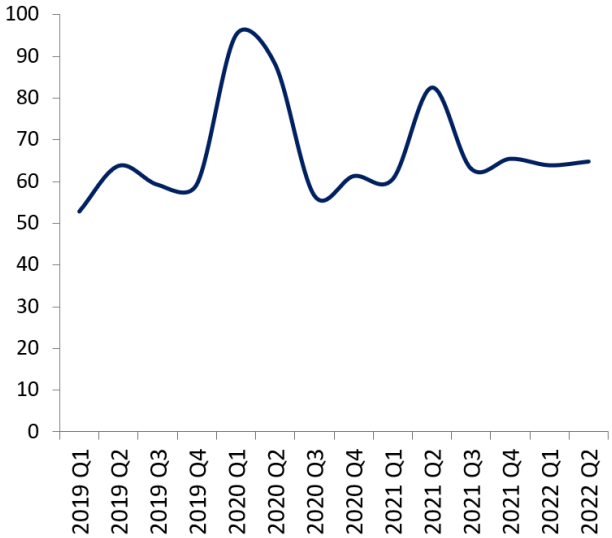


Figure 36. Debt Service Ratio for Mortgage Loans to Individuals, %



Source: CBU staff calculations.

[31] Drehmann, M. and M. Juselius (2012): "Do debt service costs affect macroeconomic and financial stability?", BIS Quarterly Review, September. https://www.bis.org/publ/qtrpdf/r_qt1209e.pdf .

The interest rates of loans, loan amounts, maturity of loans, and implied discretionary income of the borrowers were taken into account to calculate the DSR[32].

From 2019 to Q1 2022, the DSR for total loans to individuals decreased by 15 percentage points. In Q4 2019, a sharp decrease in the DSR was caused by a decline in the volume of issued loans and an increase of long-term loans in the credit composition. In 2020–2021, borrowers directed about 12 percent of their discretionary income to loan repayment, given the proportional change in individuals' credit volume and their total quarterly income. In Q2 2022, although the quarterly income of total borrowers was higher than in previous periods, the rise of allocated loans (by 31 percent compared to the previous quarter) increased the DSR by 4 percentage points.

During 2019, the DSR for mortgage loans to individuals was around 60 percent. In Q1 2020, an increase of large borrowers' share[33] in the volume of loans to individuals by 35 percentage points caused a sharp rise in the mortgage DSR. In turn, it led to a disproportionally high volume of issued loans relative to the total quarterly income of mortgage borrowers. In addition, an 11 percent increase in minimum consumption expenditure and an 82 percent increase in the loan amount per mortgage borrower[34] worsened the DSR.

In Q2 2021, the increase in the loan amount per mortgage borrower and the weighted average annual interest rate significantly pushed up the DSR. In 2022, the mortgage DSR almost did not change and was stable at around 65 percent.

[32] The DSR for borrowers is calculated using the following formula:

$$DSR_{j,t} = \frac{i_{j,t}}{\left(1-\left(1+i_{j,t}\right)^{-s_{j,t}}\right)} * \frac{D_{j,t}}{Y_{j,t}}$$

where:
DSR – the debt service ratio
i – the weighted average annual interest rate on flows of loans
s – the weighted average annual maturity of flows of loans
D – the total loan balances
Y – the annual discretionary income of borrowers
j – a loan type
t – years

[33] Borrowers with loans exceeding 100 million soums are considered large borrowers.

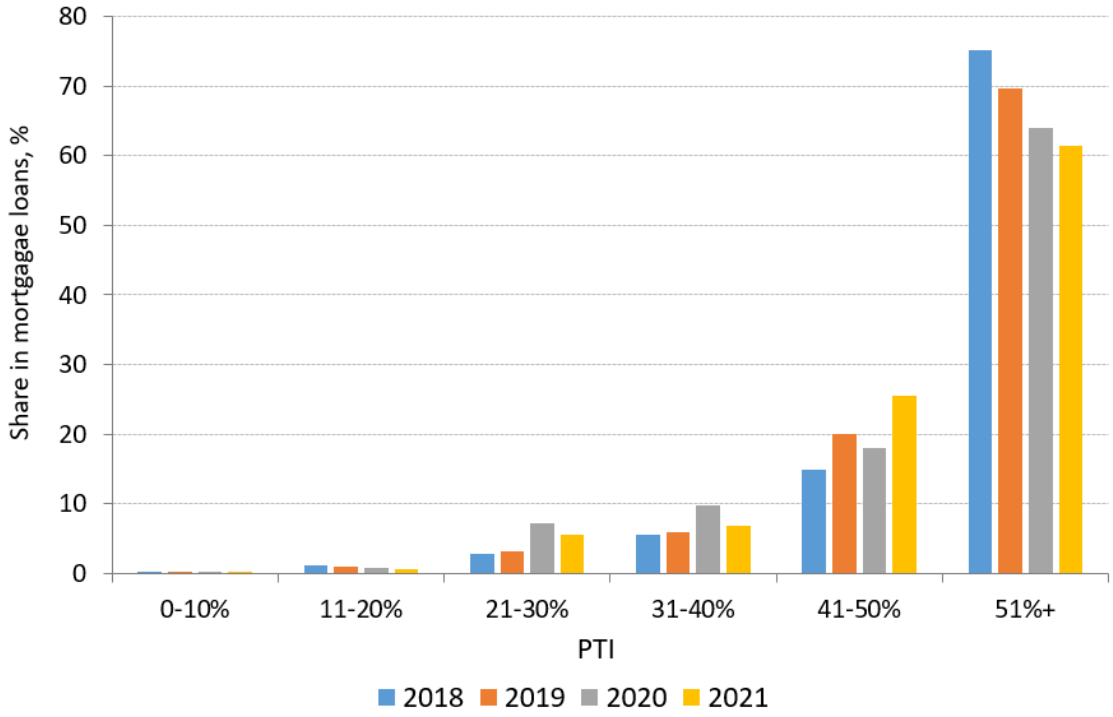
[34] The ratio of the total loan amount to the number of total borrowers.

III. Macroprudential Policy Tools

3.1. Payment-to-income and Loan-to-value Ratios

Central banks and banking regulators use a number of macroprudential tools to ensure financial stability and mitigate systemic risks. Macroprudential tools include a capital conservation buffer (CCoB), a countercyclical capital buffer (CCyB), a capital buffer for global and domestic systemically important banks, and loan-to-value (LTV) and payment-to-income (PTI) limits. Currently, in Uzbekistan, the LTV and PTI ratios are used.

Figure 37. Distribution of the PTI Ratio for Total Mortgage Loans



Source: CBU survey.

In 2020, the CBU introduced a limit on issuing loans to individuals whose PTI ratio was more than 50 percent[35]. Given the high share of mortgage loans in the total volume of loans, a PTI ratio for mortgage loans was analyzed[36].

The survey for determining the PTI ratio for total mortgage loans from 2018 to 2021 showed that at the time of issuing a loan, the share of

[35] O'zbekiston Respublikasi Markaziy banki Boshqaruvining "Qarz oluvchi jismoniy shaxslarning kreditlar (mikroqarzlar) bo'yicha qarz yukini hisoblash tartibi, qarz yukining ruxsat etilgan miqdori, shuningdek qarz yuki o'sishini cheklash to'g'risidagi nizomni tasdiqlash haqida"gi 24/5-sonli qarori, 2019. https://lex.uz/docs/-4654149

[36] The PTI ratio for total mortgage loans is determined by dividing the borrower's monthly payments on a particular mortgage by the borrower's monthly income.

loans with a PTI ratio of more than 51 percent was very high. It might be due to the implementation of a regulation[37] allowing individuals to take out mortgage loans with a PTI ratio of up to 70 percent from the Ministry of Finance's (MoF) funds. The regulation also enables borrowers with insufficient funds for taking out a mortgage loan to factor in the co-borrowers' income in the PTI ratio calculation. Co-borrowers contribute to monthly loan payments of the principal and interest and are jointly liable for the loan. Such a practice may reduce the PTI ratio of a mortgage loan for a group of borrowers but increase it for the principal borrower.

When the CBU introduced an LTV ratio in 2021[38], it decided not to put direct limits on the LTV ratio but to link it with the risk level of a mortgage loan. The risk levels were assigned to different LTV ratios as follows[39]:

Table 1. Risk Levels of Mortgage Loans

Description	LTV ratio				Loans that are in litigation and/or have outstanding debts
	LTV < 50%	50% ≤ LTV < 75%	75% ≤ LTV < 100%	100% ≤ LTV	
Risk level	35%	50%	100%	150%	200%

Source: CBU.

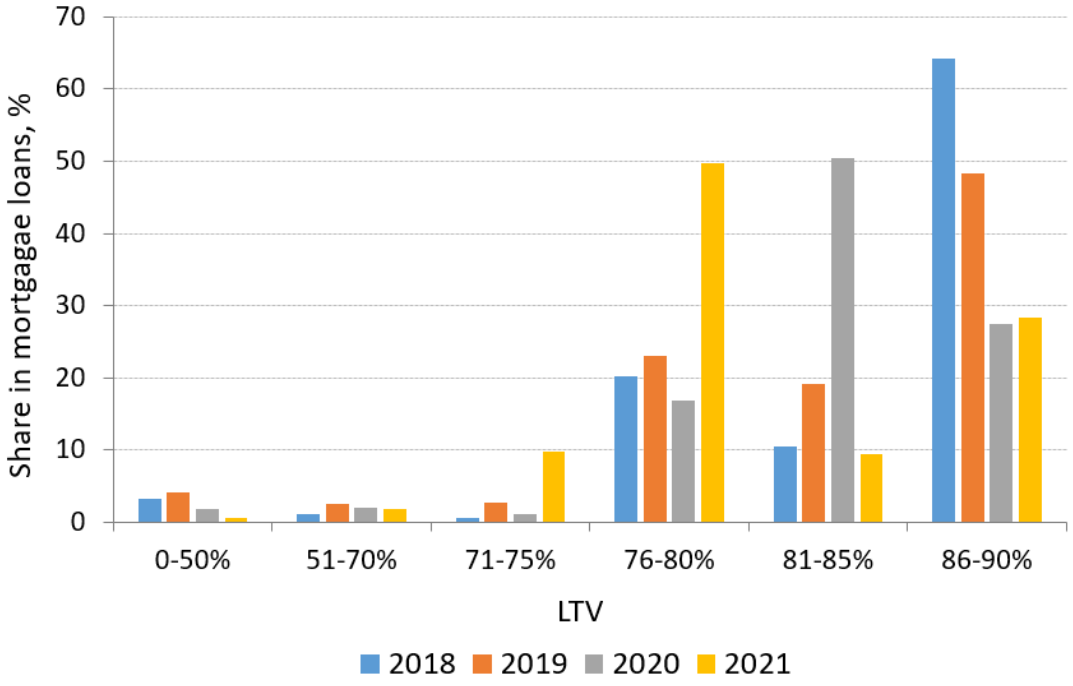
In 2021, high-risk mortgage loans, that is, mortgage loans with an LTV ratio of 76–80 percent, made up the largest share in the distribution of the LTV ratio. The riskiness of mortgage loans decreased following the implementation of the LTV regulation. As long as the CBU regulates the LTV ratio by linking it to the risk level of loans, commercial banks can manage their LTV ratios following the minimum prudential regulation indicators.

[37] O'zbekiston Respublikasi Vazirlar Mahkamasining "O'zbekiston Respublikasi Moliya vazirligi tomonidan joylashtirilgan mablag'lar hisobidan ipoteka kreditlari ajratish tartibi to'g'risidagi nizomni tasdiqlash haqida"gi 56-sonli qarori, 2021. https://lex.uz/uz/docs/-5266510

[38] O'zbekiston Respublikasi Markaziy banki Boshqaruvining "Tijorat banklari kapitalining monandligiga qo'yiladigan talablar to'g'risidagi nizomga o'zgartirish va qo'shimchalar kiritish haqida"gi 28/22-sonli qarori, 2021. https://lex.uz/docs/-5292850

[39] O'zbekiston Respublikasi Markaziy banki Boshqaruvining "Tijorat banklari kapitalining monandligiga qo'yiladigan talablar to'g'risidagi nizomni tasdiqlash haqida"gi 14/3-son qarori, 2015. https://lex.uz/docs/-2699536

Figure 38. Distribution of the LTV Ratio for Total Mortgage Loans



Source: CBU survey.

Mortgage loans for the primary housing market are issued for newly built or under-construction houses. In this case, construction companies supply new housing directly to the real estate market. Banks consider loans issued for the primary market less risky for the following reasons:

- The MoF grants commercial banks long-term, inexpensive funds under state housing programs;
- If the borrower's income is insufficient to cover loan payments, the MoF has a program that partially subsidizes the down payment or loan interest payments;
- Banks perceive developer companies as more trustworthy than individuals selling property in the secondary market.

In addition, some state programs require homebuyers to make a down payment of at least 15 percent of the house's value. Due to these reasons, banks tend to issue mortgage loans for the primary housing market with higher LTV ratios.

Figure 39. Distribution of the LTV Ratio for Mortgage Loans in the Primary Housing Market

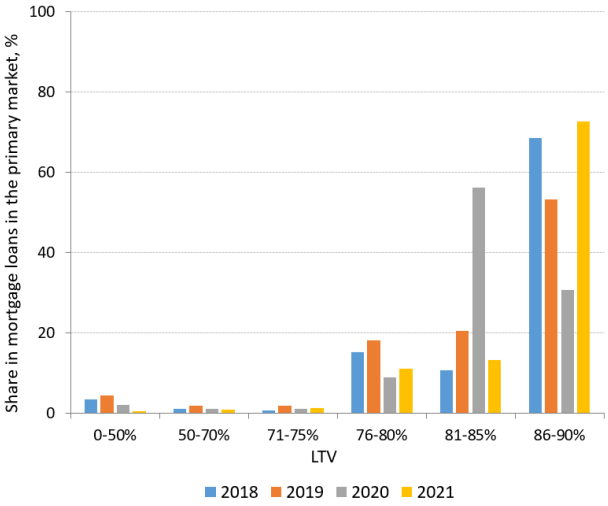
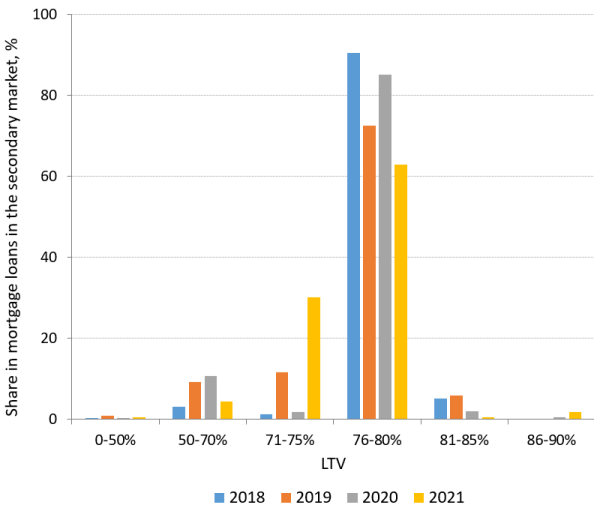


Figure 40. Distribution of the LTV Ratio for Mortgage Loans in the Secondary Housing Market

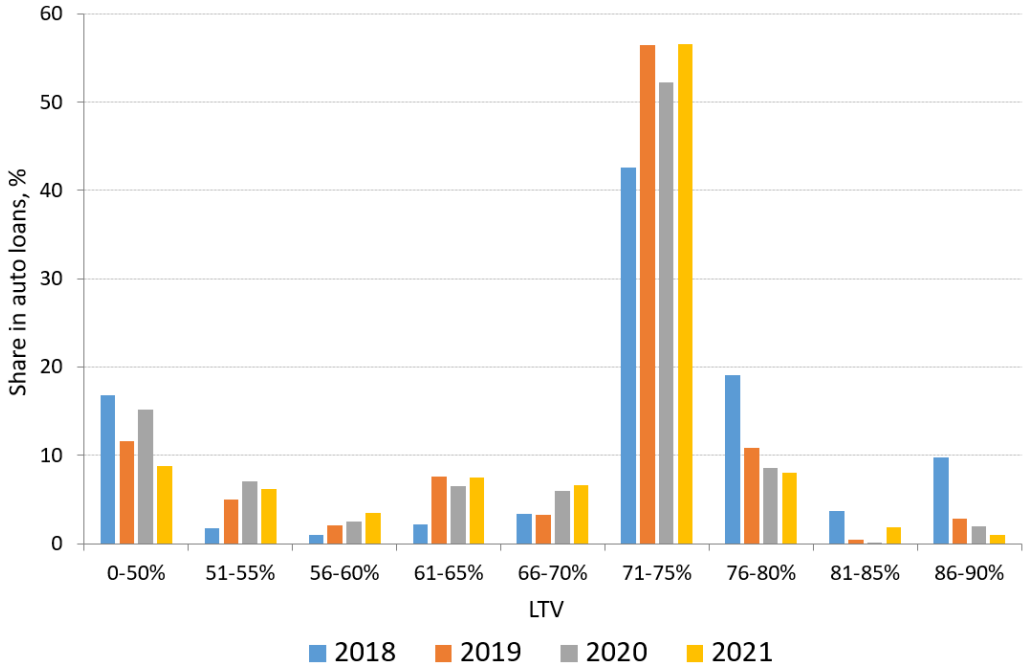


Source: CBU survey.

Banks provide loans for constructing multi-storied residential buildings. As of September 1, 2022, the total outstanding bank loans amounted to 3 trillion soums. From January to August 2022, banks issued loans worth 1.2 trillion soums for the construction of 529 residential buildings. However, 3169 apartments (valued at 1.1 trillion soums) in the 169 completed buildings have not been sold yet. As a result, 47 contractors have NPLs (over 90 days past due) of 392 billion soums as of September 1, 2022.

To pay off their debt to banks, contractors may sell off houses below their market value. Such large-scale sales may negatively pressure prices in the housing market. A significant drop in housing prices may leave borrowers with underwater mortgages, i.e., the value of real estate property may fall below the outstanding balance on the mortgage used to purchase that property. That may give rise to defaults, resulting in the deterioration of bank asset quality and increased NPLs.

Figure 41. Distribution of the LTV Ratio for Car Loans



Source: CBU survey.

Since 2017, banks have started actively issuing car loans to individuals in Uzbekistan. High demand for car loans and their proliferation in the unsaturated market led to a rapid increase in the car loan portfolio, raising sustainability concerns. In 2019, the CBU decided to set the risk level for all car loans issued to legal entities and individuals with an LTV ratio of more than 75 percent at 300 percent[40]. As a result, the number of loans with an LTV ratio of more than 75 percent decreased. In 2021, in view of the relative normalization of car demand, the CBU repealed the previously set 300 percent risk level for car loans[41].

3.2. Prospects of Introducing an Additional Capital Buffer for Systemically Important Banks

During the Global Financial Crisis, the failure of some globally active financial institutions, such as Lehman Brothers, put the financial system under strain and harmed the real economy. To promote financial stability and mitigate systemic risk, the Basel Committee on Banking Supervision

[40] O‘zbekiston Respublikasi Markaziy banki Boshqaruvining “Tijorat banklari kapitalining monandligiga qo‘yiladigan talablar to‘g‘risidagi nizomga o‘zgartirish va qo‘shimchalar kiritish haqida”gi 2/3-sonli qarori, 2019. https://lex.uz/docs/-4230138

[41] O‘zbekiston Respublikasi Markaziy banki Boshqaruvining “Tijorat banklari kapitalining monandligiga qo‘yiladigan talablar to‘g‘risidagi nizomga o‘zgartirish va qo‘shimchalar kiritish haqida”gi 28/22-sonli qarori, 2021. https://lex.uz/docs/-5292850

(BCBS) developed an assessment methodology and the higher loss absorbency (HLA) requirement for global systemically important banks (G-SIBs)[42]. The primary purpose of introducing an additional capital buffer is to mitigate the impact of the failure or impairment of SIBs on the financial system and the economy.

In most countries, a methodology for identifying D-SIBs takes into account the Basel Committee's framework for D-SIBs[43]. For example, in the European Union (EU), the European Banking Authority issued guidelines for identifying other systemically important institutions (the EU equivalent of a D-SIB in the Basel framework)[44]. According to the Basel Committee's framework, the HLA requirement for D-SIBs should be met fully by CET1 capital.

International Experience

The most common maximum D-SIB buffer rate observed in the selected sample of countries is 2 percent of RWA. The EU's highest SIB buffer is 3 percent of RWA (however, the European Commission can authorize its increase[45]).

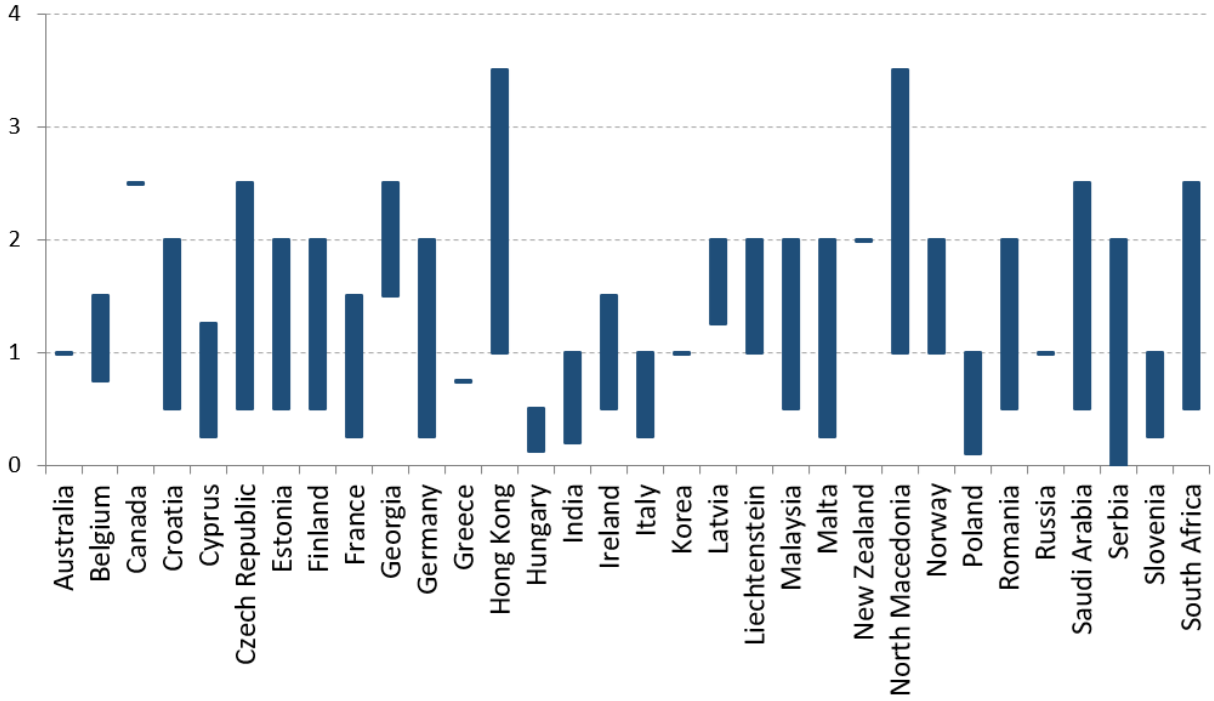
[42] Basel Committee on Banking Supervision, The G-SIB framework - Executive Summary, 2018. https://www.bis.org/fsi/fsisummaries/g-sib_framework.htm; Global systemically important banks: updated assessment methodology and the higher loss absorbency requirement, 2013. https://www.bis.org/publ/bcbs255.pdf

[43] Basel Committee on Banking Supervision, A framework for dealing with domestic systemically important banks, 2012. https://www.bis.org/publ/bcbs233.pdf

[44] European Banking Authority, Guidelines on criteria for the assessment of O-SIIS, 2014. https://www.eba.europa.eu/documents/10180/930752/EBA-GL-2014-10+%28Guidelines+on+O-SIIs+Assessment%29.pdf

[45] European Parliament and the Council of the European Union, Directive (EU) 2019/878 of the European Parliament and of the Council, 2019. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0878&from=EN

Figure 42. SIB Buffer Rates in Selected Countries, % of RWA



Source: National authorities.

Some countries (e.g., North Macedonia[46] and Hong Kong[47]) set a maximum SIB buffer at 3.5 percent of RWA to discourage banks from becoming even more systemically important. Some other countries set a single SIB buffer rate (e.g., Australia—1 percent[48], Canada—2,5 percent[49], and New Zealand—2 percent[50]). In many countries (e.g., some European countries, India and New Zealand), a D-SIB buffer implementation was phased-in, giving banks a reasonable time to raise capital. In 2021, there were 175 D-SIBs in the European banking sector, with most being subject to a D-SIB buffer of 1 percent of RWA[51].

[46] National Bank of the Republic of North Macedonia, List of Systemically Important Banks, 2022. https://www.nbrm.mk/content/Regulativa/Lista_identifikuvani_sistemski_znacajni_banki_2021_ENG.pdf

[47] Hong Kong Monetary Authority, CA-B-2 "Systemically Important Banks" (V2) dated 23.04.2021, pp. 19–20. https://www.hkma.gov.hk/media/eng/doc/key-functions/banking-stability/supervisory-policy-manual/CA-B-2.pdf

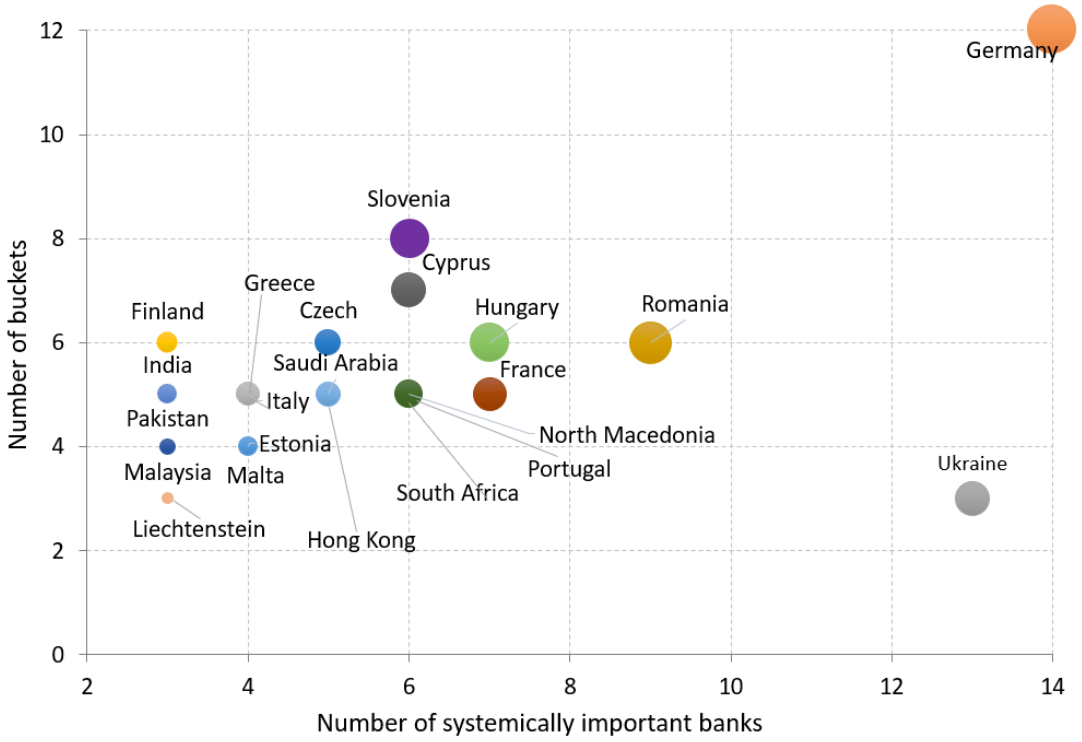
[48] Australian Prudential Regulation Authority, Capital buffers. https://www.apra.gov.au/capital-buffers

[49] Office of the Superintendent of Financial Institutions, OSFI keeps Domestic Stability Buffer at 2.50%, provides update on review, 2022. https://www.osfi-bsif.gc.ca/Eng/osfi-bsif/med/Pages/dsb20220622-nr.aspx

[50] Reserve Bank of New Zealand, Requirements for domestic systemically important banks, 2022. https://www.rbnz.govt.nz/regulation-and-supervision/oversight-of-banks/standards-and-requirements-for-banks/requirements-for-domestic-systemically-important-banks

[51] European Banking Authority, List of O-SIIs notified to the EBA by year, 2021. https://www.eba.europa.eu/sites/default/documents/files/document_library/1036637/2021%20OSII%20List.xlsx

Figure 43. Number of SIBs and Buckets in Selected Countries



Source: National authorities.

The correlation between the number of buckets and the number of SIBs for each country is reflected in the bubble size.

A SIB buffer can be calibrated using a bucketing approach by looking at a bank's degree of systemic importance in relation to the other banks. The number of buckets ranges from 3 to 12 in selected countries, while the most common is 4–6 buckets. Systemic importance scores are used for determining the number of buckets. Regardless of the number of banks in the banking sector, the closer the systemic importance scores of banks are to each other, the fewer the number of buckets is, and vice versa. SIB buffers significantly differ in the examined countries due to variations in regulatory risk assessments and characteristics of the domestic financial systems (Appendix 2). The scoring system also means that the larger the SIB, the higher the bucket it is assigned to in the list and hence the more capital it is required to hold as a percentage of RWA[52].

Assessment of Introducing a D-SIB Buffer in Uzbekistan

As of August 1, 2022, the average CAR of D-SIBs and other banks in Uzbekistan was 16.8 and 16.4 percent, respectively, which was well above the minimum requirement of 13 percent.

[52] Juan Ramirez, Handbook of Basel III Capital: Enhancing Bank Capital in Practice, 2016, p. 25.

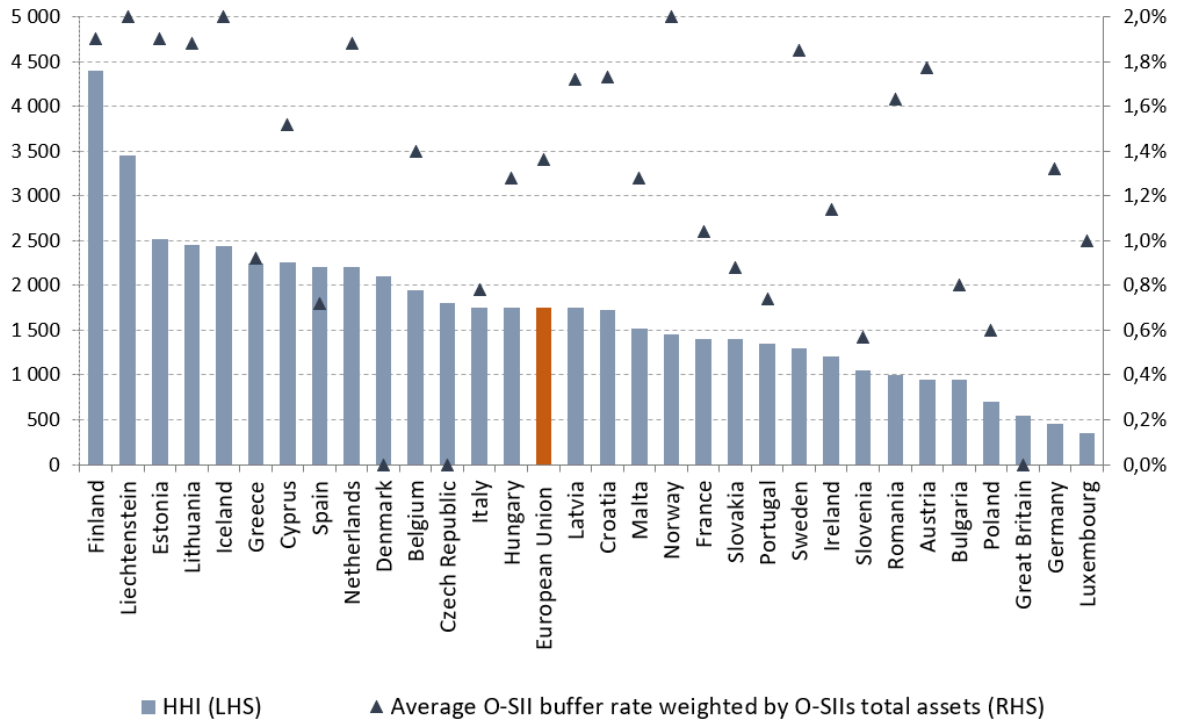
The BCBS recommends taking into account the size of the banking sector relative to GDP or the degree of concentration in the banking sector when assessing the level of HLA requirements. A D-SIB failure in a large banking sector relative to GDP can severely impact the real economy[53]. As of July 1, 2022, Uzbekistan's bank assets-to-GDP ratio was 62 percent, indicating the banking system's importance to the economy. In countries where the banking system is highly concentrated, a D-SIB failure would likely impact the domestic economy more than if it were to occur in a less concentrated banking sector. The HHI is used to determine the level of concentration and competition in the banking sector[54]:

$$HHI = s_1^2 + s_2^2 + s_3^2 + \cdots s_n^2$$

Where:

s_n is the share of a bank's assets in the banking system's assets.

Figure 44. HHI and Average D-SIB Buffer Rate Weighted by Total Assets in EU Countries[55]



Source: European Banking Authority.

[53] Basel Committee on Banking Supervision, A framework for dealing with domestic systemically important banks, 2012. https://www.bis.org/publ/bcbs233.pdf

[54] Federal Reserve Bank of St. Louis, The ABCs of HHI: Competition and Community Banks, 2018. https://www.stlouisfed.org/on-the-economy/2018/june/hhi-competition-community-banks

[55] European Banking Authority, Report on the appropriate methodology to calibrate O-SII buffer rates, 2020. https://www.eba.europa.eu/sites/default/documents/files/document_library/Publications/Reports/2020/961796/EBA%20report%20on%20calibration%20of%20OSII%20buffer%20rates.pdf

Depending on the competition level in the banking sector, three ranges for HHI values are distinguished:

1. Less than 1,000—not concentrated
2. 1,000 to 1,800—moderately concentrated
3. Greater than 1,800—highly concentrated

As of August 1, 2022, the Uzbek banking system's HHI was 1,096, indicating a moderate concentration. Some countries with an HHI lower than Uzbekistan's HHI implemented a D-SIB buffer.

Approaches to Determining the Maximum D-SIB Buffer Rate

The BCBS notes that policy judgment on the level of a D-SIB buffer should be underpinned by an analytical framework[56]. For example, to assess the maximum magnitude of the HLA requirement for G-SIBs, the BCBS undertook an empirical analysis that included an expected impact approach and a long-term economic impact (LEI) approach[57]. Assessment of domestic banking system concentration can also support policy judgment on determining the maximum level of a D-SIB buffer.

The expected impact approach uses return on risk-weighted assets (RORWA) data and a Merton model[58] (using equity price data) to determine the relationship between regulatory capital ratios and the probability of a bank's default. In the Merton model, the probability of default is estimated using the standard deviation of bank stock returns, the market value of bank equity, and banks' total assets and liabilities. In the case of Uzbekistan, the Merton model's application for determining a D-SIB buffer may be of limited value, given concerns regarding its validity and robustness in the context of the underdeveloped financial market.

SIB buffer levels in countries with a similar HHI can also inform Uzbekistan's maximum D-SIB buffer rate. Slovenia, Romania, and Austria, which had an HHI similar to Uzbekistan's in 2020, have a SIB buffer rate of 2 percent[59].

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[56] Basel Committee on Banking Supervision, A framework for dealing with domestic systemically important banks, 2012. https://www.bis.org/publ/bcbs233.pdf

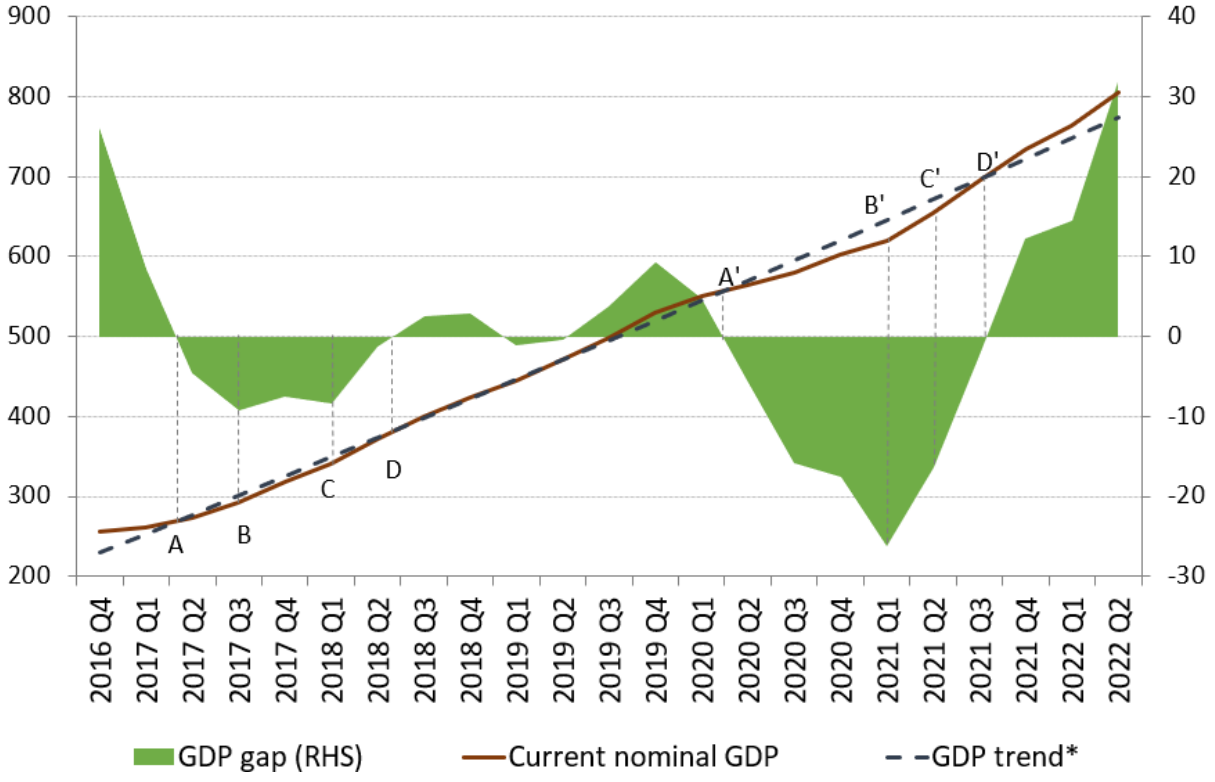
[57] Basel Committee on Banking Supervision, Global systemically important banks: revised assessment methodology and the higher loss absorbency requirement, 2018. https://www.bis.org/bcbs/publ/d445.pdf

[58] Robert C. Merton, On the pricing of corporate debt: The risk structure of interest rates, 1974. https://onlinelibrary.wiley.com/doi/10.1111/j.1540-6261.1974.tb03058.x

[59] European Banking Authority, EBA report on the appropriate methodology to calibrate O-SII buffer rates, 2020, p. 15.

The Basel Committee's LEI report[60] assesses the economic benefits and costs associated with increasing regulatory capital requirements in terms of their long-term impact on output. The LEI analysis suggests that considerable scope exists to increase capital and liquidity standards while yielding positive net benefits. Net benefits are measured by the difference between expected benefits and expected costs. Expected benefits equal the reduction in the probability of crises times the corresponding output losses associated with banking crises. Output losses are measured as the cumulative difference between actual and trend output during the crisis period. A lower probability of banking crises and their associated output losses are the main benefits of a better capitalized financial system.

Figure 45. Uzbekistan's GDP Gap, in trillion soums



Source: Statistics Committee and CBU staff calculations.
Note: The GDP trend was estimated using the Hodrick-Prescott (HP) filter.

Points A and A' are the GDP levels before an opening of a negative output gap, points B and B' are the GDP levels when the negative output gap reaches its trough, points C and C' are the lowest GDP levels before the negative output gap closes, and points D and D' are the GDP levels

https://www.eba.europa.eu/sites/default/documents/files/document_library/Publications/Reports/2020/961796/EBA%20report%20on%20calibration%20of%20OSII%20buffer%20rates.pdf

[60] Basel Committee on Banking Supervision, An assessment of the long-term economic impact of stronger capital and liquidity requirements, 2010. https://www.bis.org/publ/bcbs173.pdf

when the negative output gap closes (i.e., actual GDP reaches its potential).

The output losses are calculated for a single negative output gap ("no permanent effect on output") and all negative output gaps during the selected period ("a moderate permanent effect on output" or cumulative losses). No permanent effect[61] equals the ratio of the sum of the differences between points A and B and between points A and C to the value at point A. A moderate permanent effect[62] is defined as the sum of the values of output losses due to the negative GDP gap during the selected period.

The values of no permanent and moderate permanent effects were estimated as 0.42 and 0.67, respectively. That is, a 1 percentage point reduction in the probability of crises generates a benefit on the order of 0.42 percent (no permanent effect) and 0.67 percent (moderate permanent effect) of GDP per year. Using the LEI analysis findings, the relationship between the capital requirement and the probability of crises was estimated.

Table 2. Relationship Between Capital Requirement and Expected Benefits

CET1 requirement, %	Reduction in the probability of crises, in percentage points*§	Expected benefits-to-annual GDP ratio (no permanent effect), %†	Expected benefits-to-annual GDP ratio (moderate permanent effect), %†
A	B	C = B x 0.42	D = B x 0.67
7	1.2	0.50	0.81
8	2.2	0.93	1.49
9	2.9	1.21	1.94
10	3.3	1.39	2.24
11	3.6	1.52	2.44
12	3.8	1.61	2.58
13	4.0	1.67	2.68
14	4.1	1.73	2.77
15	4.2	1.76	2.82

Source: *Basel Committee and †CBU staff calculations.

§ According to the BCBS estimates, the reduction in the probability of crises is determined by dividing the expected benefits-to-annual GDP ratio (moderate permanent effect) by the sum of the values of the output losses (moderate permanent effect) caused by the negative GDP gap.

[61] No permanent effect $= \frac{(B-A)+(C-A)}{A}$

[62] Moderate permanent effect $= \frac{(B-A)+(C-A)}{A} + \frac{(B'-A')+(C'-A')}{A'}$

An increase in capital requirements reduces the probability of crises and increases the expected benefits thanks to the improved loss absorption capacity. However, higher capital requirements imply economic costs in terms of output forgone. The capital requirement reaches its optimal level when net benefits are the highest. According to the BCBS estimates of potential long-term costs of tightening capital requirements, a 1 percentage point increase in the capital ratio starting at 7 percent translates into a median 0.09 percent decline in the level of output relative to the baseline[63].

Table 3. Relationship Between Capital Requirement and Expected Long-Term Net Benefits

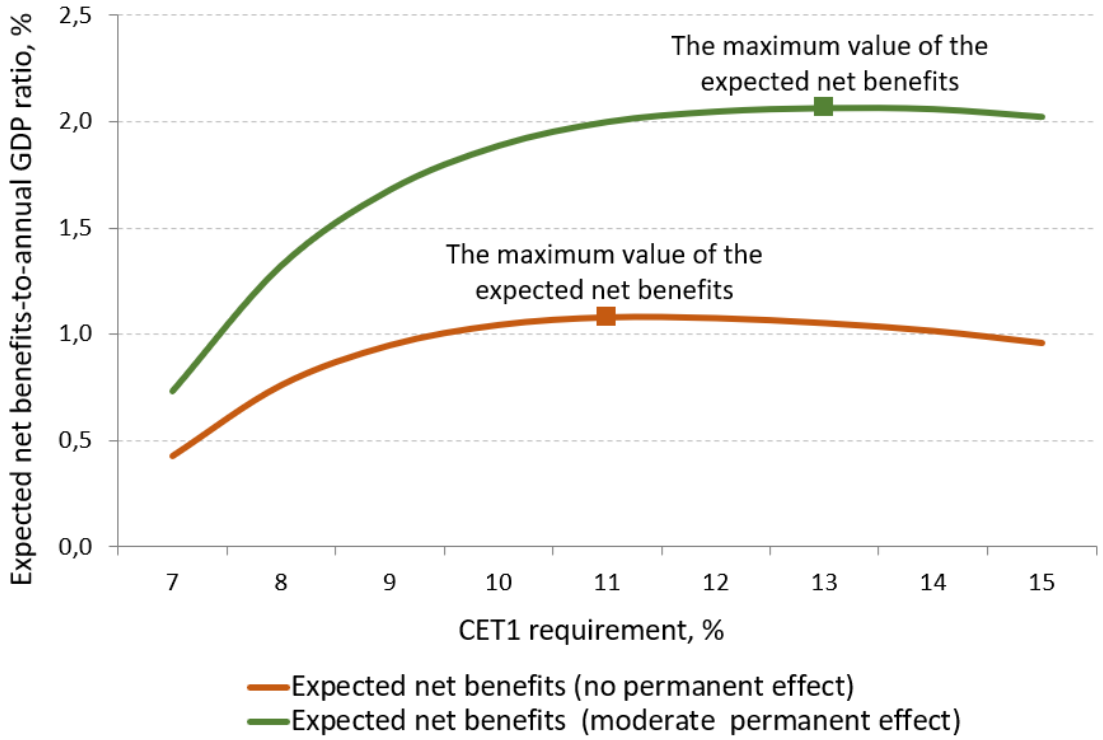
CET1 requirement, %	Reduction in the probability of crises, in percentage points*	Expected benefits-to-annual GDP ratio (no permanent effect), %†	Expected benefits-to-annual GDP ratio (moderate permanent effect), %†	Expected costs-to-annual GDP ratio, %*	Expected net benefits-to-annual GDP ratio (no permanent effect), %†	Expected net benefits-to-annual GDP ratio (moderate permanent effect), %†
A	B	C = B x 0.42	D = B x 0.67	E	F = C – E	G = D – E
7	1.2	0.50	0.81	0.08	0.424	0.730
8	2.2	0.93	1.49	0.17	0.759	1.322
9	2.9	1.21	1.94	0.26	0.948	1.679
10	3.3	1.39	2.24	0.35	1.044	1.887
11	3.6	1.52	2.44	0.44	**1.080**	2.000
12	3.8	1.61	2.58	0.53	1.076	2.048
13	4.0	1.67	2.68	0.62	1.052	**2.065**
14	4.1	1.73	2.77	0.71	1.015	2.060
15	4.2	1.76	2.82	0.80	0.959	2.023

Source: *Basel Committee and †CBU staff calculations.

CBU staff estimates suggest that the optimal level of CET1 requirement is 11 percent (no permanent effect) and 13 percent (moderate permanent effect). The expected net benefits are maximized when the CET1 requirement is 13 percent (moderate permanent effect), which is more than the CBU's CET1 requirement of 8 percent.

[63] Basel Committee on Banking Supervision, An assessment of the long-term economic impact of stronger capital and liquidity requirements, 2010, p. 29. https://www.bis.org/publ/bcbs173.pdf

Figure 46. Optimal Level for CET1 Requirement



Source: CBU staff calculations.

The change in RWA may also infer the maximum buffer level. In 2021, the total RWA of the banking system increased by 27 percent[64]. The maximum buffer level is determined by subtracting the actual CET1 requirement (8 percent) from the ratio of the optimal level of the CET1 requirement (13 percent) to the annual growth of RWA (1.27 factor)[65]. The calculation leads to a maximum D-SIB buffer level of around 2 percent:

$$\frac{13}{1{,}27} - 8 \approx 2$$

Introducing a D-SIB buffer in Uzbekistan may excessively tighten the capital adequacy requirement. Thus, the buffers and the minimum capital requirements should be harmonized before introducing an additional capital buffer.

[64] The Central Bank of the Republic of Uzbekistan, Financial Soundness Indicators, 2022. https://cbu.uz/en/statistics/e-gdds/data/111572/

[65] Basel Committee on Banking Supervision, Global systemically important banks: updated assessment methodology and the higher loss absorbency requirement, 2013. https://www.bis.org/publ/bcbs255.pdf

IV. Macro Stress Test

4.1. Macroeconomic Scenarios

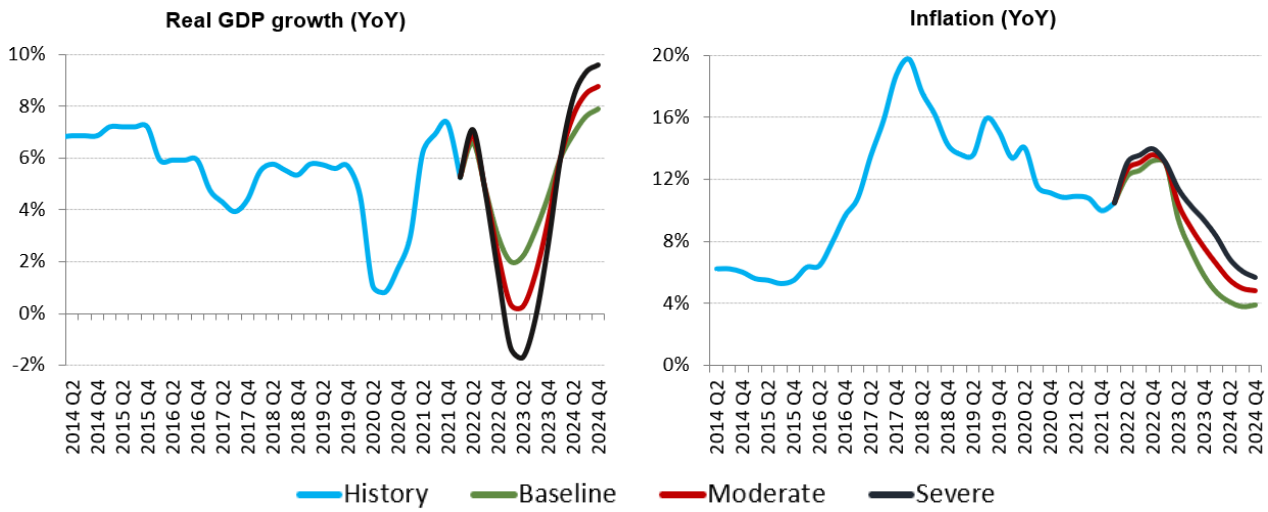
To identify macro-financial risks and assess in a forward-looking manner the banking system's resilience to them, the CBU conducted a macro stress testing exercise with the IMF's technical assistance. The macro stress testing tool utilizes the Credit Risk, the Securities and FX, and the Profit and Loss Account modules. Three macro-financial scenarios (baseline, moderately adverse, and severely adverse) were prepared, taking into account the main macroeconomic indicators, such as real GDP growth, inflation, interest rates, and the exchange rate[66].

A baseline scenario represents a set of economic and financial conditions that is generally consistent with the projection of a likely path for future economic and financial conditions. The baseline scenario does not lead to a stressed result. A moderately adverse scenario is a set of economic and financial conditions designed to moderately stress the banking sector's performance. A severely adverse scenario implies a high level of stress for the banking system as a result of the materialization of large shocks.

In the short term, inflation will rise in all scenarios due to higher prices in global commodities markets and disrupted supply chains. Loan interest rates will remain high for some time. As inflationary pressures subdue, loan interest rates will decline. In the severely adverse scenario, the soum's depreciation will accelerate against the background of GDP contraction and elevated inflation.

[66] Adam Gersl, Macro-Stress Testing (ST) Tool for Central Bank of Uzbekistan. User Manual, 2022.

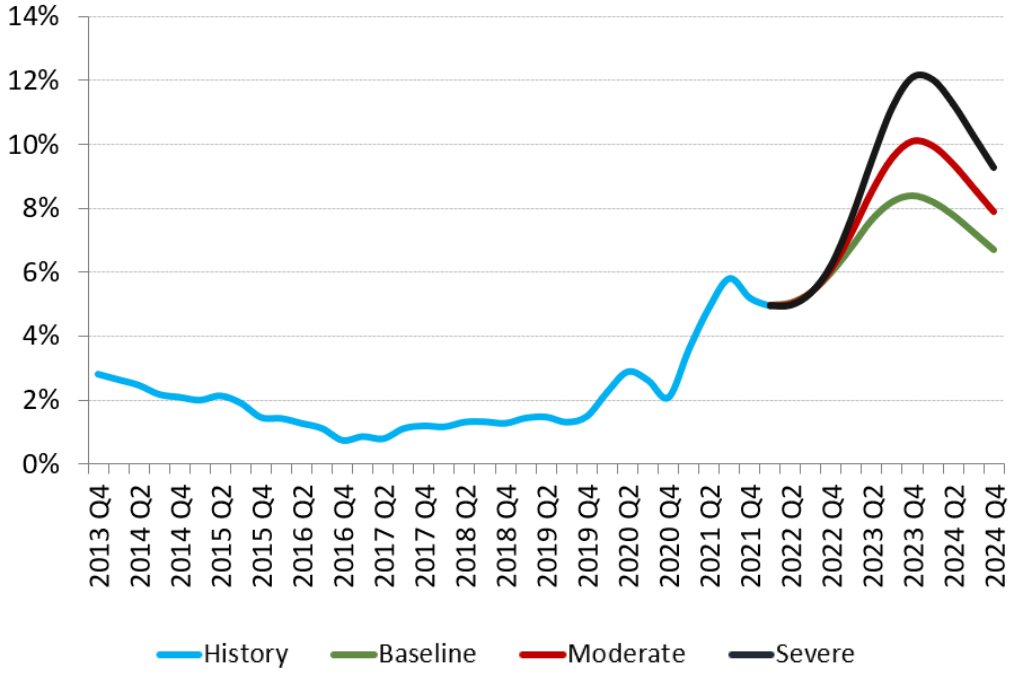
Figure 47. Macroeconomic Scenarios



Source: CBU staff calculations.

The macro-stress test includes a satellite model to project scenario paths for the NPL ratio. The model estimates the NPL ratio as the dependent variable and key scenario-specified macro-financial factors (GDP growth, loan interest rate, and one-lagged NPL) as independent variables.

Figure 48. Scenarios of the NPL Ratio



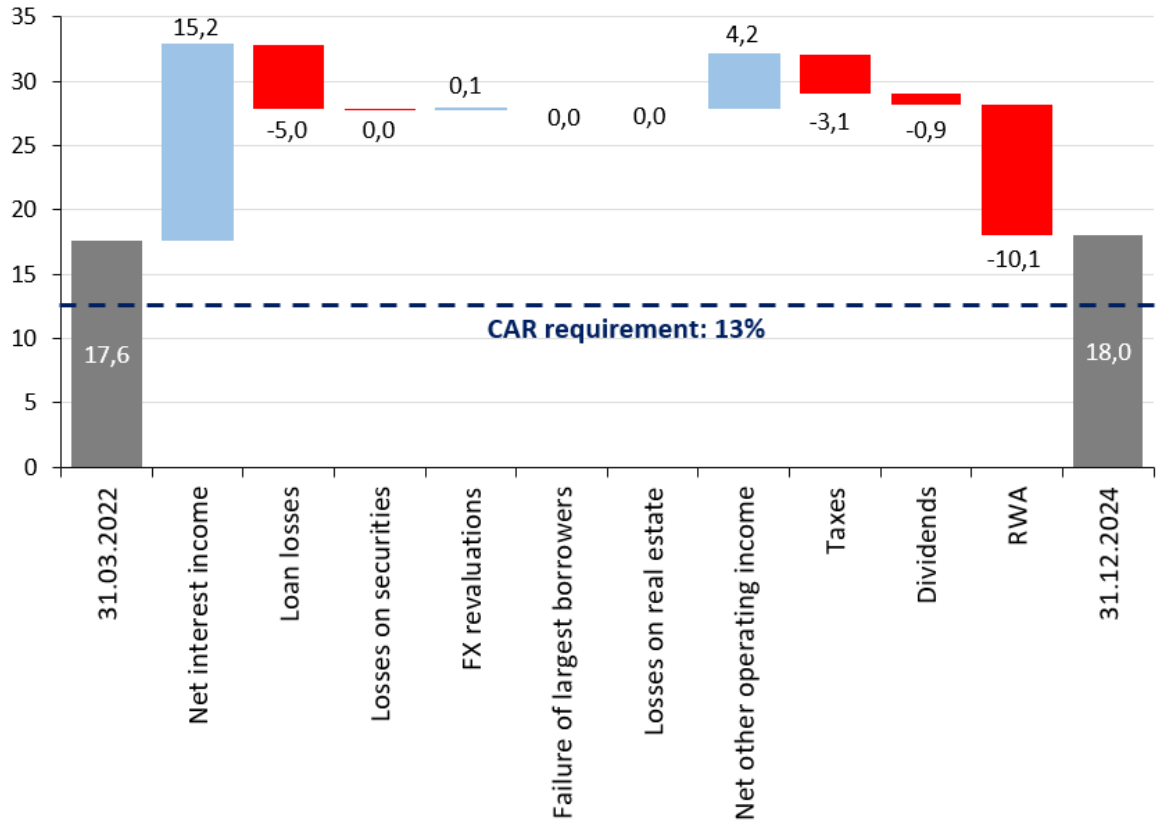
Source: CBU staff calculations.

Before the Covid-19 pandemic, the NPL ratio was low and stable, below 3 percent. However, as lockdowns weighed on economic activity, many borrowers struggled to repay their loans, and the NPL ratio rose. The CBU deployed supportive measures to alleviate the pandemic's negative impacts. One of the measures was loan deferment with a grace period and extending the repayment period until October 1, 2020, for individuals and business entities whose activities were adversely affected by the pandemic. That measure helped prevent NPL growth and ease liquidity pressures in 2020. In 2021, NPLs continued to grow due to the slowdown in economic activity caused by the pandemic and improvements in NPL reporting by banks.

4.2. Macro Stress Test Results

The implied CAR is the final result of the solvency stress test, assuming a materialization of credit, market, and income risks. The banking system appears resilient even in the case of severe shocks. Although banks face considerable loan losses, their capital bases can absorb severe shocks and maintain their overall capital ratios close to the regulatory minimum.

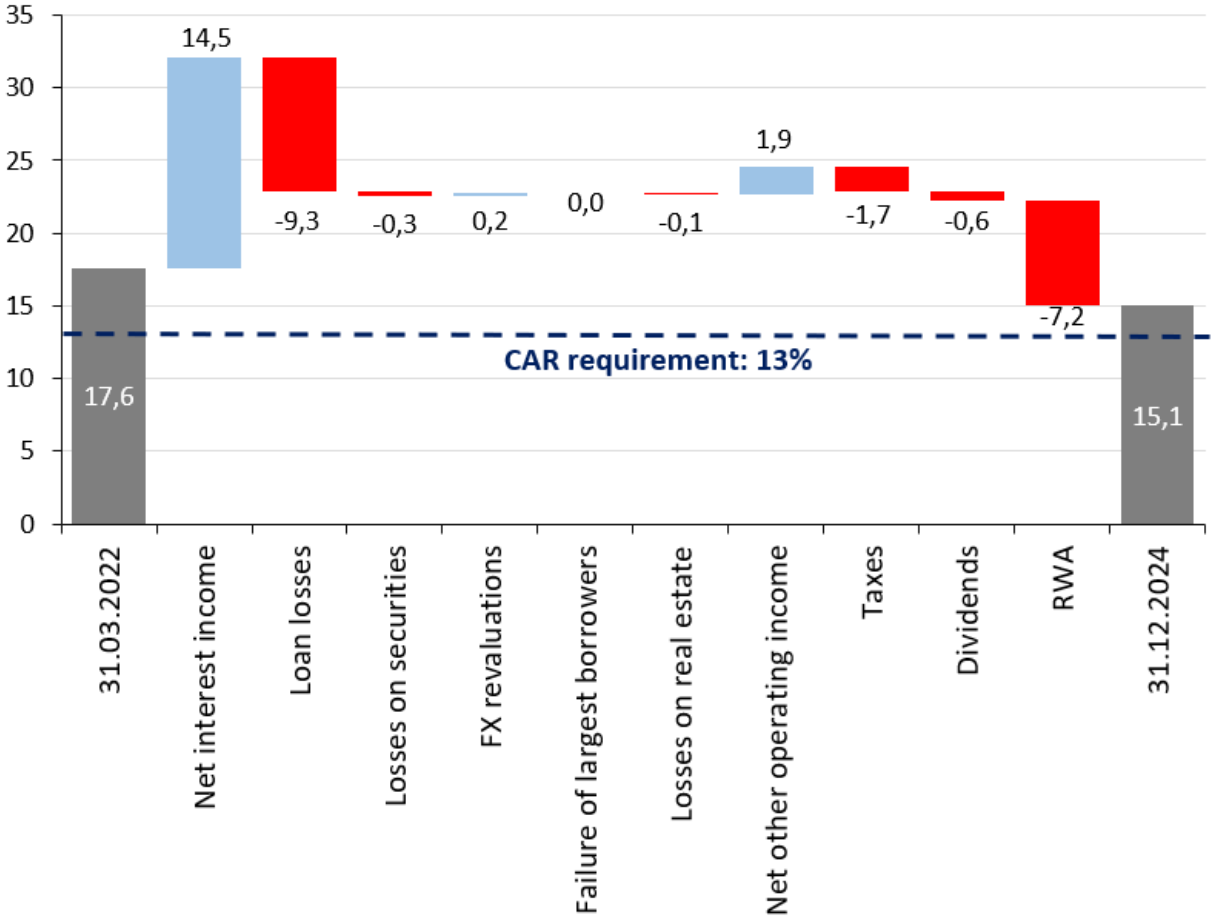
Figure 49. Baseline Scenario



Source: CBU staff calculations.

According to the baseline scenario, by end-2024, the CAR will reach 18 percent. Factors that push down the CAR, such as the increase in RWA, loan losses, taxes, and dividends, are offset by increases in net interest income and net operating income. The stress testing tool shows no losses in bond and real estate markets. The concentration risks are low.

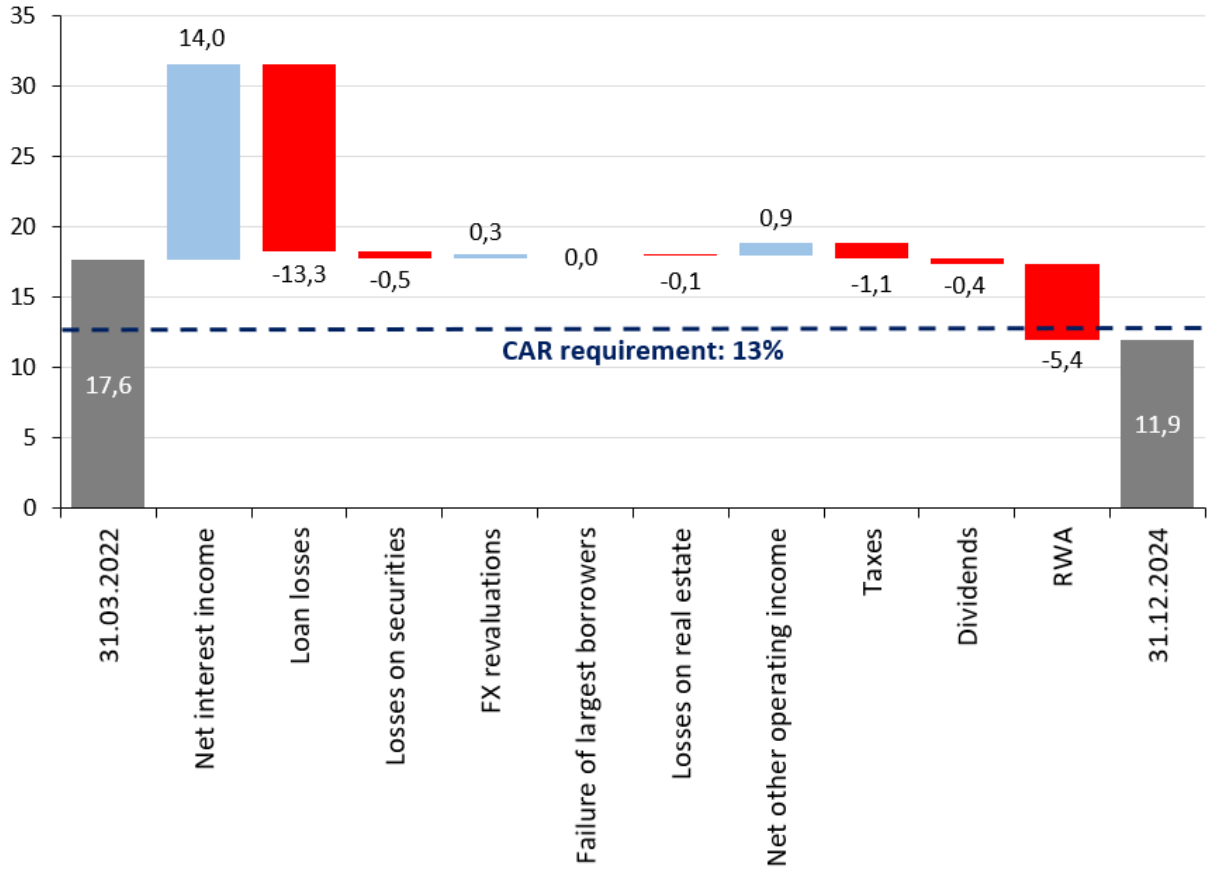
Figure 50. Moderately Adverse Scenario



Source: CBU staff calculations.

Under the moderately adverse scenario, a near doubling of loan losses compared to the baseline will lead to a decline in banks' net profits. Economic growth has a significant impact on banks' profitability. Anemic growth in the moderately adverse scenario will depress borrowers' ability to repay loans and hurt banks' asset quality. Specifically, banks' net interest income and other operating income will decrease while losses on loans and securities will grow. Lower profits of banks mean that they pay less in taxes and dividends.

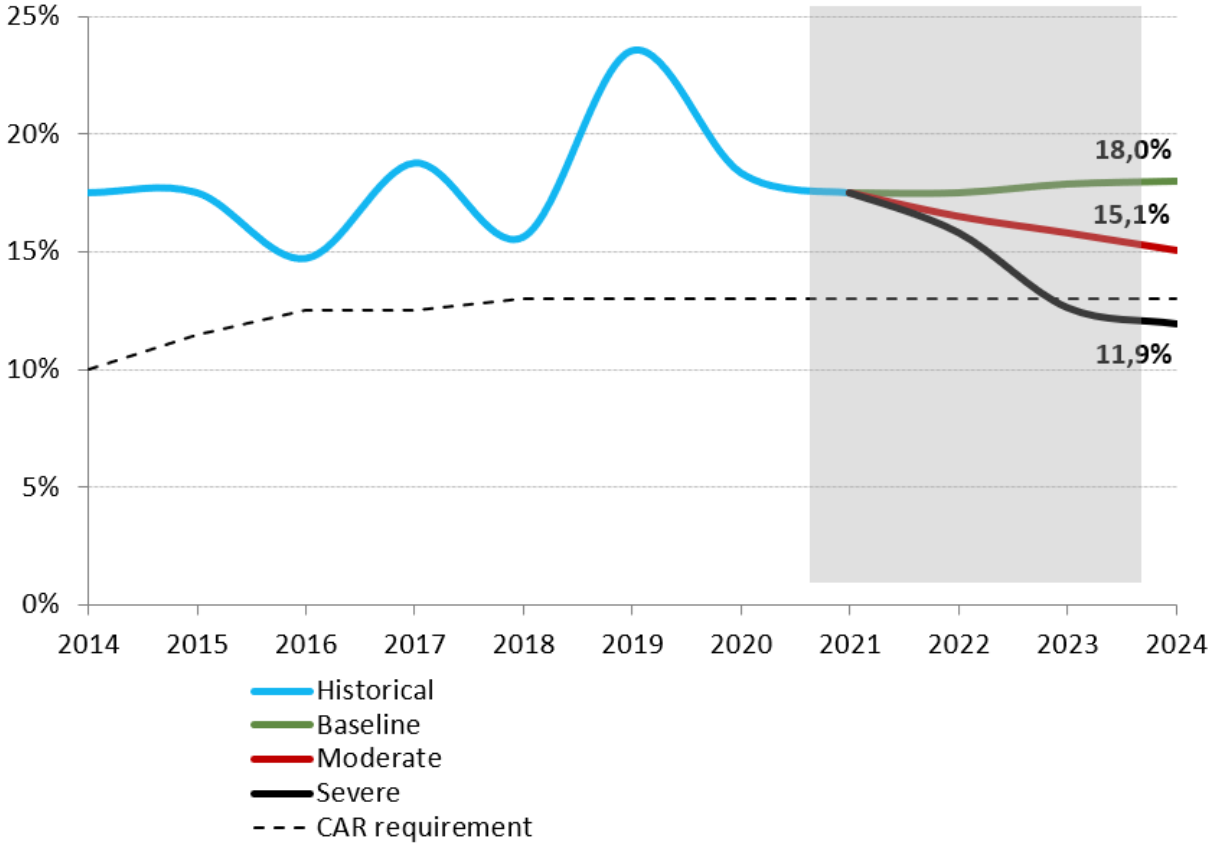
Figure 51. Severely Adverse Scenario



Source: CBU staff calculations.

The banking system incurs substantial losses in the severely adverse scenario, and the CAR breaches the regulatory minimum. Albeit trimmed down by the economic contraction, net interest and other operating income will still be enough to cancel out losses on loans and securities. Nevertheless, the growth of RWA ultimately pushes the CAR below 13 percent.

Figure 52. Banking Sector Capital Resilience in All Scenarios



Source: CBU staff calculations.

Generally, the macro stress test results demonstrate that bank capital in the baseline and moderately adverse scenarios will stay above the regulatory minimum of 13 percent, absorbing shocks well. However, in the severely adverse scenario, that is, in the case of a sharp economic deterioration and a significant exchange rate depreciation, the banking system's CAR will fall short of the required minimum. The shortfall will be driven by considerable loan losses and an increase in RWA. That said, bank capital shortfalls will not amount to overwhelming systemic stress owing to the banking system's sufficient loss-absorbing capacity.

Appendices

Appendix 1

IMF Financial Conditions Index

The IMF Financial Conditions Index (FCI) is a composite index computed using data on real short-term rates, term spreads, interbank spreads, sovereign and corporate spreads on domestic and external debt, equity market price-to-book ratios, equity market volatility, house prices, and exchange rates[67] for 22 advanced[68] and 21 emerging market economies[69]. The sample of economies for which FCIs were constructed includes the 29 systemically important jurisdictions in the IMF's Financial Sector Assessment programs and the top 20 constituents of the Emerging Market Bond Index Global (EMBIG) index. The regional aggregates are calculated using purchasing-power-parity GDP weights[70].

A positive change in the FCI means the tightening of global financial conditions, while a negative change indicates the easing of financial conditions.

[67] International Monetary Fund, Global Financial Stability Report, Online Annex 1.1 Technical Note, October 2018. https://www.imf.org/-/media/Files/Publications/GFSR/2018/Oct/CH1/doc/Annex1-1.ashx

[68] Australia, Austria, USA, Belgium, Great Britain, Germany, Hong Kong, Denmark, Ireland, Spain, Italy, Canada, Korea, Luxembourg, Netherlands, Norway, Singapore, Finland, France, Switzerland, Sweden, Japan.

[69] Argentina, Brazil, Hungary, South Africa, Indonesia, Colombia, Lebanon, Malaysia, Mexico, Egypt, Nigeria, Peru, Poland, Russia, Turkey, Ukraine, Philippines, China, Chile, Kazakhstan, India.

[70] International Monetary Fund, Global Financial Stability Report, October 2018, p. 2. https://www.imf.org/-/media/Files/Publications/GFSR/2018/Oct/CH1/doc/text.ashx

Minimum Capital Adequacy Requirements and Capital Buffers in Different Countries (as of September 1, 2022)

Countries	Minimum capital requirements			Buffer requirements			
	Common Equity Tier 1 (CET1), %[71]	Tier 1, %[72]	CAR, %	Capital conservation buffer (CCoB), %	Counter-cyclical capital buffer (CCyB), %	Systemic risk buffer (SyRB), %	SIB buffer, %
Belgium	4.5	6	8	2.5	0	9	0.75-1.5
Hungary	4.5	6	8	2.5	0	0	0.125–0.5
Germany	4.5	6	8	2.5	0	2	0.25–2
Hong Kong	4.5	6	8	2.5	1	0	1–3.5
Greece	4.5	6	8	2.5	0	0	0.75
Georgia	4.5	6	8	2.5	0	0	1.5-2.5
South Africa	4.5	6	8	2.5	2.5	0	0.5-2.5
Ireland	4.5	6	8	2.5	0	0	0.5-1.5
Italy	4.5	6	8	2.5	0	0	0.25–1
Canada	4.5	6	8	2.5	0	0	2.5
Cyprus	4.5	6	8	2.5	0	0	0.25-1.25
Latvia	4.5	6	8	2.5	0	0	1.25–2
Liechtenstein	4.5	6	8	2.5	0	1	1-2
Malaysia	4.5	6	8	2.5	0	0	0.5-2
Malta	4.5	6	8	2.5	0	0	0.25–2
Norway	4.5	6	8	2.5	1.5	4.5	1-2
Poland	4.5	6	8	2.5	0	0	0.1–1
Russia	4.5	6	8	2.5	0	0	1
Romania	4.5	6	8	2.5	0	0 - 2	1-2
Saudi Arabia	4.5	6	8	2.5	0	0	0.5-2.5
Serbia	4.5	6	8	2.5	0	3	0-2
Slovenia	4.5	6	8	2.5	0	0.5–1	0.25–1
Finland	4.5	6	8	2.5	0	0	0.5-2
France	4.5	6	8	2.5	0	0	0.25-1.5
Croatia	4.5	6	8	2.5	0	1.5	0.5-2
India	5.5	7	9	2.5	0	0	0.2–1
Czech Republic	4.5	6	8	2.5	1	0	0.5-2.5
North Macedonia	4.5	6	8	2.5	0.5	0	1–3.5
Estonia	4.5	6	8	2.5	0	0	0.5-2
New Zealand	4.5	6	8	2.5	0	0	2

Source: European Systemic Risk Board and national authorities.

[71] The minimum requirement for Tier 1 capital (6 percent) includes the minimum requirement for CET1 capital (4.5 percent).

[72] The minimum requirement for regulatory capital (8 percent) includes the minimum requirement for Tier 1 capital (6 percent).