

**THE CENTRAL BANK OF UZBEKISTAN
MACROPRUDENTIAL POLICY FRAMEWORK**

February 2023

ACRONYMS

BCBS	Basel Committee on Banking Supervision
CBU	Central Bank of Uzbekistan
CCyB	Countercyclical capital buffer
CET1	Common Equity Tier 1 capital
CGFS	Committee on the Global Financial System
DSTI	Debt service-to-income
ESRB	European Systemic Risk Board
FSR	Financial Stability Report
LCR	Liquidity coverage ratio
LTV	Loan-to-value
MPP	Macroprudential policy
NSFR	Net stable funding ratio
SyRB	Systemic risk buffer

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INTRODUCTION

One of the main goals of the Central Bank of Uzbekistan (CBU) is to ensure the stability of the banking system (Law on the CBU, Article 5)¹. To meet this goal, the CBU uses a number of macroprudential tools adopted and enforced to limit systemic risk in the banking system. These tools are capital tools, liquidity tools, and borrower-based tools.

The banking system in Uzbekistan showed substantial resilience to systemic risks and went through the Global Financial Crisis of 2007/08, the pandemic crisis of 2020/21, and the consequences of shocks caused by changes in the external economic conditions in 2022 without any major bank problems or bankruptcies that could trigger the materialization of systemic risk. By its capital and liquidity positions, the banking system stayed sound constantly, capable of persisting shocks that could otherwise trigger the crisis. These result from the Central Bank's sound and proactive policy that, in good times, builds necessary capital and liquidity reserves to be available during the systemic risk materialization phase.

The financial system in Uzbekistan is undergoing significant reforms, especially the privatization of major state-owned banks that currently dominate the banking system and that has already started. The reforms will lead to increased competition, which may increase risk-taking in the banking system. Also, future climate change implications for financial stability would become more challenging. The CBU is aware that it is time to formalize its macroprudential policy approach. Also, the International Monetary Fund (IMF) recommends the publication of the MPP strategy. To act proactively and successfully respond to new developments and risk trends, the CBU decided to affirm the Macroprudential Policy Framework². Additionally, the CBU intends to ensure that its MPP Framework is in accordance with the widely accepted international standards regarding macroprudential policy, especially IMF, BIS, and FSB standards.

The main objective of the CBU MPP framework is to define MPP, its goals, instruments, and implementation. In addition, one of the significant aspects of the development of the CBU MPP framework is that it is publicly available. In this way, it contributes to understanding the role that MPP plays in the financial system in Uzbekistan. Moreover, the CBU MPP framework secures clear and candid communication and accountability of the CBU.

I. MPP DEFINITIONS

The Global Financial Crisis 2007/08 (GFC) made it obvious that the financial system is not the simple sum of its constitutive elements but a new entity exposed to the risk specific to that entity—systemic risk. Materialization of systemic risk creates financial instability or financial crisis that can cause a contraction in economic activity

¹ Ўзбекистон Республикасининг 2019 йил 11 ноябрдаги “Ўзбекистон Республикасининг Марказий банки тўғрисида”ги янги тахрирдаги ЎРҚ-582-сон Қонуни. 5-модда. <https://lex.uz/acts/-4590452>

² IMF, 2013, “Key Aspects of Macroprudential Policy,” Article 79.

and negatively affect Gross Domestic Product (GDP). The consequences and costs of financial instability could be enormous, widespread, and protracted and impact economic activity in the long run.

The legal basis for the CBU macroprudential mandate is the CBU Law (Article 5), prescribing that the main objectives of the Central Bank are to ensure the stability of the banking system. The banking system is the most significant part of the financial system in Uzbekistan since banks represent around 96 percent³ of financial system assets and, therefore, the financial system's stability.

Macroprudential policy (MPP) is defined as using primarily prudential tools (macroprudential measures) to limit identified systemic risks⁴ (IMF, 2013).

There are **two dimensions** of systemic risk:

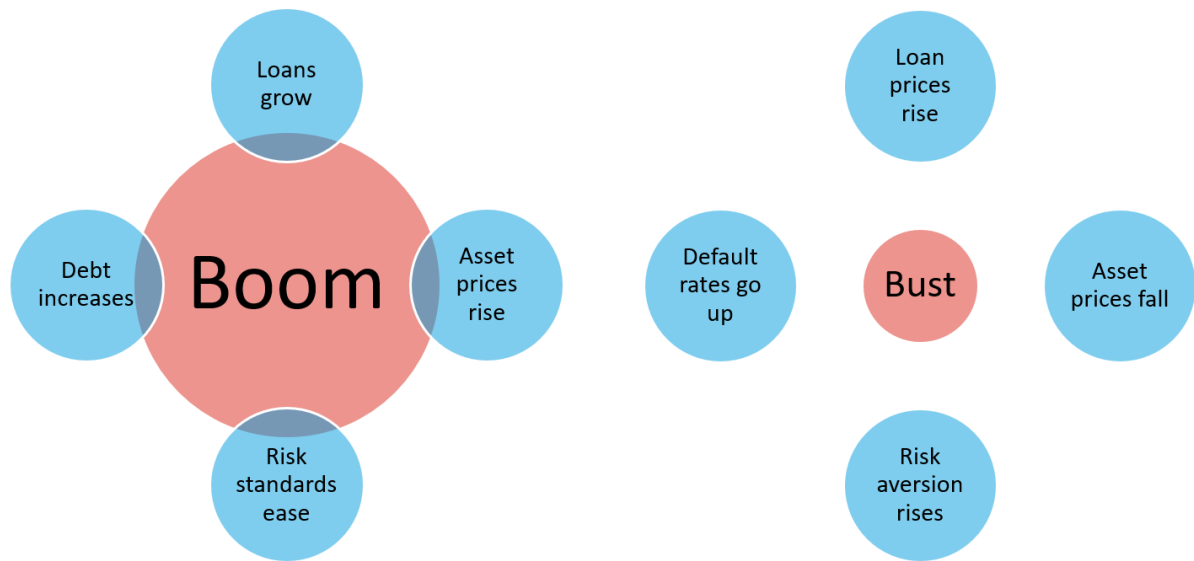
- the risk that accumulates over time (“time dimension”) and;
- the risk that has a source in direct or indirect relations (common exposure) between financial institutions (“structural” dimension) (IMF-BIS-FSB, 2016).

Systemic risk in the **time dimension** is characterized by the slow accumulation and procyclical behavior of both financial institutions and their customers. The vicious circle continues with more credit that feeds more price increases and the growth of the customers' debt. At one point, prices turn, and the feedback loop takes the opposite direction but now abruptly causing financial turmoil. Now cost of credit grows, and prices of assets fall, which could also cause fire sales that lead to even more asset prices decrease. That mechanism causes defaults of financial institutions (collateral values drop) and their clients and disruption in financial services that could negatively affect the real sector through a contraction in credit activity (Graph 1).

³ International Monetary Fund, Republic of Uzbekistan: Technical Assistance Report — Multi-Topic Statistics Diagnostic, December 2021, p. 68.
<https://www.imf.org/-/media/Files/Publications/CR/2021/English/1UZBEA2021002.ashx>

⁴ Systemic risk is a risk of disruption to the provision of financial services caused by an impairment of all or parts of the financial system, which can potentially have serious negative consequences for the real economy.

Graph 1. Time dimension of systemic risk (Boom–Bust cycle)

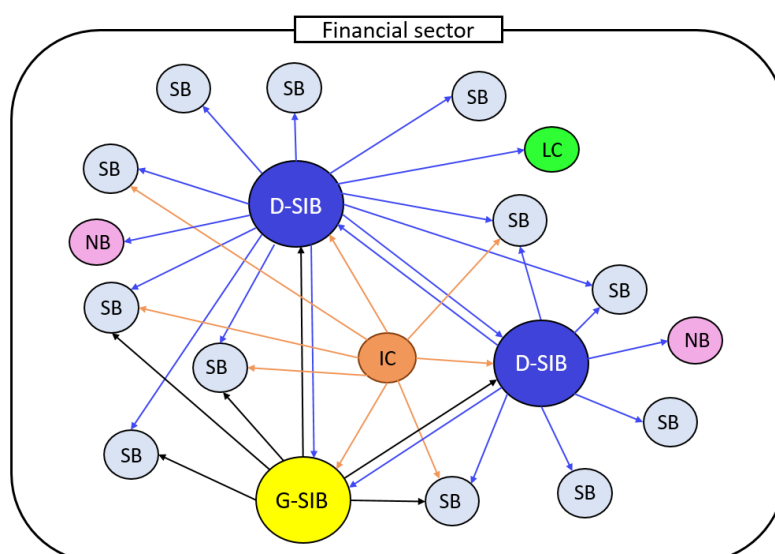


Source: CBU.

Systemic risk in the **structural dimension** has a source in direct connections between financial institutions or indirect connections through exposures to the same or similar assets (Graph 2). Direct connections exist through contractual relations between financial institutions that appear as creditors and debtors in various contracts. Indirect connections are financial institutions' exposures to the same or similar assets with correlated prices. An abrupt drop in these prices causes all institutions with significant exposure to that asset to simultaneously experience risk materialization that could trigger widespread disruption in the financial system. The mentioned disruption is created by hidden or neglected vulnerabilities (e.g., soft credit risk standards, improper collateral valuation, high borrowers' leverage, currency and maturity mismatch, inadequate risk pricing) that accumulate over time and are uncovered by the assets' price drop. One prominent example of this effect was common exposures to mortgage markets during the GFC.

Systemic risk begins its growth in good times (when both customers and financial institutions are over-expectant regarding the future, credit standards easily deteriorate, and risk-taking increases). Therefore, the CBU is committed to implementing its policy measures early in the financial cycle, keeping in mind that the cost of many early macroprudential interventions is much smaller than the cost of only one financial crisis.

Graph 2. Structural dimension of systemic risk



Note: Global systemically important bank (G-SIB), Domestic systemically important bank (D-SIB), Small bank (SB), Insurance company (IC), Non-bank credit institutions (NB), Leasing company (LC).

Source: CBU and IMF.

The CBU does not consider that systemic risk is every disruption in the financial system but only a significant disruption that could cause a fall in economic activity. Therefore, issues in providing financial services, prompted by, for example, the default or bankruptcy of a small financial institution whose services could be fast replaced by other institutions, cannot be viewed as systemic risk (without additional qualifications). Consequently, the CBU macroprudential measures aim not to eliminate any disruption in the financial system but to limit the risk of systemic disruption.

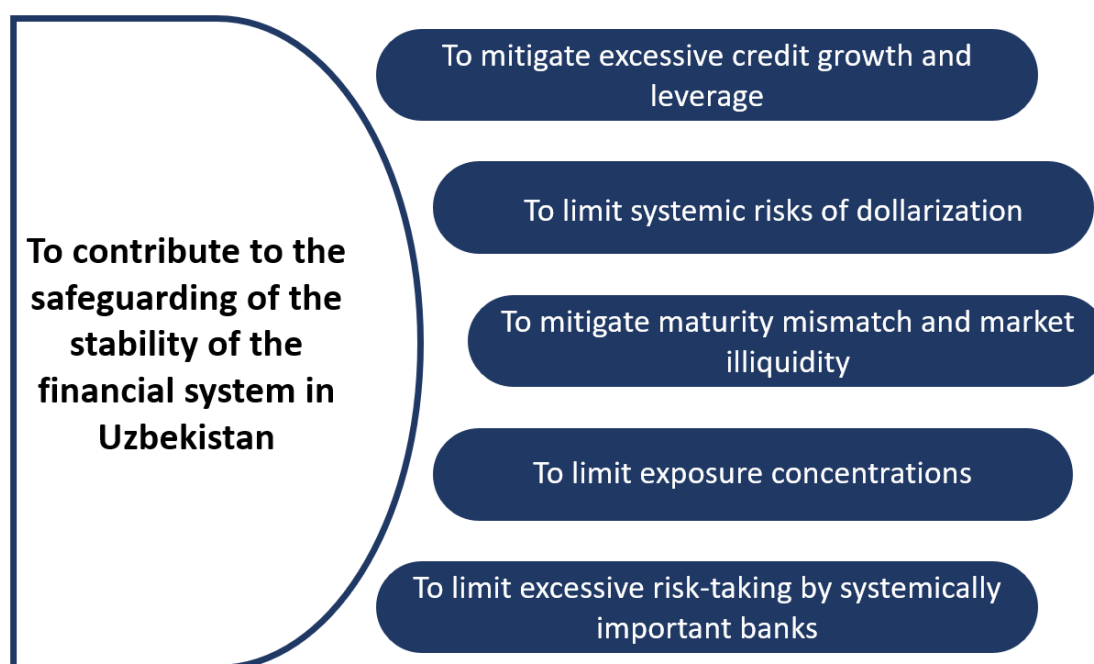
II. MPP ULTIMATE AND INTERMEDIATE GOALS

The ultimate goal of the CBU MPP is **to contribute to safeguarding the stability of the financial system in Uzbekistan**. Financial system stability is a precondition for achieving sustainable economic growth.

To achieve the ultimate goal, it is necessary to identify several intermediate goals (Graph 2), together with an indicative list of macroprudential instruments that could be used in achieving these goals (Appendix 1). Taking into account international experience⁵ and specific features of Uzbekistan's financial system, the five intermediate goals of the MPP are determined.

⁵ These intermediate objectives are defined in accordance with the best international practice, especially considering the European Systemic Risk Board (ESRB) practice.

Graph 3. Intermediate objectives of MPP



Source: CBU.

Mitigate excessive credit growth and leverage. Excessive credit growth in the economy is one of the main causes of financial crises, and high leverage increases the risk of these crises. The CBU can use capital buffers and other instruments to prevent cyclical systemic risks and improve the banking system’s resilience to shocks.

Limit systemic risks of dollarization. The high dollarization level can expose banks and consumers to systemic risk.

Mitigate maturity mismatch and market illiquidity. Relying on short-term and unsecured funding may lead to fire sales and market illiquidity. Macroprudential measures aim to reduce imbalances between assets and liabilities and strengthen the liquidity of financial market participants.

Limit exposure concentrations. While large banks’ exposures to the non-financial sector cause direct concentration risk, the interconnectedness of financial institutions and common exposures to economic sectors create indirect concentration risk and contagion within the financial system. The CBU minimizes these risks by assigning the maximum level of risk to a single borrower or a group of interconnected borrowers and limits concentration in areas directly affected by climate change.

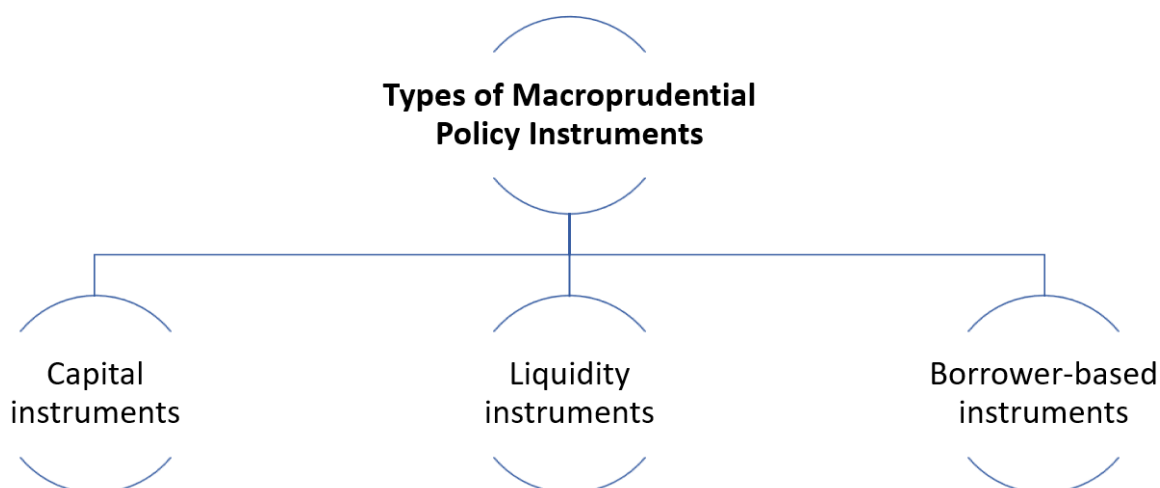
Limit excessive risk-taking by systemically important banks. State-owned banks are more prone to risk because they believe the government will protect them. Since the state owns a significant share in major banks in Uzbekistan, any problems in their operation affect the entire financial system (“too big to fail”). Considering this, the CBU can implement a separate capital buffer for systemically important banks.

III. MPP INSTRUMENTS

MPP instruments are primarily prudential measures adopted to limit identified systemic risks. A number of macroprudential instruments can be used to achieve each intermediate objective.

The CBU divides MPP instruments into three groups: capital instruments, liquidity instruments, and borrower-based instruments.

Graph 4. Types of macroprudential policy instruments



A. Capital Instruments

Countercyclical capital buffer (CCyB)

The CCyB is a capital-based instrument in the form of Common Equity Tier 1 (CET1) capital and could range from 0 to 2.5 percent of risk-weighted assets (RWA)⁶. It is developed to increase the resilience of the overall banking system to systemic risks that accumulate during periods of excessive credit growth (time dimension of systemic risk). The most important transmission channel of the CCyB is increasing the **resilience** of the banking system by supporting new credit activity when funding is scarce in the downturn phase of the financial cycle. Therefore, the CCyB protects a critical function of the banking system because a fall in credit activity at the system level could cause a fall in the GDP.

⁶ Recently, a number of countries opted for an early introduction of the positive CCyB rate in the standard risk environment—in which risks are neither elevated nor subdued. The primary purpose of such an approach is to ensure the buffer is built up during ‘good times’ before a significant shock hits the financial system. https://www.bis.org/publ/bcbs_n130.htm

In addition, the CCyB influences the moderation of the credit cycle by increasing the cost of credit and, in that way, impacts credit demand (**price channel**)⁷. The CBU will tend to increase the CCyB rate in the build-up phase of the financial cycle while decreasing it in the unwinding phase to support continuous credit flow to the real economy⁸.

Capital buffer for domestic systemically important banks (D-SIBs)

The D-SIB buffer is developed to limit the negative externalities of D-SIBs defaults on the financial system and the real economy. In the case of a D-SIB default, negative externalities are spread throughout the financial system by direct or indirect connections between financial institutions. Negative effects are even amplified by explicit or implicit state guarantees that can encourage banks to take more risk—the “Too Big to Fail” problem. Therefore, unlike the CCyB, which serves to secure stable funding for the banking system, the main purpose of the D-SIB buffer is to cover the losses of the D-SIBs (**increasing resilience**). Although the D-SIB buffer influences the moderation of the credit cycle by increasing the cost of credit, this is not its primary function (**price transmission channel**)⁹. The level of this buffer is determined for each systemically important bank based on its systemic importance.

Systemic risk buffer (SyRB)

The SyRB is a macroprudential instrument primarily designed to mitigate and prevent structural systemic risks and can be applied to all banks or a specific group of banks. Similarly to other capital instruments, the SyRB influences systemic risks through two transmission channels—**resilience** and **price channels**. Since the SyRB is primarily directed to structural systemic risk, the dominant transmission channel should be increasing the financial system’s resilience by covering the losses caused by the materialization of structural systemic risks (that have a source in direct or indirect connections between financial institutions). However, the SyRB influences the credit cycle by increasing the cost of credit (price channel), which could be intended or unintended. The SyRB can also be used to limit structural systemic risks that may arise from a specific sector (for example, the real estate sector, sector exposed to climate change risks, etc.). When applying the SyRB, the CBU will consider the possible coverage of this instrument and its transmission by both channels.

⁷ See Transmission Channels of Capital Instruments Chapter.

⁸ The build-up phase and the unwinding phase of the financial cycle are identified using a number of quantitative indicators of the cyclical dimension of systemic risk (e.g., credit-to-GDP gap, credit growth, DSTI ratio, asset price deviations from long-term trends, etc.). The CBU can use different indicators to decide on increasing and releasing the CCyB rate.

⁹ See Transmission Channels of Capital Instruments Chapter.

Leverage ratio

The leverage ratio is used to limit the accumulation of excessive leverage in the banking system by limiting the sum of total assets and off-balance sheet items by the level of Tier 1 capital. It differs from capital adequacy measures by not considering risk-weighted assets, which could cyclically decrease. It is a simple and effective tool against the disproportionate excess of assets relative to capital. The main transmission of the leverage ratio is **increasing resilience** by preserving capital reserves to mitigate possible losses. A **price channel** is also present since higher capital requirements impact the price of credit. The leverage ratio could also be used to target structural risk when differentiated minimums are applied, for example, for D-SIBs.

B. Liquidity Instruments

Liquidity coverage ratio (LCR)

The LCR is developed to increase resilience on short-term liquidity shocks¹⁰. One of the main assumptions of the LCR is that the bank should have enough High-Quality Liquid Assets (HQLA) to be able to repay its short-term liquidity needs that are due in the next 30 days under a stress scenario. A time period of 30 days is enough for the bank to try to reorganize and find other sources of liquidity and, in that way, avoid bankruptcy that could be caused by short-term illiquidity. The illiquidity of one or more financial institutions could be amplified through the financial system (the structural dimension of systemic risk) and cause wider consequences. Therefore, the LCR's main transmission channel is **increasing resilience**.

Net stable funding ratio (NSFR)

The NSFR is developed to **increase the resilience** of the banks' funding structure and secure sustainable funding. The NSFR is defined as the ratio of the available amount of stable funding to the required amount of stable funding. One of the main functions of the banking system is maturity transformation between longer-term assets (loans) and shorter-term liabilities (deposits and other funding sources). However, the risk of maturity mismatch should be managed appropriately, so overlying on the short-term liabilities to finance long-term assets should be moderated. If this is the case, a sudden drop in bank funding can potentially cause severe consequences for the particular bank and, if the practice is widespread, for the banking or financial system. Therefore, the main goal of developing the NSFR is to ensure that in the one-year period bank has an appropriate level of stable funding (with longer maturities) to cover its needs to finance long-term assets.

Loan-to-deposit ratio (LTD)

The main goal of the LTD ratio is to **maintain the banking system's resilience** by limiting the level of total loans to the level of total deposits. Therefore, the

¹⁰ IMF, 2014, "Staff Guidance Note on Macroprudential Policy – Detailed Guidance on Instruments."

LTD limit requires that banks rely on a determined share of deposits as a stable funding source. The LTD ratio is a simple measure of liquidity risk, which does not take into account the maturity structure of loans or deposits.

C. Borrower-based instruments

Loan-to-value limit (LTV)

An LTV limit is intended to increase **the borrowers' resilience** to risk by limiting a maximum amount of a loan that borrowers can afford by the value of the real estate that serves as collateral. The LTV directly reduces the loan amount a borrower could take and prevents borrowers that cannot obtain enough funding to buy real estate. Therefore, the LTV decreases housing demand and limits credit and house price growth, and, in that way, **moderates the credit cycle**. Moreover, the LTV increases the borrowers' resilience by securing that borrower has more equity in the real estate and thus lowering PD and LGD.

Payment-to-income or debt service-to-income limit (PTI/DSTI)

A PTI/DSTI limit is intended to increase **the borrowers' resilience** by limiting the size of debt service payments by the value of borrowers' income. This limit reduces the loan amount borrowers can take in relation to their income and prevents borrowers with lower income from taking loans. Consequently, and similarly to the LTV, it decreases loan demand, limits credit growth, and thus **moderates the credit cycle**. An advantage of the PTI/DSTI over the LTV materializes in the case of housing price growth. To be effective in this environment, the LTV should be tightened, maybe several times, while the PTI/DSTI is more resistant when the growth of the real estate prices is not followed by the growth of disposable income (automatic stabilizer, IMF, 2014).

Loan-to-income or debt-to-income limit (LTI/DTI)

An LTI/DTI limit constrains the size of the household debt to a fixed multiple of income. While an LTI ratio covers a specific mortgage loan, a DTI ratio captures a broader range of household debts (IMF, 2014)¹¹. The transmission mechanisms of the LTI/DTI ratio are very similar to that of the PTI/DSTI limit. Such restrictions aim to increase the resilience of borrowers to income shocks and, thus, indirectly strengthen the robustness of lenders.

IV. TRANSMISSION CHANNELS OF MPP INSTRUMENTS

In choosing and calibrating the adequate instrument, understanding the transmission channels of each group of MPP instruments is key.

¹¹ International Monetary Fund, Staff Guidance Note on Macprudential Policy—Detailed Guidance on Instruments, December 2014, p. 33. <https://www.imf.org/external/np/pp/eng/2014/110614a.pdf>

A. Transmission Channels of Capital Instruments

The CBU macroprudential capital instruments contribute to financial stability directly by **increasing the financial system's resilience** through raising capital reserves that can be used during the materialization phase of systemic risk. These reserves can be affected in two ways, first to cover realized losses and second to support new credit activity when funding is scarce and thus support the real economy and sustainable economic growth. This is the most important transmission channel of the CBU macroprudential capital instruments. Moreover, macroprudential capital instruments support financial stability in Uzbekistan through their effect on mitigating the financial cycle. Furthermore, these instruments can affect banks' risk management behavior through the expectation channel.

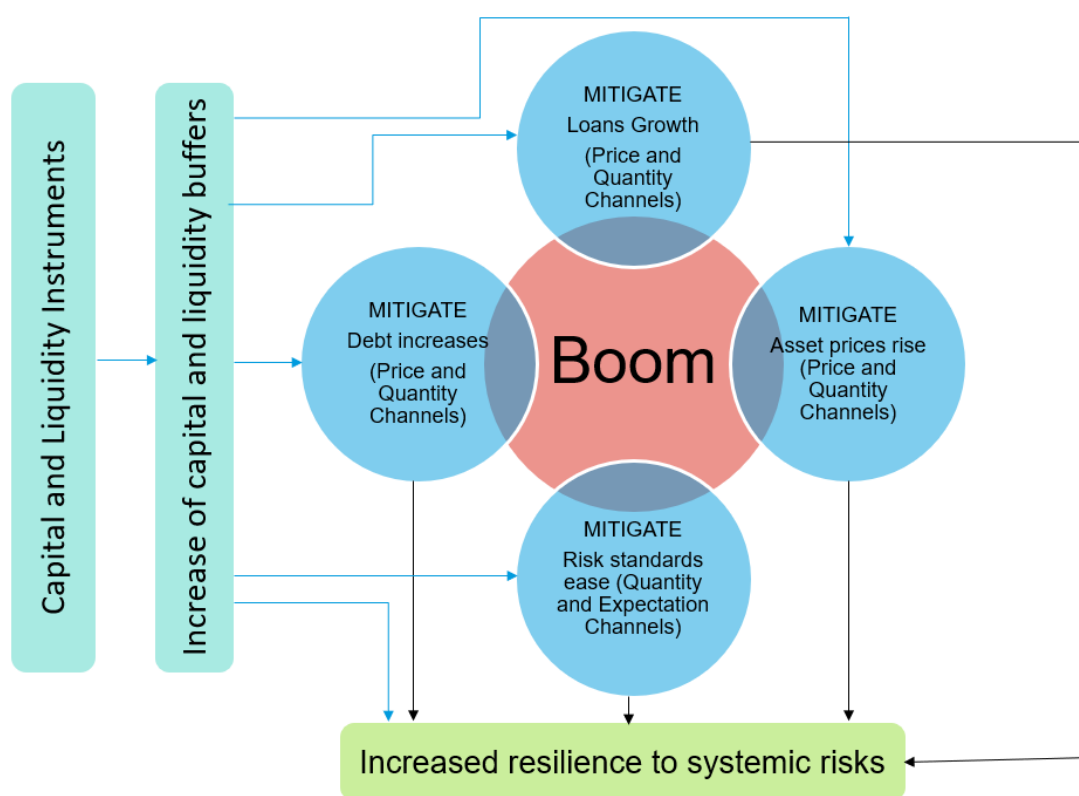
As mentioned, the second transmission channel of macroprudential capital instruments is their effect on **credit cycle mitigation**. To build capital buffers (if they do not hold more capital than is required), banks could respond in four ways (CGFS, 2012):

- collect new capital by issuing equity,
- reduce the distribution of earnings (e.g., dividends and bonuses),
- increase lending spreads (interest rates for new loans) or
- reduce the volume of risk-weighted assets (the denominator in the Capital Adequacy Ratio).

The first three options have consequences in increasing lending spreads (the cost of new credit) and, in that way, influence credit demand (**price channel**). The last option of reducing the volume of risk-weighted assets affects credit supply because banks can be reluctant to offer new credit, or they would try to rebalance their portfolio by shifting it toward credit that bears lower risk weights (**quantity channel**) (Graph 4). When capital buffers are relaxed and, provided that banks use the freed-up capital, the mechanisms mentioned above are expected to work in reverse, i.e., they will influence the increase in the supply (availability) of loans and the lower loan cost, which should increase credit activity (Graph 5) (CGFS, 2012).

The **expectation channel** is also essential for the CBU because it could achieve macroprudential policy goals, even without activating macroprudential capital tools. With its communication and credibility, the CBU signals to banks and the market planned capital measures. This gives banks room to adjust their risk management.

Graph 5. Capital and liquidity tools transmission channels in the boom phase



Source: CBU.

B. Transmission Channels of Liquidity Instruments

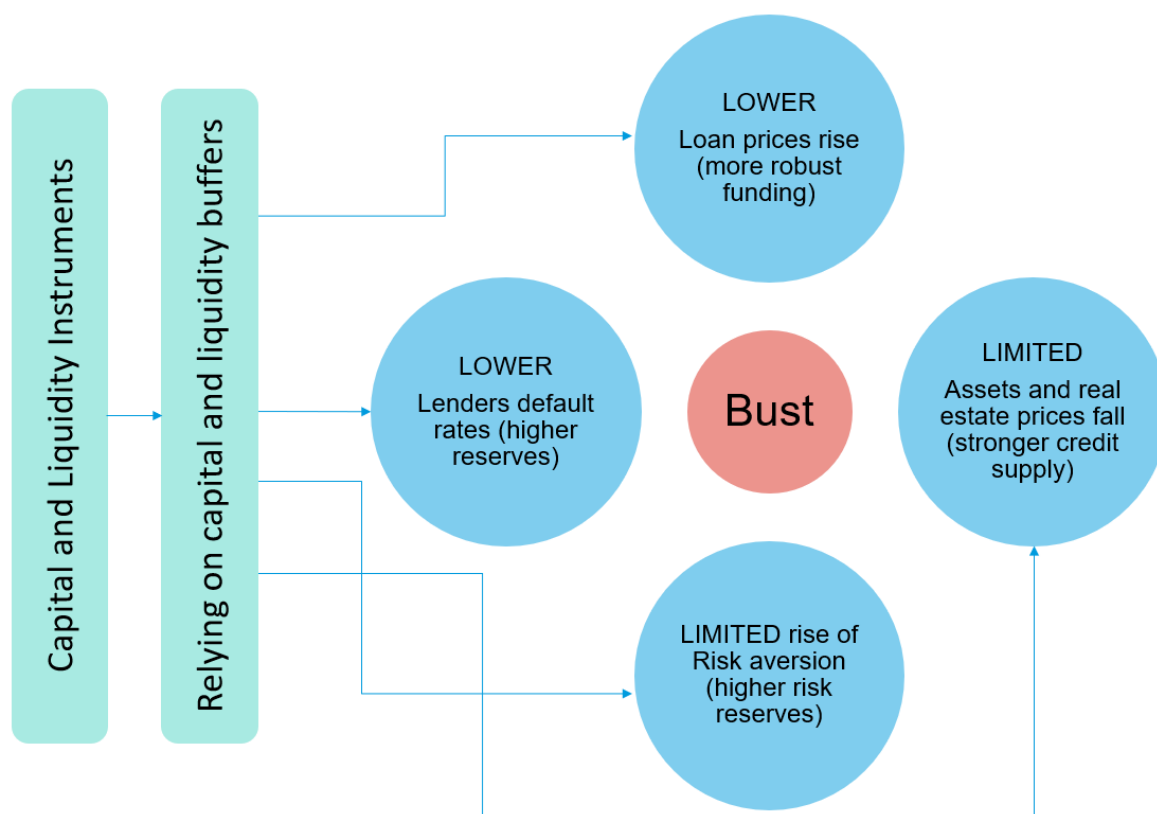
The CBU macroprudential liquidity instruments have similar transmission channels to its macroprudential capital instruments (Graphs 5 and 6). The first direct transmission channel supports financial stability by **increasing the resilience of the financial system**. The CBU liquidity tools require banks to hold more liquid assets, decrease illiquid assets and reduce loan maturities (IMF, 2014). It allows banks to mitigate the risk of asset fire sales under liquidity stress to cover their liquidity needs. Moreover, it limits systemic risk in its cross-sectional dimension by mitigating possible contagion from the fire sale and adverse effects on the real economy.

The second transmission channel of the macroprudential liquidity instruments is the **mitigation of the credit cycle**. Banks have two options to react to tightening liquidity tools: 1) to increase deposit funding (stable funding) or 2) to reduce new lending. Deposit funding has slow growth. Also, it is difficult to increase during the boom phase without substantial costs. Therefore, banks that lack a broad deposit base would rely on the second option to slow credit growth.

Additionally, liquidity requirements directed at increasing liquid assets (e.g., LCR) drive banks to increase the cost of new lending because liquid assets in standard situations bear lower interest than illiquid assets. It influences credit demand that transmits to decreased new lending. During financial stress, liquidity tools should be

released not to become a restriction for providing interbank liquidity and to support credit supply. Otherwise, tightened liquidity tools could contribute to interbank market freeze, fire sale, and deleveraging (IMF, 2014). In addition, releasing liquidity tools during stress reduces funding costs that should transmit into more robust lending. The **expectation channel** is also important for the CBU macroprudential liquidity instruments. It functions similarly to the expectation channel for macroprudential capital instruments.

Graph 6. Capital and liquidity tools transmission channels in the bust phase



Source: CBU.

C. Transmission Channels of Borrower-based Instruments

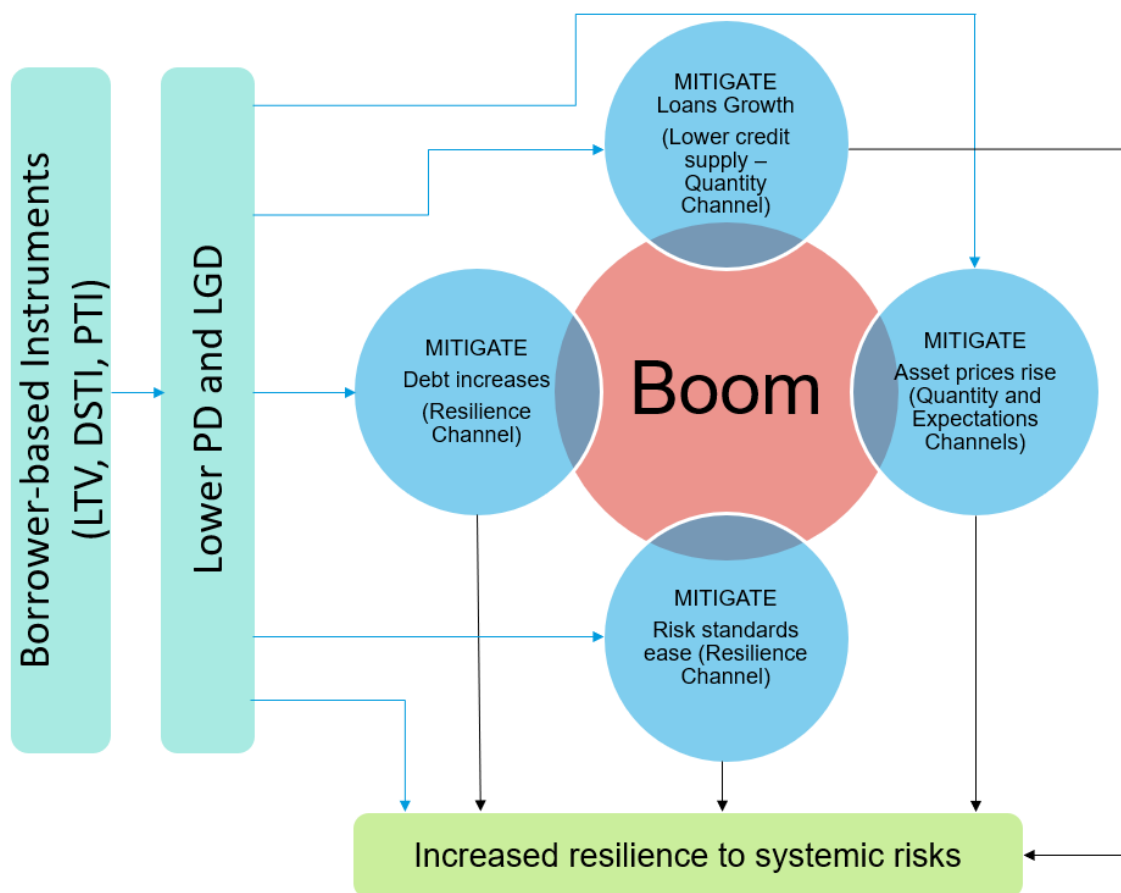
Borrower-based instruments directly limit the value of the loan that borrowers can afford by the value of the collateral (LTV) or the value of borrowers' income (in the case of the DSTI and PTI). Borrower-based instruments **increase the borrowers' resilience** by increasing the borrowers' buffers and, in that way, lowering the probability of default (PD). The LTV does this by securing that borrower has more own value (equity) in the real estate or other collateral, and the DSTI or PTI by ensuring that the borrower has more disposable income to cover its obligations. In the case of the LTV limit, loss-given default (LGD) would be lower, too, because of the larger share of equity in the value of the collateral. Since banks are exposed to borrowers' credit risk, borrower-based instruments simultaneously increase **the banks' resilience to risks**.

Since borrower-based instruments directly influence the value of a loan that a borrower can afford, they impact the real estate market by reducing demand (Graph 6).

Consequently, lower housing demand leads to lower credit supply, which could lead to a decrease in credit and real-estate price growth that **moderates the credit-asset prices procyclical feedback mechanism** (IMF, 2014).

The expectations channel is even more critical in the case of borrower-based instruments than in the case of other tools because the information on the future introduction of borrower-based instruments could cause frontloading of credit activity. Therefore, the CBU will approach communications on the introduction of borrower-based tools with the needed degree of caution (IMF, 2014).

Graph 7. Borrower-based tools transmission channels



Source: CBU.

V. MPP IMPLEMENTATION

A. Basic Principles of MPP Implementation

The main principles that the CBU applies in the MPP implementation process are as follows:

Independence. The macroprudential policy should be carried out independently of other central bank functions, particularly monetary policy and prudential control functions, as well as the intervention of other public institutions. However, independence does not preclude the principle of coordination. The activities of the CBU to ensure the banking system’s stability should not negatively impact price stability¹².

Transparency. Macroprudential policy implementation is clear and open to all financial system participants and the public. To utilize the expectation transmission channel of macroprudential instruments, the CBU regularly informs the target audience about relevant policy decisions and regulatory changes.

Preventive approach. The CBU is committed to implementing its policy measures timely after systemic risk is identified, acknowledging that the cost of many early macroprudential interventions is much smaller than that of only one financial crisis.

Guided discretion. The CBU policy decisions are primarily based on the rules. However, these decisions are not mechanistic since risk indicators’ signaling effects could be imperfect and different indicators through several channels could lead to different conclusions. Therefore, rule-based analysis (when indicators reach pre-established thresholds) is supported by the CBU expert judgment when necessary.

Coordination. The effectiveness of the macroprudential policy depends on its interactions with other policies of the central bank or relevant public bodies. Therefore, the CBU ensures proper coordination of macroprudential policy and other policies.

Proportionality. Given that the use of macroprudential tools imposes certain requirements on financial institutions, the CBU takes into account that these requirements are proportionate to the contribution of a particular financial institution to the overall systemic risk.

Preventing regulatory arbitrage. Financial system participants should not have a comparative advantage by moving into relatively less regulated market segments to circumvent restrictions. This arbitrage can be avoided by filling legislative gaps and applying the requirements to all financial market participants.

B. Stages of the CBU Macroprudential Policy Implementation

The implementation of macroprudential policy in the CBU is a continuous process that includes four stages (Graph 8):

1. Identification and assessment of systemic risks;
2. Selection and calibration of instruments;
3. Decision-making and instruments implementation and
4. Policy impact assessment.

¹² Ўзбекистон Республикасининг 2019 йил 11 ноябрдаги “Ўзбекистон Республикасининг Марказий банки тўғрисида”ги янги тахрирдаги ЎРҚ-582-сон Қонуни. 5-модда. <https://lex.uz/acts/-4590452>.

Graph 8. Stages of macroprudential policy implementation



Source: CBU.

Identification and assessment of systemic risks

Identifying and assessing existing and potential systemic risks is the first step in the CBU process of macroprudential policy implementation. Systemic risks are identified using a number of quantitative indicators. Indicators are divided into core and additional sets. Core indicators are the starting point in the risk assessment process. The CBU's preliminary judgment on macroprudential instruments application can be based on them (IMF, 2014)¹³.

Since indicators' signaling effects could be imperfect, in addition to core indicators, the CBU is relying on the additional set of indicators to get a broader picture of the analyzed systemic risks. This analysis is not mechanistic because different indicators could lead to different deductions. Therefore, rule-based analysis (when indicators reach pre-established thresholds) is supported by the CBU expert judgment to make the right conclusions. Since expert judgment in this phase could play an important role, the CBU is using other information from the market (market intelligence and ad hoc surveys), the prudential supervision function, and other stakeholders.

Moreover, to assess banking system resilience to the analyzed systemic risks, the CBU applies a macro stress testing tool. Financial system resilience to systemic risks means that the financial system (under current prudential requirements) would continue to

¹³ For example, one of the well-known core indicators for the time dimension of systemic risk is a credit-to-GDP gap.

provide credit to the real economy in the case of a downturn or other systemic event and would not amplify the consequences of a downturn or systemic event. The CBU considers the identification and analysis of systemic risks as one of the most important phases of MPP implementation. It regularly reports updated assessments of systemic risks in its twice-a-year Financial Stability Report.

Selection and instruments calibration

When systemic risks are identified, the need to use macroprudential instruments to mitigate and eliminate these risks arises. In the **selection and instrument calibration phase**, the CBU first establishes the list of possible instruments that can be used depending on the identified systemic risk dimension (time or structural) and the intermediate objective closest to the identified risk. After that, the listed instruments' transmission channels are analyzed to assess the suitability and effectiveness of possible tools.

The two most important transmission channels of macroprudential instruments are increasing the resilience of the financial system and moderating the financial cycle. Nevertheless, increasing the resilience could be aimed at the banking system to cover possible losses or to support lending to the real economy in a downturn. Correspondingly, increasing resilience could be focused directly on the banking system (capital buffers) or indirectly by increasing the resilience of borrowers (borrower-based instruments). Also, some instruments are more effective in moderating the credit cycle than others (borrower-based vs. capital instruments).

Furthermore, every instrument has its primary transmission mechanism, additional transmission channels, and suitability for the particular risk. Therefore, choosing an appropriate instrument or set of instruments is a complex task, and the CBU is committed to selecting the most commensurate instruments for the particular risk. The process finalizes by assessing the calibration and possible channels of regulatory arbitrage.

Decision-making and instruments implementation

The CBU Executive Board is in charge of adopting macroprudential instruments. The adoption of an instrument assumes that it is already calibrated regarding the level and that its coverage is appropriately defined in the instrument selection and calibration phase. Besides securing that all the procedures are fulfilled from the legal point of view, this phase is critical because it emphasizes the **expectation transmission channel** of macroprudential instruments. Therefore, the CBU communicates with the public and entities affected by every adopted tool to ensure that the expectation channel is **utilized to the highest possible level**.

This **channel** is important for the CBU because it could achieve macroprudential policy goals even before instruments are implemented. With established expectations, banks would change their risk management behavior following just the CBU announcement that, for example, a capital instrument will be deployed in the future.

In addition, in the decision-making process phase, it is necessary to consider the interaction of macroprudential policy with other policies conducted by the CBU and to coordinate when making a decision and implementing macroprudential instruments.

Policy impact assessment

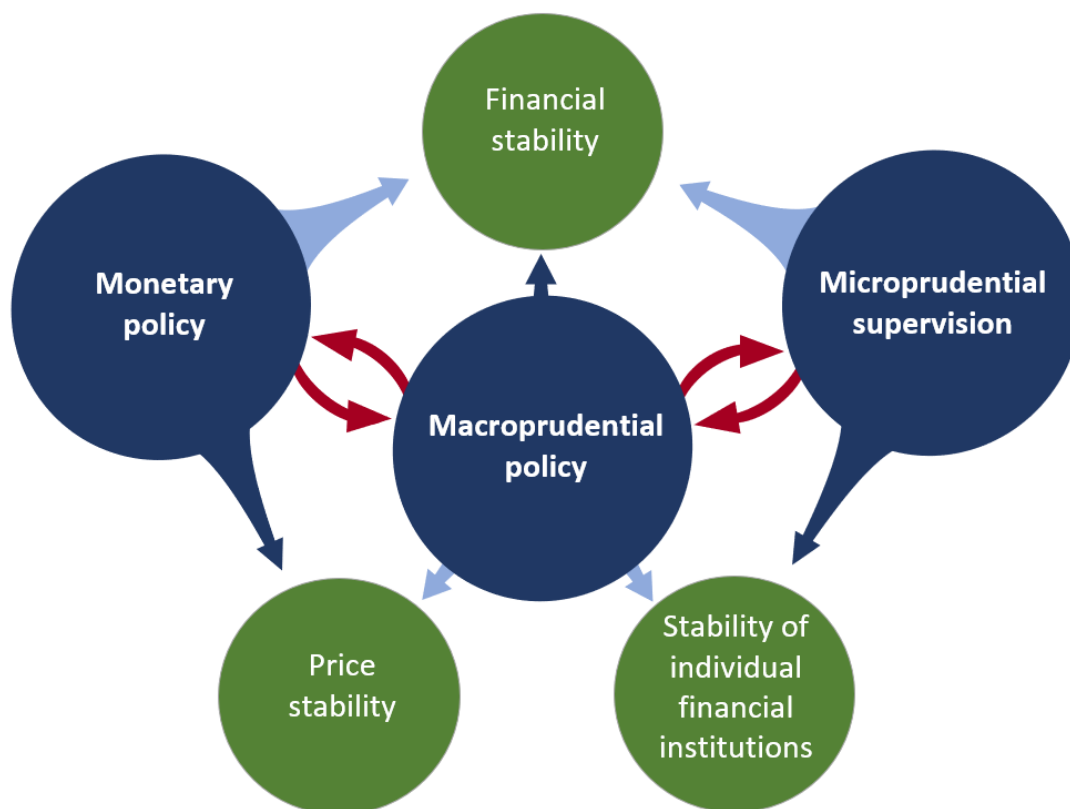
The CBU policy impact assessment includes assessing: 1) the level of policy instruments' impact on resilience, 2) the impact on credit and asset price dynamics, 3) the impact on risk management behavior of market participants, and 4) regulatory arbitrage and leakages. For example, the impact on the resilience of the borrower-based instruments could be assessed by analyzing the ex-post distribution of LTV ratios for new loans and the existing stock of loans. Also, the CBU assesses resilience by using its macro stress testing tool. Impact on credit and asset price dynamics could be assessed by following the developments of credit, asset price, and risk indicators that were used as a signal for instrument deployment. The same indicators can be used to assess the market participants' behavior changes.

In addition, regulatory arbitrage and leakages are assessed by following developments in the domestic non-supervised financial sector and cross-border credit activity. Also, the CBU policy impact assessment helps analyze when MPP instruments should be relaxed. Moreover, impact assessment is essential in improving other stages of the macroprudential policy cycle, such as instrument selection, development, and calibration. However, the primary purpose of this phase is to assess the instrument's impact on the mitigation of systemic risk.

C. Interaction with Other Policies

The macroprudential policy interacts with the **monetary** and **microprudential policies** of the CBU. The goals of monetary and macroprudential policies are different (price stability vs. financial stability), and sustainable economic growth and macroeconomic stability are supported by achieving these two goals. Monetary policy and macroprudential policy complement each other through several transmission channels. For example, in an upturn, increasing the level of capital buffers can increase the financial system's resilience and mitigate the effects of inflation resulting from a financial shock. However, easing monetary policy could support credit growth in the low inflation environment, leading to systemic risk accumulation (price bubbles). Therefore, the CBU coordinates the conduct of monetary and macroprudential policies but only uses one policy's specific instruments to achieve that policy's goals (Graph 9). The CBU conducts macroprudential policy without a negative impact on price stability.

Graph 9. Interactions of monetary, macroprudential and microprudential policies in the CBU



Source: CBU.

Microprudential policy aims to ensure the stability of individual financial institutions, with the ultimate goal of protecting depositors. In this respect, the resilience of individual institutions to external and internal shocks lays the foundation for the stability of the overall financial system and vice versa. On the other hand, during financial distress, there may be tension between these two policies: macroprudential policymakers could support relaxing capital buffer requirements that restrict the provision of credit to the real economy and contribute to the fire sale effects. At the same time, microprudential supervisors want to leave these requirements or even tighten them to protect the solvency and liquidity of individual banks and, in that way, the interests of depositors.

Also, macro- and microprudential policies share several of the same instruments and transmission channels, and only the purpose of their deployment distinguishes between the policies. Therefore, shared information, collaborative risk analysis, and strong communication between macro- and microprudential functions in the CBU strengthen coordination between macro- and microprudential policies.

The third layer of coordination includes structural policies that support household indebtedness, for instance, outside the jurisdiction of the CBU. Structural measures must be deployed when faced with a start demand-supply imbalance in housing, as MPP alone

could not solve this imbalance. Therefore, the CBU takes steps to coordinate with structural policies.

D. Macroprudential Policy Communication

Macroprudential policy communication is carried out in accordance with the CBU’s overall communication strategy¹⁴. Several communication channels and tools are used for effective communication with the target audience and the general public. In this respect, credibility, openness, and comprehensibility are the main principles of macroprudential policy communication.

The CBU uses the “Financial Stability” section on its official website as the main communication channel for effective communication with the general public on macroprudential policy. This section provides the MPP Framework, definitions, tools, regular publication of the Financial Stability Report (FSR), and research and analytical materials. In addition, the CBU implements communication through alternative (social networks, messaging applications, focus groups, and surveys) and traditional (mass media, public events, and experts) channels to further increase the effectiveness of macroprudential policy.

The FSR, published twice a year, analyzes existing and potential systemic risks in the financial system and macroprudential measures and serves as the primary tool in implementing communication with the financial market participants and the general public. Furthermore, press releases cover key aspects of the FSR and macroprudential policy decisions. The CBU familiarizes the target audience with the analysis of possible systemic risks in the financial system and macroprudential measures by organizing press conferences on the FSR, as well as seminars and other events on various topics related to financial stability. The negative impacts of current and potential systemic risks on the financial system and the real economy will be discussed in the mass media with the participation of relevant staff, where necessary.

¹⁴ The CBU Communication Strategy for 2023-2025.

Glossary

Capital buffer for systemically important banks is the additional capital requirement implemented to increase the resilience of banks identified as systemically important to unexpected shocks or losses that may occur during their operation. The higher solvency of systemically important banks and their higher resilience strengthens the stability and security of the banking system and the economy in general.

Capital buffers are requirements formed as part of the Common Equity Tier 1 (CET1) capital and introduced in addition to the regulatory capital standards to increase banks' resilience to various shocks.

Countercyclical capital buffer (CCyB) is a capital requirement designed to counter procyclicality in the financial system. When the cyclical systemic risk is judged to be increasing, institutions should accumulate capital to create buffers that strengthen the resilience of the banking sector during periods of stress when losses materialize. This will help maintain the supply of credit to the economy and dampen the downswing of the financial cycle. The CCyB can also help dampen excessive credit growth during the upswing of the financial cycle.

Deleveraging is a process undertaken by companies or banks to reduce the amount of total debt. The objective of deleveraging is—most often—to minimize risk when the deleveraging is voluntary. It is also used to avoid bankruptcy when done as a result of a change in financial conditions.

Financial cycle can be considered economic fluctuations amplified by—or stem directly from—the financial system. It typically manifests as a co-movement between credit aggregates and asset prices with a possible impact on real economic developments.

Financial stability is the capability of the financial system, i.e., financial institutions and market infrastructures, to withstand possible shocks and reduce the possibility of disruptions in the performance of financial intermediation functions. Achieving financial stability means ensuring the stability of the entire financial system, not individual financial institutions.

Fire sales occur when an owner of an asset is forced to sell it at a discounted price to meet creditor demands.

Guided discretion is an approach that considers not only automatic rules, but also relies on quantitative indicators and relevant qualitative information. Given that macroprudential instruments can generate multiple effects on the financial system, the macroprudential policy decisions on the activation/deactivation and calibration of macroprudential instruments should not be based entirely on strict rules, allowing the macroprudential authorities a high degree of flexibility and the possibility of entering qualitative factors in the decision-making process.

Leverage ratio is a capital adequacy tool that measures a bank's Tier 1 capital divided by its total exposures; it is used to monitor a bank's overall risk. Its principal objective is to constrain the maximum degree to which a bank can leverage its equity. It differs from capital adequacy requirements by not taking into account risk-weighted assets, and it is a simple and effective tool against the disproportionate excess of assets relative to capital.

Liquidity coverage ratio promotes the short-term resilience of a bank's liquidity risk profile. It does this by ensuring that a bank has an adequate stock of unencumbered high-quality liquid assets (HQLA) that can be converted into cash easily and immediately in private markets to meet its liquidity needs for a 30-calendar day liquidity stress scenario. It will improve the banking sector's ability to absorb shocks from financial and economic stress, whatever the source, thus reducing the risk of spillover from the financial sector to the real economy.

Loss given default (LGD) is a bank's financial loss when the borrower cannot repay its debt; the share of a loan or security's nominal value that would not be recovered following default.

Macro stress test is a set of tools used to measure the resilience of the entire financial system to systemic risk factors, including severe but possible macroeconomic indicators in adverse scenarios, and to ensure that it has sufficient capital and liquid assets to maintain stability in the event of a stress situation.

Macroprudential instruments are tools and limits designed to achieve macroprudential policy's ultimate and intermediate objectives.

Macroprudential policy is defined as limiting systemic risks and mitigating their negative consequences, increasing the stability of the financial system by introducing buffers that ensure the stable functioning of the economy. Macroprudential policy is characterized by reference to three defining elements: (i) Its objective: to limit systemic risk—the risk of widespread disruptions to the provision of financial services that have serious negative consequences for the economy. (ii) Its scope: the focus is on the financial system as a whole (including the interactions between the financial and real sectors) as opposed to individual components (that take the rest of the system as given). (iii) Its instruments and associated governance: it uses primarily prudential tools calibrated to target the sources of systemic risk.

Net stable funding ratio (NSFR) is complementary to the LCR in that it aims to ensure funding resilience over a longer time horizon, requiring banks to fund long-term assets with long-term liabilities and thus limit the degree of maturity mismatch.

Regulatory arbitrage is when financial market participants gain comparative advantages by moving and (or) starting their activities in relatively less regulated segments of the market to circumvent restrictions.

Risk profile represents the investor's attitude to risk and is important for effective asset allocation in the investment portfolio. Individual investors, financial institutions, or

companies have unique risk profiles as their risk appetites may differ according to psychological factors, loss-absorbing capacity, investors' age, and other investment objectives. Usually, investors can be divided into conservative, rational, and aggressive types based on the risk profile.

Structural (cross-sectional) dimension of systemic risk is a risk arising due to the distribution of risks throughout the financial system and interconnectedness between financial institutions and common exposures.

Systemic risk is the risk of widespread disruption to the provision of financial services caused by an impairment of all or parts of the financial system, which can cause serious negative consequences for the real economy. By mitigating systemic risks, macroprudential measures ultimately aim to reduce the frequency and severity of financial crises. Systemic risk is generally recognized as having two dimensions: structural (cross-sectional) and time dimension.

Systemic risk buffer can be used if other macroprudential instruments, like the CCyB or the D-SIB buffer, do not address systemic risks. The buffer can address general systemic risks or risks related to a subset of bank exposures.

Systemically important banks are banks on which the banking system's stability depends; they are banks whose disorderly failure, because of their size, complexity, and systemic interconnectedness, would cause significant disruption to the broader financial system and economic activity.

Time dimension of systemic risk refers to procyclicality, which is based on a collective tendency by financial and non-financial economic agents to increase risk exposures during the boom phase of a financial cycle and become overly risk-averse during the bust phase. Procyclicality manifests itself in credit and liquidity cycles induced by excessive leverage in financial firms (but also corporations and households) and excessive maturity mismatches in the financial sector.

"Too big to fail" institution is so systemically important that it cannot be allowed to fail, as its failure would cause instability across the financial system and disrupt the economy at large.

Transmission channels of MPP are channels through which macroprudential policy decisions can impact the resilience of the financial sector and the credit cycle. The tightening of macroprudential policy instruments is transmitted to the financial system and the real economy through price, quantity, resilience, and expectations channels.

Table 1. MPP intermediate goals and indicative instruments¹⁵

Intermediate objectives	Indicative instruments
To mitigate excessive credit growth and leverage	<ul style="list-style-type: none"> - Counter-cyclical capital buffer (CCyB) - Sectoral capital requirements (exposure to fast-growing sectoral loans) - Macro-prudential leverage ratio - Loan-to-value requirements (LTV) - Payment-to-income or debt service-to-income limit (PTI/DSTI) - Loan-to-income or debt-to-income limit (LTI/DTI)
To limit systemic risks of dollarization	<ul style="list-style-type: none"> - Risk weights (differentiated by currency) - Caps on loan-to-value, loan-to-income or debt-service-to-income ratios (differentiated by currency) - Limit on lending and borrowing denominated in foreign currency - Exposure caps on corporate credit (foreign-currency-denominated loans) - LCR differentiated by currency - NSFR differentiated by currency - Required reserves differentiated by currency - Mandatory downpayment differentiated by currency - Systemic risk buffer (SyRB)
To mitigate maturity mismatch and market illiquidity (e.g., external wholesale borrowings)	<ul style="list-style-type: none"> - Liquidity coverage ratio (LCR) - Net stable funding ratio (NSFR) - Loan-to-deposit ratio (LTD)
To limit exposure concentrations	<ul style="list-style-type: none"> - Sectoral SyRB - Large exposure restrictions
To limit misaligned incentives	<ul style="list-style-type: none"> - Domestic systemically important bank (D-SIB) capital buffer

¹⁵ The instruments described above are the most frequently applied in international practice. The list is indicative, and the CBU could use them or introduce new instruments more commensurate with the identified systemic risks.