



# Macprudential Policy

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## Introduction

This document represents the National Bank of Ukraine's (NBU) Macroprudential Policy Strategy. The document outlines in a plain and detailed manner the general framework for macroprudential regulation and the NBU's approach to macroprudential regulation in Ukraine. The strategy's publication will help promote transparency, clarity, and predictability of macroprudential policy for financial market participants. Overall, the publication will help deliver the policy's key objective: financial stability in Ukraine.

Ukraine's need for a macroprudential strategy became clear years ago. Globally, macroprudential regulation spread quickly over the last decade, propelled especially by the global financial crisis of 2007-2009. Ukraine's deep economic crises in 2008-2009 and 2014-2016 hastened the need for the country to adopt a macroprudential strategy. Financial stability has now been legislated as the NBU's second most important function after maintaining price stability. The NBU has thus de facto received a mandate to set macroprudential policy in Ukraine. This strategy forms the foundations for that mandate.

Section 1 of the document provides a brief overview of the theory, objectives, principles, and tools of macroprudential policy. Section 2 is devoted to environment of macroprudential regulation in Ukraine. Section 3 describes the practicalities of the implementation of macroprudential policy in Ukraine. Within Section 3, the NBU focuses on the key risks that could disrupt the normal functioning of the financial sector and identifies means of mitigating those risks. The strategy also provides a tentative list of macroprudential instruments the NBU uses or intends to use at a later date to promote financial stability.

The strategy focuses primarily on the banking sector, as the NBU currently has no mandate to regulate other areas of the financial sector. If the NBU's mandate were to be expanded, this document will be updated.

In November 2018, the strategy was discussed at a meeting of the Financial Stability Committee and approved by the Board of the NBU.

# Fundamentals of Macroprudential Regulation

## Overview and Purpose of Macroprudential Regulation

Macroprudential policy aims to prevent the build-up and materialization of systemic risks in the financial sector to ensure the smooth functioning of the financial system. The policy's ultimate goal is to promote financial stability, defined as the state in which the financial system is able to properly perform its main functions like financial intermediation and enabling payments, and also to withstand crises. Achieving that goal will facilitate sustainable economic growth.

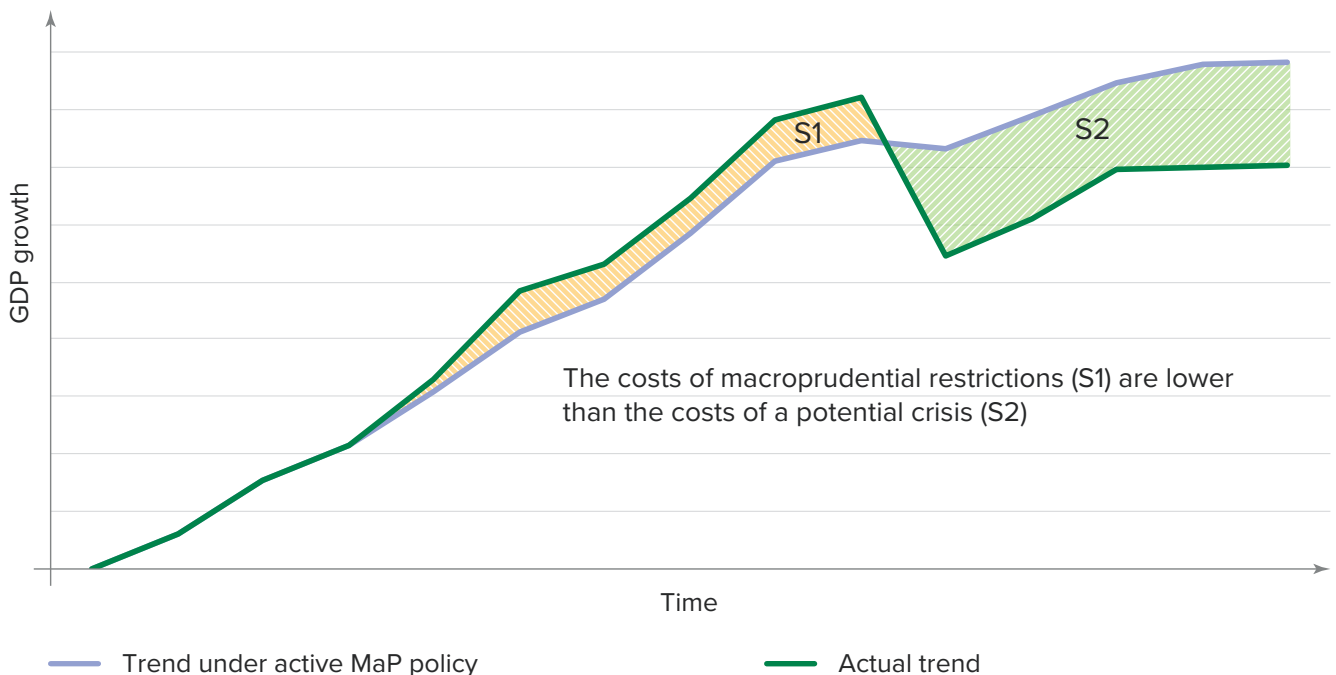
The notion of macroprudential policy emerged as policymakers reviewed past economic crises in search of a better solution. Since financial systems are more than simply the sum of its parts, effective supervision over individual financial institutions alone is insufficient to ensure the proper functioning of the financial system during crises. The idiosyncratic resilience of individual financial market participants does not necessarily ensure the resilience and continuous operation of the entire financial sector. For example, a well-capitalized bank may honor all its obligations to depositors even during a crisis, but still temporarily scale back new

lending, thus contributing to a deeper recession. Therefore, the financial sector needs regulation of the system overall and not just of individual institutions.

Macroprudential policy cannot completely eliminate systemic risks. It can, however, prevent the excessive build-up of risks and limit the probability of those risks materializing. Thus, the policy promotes the resilience of the economy and reduces volatility of GDP, as shown by numerous empirical studies. However, this policy also carries side effects, including temporary restrictions on access of households and businesses to credit. This may slow economic growth, which is viewed as an acceptable cost in return for resilience in the face of financial crisis.

Macroprudential policy is complex, partly because preemptive tools may be required even when risks to the financial system may seem insignificant. At those times, decision-makers may lack resolve (the so-called inaction bias) because during an expansion of credit, it is difficult to communicate the need for restrictions to market participants, politicians, and households.

### Stylized impact of macroprudential policy on the economic cycle



<sup>1</sup> [https://www.bis.org/publ/qtrpdf/r\\_qt1709g.pdf](https://www.bis.org/publ/qtrpdf/r_qt1709g.pdf)

### The rise of macroprudential policy

Macroprudential policy emerged as a theoretical concept in the late 1970s, but only achieved a critical mass in the aftermath of three crises: the Japanese financial crisis in the 1990s, the Asian financial crisis in the late 1990s, and the global crisis of 2008-2009. In the 1980s, macroprudential policy began appearing in documents from the Bank for International Settlements (BIS) as a new separate policy aimed at maintaining the stability of the entire financial system.

The central banks of Hong Kong (in the 1990s) and South Korea and Singapore (in the 2000s) were the first to deploy macroprudential tools in response to excessive inflows of capital. After the crisis of 2008-2009, the macroprudential concept spread much wider. Central banks started to establish separate financial stability units focused on macroprudential analysis and regulation and began publishing financial stability reports.

Internationally, the Financial Stability Board (FSB) was established in 2009 and the European Systemic Risk Board (ESRB) was set up in 2010. Basel III was agreed in 2010 and the new Capital Requirement Directive and Regulation (CRR/CRD IV) was adopted in 2013, both of which introduced macroprudential instruments. The ESRB

has published recommendations on macroprudential policy aimed at stronger mandates for central banks in the promotion of financial stability and the establishment of high-level interagency councils/committees on financial stability.

### Objectives of Macroprudential Policy

Promoting financial stability as a precondition for sustainable economic growth is a fundamental goal for many central banks around the globe. To this end, regulators aim to prevent the build-up of systemic risks to decrease the probability of crisis and strengthen the resilience of the financial sector.

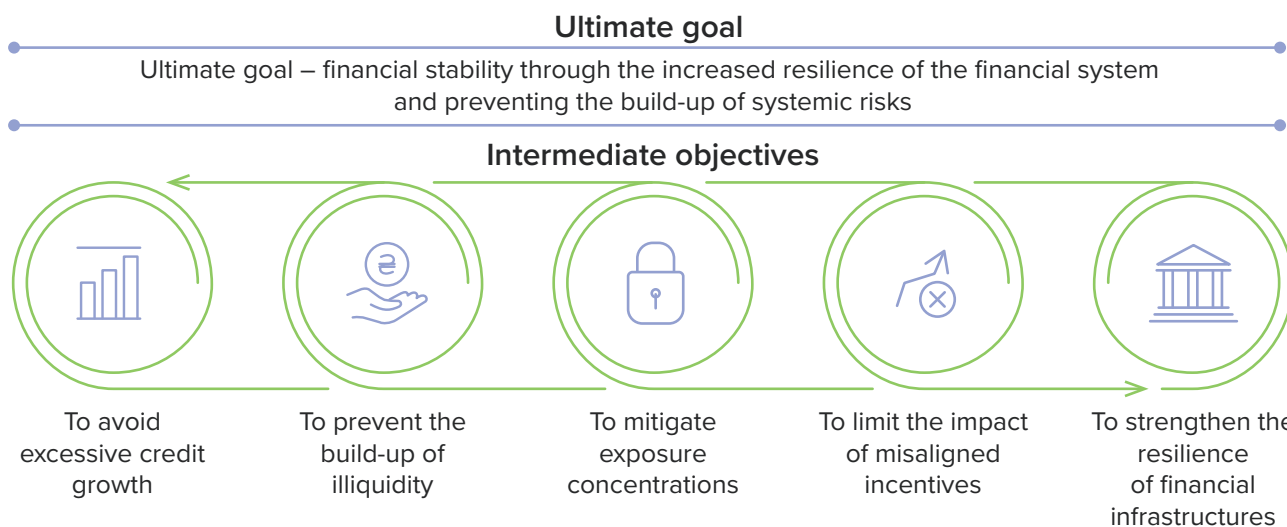
According to recommendations by the ESRB, the strategic (ultimate) goals of macroprudential policy are achieved through tactical (intermediate) objectives.

### Principles of Macroprudential Policy

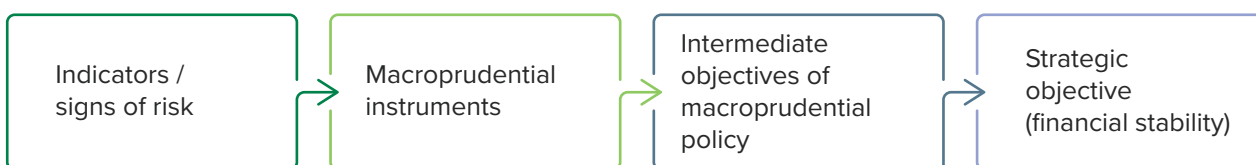
In implementing macroprudential policy, regulators are guided by principles that aim to ensure the effectiveness of the measures used.

1. **Independence.** Macroprudential policy must be

### Framework of macroprudential policy objectives<sup>2</sup>



### The stages of achieving strategic objectives



<sup>2</sup> The original intermediate objectives as outlined by the ESRB are to: 1) Mitigate and prevent excessive credit growth and leverage; 2) Mitigate and prevent excessive maturity mismatch and market illiquidity, 3) Limit direct and indirect exposure concentrations; 4) Limit the systemic impact of misaligned incentives with the view to reducing moral hazard; 5) Strengthen the resilience of financial infrastructures.

independent from a central bank's (or regulator's) other functions, including monetary policy and microprudential supervision, as well as from pressures from the financial sector or other authorities. This ensures that long-term goals are prioritized over short-term objectives. For instance, during growth periods, financial institutions may object to stronger regulatory requirements. Independence helps the central bank or other regulators withstand this pressure.

2. **Transparency.** The objectives and the grounds for the use of macroprudential instruments must be clear for the banking sector and the public. The central bank should inform target audiences of regulatory changes in a timely manner to allow sufficient time to adjust.
3. **Preventive approach.** The central bank should work to identify systemic risks and act to minimize them in time. If the scale of the threat is difficult to estimate, a central bank should opt for over-reaction (so-called over-reaction bias) instead of inaction, as crisis-related losses tend to outweigh costs related to macroprudential restrictions.
4. **Guided discretion.** The use of macroprudential instruments shall be guided by rules set in advance. Any non-adherence will only be allowed if justified properly.
5. **Coordination.** The efficacy of macroprudential policy depends on its interaction with other policies that belong to the mandate of the central bank or other authorities. The central bank must ensure proper coordination.
6. **Proportionality.** The use of macroprudential tools carries certain requirements to financial institutions. Those requirements must be commensurate with the contribution of a given financial institution to the overall systemic risk.
7. **Avoiding regulatory arbitrage.** Macroprudential policy is only efficient if market participants cannot avoid restrictions by migrating to less regulated segments. Macroprudential tools should aim primarily at the participants and operations that cannot easily migrate into other financial segments without significant losses.
8. **Consideration for national specifics.** Macroprudential policy should account for the specifics of the national financial system to ensure the effective use of selected instruments. In Ukraine, the large market share held by state-owned banks is a prime example. This feature limits the impact of the capital buffer for systemically important banks.

## Macroprudential Tools

Globally, macroprudential tools are typically divided into capital, liquidity, and other (sectoral) instruments. However, no classification is entirely definitive because regulators are constantly introducing additional tools in response to developing needs and the specifics of the financial sector. The choice of a specific tool depends on a regulator's intermediate objectives. In addition, a single instrument can help achieve several objectives. The most frequently globally used instruments are listed below.

### Capital Instruments

#### Countercyclical capital buffer, CCB

This instrument sets higher capital requirements (buffers) during periods of credit expansion with the option of easing or releasing that buffer in a downturn when systemic risks materialize. The CCB aims to reduce the pro-cyclicality in the financial system. The CCB enhances the resilience of the banking system, protects it from potential losses, and indirectly limits the expansionary stage of the credit cycle. The gap between GDP and credit growth rates is the main criterion for setting or releasing the buffer. In addition, the regulator considers other indicators like the ratio of housing prices to household incomes, the ratio of debt service costs to incomes for households and corporates, and others.

#### Capital buffer for systemically important banks

The buffer sets additional capital requirements on systemically important banks whose failure would have serious adverse effect on the financial system and the economy. The capital buffer enhances the ability of qualifying banks to cover losses, thus decreasing the probability of crises and the scale of their impact. The buffer can also limit some of the competitive advantages of systemically important institutions to level the playing field for small- and medium-sized banks.

#### Systemic risk buffer, SRB

The buffer involves reserving additional capital to cover long-term structural (non-cyclical) systemic risks. It can be applied to a group of banks or all banks in the system. The ESRB recommends not using this instrument to cover risks that are measurable, homogeneous, and standardized, like credit, market, or operating risks. Instead, the buffer should be applied to cover, for instance, risks related to high concentration in the sector, high interconnectedness, the size of the financial sector (relative to GDP), or financial innovations that boost system complexity. If a bank is required to maintain the SRB along with the capital buffer for systemically important banks, the higher of the two applies.

#### Capital conservation buffer

The capital conservation buffer aims to ensure a stock of capital in "normal" times above the minimum

requirements to cover possible losses and prevent non-compliance with minimum capital adequacy requirements in the future. In doing so, the pro-cyclicality of lending is reduced. The capital conservation buffer is mostly defined as a microprudential instrument that helps to achieve macroprudential goals.

#### **Leverage ratio**

The ratio of tier I capital to all assets (on- and off-balance-sheet), with unweighted risk. Maintaining the ratio at a required level serves to limit the expansion of bank lending. This is an extra safety measure against an excessive expansion of bank balance sheets when risk weightings do not reflect actual riskiness of operations. The instrument's advantages are its simplicity and transparency, as banks do not have to classify assets according to their riskiness to calculate the ratio. The Basel Committee for Bank Supervision sets the minimum leverage ratio at 3%.

#### **Liquidity instruments**

##### **Liquidity coverage ratio, LCR**

The ratio of a bank's liquid assets to expected net cash outflows over a 30-day crisis period. By maintaining the ratio above the threshold, financial institutions maintain the liquidity levels needed to weather a crisis. The LCR is often defined as a microprudential instrument that can be used to achieve macroprudential objectives by setting additional requirements (either fixed or time-varying). For example, regulators can lower LCR requirements during a systemic liquidity crisis to allow banks to meet obligations to depositors in full.

##### **Net stable funding ratio, NSFR**

The ratio defines the minimum proportion of stable (long-term) funding depending on the liquidity and

residual maturity of a bank's assets. The instrument motivates banks to switch to long-term funding sources and not make long-term lending reliant exclusively on short-term funding. The ratio mitigates asset-liability mismatches to help limit credit cycle volatility. The NSFR is often described as a microprudential instrument that can be used to achieve macroprudential objectives by setting additional requirements (either fixed or time-varying)<sup>3</sup>.

#### **Other instruments**

##### **Loan-to-value ratio, LTV**

The instrument caps loan amounts for households depending on the collateral applied. The LTV prevents asset bubbles in the real estate market and the excessive growth of mortgage lending. Regulators can cap the marginal LTV for all new mortgages or just for the mortgages on real estate that has the highest price growth.

##### **Caps on debt-service-to-income ratio (DSTI) and debt-to-income ratio (DTI)**

The DSTI and DTI instruments cap maximum loan amounts for households depending on income levels. They limit excessive growth in mortgage lending and household debt burden.

##### **Higher disclosure requirements**

The regulator may require greater or more frequent disclosures of information from banks. This instrument boosts the public's understanding of the operations of financial institutions, thus enhancing the resilience of the financial system. The additional disclosures increase the quality of risk assessments by financial market participants, especially of risks related to the solvency and liquidity of counterparties.

<sup>3</sup> [https://www.esrb.europa.eu/pub/pdf/other/140303\\_esrb\\_handbook\\_mp.en.pdf](https://www.esrb.europa.eu/pub/pdf/other/140303_esrb_handbook_mp.en.pdf)

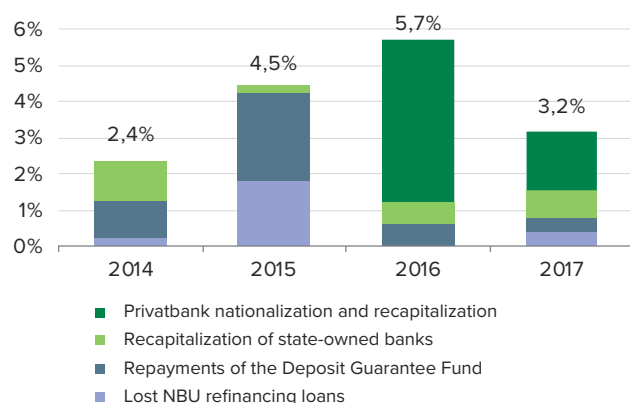
# Environment for Implementation of Macroprudential Policy in Ukraine

## Ukraine's Need for Macroprudential Regulation

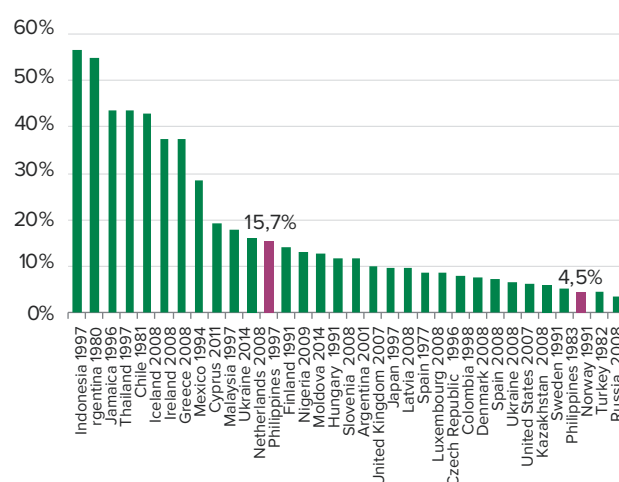
Maintaining financial stability is an acute issue for Ukraine. The country is among the top-3 globally in terms of the frequency of crises: over the last 20 years, Ukraine has experienced three deep crises. The last crisis was in

2014-2016. The direct fiscal costs of resolving that crisis amounted to 15.7% of GDP in the respective years, which is moderate relative to other countries. However, the indirect costs for economy in general were much higher at 38% of GDP. The consequences of that systemic crisis will limit bank lending and economic growth for a long time still.

Public costs related to the resolution of the banking crisis in Ukraine in 2014-2017 (fiscal costs), % GDP



Fiscal costs of banking crisis resolution, % GDP



The costs are a part of total public expenditures on financial sector restructuring. They include bank recapitalization costs, but exclude the cost of purchased assets if they were later sold or the cost of liquidity support if it was later repaid. The nationalization of Privatbank and the recapitalization of state-owned banks reflects the amount of domestic government bonds issued to increase equity capital in the respective year. Lost NBU refinancing loans include only loans to insolvent banks. Lost budget funds include the funds that budgets of all levels deposited at insolvent banks. The data for Ukraine includes refinancing loans to insolvent banks.

The depth and frequency of the systemic crises in Ukraine is a function of a range of fundamental problems. These include an absence of effective banking regulation at the micro-level and financial stability framework, including measures to mitigate the emergence and build-up of systemic risks. In other words, the banking sector was not prepared for the crises. The NBU thus had to intervene in the midst of the crisis with strong measures that were unpopular with bank clients, like limits on deposit withdrawals.

Ukraine's last two crises had common elements, but also had different features.

### 2008-2009 crisis

The 2008-2009 crisis was provoked by cyclical factors including a rapid credit expansion. With access to

cheap external funding, banks lent to households and businesses in foreign currency. Borrowers mostly did not hedge the currency risk, and a substantial depreciation of the hryvnia had an adverse impact on their solvency. The mortgage segment became a source of systemic risk. Affordable credit massively pushed up housing demand, which propelled rapid growth in housing prices. That incited households to borrow and buy housing to capitalize on the price growth.

The systemic risks fully materialized after the beginning of the crisis. The sharp hryvnia depreciation rapidly increased the household debt burden, as they had little to no foreign currency income. Prices (USD) plummeted for real estate, including for assets pledged as mortgage collateral. As a result, the NPL ratio for mortgages soared.

<sup>1</sup> Laeven, Valencia. Systemic Banking Crises Revisited. IMF. 2018. <https://www.imf.org/en/Publications/WP/Issues/2018/09/14/Systemic-Banking-Crises-Revisited-46232>

<sup>2</sup> NBU estimates

<sup>3</sup> <https://bank.gov.ua/doccatalog/document?id=50604896>

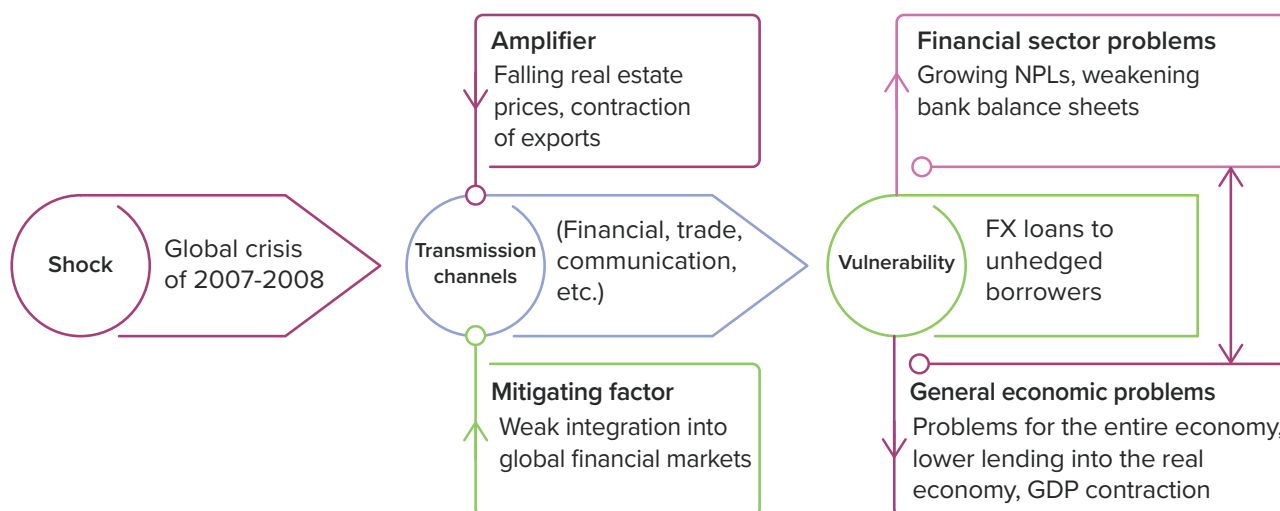


## 2014-2016 crisis

This crisis was rather a structural one for several reasons:

- Banks had accumulated considerable loans to related parties prior to the crisis. For example, 97% of corporate loans at Privatbank, the largest Ukrainian bank, were

## Materialization of systemic risks during the 2008-2009 crisis



issued to companies related to its shareholders;

- State-owned banks lent excessively to companies belonging to politically exposed persons (almost two-thirds of their credit portfolios);
- Many captive banks did not provide financial intermediation, but instead served the interests of business groups or specialized in withdrawing capital abroad or money laundering;
- The banking sector had low liquidity and substantial maturity mismatches;
- Weak banks were highly interconnected in specific segments including in interbank lending. That caused a domino effect once a single weak institution failed.

Most of those problems emerged prior to the 2008-2009 crisis. Nevertheless, they were not properly assessed and the regulator's reaction to them was insufficient prior to or after the crisis. The two crises show the high cost related to an absence of effective financial regulation at the level of individual financial institutions as well as at the systemic level.

## Institutional Framework

### The NBU is the key policymaker of macroprudential policy

According to Article 6 of the Law of Ukraine On the National Bank of Ukraine (the Law), the NBU is mandated to promote financial stability, including banking system stability, provided it does not conflict the price stability target. In practice, the Law gives the NBU the mandate to design and implement macroprudential policy. This meets EU standards in the recommendations of the European Commission and the ESRB<sup>4</sup>.

In promoting financial stability, the NBU is guided by the recommendations of the Basel Committee on Banking Supervision, the ESRB, and CRR/CRD IV.

The Financial Stability Committee (FS Committee) coordinates macroprudential policy within the NBU's mandate. This is a strategic policy-making committee chaired by the Governor of the NBU. The FS Committee meets at least once a quarter, and more frequently if needed.

The key tasks of the FS Committee are to identify systemic risks and ways to mitigate them, make recommendations on the use of macroprudential tools, and coordinate actions that promote financial stability at the NBU level. The FS Committee makes recommendations to the NBU Board, which makes decisions on macroprudential interventions. If a risk that the FS Committee has identified is beyond the NBU's mandate, the FS Committee may recommend that the interagency Financial Stability Council step in.

<sup>4</sup> Regulation (EU) No 1092/2010: «...the national central banks should have a leading role in macro-prudential oversight because of their expertise and their existing responsibilities in the area of financial stability»; ESRB Recommendations of 22 December 2011 (ESRB/2011/3) on the macro-prudential mandate of national authorities, Recommendation B.3: «ensure that the central bank plays a leading role in the macroprudential policy...»

### Interagency cooperation

Financial stability in a country depends on banks and non-bank financial institutions. This creates the need to ensure effective coordination between the NBU and other financial regulators on the implementation of macroprudential policy measures. To this end, the Financial Stability Council (FSC) was established by presidential decree in 2015. The FSC's mandate is to timely identify and mitigate risks that threaten the stability of the domestic banking and financial systems.

The FSC is a platform for the professional discussion of threats to financial stability at the top level of its member institutions. The FSC makes recommendations on the mitigation of risks. Institutions addressed must implement the recommendations or explain their reasons for not doing so. Moreover, in line with article 7<sup>1</sup> of the Law of Ukraine On the National Bank of Ukraine, the FSC recognizes presence of signs of risks to stability of the national banking and/or financial system. This

empowers the NBU to impose temporary restrictions in regulating and supervising banks. The FSC meets at least quarterly. The FSC publishes press releases after meeting and compiles an annual report on its activities.

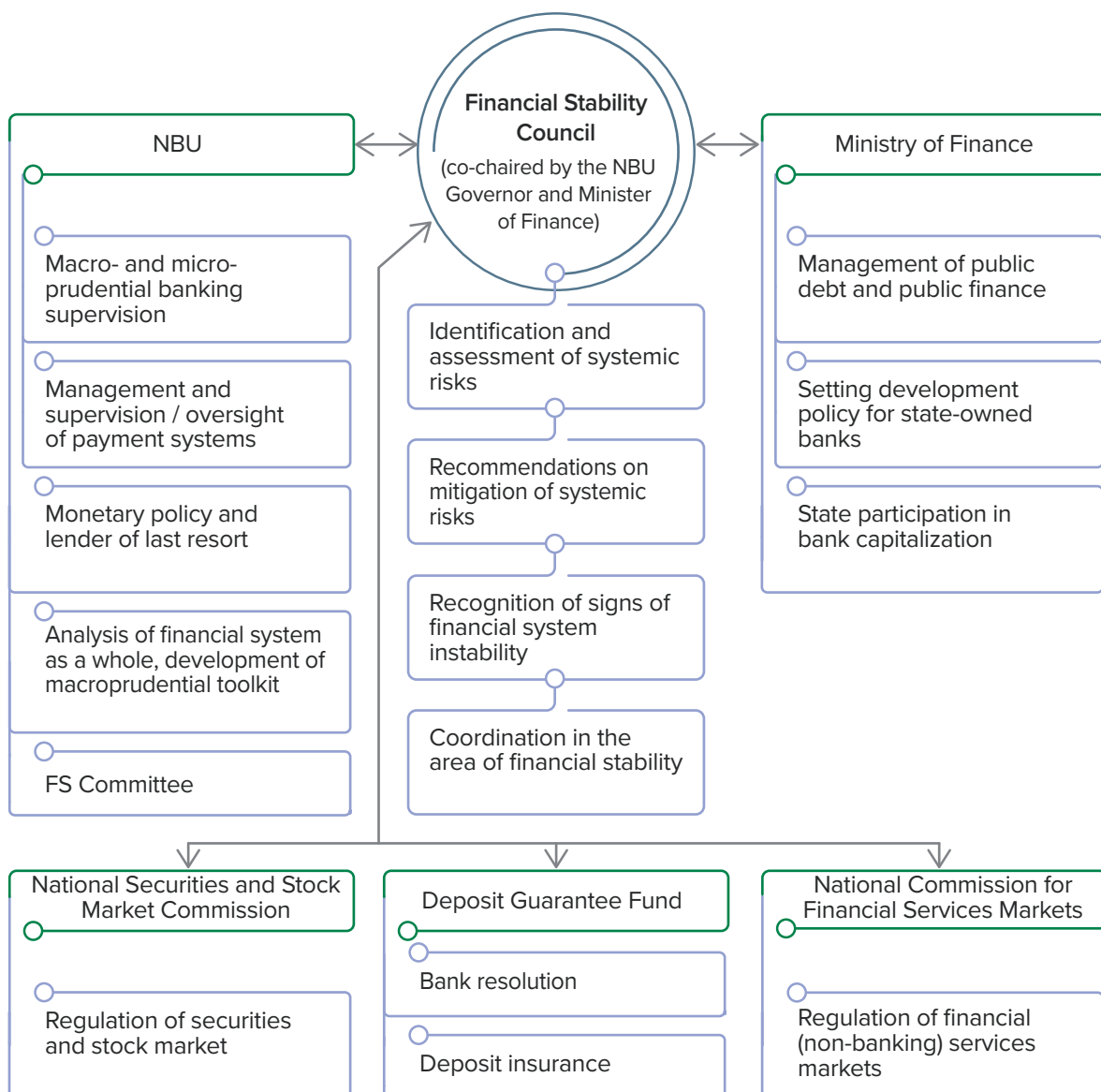
### Interaction with Other Economic Policies

On top of the interagency coordination, to be effective, macroprudential regulation must properly interact with the central bank's other policies. Within the NBU's mandate, macroprudential policy interacts with monetary policy and banking (microprudential) supervision. They react to different challenges and have distinct objectives, but they need to interact with and complement one another.

### Monetary policy

Monetary policy is the part of macroeconomic policy that aims to uphold hryvnia purchasing power by maintaining low sustainable inflation rates. This objective

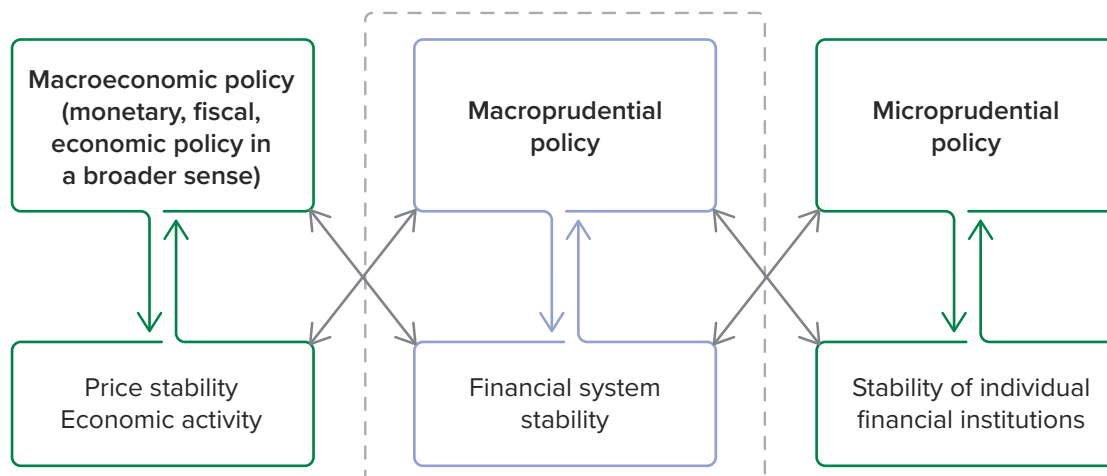
### Financial Stability Council and the roles of its member institutions



is one of the preconditions of financial stability. At the same time, a more stable system and more accessible financial services contribute to the effectiveness of the transmission channel of monetary policy. Monetary policy instruments are the “big guns” that impact the entire economy including the financial sector. The

NBU applies monetary policy instruments to promote financial stability only if systemic risks or complications in the functioning of financial markets could have a serious impact on future inflation and economic activity. Normally, monetary policy instruments are not used to stabilize the financial system. If risks emerge in

### Economic policy interactions



individual segments or markets, macroprudential policy is more efficient.

At times, there might be a conflict between policy objectives. For example, an accommodative monetary policy may be appropriate based on macroeconomic conditions, but they may trigger side effects like an increase in debt burden and a less prudent perception of risks by lenders given the low interest rate environment. The solvency of borrowers may decrease during a reverse to tight monetary policy. Therefore, the NBU must coordinate its monetary and macroprudential policy decisions.

#### Banking (microprudential) supervision

Banking supervision aims to ensure the stability of banks and protect their depositors and creditors. The stability of individual institutions is a necessary (although insufficient) precondition for banking sector resilience. One of the key objectives of banking supervision is the timely identification of problems and intervention in individual banks, including through resolution. Financial institutions that repeatedly fail to comply with minimum regulatory requirements can weaken the resilience of the financial sector.

However, separate policies could encounter a conflict of interest. For instance, during an economic upturn, macroprudential policy prescribes a build-up of capital reserves (buffers) even though institutions may seem sufficiently capitalized from a microprudential point of view. During a crisis, the foreclosure of collateral by a

bank may improve that bank’s financial standing but still pose a systemic threat to the interests of other banks exposed to that borrower or prompt fire sales.

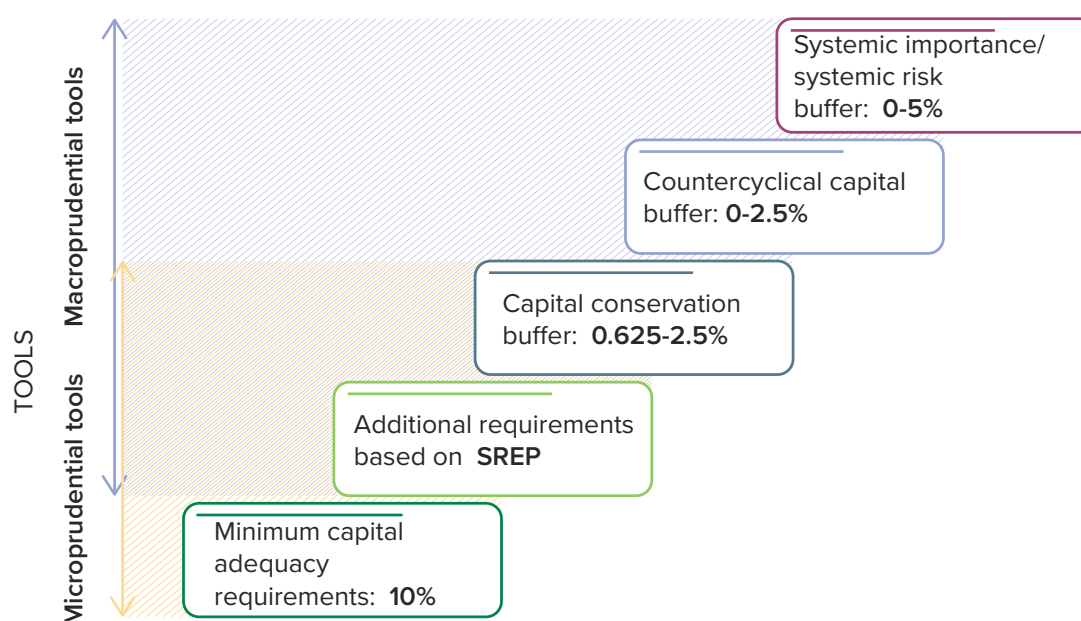
Setting capital requirements is a key area where microprudential supervision and macroprudential policy intersect. Minimum capital requirements are a traditional microprudential instrument, while the countercyclical capital buffer, systemic importance buffer, and systemic risk buffer are typical macroprudential instruments. The capital conservation buffer and buffer resulting from bank assessments under SREP are both micro- and macroprudential instruments.

The NBU recognizes the potential for conflicts of interest between the policies. The regulator’s internal framework of committees works collaboratively and involves directors from the relevant departments. This facilitates an exchange of information and ideas, prevents conflicts between policies, and allows for the reconciliation of measures and instruments. Committees for financial stability (the FS Committee), monetary policy, banking supervision, and regulation must ensure coordination between macroprudential, microprudential and monetary policy.

#### Foreign exchange liberalization and macroprudential policy

Ukraine is a small open economy, sensitive to volatility in global financial markets. As a result, external factors played a major role in the country’s recent crises. They propelled outflows of foreign currency from the banking

## Total capital requirements, percentage of risk-weighted assets (RWA)



sector and of capital abroad, complicated refinancing of external debts, depleted the NBU's international reserves, and caused substantial depreciation pressures on the hryvnia exchange rate. Thus, the NBU often had to react to the risks by introducing foreign currency restrictions and thus using them as a macroprudential tool.

The Law of Ukraine On Currency and Currency Operations, which was adopted in June 2018, introduced the free flow of capital as a key tenet. Under stable economic conditions, all restrictions on trans-border foreign exchange transactions will be lifted. However, if signs of financial instability emerge, the NBU may impose safeguard measures or special temporary banking requirements. Those may include restrictions on outflows of debt raised by banks and their customers. The NBU views capital controls as a last-ditch instrument to be used when all other macroprudential instruments are insufficient. The NBU will choose other instruments if they are deemed more effective.

The NBU will prevent the build-up of systemic risks related to capital inflows by requiring provisioning for short-term funds raised on external markets. For instance, the provisioning requirement can be used if credit expands quickly fueled by external borrowings. However, this instrument is a supportive one, and capital and sectoral instruments that limit excessive credit are preferred. Moreover, if demand for foreign currency increases through forward contracts, the NBU may introduce special provisioning requirements for forward contracts as well.

## Underlying Information

The effectiveness of macroprudential policy depends largely on the quality of the input information. Currently, not all data is available in Ukraine.

Banking sector data is most readily available, including through the NBU's Credit Register. It collects data on outstanding credit exposures of 100 times the minimum wage or more. The NBU uses the register to recalibrate the PD and LGD ratios used by banks to assess credit risks. The Credit Register helps promote the effective monitoring of concentrations of credit risk in the system.

The amount and quality of information on non-bank financial institutions and non-financial corporations is satisfactory. However, data on other sectors are incomplete for now. The NBU lacks the data to evaluate the debt burden or market behavior for households by income groups. That data would help the NBU set appropriate limits on credit exposures (LTV, DSTI, DTI). The system of data collection on the real estate market needs to be substantially revised and improved.

The NBU will continue to work to improve the quality and availability of the information required for macroprudential policymaking. The implementation of single reporting standards for financial sector participants (FINREP and COREP) will be a priority in terms of ensuring accessibility and comparability of data. Work on increasing the volume and quality of the data is a medium-term priority.

Sources of information on financial stability by sectors

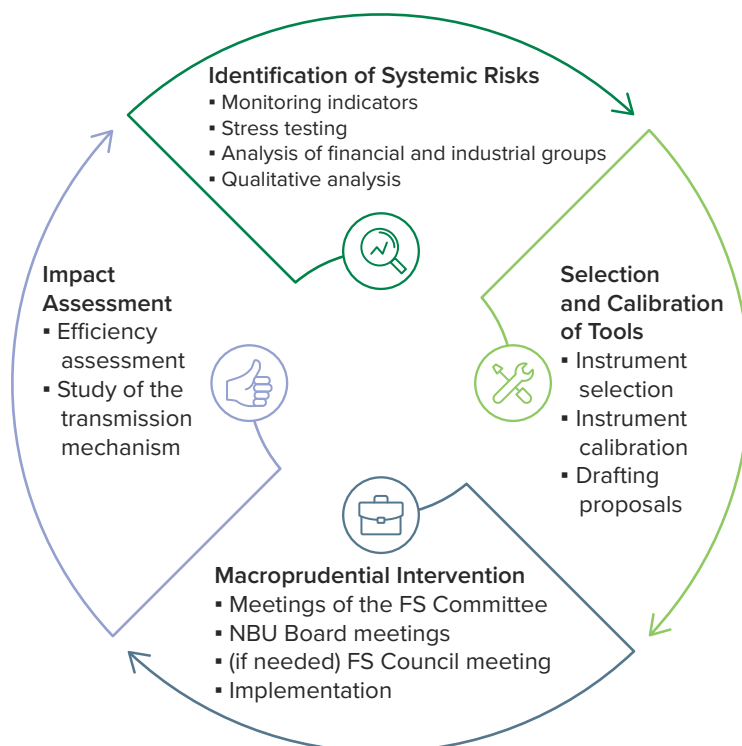


# Specifics of Macroprudential Policy in Ukraine

## Stages of Macroprudential Policy

The macroprudential policy cycle is made up of four main stages.

### Tentative list of indicators to monitor



**1. Identification of Systemic Risks.** The NBU analyzes the conditions of major markets based on open data and information from NBU departments (banking supervision, monetary policy, payment system oversight, open market operations, etc.), as well as the information from other financial sector regulators.

To identify risks, the NBU looks at quantitative indicators and expert judgments, inter alia, including but not limited to:

- Macroeconomic, monetary, and banking statistics, and indicators in the financial and real sectors and the real estate market;
- Solvency indicators for financial and industrial groups (FIGs), which are the largest borrowers from Ukrainian banks, as well as for households;
- Surveys of banks and other financial market players.

### Tentative list of indicators to monitor

Intermediate objectives	Indicators
Prevent excessive credit growth	<ul style="list-style-type: none"> <li>▪ Credit-to-GDP gap;</li> <li>▪ Credit growth, total as well as by individual economic sectors;</li> <li>▪ Leverage ratio (ratio of Tier 1 capital to all on-balance and off-balance sheet items);</li> <li>▪ Capital adequacy;</li> <li>▪ Change in the NPL ratio;</li> <li>▪ NPL coverage ratio;</li> <li>▪ Change in housing prices and the deviation from the long-term trend;</li> <li>▪ Change in LTV for new mortgages;</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Household debt-to-income ratio;</li> <li>▪ Change in housing cost over household incomes;</li> <li>▪ Change in the buy-rent gap;</li> <li>▪ Developments in rents and vacancy ratios on the commercial real estate market;</li> <li>▪ Lending terms and conditions (based on a survey of banks);</li> </ul>
Prevent market illiquidity	<ul style="list-style-type: none"> <li>▪ Loan-to-deposit ratio;</li> <li>▪ Liquidity coverage ratio (LCR);</li> <li>▪ Net stable funding ratio (NSFR);</li> <li>▪ Distribution of liabilities by maturity;</li> <li>▪ Limits on open foreign currency position of banks;</li> <li>▪ Ratio of external borrowing in total liabilities of banks;</li> <li>▪ Change in CDS on banks' debt instruments;</li> </ul>
Limit exposure concentration	<ul style="list-style-type: none"> <li>▪ Distribution of credit portfolio by sectors;</li> <li>▪ Regional distribution of credit portfolios;</li> <li>▪ Currency distribution of credit portfolios;</li> <li>▪ Exposure concentration by selected financial and industrial groups;</li> <li>▪ Rate of interconnectedness of banks;</li> </ul>
Limit the systemic impact of misaligned incentives	<ul style="list-style-type: none"> <li>▪ Banking assets-to-GDP ratio;</li> <li>▪ Share of systemically important banks in total deposits and loans;</li> <li>▪ Share of systemically important payment systems in total transactions;</li> <li>▪ Change in interest rates;</li> <li>▪ Net interest margin;</li> <li>▪ ROE of banks.</li> </ul>

**2. Selection and Calibration of Tools.** The NBU chooses a macroprudential instrument based on the best fit for a given identified systemic risk. To choose a macroprudential instrument, the NBU considers the following factors: scale of the systemic risk (affecting the entire system or only a part), its source (on the borrower or lender side), impact of the instrument (affects the bank's balance sheet or its market behavior), its impact on the financial cycle (limiting expansion or limiting downturn), and possible unintended / side effects. Then, the NBU makes the instrument consistent with its other policies and calibrates it to the scale and potential contagion area of the risk, and the conditions of and prospects for financial sector development. Instruments will be pre-selected and pre-calibrated for eventual activation.

The NBU bases its selection for an appropriate instrument on the basic list of instruments recommended by the ESRB. However, the NBU can also deploy other macroprudential tools as appropriate, especially to mitigate risks specific to Ukraine's banking sector

### 3. Macroprudential Intervention.

The NBU reacts to systemic risks in the following ways:

- **Risk warnings.** The NBU communicates on risks to financial stability to financial market participants, other regulators, authorities, and the public. This is a mandatory stage of macroprudential policy. If stricter macroprudential measures are premature, unsuitable, or impossible, the NBU will limit its intervention to the communications alone;

- **Use of Macroprudential Instruments.** If the communication related to a risk is insufficient, the NBU will introduce the macroprudential instrument as selected based on prior analysis of its pros and cons. The FS Committee recommends and the Board approves decisions on the use of macroprudential instruments and their characteristics. If the NBU cannot mitigate identified risks with those instruments, the NBU can initiate a discussion at the FS Council and invite other authorities to work on the solution. The NBU will inform market participants in advance of the use of most macroprudential instruments.

### 4. Assessment of the Impact of Macroprudential Policy.

The NBU will collect and analyze data on the impact of the macroprudential instrument to understand all of its effects. The regulator estimates the instrument's impact on the financial system based on an analysis of individual bank reports, key indicators for the banking system and for markets, and from changes in market sentiment. This helps the NBU understand whether the risk was correctly identified, whether intermediate objectives were achieved, and whether the instrument was effective. Individual instrument evaluations sum up to an assessment of overall macroprudential policy.

The NBU can also study the transmission mechanisms for instruments, ex ante and ex post, to better understand them and improve their calibration. The regulator will assess the efficacy of an instrument based on the output of models and feedback from market participants.

## Role of Stress Testing

Stress testing plays a major role in the identification of systemic risks. Stress test scenarios build on assumptions of deteriorating macroeconomic, sectoral, and specific financial indicators. The stress test helps evaluate the impact of economic shocks on banks and assess the related costs for the banking system. Even if the shock never materializes, the NBU obtains valuable information from the stress test. That information underpins actions that can be taken regarding a bank and recommendations for individual financial institutions or on the use of macroprudential instruments.

The question the stress test tries to answer is “what would happen to banks if the worst scenario materialized”, even if the regulator is confident that a scenario is unlikely to materialize over the forecast horizon. Stress tests do not seek to ascertain the impact on banks in the short term.

The NBU holds stress tests at the micro and macro level. The testing cycle for individual banks and the entire banking system comprises one year.

### Micro Stress Tests

The NBU normally holds an asset quality review at banks before conducting micro stress tests. The tests model the operations of individual financial institutions in detail. These are top-down stress tests. This means that the NBU bases its calculations on the information reported by banks. The NBU applies additional requirements on banks based on the results of the test, including additional capital buffers or restructuring of assets or business processes. Compliance with those requirements should enhance a bank’s resilience in the event of a crisis.

The NBU will annually stress test the banks that account for 90% of banking sector assets. The tests will not be conducted at small banks, as any loss of capital at a small bank does not pose a systemic risk.

### Macro Stress Tests

Macro stress tests are held for the total sector and mostly do not look deep into the operations of individual financial institutions. The macro stress tests are based on aggregated data. If a test identifies systemic risks that apply to many banks, the NBU may deploy macroprudential instruments.

A macro stress test can also be based on assessments of individual banks. The test would then model feedback loops between financial institutions.

### Macroeconomic Scenarios for Stress Testing

Stress tests are conducted based on two macroeconomic scenarios: baseline and adverse. The key risk factors feed into the model of the adverse scenario that helps the NBU measure the resilience of banks to crises. The baseline scenario provides

the background for a comparison and helps to detect weaknesses in banks’ current business models. The NBU develops scenarios on three-year horizons, which allows the model to capture all potential stages of a crisis, from the outbreak to the initial recovery.

The baseline scenario is generally in line with the NBU’s macroeconomic forecast. The adverse scenario models a severe but plausible scenario. It does not necessarily reflect the experiences of past crises and does not constitute an alternative macroeconomic scenario of the NBU.

Scenario modelling builds on four key groups of indicators:

- GDP and output volumes. The scenario assumes that GDP and output will plummet, with varying impacts across different sectors;
- Exchange rate. The scenario projects a substantial depreciation of the hryvnia;
- Inflation. The pace of price growth will accelerate during a crisis, in particular because of currency depreciation;
- Interest rates. The model includes a sharp hike in the NBU’s key interest rate that would squeeze the interest spreads and margins of banks.

The NBU will adjust the list of risk factors in the adverse scenario based on the development path of the banking sector and the economy. The NBU can also conduct reverse stress tests; the test first defines the amount of losses banks must be able to absorb and then models the projected change in key macroeconomic indicators that generate these losses.

The aim of modelling indicators for individual banks or the entire banking system is not to forecast their precise change. This is impossible because of the assumption of static balance sheets. However, the baseline and adverse scenarios show how existing imbalances could materialize and the impact on bank profits and capital.

The NBU plans to annually communicate macroeconomic scenarios for stress tests to banks and to the public explaining the rationale for their design.

## Macroprudential Policy Focus

Systemic risks can vary depending on the development stage of the banking sector, the stage of the financial and economic cycle, and external conditions. Ukraine faces numerous protracted risks; the NBU will monitor those and intervene as needed.

### Short maturity of bank funding

The structure of bank funding has changed considerably



over the last decade. The share of external debt in the liabilities of financial institutions has fallen from 38% in 2009 to 13% as of mid-2018. Domestic deposits account for more than 75% of liabilities in 2018. On the positive side, the banking sector is now much less dependent on global debt markets, which limits Ukraine's exposure to external crises. However, a new threat has emerged: the short maturity of corporate and retail deposits, which generates liquidity risks. Over 70% of bank hryvnia liabilities have a residual maturity of less than one month. Therefore, the NBU will encourage banks to keep more assets in high quality liquid components and to extend the maturity of funding, for example by attracting longer-term deposits.

**Possible NBU actions** – Introduction of the LCR requirement (from December 2018) and NSFR (in 2020), and tighter requirements on internal liquidity management at banks.

**Expected impact from implementation** – Extension of funding maturity, mitigating maturity gap, building up liquidity buffers by holding more assets in high quality liquid components.

#### High dollarization rate in the banking sector

Bank balance sheets in Ukraine are excessively dollarized for two main reasons. First, frequent spikes in inflation have deteriorated hryvnia purchasing power, which pushed households to keeping a high proportion of their savings in foreign currencies. Second, the once-generous external funding of banks fueled the rapid growth in the foreign currency credit portfolio. During and after the 2014-2016 crisis, the share of foreign currency assets and liabilities fell as foreign currency deposits and interbank loans flowed out, foreign currency funding was converted into equity, and many foreign currency loans were restructured and converted to hryvnia. However, the dollarization rate has remained high because of hryvnia depreciation: foreign currency components account for 45% of total deposits and 41% of total loans. This situation raises systemic risks, including because of increasing currency risks for banks. Stress tests have shown that numerous corporate customers could stop servicing loans if the hryvnia were to depreciate substantially. The NBU will encourage banks to decrease the dollarization of their balance sheets.

**Possible NBU actions** – Introducing additional risk weights for foreign currency assets, tightening requirements on the evaluation of foreign currency credit exposures, developing recommendations for banks to decrease the proportion of foreign currency loans in their portfolios.

**Expected impact from implementation** – Decreasing currency risk for banks and their customers.

#### High share of state-owned banks in the banking sector

State-owned banks have historically held a large share of the market, and that share grew further during the 2014-2016 crisis. The nationalization of Privatbank in

December 2016 boosted the market share by assets of state-owned banks by 20 pp. As of the end of September 2018, state-owned banks accounted for 54% of the market in terms of net assets, 64% in retail deposits, and 38% in net loans. Prior to 2014, state-owned banks were a common source of lending to businesses owned by politically exposed persons. Most of those loans are now classified as non-performing loans (NPLs). That practice has been checked. However, state-owned banks still generate a range of problems like low quality of risk management or the dominance of state-owned banks in providing liquidity to the government. In addition, these financial institutions are not profit-oriented, but they do shape trends in market pricing for assets and liabilities because of their size.

**Possible NBU actions** – Vigilant monitoring of the implementation of strategies at state-owned banks that aim to resolve existing problems, setting systemic importance buffers and systemic risk buffers, and tightening risk management requirements.

**Expected impact from implementation** – Lower share of state capital in the banking sector, stronger competition, better operational and financial performance of the state-owned banks.

#### High growth in consumer lending

Consumer lending is attractive to banks as it offers diversification of risks and higher profitability. Those incentives have propelled a 35% yoy increase in the hryvnia net consumer loan portfolio in 2017. The total outstanding retail loan portfolio is still small relative to GDP and household income. However, if the growth rate remains high, credit risks will start to build at individual banks and across the entire system. The NBU believes this will remain a risk over the long run.

**Possible NBU actions** – Regular revision of regulatory parameters of PD and LGD, introduction of additional risk weights for consumer loans, caps on DSTI or DTI.

**Expected impact from implementation** – Ensuring a conservative approach in credit risk assessment by banks, preventing a relaxation of lending conditions and excessive debt burden on certain groups of households.

#### Migration of assets and operations into the non-bank financial sector

The strict regulation of the banking sector causes an important side effect: some assets and transactions migrate to non-bank financial institutions. Supervision standards for those institutions are lower, which drives regulatory arbitrage. The financial reports of non-bank financial institutions generally do not reflect their true liquidity and solvency. It is therefore impossible to track systemic risks in this segment. Moreover, the NBU lacks the powers to adequately react to threats in this segment. The recommendations of the FS Council, of which the National Commission on State Regulation of

Financial Services is a member, typically are not sufficient to mitigate the risks.

**Possible NBU actions** – Establishing a system of micro- and macroprudential supervision over the non-bank financial sector once a law on the consolidation of supervisory functions (the so-called “split” law) is adopted.

**Expected impact from implementation** – Decreased ability for regulatory arbitrage in the financial sector, better regulation and enhanced resilience of non-bank financial institutions.

#### High concentration of exposures

The banking sector’s loan portfolio is very concentrated. According to the NBU’s estimates, the 20 largest groups of private companies accounted for 51% of gross and 28% of net corporate loans as of October 2018. The NPL ratio for loans to these business groups was around 77%. This level of concentration is abnormally high and poses a risk for the entire sector. The NBU expects banks to diversify their loan portfolios and lend more proactively to SMEs.

**Possible NBU actions** – Informing market participants on the rate of concentration of the corporate loan portfolio to allow banks to make prudent loan decisions, tighter monitoring of standards for assessing credit risk for large exposures.

**Expected impact from implementation** – Diversification of the banking sector’s loan portfolio by economic sectors and by borrower size.

#### High rates of lending to related parties

In 2015-2016, the NBU held a diagnostic study of loans issued to parties related to banks. The study revealed that these loans made up roughly one-quarter of the credit portfolio at banks with private Ukrainian capital. Over 40 banks were in breach of the limit on exposure to related parties. The study showed that lending to related parties substantially increased credit risks. In addition, historically, related companies were typically the first to stop servicing their loans during a crisis, which contributed to bank failure. Since early 2016, total loans to related parties have declined substantially across the banking sector. However, this remains an important issue for many banks. The NBU expects the problem of excessive lending to related parties to be resolved entirely over the next two years.

**Possible NBU actions** – Control over the implementation of programs to wind down related party lending; actions in response to non-compliance with the programs’ schedules; setting tighter rules for the calculation of

regulatory capital adequacy ratios for banks that do not observe the limits on related party lending.

**Expected impact from implementation** – Reducing lending to related parties to an acceptable level, improving the quality of the loan portfolio.

#### High NPL ratio

Ukrainian banks currently have a 54% NPL ratio. The reason behind this high rate was the expansion of credit in the past when standards for assessing borrower creditworthiness were rather low and creditor rights were not properly protected. The practice of lending to related parties that stopped servicing their loans during the crisis was another significant contributor. As of today, banks have recognized all NPLs and the NPL coverage with provisions is constantly rising, reaching around 86% as of October 2018. Thus, NPLs should not have a significant impact on the financial performance and capital of banks. However, the high NPL ratio is a heavy burden for the banking sector, especially at state-owned banks, which accumulated around 66% of all NPLs in the sector (including 37% at Privatbank). The NBU believes that banks must be more proactive in cleaning their balance sheets, and NPLs should be restructured, sold, or written off.

**Possible NBU actions** – Issue a special regulation requiring banks to build an effective internal system for work out and resolution of NPLs, develop recommendations on NPL resolution, promote the establishment of a functioning market for non-performing assets

**Expected impact from implementation** – Clean-up of banks’ balance sheets from NPLs, establishment of a system for monitoring credit portfolio quality.

### Objectives and Tools for Macroprudential Policy in Ukraine

The NBU has already used several macroprudential instruments or their equivalents. Over the next two years, it plans to introduce a few more instruments. Over this time, the NBU will adapt them to suit Ukrainian conditions, collect the necessary data, and work on models that will assess the impact from the instrument’s use.

Based on the ESRB’s recommendations and the conditions of the Ukrainian banking sector, the NBU has defined a sixth intermediate objective on top of the five basic objectives: to reduce the dollarization of the banking sector. The NBU will apply a range of instruments to achieve each of the objectives, as outlined in the table below. This list is not exclusive; the NBU may expand the list if needed.

## Intermediate objectives of macroprudential policy and a preliminary toolkit for Ukraine

Intermediate objectives	Possible instruments*
1. To avoid excessive credit growth	<p>Capital instruments:</p> <ul style="list-style-type: none"> <li>▪ Capital requirements based on stress tests;</li> <li>▪ Countercyclical capital buffer – to be activated no earlier than in 2020 ;</li> <li>▪ Capital conservation buffer – to be introduced in 2020; the initial rate will be 0.625% with a gradual increase to 2.5% in early 2023;</li> <li>▪ Systemic risk buffer;</li> <li>▪ Sectoral capital requirements;</li> <li>▪ Additional risk weights for certain types of loans;</li> <li>▪ Leverage ratio.</li> </ul> <p>Other instruments:</p> <ul style="list-style-type: none"> <li>▪ Regulatory requirements on calculating prudential provisions (minimal rates of PD and LGD). Banks are required to apply the single scoring model to calculate prudential (regulatory) provisions. If the total prudential provisions exceed total provisions under IFRS, the regulatory capital of banks is adjusted for this gap;</li> <li>▪ Establishment of the NBU Credit Register;</li> <li>▪ Loan-to-value ratio (LTV);</li> <li>▪ Debt service-to-income ratio (DSTI) and loan-to-income (LTI).</li> </ul>
2. To prevent illiquidity	<p>Liquidity instruments:</p> <ul style="list-style-type: none"> <li>▪ Liquidity coverage ratio (LCR). Starting in December 2018, LCR will be introduced in a single currency (hryvnia + foreign currency) and separately for foreign currencies, both at 80%. By the end of 2019, the requirement will increase to 100%;</li> <li>▪ Net stable funding ratio (NSFR) – to be introduced in 2020;</li> <li>▪ Mandatory reserve requirement for short-term external borrowing (0% as of the end of October 2018) ;</li> <li>▪ Other stable funding requirements (e.g. loan-to-deposit ratio, LTD);</li> <li>▪ Additional liquidity requirements, e.g. liquidity buffers.</li> </ul>
3. To limit the concentration of exposures	<p>Capital instruments:</p> <ul style="list-style-type: none"> <li>▪ Capital requirements based on stress tests;</li> <li>▪ Systemic risk buffer.</li> </ul> <p>Other instruments:</p> <ul style="list-style-type: none"> <li>▪ Limits on the concentration of large exposures. Currently, the maximum loan amount a bank can extend to a single counterparty or to a group of related counterparties cannot exceed 25% of regulatory capital;</li> <li>▪ Limits on bank lending to related parties, currently at 25% of regulatory capital. The NBU plans to introduce a strict rule that a bank’s regulatory capital shall be adjusted for the excessive amount of loans to related parties (over the set limit);</li> <li>▪ Additional capital requirements in the event of significant concentrations in some sectors or types of loans.</li> </ul>
4. To limit the impact of misaligned incentives (especially for state-owned banks)	<p>Capital instruments:</p> <ul style="list-style-type: none"> <li>▪ Capital requirements based on stress tests;</li> <li>▪ Additional capital requirements for systemically important banks, which can be introduced from early 2020 at a rate of 1% or 2% depending on a bank’s systemic significance;</li> <li>▪ Systemic risk buffer.</li> </ul> <p>Liquidity instruments:</p> <ul style="list-style-type: none"> <li>▪ Additional liquidity requirements for systemically important banks.</li> </ul> <p>Other instruments:</p> <ul style="list-style-type: none"> <li>▪ Promoting the implementation of strategies at state-owned banks;</li> <li>▪ Recommendations on enhanced risk management practices .</li> </ul>
5. To enhance the resilience of financial infrastructure	<p>Other instruments:</p> <ul style="list-style-type: none"> <li>▪ Enhanced oversight over key elements of payment infrastructure;</li> <li>▪ Enhanced resilience of the central bank’s payment systems (NBU’s SEP, Prostir card payment system).</li> </ul>

6. To lower dollarization rates in the sector

Liquidity instruments:

- Higher PD and LGD for loans in foreign currency that are assessed on a group basis;
- LCR requirement in foreign currency.

Other instruments:

- Ban on lending to households in foreign currency, which was legislated in 2009. There are currently no reasons to relax or lift the ban;
- Limits on open foreign currency positions. As of October 2018, limits are effective for banks' short and long foreign currency positions at 5% of regulatory capital. The NBU will adjust the limit depending on the situation in the foreign exchange market. However, the restrictions will remain;
- Requirements to re-balance the foreign currency composition of loan portfolios based on bank stress tests;
- Mandatory reserve requirement for short-term external borrowing;
- Additional risk weights for foreign currency assets ;
- Setting tighter requirements for assessing credit risk for foreign currency loans .

\* Tools marked blue are already in use or approved for use. The NBU can apply the other tools in the future.

## Communication Framework

Established communications are key to the effectiveness of macroprudential policy. They help to shape expectations of target audiences, promote comprehension of risks by public, and facilitate awareness about macroprudential regulation.

Communications on macroprudential policy comprise three key components:

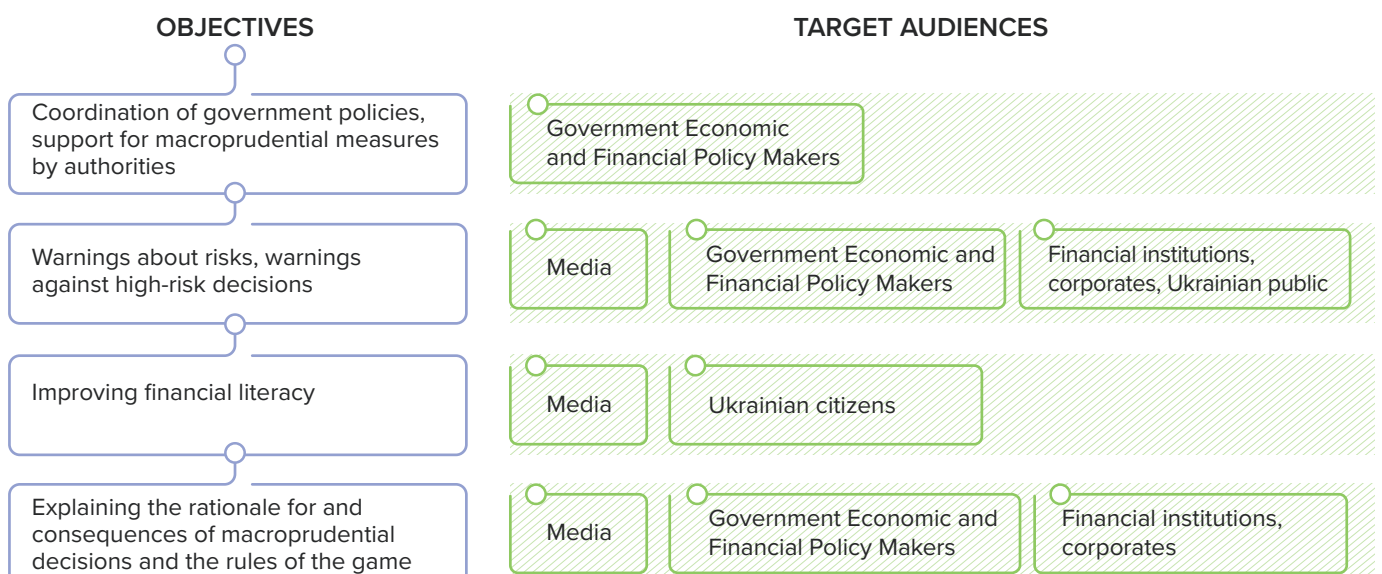
- Explaining the macroprudential framework. The NBU describes objectives of macroprudential policy, mandates of respective authorities, the decision-making processes, and the available instruments. This strategy document constitutes an important part of this work;
- Risk warnings. After a risk assessment, the NBU communicates information about the most

substantial risks, unless disclosing a risk itself constitutes a threat;

- Explaining macroprudential measures. When introducing a macroprudential instrument, the NBU explains its actions to banks and provides them with templates or guidelines for calculations.

The Financial Stability Report is the key informational and analytical product related to systemic risks. Other important regular publications include the Banking Sector Review, the Systemic Risk Survey, and the Bank Lending Survey. Annually, the NBU publishes the results of stress tests and the FSC produces reports on its activities. The NBU also issues occasional communications, conducts research on specific events/topics, and holds seminars and lectures, including at universities. Communications are mainly disseminated through the Financial Stability section of the NBU's official website.

## The target audiences of macroprudential policy and objectives of communication

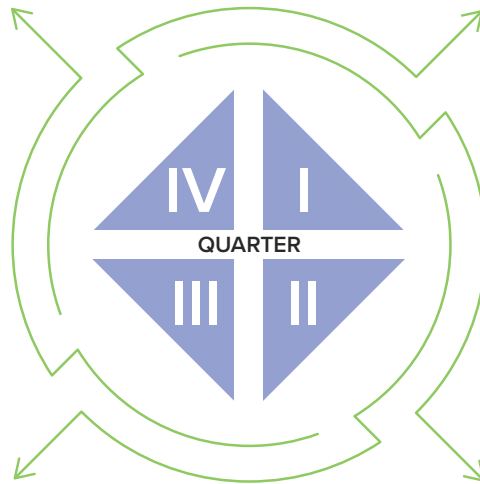


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## Cycle of communications on financial stability

- Financial Stability Report
- Stress Test Results
- Systemic Risk Survey
- Banking Sector Review
- Bank Lending Survey

- Banking Sector Review
- Bank Lending Survey



- Banking Sector Review
- Bank Lending Survey

- Financial Stability Report
- Annual Report on Activities of the FS Council
- Systemic Risk Survey
- Banking Sector Review
- Bank Lending Survey

# Glossary

**Financial stability** – refers to the state of the financial system in which it can properly perform its main functions like financial intermediation and making payments, as well as being able to withstand crises. The financial system is considered stable if a) it effectively redistributes resources from savers to investors, b) financial risks are thoroughly evaluated and properly managed, and c) it can absorb shocks without significant negative consequences.

**Systemic risk** – is the possibility of a functional failure of the financial system, in whole or in part, that will disrupt the proper redistribution of financial resources and carry potential adverse effect for the entire economy. Systemic risk has a cyclical and a structural component.

**Cyclical risks** – are related to the tendency of economic agents to take excessive risks during economic upturns.

**Structural risks** – are driven by the distribution of risks and interconnectedness between participants in the financial system. Structural risks make the system vulnerable.

**Macroprudential policy** – encompasses a set of measures aimed at identifying, evaluating, and mitigating systemic risks.

**Macroprudential policy instruments** – are requirements and restrictions imposed on the financial system or on individual groups/market participants aimed at achieving strategic and intermediate objectives of macroprudential policy.

**Capital buffer** – is the amount of capital a bank must hold above the required regulatory minimum. It either can be set as a single rate for all banks (or groups of banks) or individually for a bank based on an assessment of risk.

**Systemically important financial institutions** – are the financial institutions whose failure could lead to material imbalances in the financial system and the economy given their size, complexity, indispensability, and interconnectedness with other institutions.

**Stress test** – is a diagnostic instrument for evaluating the resilience of financial institutions and/or the financial system to potential shocks, such as abrupt changes in the domestic or external economic environment or the behavior of economic agents.

**Regulatory arbitrage** – is a practice in which financial institutions take advantage of softer regulations to boost profits, which can result in a build-up of systemic risks.

**SREP** (supervisory review and evaluation process) – is a supervisory evaluation process in which a bank's risks are assessed in terms of the bank's business model, corporate governance, capital adequacy, and liquidity. Probability of default (PD) is a ratio showing the likelihood a borrower/counterparty will be unable to repay debt (default).

**Loss given default (LGD)** – is a ratio reflecting the amount of losses in case a borrower/counterparty defaults.

**Non-performing asset / loan** – is an asset past due over 90 days (30 days for banks-debtors) or where the counterparty is unable to repay without a foreclosure.